

ISSN 2518-1467 (Online),
ISSN 1991-3494 (Print)

ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ҰЛТТЫҚ ҒЫЛЫМ АКАДЕМИЯСЫНЫҢ

Х А Б А Р Ш Ы С Ы

ВЕСТНИК

НАЦИОНАЛЬНОЙ АКАДЕМИИ НАУК
РЕСПУБЛИКИ КАЗАХСТАН

THE BULLETIN

THE NATIONAL ACADEMY OF SCIENCES
OF THE REPUBLIC OF KAZAKHSTAN

PUBLISHED SINCE 1944

2

MARCH – APRIL 2020

ALMATY, NAS RK

NAS RK is pleased to announce that Bulletin of NAS RK scientific journal has been accepted for indexing in the Emerging Sources Citation Index, a new edition of Web of Science. Content in this index is under consideration by Clarivate Analytics to be accepted in the Science Citation Index Expanded, the Social Sciences Citation Index, and the Arts & Humanities Citation Index. The quality and depth of content Web of Science offers to researchers, authors, publishers, and institutions sets it apart from other research databases. The inclusion of Bulletin of NAS RK in the Emerging Sources Citation Index demonstrates our dedication to providing the most relevant and influential multidiscipline content to our community.

Қазақстан Республикасы Ұлттық ғылым академиясы "ҚР ҰҒА Хабаршысы" ғылыми журналының Web of Science-тің жаңаланған нұсқасы Emerging Sources Citation Index-те индекстелуге қабылданғанын хабарлайды. Бұл индекстелу барысында Clarivate Analytics компаниясы журналды одан әрі the Science Citation Index Expanded, the Social Sciences Citation Index және the Arts & Humanities Citation Index-ке қабылдау мәселесін қарастыруда. Web of Science зерттеушілер, авторлар, баспашылар мен мекемелерге контент тереңдігі мен сапасын ұсынады. ҚР ҰҒА Хабаршысының Emerging Sources Citation Index-ке енуі біздің қоғамдастық үшін ең өзекті және беделді мультидисциплинарлы контентке адалдығымызды білдіреді.

НАН РК сообщает, что научный журнал «Вестник НАН РК» был принят для индексирования в Emerging Sources Citation Index, обновленной версии Web of Science. Содержание в этом индексировании находится в стадии рассмотрения компанией Clarivate Analytics для дальнейшего принятия журнала в the Science Citation Index Expanded, the Social Sciences Citation Index и the Arts & Humanities Citation Index. Web of Science предлагает качество и глубину контента для исследователей, авторов, издателей и учреждений. Включение Вестника НАН РК в Emerging Sources Citation Index демонстрирует нашу приверженность к наиболее актуальному и влиятельному мультидисциплинарному контенту для нашего сообщества.

Б а с р е д а к т о р ы

х.ғ.д., проф., ҚР ҰҒА академигі

М.Ж. Жұрынов

Р е д а к ц и я а л қ а с ы:

Абиев Р.Ш. проф. (Ресей)
Абишев М.Е. проф., корр.-мүшесі (Қазақстан)
Аврамов К.В. проф. (Украина)
Аппель Юрген проф. (Германия)
Баймуқанов Д.А. проф., корр.-мүшесі (Қазақстан)
Байтулин И.О. проф., академик (Қазақстан)
Банас Иозеф проф. (Польша)
Берсимбаев Р.И. проф., академик (Қазақстан)
Велесько С. проф. (Германия)
Велихов Е.П. проф., РҒА академигі (Ресей)
Гашимзаде Ф. проф., академик (Әзірбайжан)
Гончарук В.В. проф., академик (Украина)
Давлетов А.Е. проф., корр.-мүшесі (Қазақстан)
Джрбашян Р.Т. проф., академик (Армения)
Қалимолдаев М.Н. проф., академик (Қазақстан), бас ред. орынбасары
Лаверов Н.П. проф., академик РАН (Россия)
Лунашку Ф. проф., корр.-мүшесі (Молдова)
Мохд Хасан Селамат проф. (Малайзия)
Мырхалықов Ж.У. проф., академик (Қазақстан)
Новак Изабелла проф. (Польша)
Огарь Н.П. проф., корр.-мүшесі (Қазақстан)
Полещук О.Х. проф. (Ресей)
Поняев А.И. проф. (Ресей)
Сагиян А.С. проф., академик (Армения)
Сатубалдин С.С. проф., академик (Қазақстан)
Таткеева Г.Г. проф., корр.-мүшесі (Қазақстан)
Умбетаев И. проф., академик (Қазақстан)
Хрипунов Г.С. проф. (Украина)
Юлдашбаев Ю.А. проф., РҒА академигі (Ресей)
Якубова М.М. проф., академик (Тәжікстан)

«Қазақстан Республикасы Ұлттық ғылым академиясының Хабаршысы».

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print)

Меншіктенуші: «Қазақстан Республикасының Ұлттық ғылым академиясы»РҚБ (Алматы қ.).

Қазақстан республикасының Мәдениет пен ақпарат министрлігінің Ақпарат және мұрағат комитетінде
01.06.2006 ж. берілген №5551-Ж мерзімдік басылым тіркеуіне қойылу туралы куәлік.

Мерзімділігі: жылына 6 рет.

Тиражы: 2000 дана.

Редакцияның мекенжайы: 050010, Алматы қ., Шевченко көш., 28, 219 бөл., 220, тел.: 272-13-19, 272-13-18,
<http://www.bulletin-science.kz/index.php/en/>

© Қазақстан Республикасының Ұлттық ғылым академиясы, 2020

Типографияның мекенжайы: «NurNaz GRACE», Алматы қ., Рысқұлов көш., 103.

Г л а в н ы й р е д а к т о р
д.х.н., проф. академик НАН РК
М.Ж. Журинов

Р е д а к ц и о н н а я к о л л е г и я:

Абиев Р.Ш. проф. (Россия)
Абишев М.Е. проф., чл.-корр. (Казахстан)
Аврамов К.В. проф. (Украина)
Апель Юрген проф. (Германия)
Баймуканов Д.А. проф., чл.-корр. (Казахстан)
Байтулин И.О. проф., академик (Казахстан)
Банас Иозеф проф. (Польша)
Берсимбаев Р.И. проф., академик (Казахстан)
Велесько С. проф. (Германия)
Велихов Е.П. проф., академик РАН (Россия)
Гашимзаде Ф. проф., академик (Азербайджан)
Гончарук В.В. проф., академик (Украина)
Давлетов А.Е. проф., чл.-корр. (Казахстан)
Джрбашян Р.Т. проф., академик (Армения)
Калимолдаев М.Н. академик (Казахстан), зам. гл. ред.
Лаверов Н.П. проф., академик РАН (Россия)
Лунашку Ф. проф., чл.-корр. (Молдова)
Мохд Хасан Селамат проф. (Малайзия)
Мырхалыков Ж.У. проф., академик (Казахстан)
Новак Изабелла проф. (Польша)
Огарь Н.П. проф., чл.-корр. (Казахстан)
Полещук О.Х. проф. (Россия)
Поняев А.И. проф. (Россия)
Сагян А.С. проф., академик (Армения)
Сатубалдин С.С. проф., академик (Казахстан)
Таткеева Г.Г. проф., чл.-корр. (Казахстан)
Умбетаев И. проф., академик (Казахстан)
Хрипунов Г.С. проф. (Украина)
Юлдашбаев Ю.А. проф., академик РАН (Россия)
Якубова М.М. проф., академик (Таджикистан)

«Вестник Национальной академии наук Республики Казахстан».

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print)

Собственник: РОО «Национальная академия наук Республики Казахстан» (г. Алматы).

Свидетельство о постановке на учет периодического печатного издания в Комитете информации и архивов
Министерства культуры и информации Республики Казахстан №5551-Ж, выданное 01.06.2006 г.

Периодичность: 6 раз в год.

Тираж: 2000 экземпляров.

Адрес редакции: 050010, г. Алматы, ул. Шевченко, 28, ком. 219, 220, тел. 272-13-19, 272-13-18.

<http://www.bulletin-science.kz/index.php/en/>

© Национальная академия наук Республики Казахстан, 2020

Адрес типографии: «NurNazGRACE», г. Алматы, ул. Рыскулова, 103.

Editor in chief

doctor of chemistry, professor, academician of NAS RK

M.Zh. Zhurinov

Editorial board:

Abiyev R.Sh. prof. (Russia)
Abishev M.Ye. prof., corr. member (Kazakhstan)
Avramov K.V. prof. (Ukraine)
Appel Jurgen, prof. (Germany)
Baimukanov D.A. prof., corr. member (Kazakhstan)
Baitullin I.O. prof., academician (Kazakhstan)
Joseph Banas, prof. (Poland)
Bersimbayev R.I. prof., academician (Kazakhstan)
Velesco S., prof. (Germany)
Velikhov Ye.P. prof., academician of RAS (Russia)
Gashimzade F. prof., academician (Azerbaijan)
Goncharuk V.V. prof., academician (Ukraine)
Davletov A.Ye. prof., corr. member (Kazakhstan)
Dzhrbashian R.T. prof., academician (Armenia)
Kalimoldayev M.N. prof., academician (Kazakhstan), deputy editor in chief
Laverov N.P. prof., academician of RAS (Russia)
Lupashku F. prof., corr. member (Moldova)
Mohd Hassan Selamat, prof. (Malaysia)
Myrkhalykov Zh.U. prof., academician (Kazakhstan)
Nowak Isabella, prof. (Poland)
Ogar N.P. prof., corr. member (Kazakhstan)
Poleshchuk O.Kh. prof. (Russia)
Ponyaev A.I. prof. (Russia)
Sagiyani A.S. prof., academician (Armenia)
Satubaldin S.S. prof., academician (Kazakhstan)
Tatkeyeva G.G. prof., corr. member (Kazakhstan)
Umbetayev I. prof., academician (Kazakhstan)
Khripunov G.S. prof. (Ukraine)
Yuldashbayev Y.A., prof., academician of RAS (Russia)
Yakubova M.M. prof., academician (Tadjikistan)

Bulletin of the National Academy of Sciences of the Republic of Kazakhstan.

ISSN 2518-1467 (Online),

ISSN 1991-3494 (Print)

Owner: RPA "National Academy of Sciences of the Republic of Kazakhstan" (Almaty).

The certificate of registration of a periodic printed publication in the Committee of Information and Archives of the Ministry of Culture and Information of the Republic of Kazakhstan N 5551-Ж, issued 01.06.2006.

Periodicity: 6 times a year.

Circulation: 2000 copies.

Editorial address: 28, Shevchenko str., of. 219, 220, Almaty, 050010, tel. 272-13-19, 272-13-18,

<http://www.bulletin-science.kz/index.php/en/>

© National Academy of Sciences of the Republic of Kazakhstan, 2020

Address of printing house: «NurNaz GRACE», 103, Ryskulov str, Almaty.

BULLETIN OF NATIONAL ACADEMY OF SCIENCES
OF THE REPUBLIC OF KAZAKHSTAN

ISSN 1991-3494

Volume 2, Number 384 (2020), 6 – 14

<https://doi.org/10.32014/2020.2518-1467.35>

UDC 622.271.4

B. Rakishev

Satbayev University, Almaty, Kazakhstan.
E-mail: b.rakishev@mail.ru

JUSTIFICATION OF SYSTEMS OF OPEN CAST DEVELOPMENT OF USEFUL FOSSILS AND THEIR NEW CLASSIFICATION

Abstract. To substantiate the new definition of an opencast development system of minerals, the standard approaches of the systems analysis are used. The patterns of moving of the mine workings in the quarry field are expressed through the analytically found velocities of moving the bench face, moving of the bench slope and the deepening of the quarry bottom. These kinematic characteristics of the moving of mine workings are the basis for the classification of the opencast development systems.

A new well-reasoned definition of an opencast development system is given. The properties inherent in it as in any system are disclosed: organization, structure, connections and functions. A new classification of the minerals opencast development systems has been created. The velocities of the bench face moving, the bench slope moving and the quarry bottom deepening were found analytically. These kinematic characteristics of the moving of the development system elements are successfully correlated their parameters with the productivity of the excavating and loading equipment.

It is substantiated for the first time that the complex of the interdependent and interconnected with each other the development, stripping and excavating workings, moving at the quarry field by time for rock extraction from the Earth bowels, is a system of the minerals opencast development. For the first time in the mining science, the kinematic characteristics of the moving of mine workings in a quarry field have been theoretically found. The format of the new classification of the minerals opencast development systems is substantiated.

The proposed new classification of minerals opencast development systems and the kinematic characteristics of moving of the mine workings in the quarry field make it possible to reasonably choose the development subsystems, their parameters and indicators in relation to the working dimensions of excavating and loading equipment, transport, and opencast mining technology. This solution provides a safe, high-performance, economical mining operation in the quarry.

Key words: quarry field, minerals opencast development, systems of the minerals opencast development, their classification, velocities of the mine workings moving at the quarry field, regulation of these velocities.

Problem statement. There are many definitions of the concept “system of opencast development of the deposit” and their classifications [1-8].

In the above definitions, as the system of opencast development of the deposit in the various interpretations the order and sequence of development and stripping operations at the quarry field are understood. They do not reflect the essence of the generally accepted concept of “system”. They do not pay attention to the role of development, stripping and excavating workings designed to extract rocks (minerals) from the Earth bowels in creating a system for mineral resources developing. Meanwhile, in the deposit development projects, the key task is to establish rational parameters for working benches,

extracting blocks, and a quarry as a whole, ensuring the achievement of the necessary productivity in minerals, stripping and rock mass. Therefore, the development and stope workings (benches), containing these parameters, should be considered as the determining components of the system of minerals opencast development.

New definition of the system of minerals opencast development. To formulate the desired definition, we pay attention to the concept of “system”. As is known, “the system (from the Greek “systema” – the whole, consisting of the parts; combination) is a great number (the whole complex) of the elements, being in relationship and connections with each other, which forms the certain integrity, unity. Only within the framework of such a family of definitions it is possible to express the basic system principles: integrity, structure, interdependence of the system and the environment, hierarchy, plurality of descriptions of each system, etc. [9].

In accordance with these requirements, we consider the development of minerals as the extraction of rocks (minerals, including oil, gas, water) from the Earth bowels in the various ways (opencast, underground, borehole, underwater and combined) after the deposit stripping [11]. When the opencast method of development, this process is realized by carrying out of the working trenches (foundation pits) from the passed permanent mine workings and extraction, loading of stripping rocks and minerals from the working trench and the formed stope workings [11].

Thus, minerals opencast development is excavation of rocks (minerals) from the Earth bowels by some given complex of the development, stripping and excavating workings, moving at the quarry field within time.

Taking into account the listed system principles and, based on a new definition of the minerals opencast development, one can give the following definition of an opencast development system.

A system of the minerals opencast development is a complex of interdependent and interconnected with each other the development, stripping and excavating workings, moving in the quarry field within time to extract rocks (minerals) from the bowels of the Earth.

Elements of the development system: development workings – working trenches (foundation pits), stripping and excavating benches are in constant motion until they reach their limit (or intermediate) position stipulated by the project for the deposit development. Consequently, the development system is a moving, dynamic object of a quarry.

The above definition of the system fully discloses the essence of opencast development of minerals - the extraction of rocks (minerals) from the Earth bowels in an open way. For it, as for any system in the generally accepted sense, the organization, structure, connections and functions are inherent [10-12].

As is known, “organization” expresses the complex of properties, characterizing certain ordering of the elements in system and their interaction. For example, the development workings precede the stripping and excavating workings and are placed in the quarry field in accordance with the established rules and norms. The stripping workings in a certain way get ahead the excavating workings. This relationship between the elements ensures the normal functioning of the system of opencast development of minerals.

“Structure” is comprehended as the complex of the elements and the methods of their unification in a single whole (it is mechanical connection between the elements). In the mineral development system, the benches working platforms act as such, since they join the benches into a single whole - the system (see figure 1). On all the working benches, their sizes should be not less than some of their minimum value, necessary to ensure the normal functioning of the system.

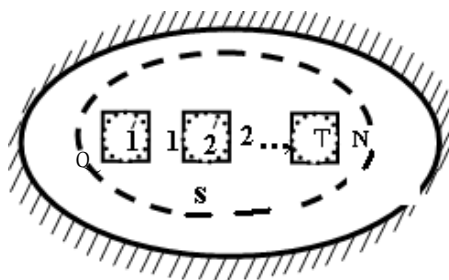


Figure 1 – Structural model of the system of minerals development

In the broad sense, “connection” is understood as what unites individual elements into a system. Connections are diverse in their forms, meaning, and content. Usually the energetic, information and material connections are selected. In our case, individual elements (working benches) are integrated into the development system by a material connection, i.e. the required amount of rock mass of a given quality, extracted from each working horizon (bench). This connection is flexible and changing in the process of the system functioning.

Each system performs some functions - it simply exists, serves as the habitat of another system, serves a system of a higher level, etc. The mineral development system is designed to provide the sustainable extraction of rocks of a given amount and required quality from the Earth bowels for a certain period of time. It serves a higher-level system “the exploitation of a mineral deposit” and at the same time serves as a habitat for another system “the mining technology”.

A mineral development system, like any system, can be represented by a structural model that displays only the construction, the system structure and the relative position of elements in space. In the model shown at the figure 1, the elements (the working benches) 1, 2, ..., N form the development system S, which is part of the environment (quarry field) Q. Another system lives in the S system - “the mining technology” with the elements 1', 2', ..., T (the working faces of the benches).

Thus, in the proposed definition of a system of minerals opencast development, the assignment of the interconnected with each other development and stripping workings is clearly indicated, all basic system principles are observed: integrity, hierarchy, structure, interdependence of the system elements. It is reasoned and in tune with the generally accepted concept of "the system". The new definition of the system of minerals opencast development is fundamentally different from the previously known ones [1-8].

New classification of the minerals opencast development systems. Mining operations mentioned in [1-3] are a technological process by which purposeful movement of the development, stripping and excavating workings in a quarry field is carried out to extract rocks from the Earth bowels. The general nature of the moving of the system elements in plan and into the depth of the quarry is determined by the mining-geological conditions of minerals bedding, the type of deposits being developed and the tasks of shipment to the consumer the required amount of rock mass of the required quality [3].

When developing the horizontal and gentle beddings with a thickness of up to 50 m during the deposit's exploitation, the slopes of the working benches of almost constant height make plane-parallel or fan-shape motion relative to their initial position. This moving of the mine workings characterizes *a continuous development system*.

When developing the inclined, steep, as well as powerful gentle-dipping beddings, the development workings are carried out both during the construction period and during the quarry exploitation. At the same time, the bottom of the development working makes a discrete vertical moving into the depth of the quarry relative to the previous horizon, and the slopes of all the working benches make horizontal moving. In general, the totality of the mine workings in this case makes a mixed (vertical, horizontal) moving and characterizes *the deepening development system*.

When developing the deposits that are complex in terms of topographic and mining-geological conditions within the same quarry field at different periods of exploitation, both varieties of moving of mine workings totalities can be used. For example, the upper part of the stripping rocks and minerals can be extracted with the regular vertical and then horizontal moving of the workings, the lower part - with the horizontal moving of the workings; or the upper part of the deposit can be extracted with the horizontal moving of the workings, and the lower part - with the vertical, then horizontal moving of the workings. In general, the deposit exploitation in this case can be carried out by a combination of the vertical and horizontal moving of the mine workings. These movements characterize *the combined development system*.

At the base of the carried analysis of the moving of the stope workings in the quarry field and the concept of acad. V. V. Rzhnevsky, a new classification was designed of the systems of minerals opencast development (see table). It is based on the nature of the moving of the development, stripping and excavating workings in the quarry field - the kinematic characteristics of moving of the elements of an opencast development system. This approach has been used in the theory of opencast mining for the first time.

New classification of the systems of mineral opencast development

Development systems	Development subsystems
Continuous	Continuous longitudinal one-board or two-board Continuous transversal one-board or two-board Continuous fan-shaped central or dispersed Continuous ring-shape central or peripheral
Deepening	Deepening longitudinal one-board or two-board Deepening transversal one-board or two-board Deepening fan-shaped dispersed Deepening ring-shape central
Combined	The same, in different combinations

In the new classification, only three opencast development systems are accepted: continuous, deepening and combined, which are named in [3] as the groups of systems. Further, by analogy with [3], they are divided into subsystems in the direction of moving of the slopes of the working benches relative to the axes and the contour of the quarry field: longitudinal, transverse, fan-shape, ring-shape, in addition to the one-board, two-board, etc. There are only 12. These subsystems in [3] are called the development systems, there are 18 of them.

As is seen, the new classification in essence, form and structure compares favorably with the classification of acad. V. V. Rzhnevsky. It is based on the kinematic characteristics of the moving of the elements of the development system, more compact, specific and contains only 3 systems and 12 subsystems.

Development systems are predetermined by the specified specific mining and geological conditions of the minerals bedding and the nature of the moving of the stripping workings in the quarry field. Development subsystems are selected based on the form, parameters of mineral bedding, physical and technical properties of rocks, the required quality of marketable products and economic indices of the enterprise.

The main parameters of the development system are the height of the bench, the width of the working trench (pit dimensions), the slope angles of the working benches, the stope width, the width of the working platform, the length of the excavator block, the length of the excavating and stripping blocks on the bench, the number of working benches, the height and width of the working zone, slope angle of the working board of the quarry.

Methods for determining the parameters and indicators of the development system are constantly being improved, as evidenced by the data of papers [13-18]. The selected development subsystem in specific mining-geological and mining-technical conditions with the best parameters and environmentally friendly development of the deposit with the complete extraction of all reserves from the subsoil, useful components from mineral raw materials.

Kinematic characteristics of moving velocities of the elements of development systems. The passing velocity of working trench, the velocity of the face moving, the moving velocity of the working bench slope, the velocity of the quarry bottom deepening are usually calculated according to the empirical formulas given in [1-6]. Analytical solution of the problem is adduced below. Naturally, the theoretical definition of these quantities is more universal. To derive the desired equations, the volume of the extracted rock mass from the massif can be represented as a rectangular parallelepiped (see figure 2):

$$V = ABC, \quad (1)$$

where A , B , C are the length, width and height (thickness) of the parallelepiped, respectively. In the general case, all of these quantities are variables.

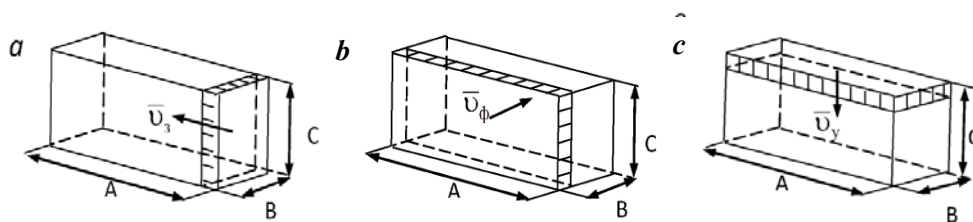


Figure 2 – Schemes to determination of moving velocities of the mine workings

Dividing both sides of equation (1) by the developing time t of the considering volume, it is possible to obtain the dependences for the desired characteristics. In this case, the expression V/t will represent the productivity of excavating and loading equipment in time t , and the number on the right side divided by t is the velocity of moving of the mine working in this direction.

For example, in the expression

$$V/t = A/t \cdot BC$$

the variable V/t represents the productivity of the excavating and loading equipment (ELE) during developing of the excavator block layer, and the variable A/t is the velocity of the face shift along the slope line of the bench (see fig. 2a). B and C are the constants.

Thus, velocity of the bench face shift is determined by the formula:

$$v_3 = Q_t/BC = Q_t/S_{my}, \quad (2)$$

where v_3 is the face shift velocity within the time t (usually a shift, day, month); Q_t is the ELE productivity when the block's layer developing within the same time; $B \cdot C = S_{my}$ (S_{my} is the cross-sectional area of the bench (entry) panel); $B = B_3$ (B_3 is the width of the panel (entry)); $C = h$ (h is the bench height).

Dependence (2) is also valid for velocity of the working trench passing. In this case, the trench transverse section is trapezium, therefore

$$S_{my} = (B_{p,m} + hctg\alpha)h.$$

Here $B_{p,m}$ is the width of the working trench in the bottom, α is a slope angle of the working trench flank.

In expression

$$V/t = A \cdot B/t \cdot C$$

the variable V/t represents the productivity of ELE during developing of the bench panel, the values A and C are constant, the variable B/t is the velocity of the bench slope into the panel cross (see fig.2b). It is determined by the formula:

$$v_\phi = Q_t / AC = Q_t / S_{ey} \quad (3)$$

where v_ϕ is moving velocity of the bench slope during the time t (usually a month, a year); Q_t is the productivity of ELE when developing of the bench part with the width B during the same time; $A \cdot C = S_{ey}$ (S_{ey} is the area of the longitudinal vertical section of the bench panel); $A = L_\phi$ (L_ϕ is the length of the bench front); $C = h$ (h is the bench height).

In expression

$$V/t = AB \cdot C/t$$

the variable V/t represents the productivity of during (ELE) developing of rocks of the bottom horizon, the values of A and B are constant, the variable C/t is the velocity (pace) of the quarry bottom deepening (see fig.2b). It is determined by the formula:

$$v_y = Q_t / AB = Q_t / S_{zc}, \quad (4)$$

where v_y is the deepening velocity of the quarry bottom during the time t (usually a year); Q_t is the productivity of ELE when developing of the rocks of the current lower bench within the same time; $AB = S_{rc}$ (S_{rc} is the area of the middle horizontal section of the current lower horizon); $A = L_\phi$ (L_ϕ is the length of the work front at the current lower bench); $B = B_{op}$ (B_{op} is the width of the middle horizontal section of the lower bench) (see figure 3).

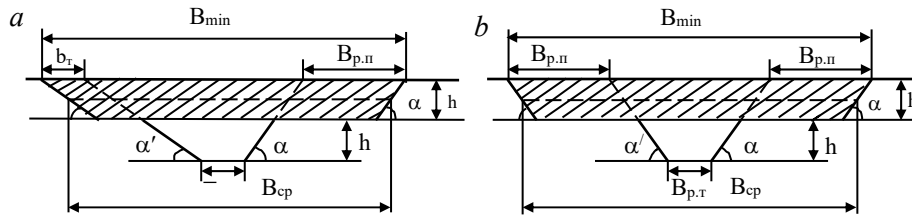


Figure 3 – Schemes to determination of the minimum values of S_z

For the normal development of mining operations in the quarry, which provides creation of conditions for stripping the next underlying horizon, the current lower bench should have the necessary working platform. Its dimensions are determined by the length of the work front L_ϕ and the total width B . The minimum size of this platform S_{zc}^{min} is different for the different subsystems of opencast development. When the one-board development subsystem (figure 3a):

$$S_{zc}^{min} \geq [b_m + B_{p,m} + B_{p,n} + 1,5h(ctg\alpha' + ctg\alpha)] L_\phi, \quad (5)$$

When the two-board development subsystem (figure 3b):

$$S_{zc}'' \geq (B_{p,m} + 2B_{p,n} + 3hctg\alpha) L_\phi, \quad (6)$$

where B_T is the width of the transport (safety) berm; $B_{p,t}$ is the width of the working trench on the stripping horizon; $B_{p,n}$ is the width of the working platform of the current lower bench; h is the height of the bench; α' , α is the slope angle of the non-working and working benches, respectively.

Thus, the maximum velocity (pace) of the quarry bottom deepening when the one-board development subsystem is determined by the dependence:

$$v_y^{max} = \frac{Q_t}{[b_m + B_{p,m} + B_{p,n} + 1,5h(ctg\alpha' + ctg\alpha)] L} \quad (7)$$

when the two-board development subsystem by the dependence:

$$v_y^{max} = \frac{Q_t}{[B_{p,m} + 2B_{p,n} + 3hctg\alpha] L}. \quad (8)$$

As is seen from (3), at a given height of the bench, v_ϕ is regulated by changing the productivity of excavating and loading equipment Q_t and the length of the work front L_ϕ . If the total length of the bench front is fixed, which usually takes place in practice, the set goal is achieved by choosing the appropriate type of ELE and a clear organization of its work.

When the deepening development system, to ensure the quarry's set productivity in minerals and stripping, it is necessary to control the value of both \bar{v}_ϕ , and \bar{v}_y , i.e. maintain them on the appropriate level. The values \bar{v}_ϕ on each working horizon should provide that conditions (5-6) are met, and the values \bar{v}_y should provide the development of mining operations into the depth (7, 8).

To increase the deepening pace of the quarry bottom \bar{v}_y , as can be seen from (7, 8), it is necessary to increase the productivity of ELE on the lower horizon using the methods mentioned above and to minimize the area value S_{zc} (see (5) and (6)). Moreover, the shorter the length of the developing block, the higher the deepening pace v_y .

Regulation of the values \bar{v}_ϕ and \bar{v}_y is dictated by the need for the planned execution of a set amount of stripping and excavating operations. This should be reflected in the development project for a specific deposit.

Conclusions. The analysis of existing systems of the deposit development and their classifications is carried out. It is noted that they do not explicitly reflect the essence of the generally accepted concept of “system”.

Based on system analysis, a new definition of the system of the minerals opencast development is given. It is justified that the system of the minerals opencast development is a complex of interdependent and interconnected with each other the development, stripping and excavating workings, moving in the quarry field within time, to extract rocks from the Earth bowels.

A new classification was designed of the systems of minerals opencast development. It is based on the nature of the moving of the development, stripping and excavating workings in the quarry field – the kinematic characteristics of moving of the elements of an opencast development system. This approach has been used in the theory of opencast mining for the first time.

In the new classification, only three opencast development systems are accepted: continuous, deepening and combined. In the direction of moving of the slopes of the working benches relative to the axes and the contour of the quarry field, they are divided into subsystems: longitudinal, transverse, fan-shape, ring-shape, in addition to the one-board, two-board, etc.

For the first time in mining science, analytical dependencies were derived to determine the velocities of the working trench passing, of the bench face moving, the bench slope moving and the quarry bottom deepening.

This work was carried out within the framework of the target program 2018 / BR05235618 “Modernization of technologies and production in the mining and processing industries of the Republic of Kazakhstan”, funded by the Ministry of Science and Education of the Republic of Kazakhstan in 2018-2020.

Б. Рақышев

Satbayev University, Алматы, Қазақстан

ПАЙДАЛЫ ҚАЗБАЛАРДЫ АШЫҚ ИГЕРУ ЖҮЙЕЛЕРІН НЕГІЗДЕУ ЖӘНЕ ОЛАРДЫҢ ЖАҢА ЖІКТЕЛУІ

Аннотация. Терминология – ғылым мен техниканың әр саласындағы тілдің ерекше маңызды құрамдас бөлігі. Терминдерді, ұғымдарды бір мағыналы анықтау және түсіндіру әр түрлі теориялық және практикалық міндеттерді қарау кезінде шындықты дұрыс қабылдауға және дұрыс шешім қабылдауға ықпал етеді. Негізсіз анықтамалар теріс салдарларға әкеп соғады. Олар жүйелі тәсілді мысалы, «пайдалы қазбалар кен орнын игеру», «пайдалы қазбаларды игеру», «пайдалы қазбаларды игеру жүйелері» және т.б. ұғымдарды анықтау кезінде пайдалану көп қтындықтарды шешеді.

Осыған байланысты пайдалы қазбаларды ашық игеру жүйесін жаңа айқындауды негіздеу үшін жүйелік талдаудың стандартты тәсілдері пайдаланылды. Олар жер қойнауынан тау жыныстарын (пайдалы қазбаларды) алуға арналған және бір-бірімен белгілі бір қарым-қатынаста болатын тау-кен қазбаларының кейбір жиынтығынан тұратын карьер объектісі ретінде игеру жүйесін қарастыруға мүмкіндік берді. Осының арқасында пайдалы қазбаларды ашық игеру жүйесін жаңа дәлелді анықтау тұжырымдалған. Кез келген жүйеге тән қасиеттер: ұйым, құрылым, байланыс және функциялар анықталынған. Пайдалы қазбаларды ашық игеру жүйелерінің жаңа жіктелуі жасалды. Кемер кенжарының қозғалу жылдамдығы, кемер еңісінің жылжуы және карьер түбінің тереңдеуі аналитикалық түрде табылды. Өңдеу жүйесі элементтерінің орын ауыстыруының осы кинематикалық сипаттамалары оның параметрлерін алу – тиеу жабдықтарының өнімділігімен өзара байланыстырады.

Осылайша, бірінші рет өзара тәуелді және өзара байланысты, жер қойнауынан тау жыныстарын алу үшін уақыт ішінде карьер алаңында орын ауыстыратын дайындық, аршу және өндіру қазбаларының жиынтығы пайдалы қазбаларды ашық игеру жүйесі болып табылатыны негізделген. Тау-кен ғылымында алғаш рет тау-кен қазбаларының карьер алаңында орын ауыстыруының кинематикалық сипаттамалары теориялық тұрғыдан табылды.

Жаңа жіктемеде ашық әзірлеудің тек үш жүйесі ғана қабылданған: тұтас, тереңдетілген және аралас. Олар одан әрі осьтерге қатысты жұмыс кемерлерінің еңістерін ауыстыру бағыты бойынша және карьер алаңының контуры ішкі жүйелерге бөлінген: бойлық, көлденең, желе, сакиналы, қосымша тағы бір бортты, екі бортты және т.б.

Белгілі әдістерден жаңа классификация кен қазбаларының карьер алаңында орын ауыстыру сипатын ескеретін, оның анықтамасынан тікелей пайда болатынымен ерекшеленеді.

Казу жүйелері пайдалы қазбалар жатуының нақты тау-кен-геологиялық жағдайларымен және карьер алаңында тазалау қазбаларының орын ауыстыру сипатымен алдын ала анықталады. Өзірлеудің кіші жүйелері пайдалы қазбалардың орналасу түріне, параметрлеріне, жыныстардың физикалық-техникалық қасиеттеріне, тауарлық өнімнің талап етілетін сапасына және кәсіпорын жұмысының экономикалық көрсеткіштеріне сүйене отырып таңдалады.

Пайдалы қазбаларды ашық игеру жүйесінің ұсынылған жаңа жіктелуі және кен қазбаларын карьер алаңында орын ауыстырудың кинематикалық сипаттамалары қазбаның кіші жүйелерін, олардың параметрлері мен көрсеткіштерін кен алу-тиеу жабдықтарының, көлік құралдарының жұмыс көлемдерімен, ашық тау-кен жұмыстарының технологияларымен өзара байланыстыра отырып, негізді таңдауға мүмкіндік береді. Мұндай шешім карьерде тау-кен жұмыстарын қауіпсіз, жоғары өнімді, үнемді орындауды қамтамасыз етеді.

Түйін сөздер: карьерлік алаң, пайдалы қазбаларды ашық қазу, пайдалы қазбаларды ашық қазу жүйесі, олардың жіктелуі, кен қазбаларының карьерлік алаңдағы орнын ауыстыру жылдамдығы, осы жылдамдықтарды реттеу.

Б. Ракишев

Satbayev University, Алматы, Казахстан

ОБОСНОВАНИЕ СИСТЕМ ОТКРЫТОЙ РАЗРАБОТКИ ПОЛЕЗНЫХ ИСКОПАЕМЫХ И ИХ НОВАЯ КЛАССИФИКАЦИЯ

Аннотация. Терминология – важнейшая составляющая специфического языка любой отрасли науки и техники. Однозначное определение и толкование терминов, понятий способствует правильному восприятию реалий и принятию верных решений при рассмотрении различных теоретических и практических задач. Необоснованные определения приводят к негативным последствиям. Они могут быть предотвращены при использовании системного подхода, например, при определении понятий «разработка месторождения полезных ископаемых», «разработка полезных ископаемых», «системы разработки полезных ископаемых» и др.

В связи с этим для обоснования нового определения системы открытой разработки полезных ископаемых использованы стандартные подходы системного анализа. Они позволили рассмотреть систему разработки как объект карьера, состоящий из некоторой совокупности горных выработок, предназначенных для извлечения горных пород (полезных ископаемых) из недр Земли и находящихся в определенных отношениях между собой. На этой базе сформулировано новое аргументированное определение системы открытой разработки полезных ископаемых. Раскрыты присущие ей, как любой системе, свойства: организация, структура, связи и функции. Создана новая классификация систем открытой разработки полезных ископаемых. Аналитически найдены скорости подвижения забоя уступа, перемещения откоса уступа и углубления дна карьера. Эти кинематические характеристики перемещения элементов системы разработки удачно взаимоувязывают ее параметры с производительностью выемочно – погрузочного оборудования.

Таким образом, впервые обосновано, что совокупность взаимозависимых и взаимосвязанных между собой подготовительных, вскрышных и добычных выработок, перемещающихся в карьерном поле во времени для извлечения горных пород из недр Земли представляет собой систему открытой разработки полезных ископаемых. Впервые в горной науке теоретически найдены кинематические характеристики перемещения горных выработок в карьерном поле.

В новой классификации принято только три системы открытой разработки: *сплошная, углубочная и комбинированная*. Они далее по направлению перемещения откосов рабочих уступов относительно осей и контура карьерного поля подразделены на подсистемы: продольные, поперечные, веерные, кольцевые, дополнительно еще на однобортовые, двухбортовые и т.д.

Новая классификация от известных принципиально отличается тем, что названия систем разработки непосредственно вытекает из ее определения, учитывающего характер перемещения горных выработок в карьерном поле.

Системы разработки предопределяются заданными конкретными горно-геологическими условиями залегания полезных ископаемых и характером перемещения очистных выработок в карьерном поле. Подсистемы разработки подбираются исходя из формы, параметров залегания полезных ископаемых, физико-технических свойств пород, требуемого качества товарной продукции и экономических показателей работы предприятия.

Предложенные новая классификация систем открытой разработки полезных ископаемых и кинематические характеристики перемещения горных выработок в карьерном поле позволяют обоснованно выбрать подсистемы разработки, их параметры и показатели во взаимосвязи с рабочими размерами выемочно-погрузочного оборудования, транспортных средств, технологии открытых горных работ. Такое

решение обеспечивает безопасное, высокопроизводительное, экономичное выполнение горных работ в карьере.

Ключевые слова: карьерное поле, открытая разработка полезных ископаемых, системы открытой разработки полезных ископаемых, их классификация, скорости перемещения горных выработок в карьерном поле, регулирование этих скоростей.

Information about the author:

Rakishev B., Dr. Sci. (Tech.), professor, Academician of NAS of the Republic of Kazakhstan, professor of Mining department, NJSC «K. I. Satpayev Kazakh National Research Technical University», Almaty, Kazakhstan; b.rakishev@mail.ru; <https://orcid.org/0000-0001-5445-070X>

REFERENCES

- [1] Sheshko E.F. Opencast mining of the minerals deposits. M-Kharkov: Ugletekhizdat, 1951. 222 p.
- [2] Mel'nikov N.V. Selected publications: State and problems of development of mining science and techniques in the USSR. M: Nauka, 1992. 230 p.
- [3] Rzhetsky V.V. Opencast mining works. P. 2. M.: Nedra, 1985. 550 p.
- [4] Arsentyev A.I., Kholodnyakov G.A. Mining works projecting by the deposits opencast mining. M.: Nedra, 1994. 336p.
- [5] Novozhilov M.G. Otkrytye gornye raboty: «Tecnologiya i complexnaya mekhanizatsiya» [Text]: / M.G.Novozhilov, G.D.Pchelkin, V.S.Eskin. 2nd ed. K.: Vissha shkola, 1990. 320 p.
- [6] Trubetskoy, K.N., Krasnoyarsky, G.L., Hronin, V.V., Kovalenko, V.S. Proektirovanie kar'erov [Projecting of the quarries]. M.: Vysshaya shkola, 2009. 694 p.
- [7] Sekisov G.V. Sposoby i sistemy otkrytoi razrabotki mestorozhdenii. Frunze: Ilim, 1966. 160 p.
- [8] Yakovlev V.L., Kornilkov S.V. Metodologicheskie osobenosti osvoeniya nedr na sovremenom etape // Vestnik UrO RAN. Nauka. 4. 2013. P. 43-49.
- [9] Bolshaya sovetskaya encyclopediya [The Large Soviet Encyclopedia]. Vol. 21, P. 301-307; Vol. 23, P. 463-470. M.: Sovetskaya encyclopediya, 1976.
- [10] Gornaya encyclopediya [Mining encyclopedia] Vol. 4. 301 p. Vol. 1, 439 p. M.: Sovetskaya encyclopediya, 1989.
- [11] Rakishev B.R. Opening of the quarry fields and the systems of the open-cast mining: Textbook. Almaty, 2013. 304 p.
- [12] Rakishev B.R. Technological resources for improving the quality and completeness of use of the mineral raw materials // Series of geology and technical sciencis. 2017. N 2. P. 116-124.
- [13] Sobko B., Lozhnikov O. Determination of cut-off wall cost efficiency at motronivskyi pit mining // Natsional'nyi Himychnyi Universytet. Naukovyi Visnyk. 2018. N 3. P. 44-49.
- [14] Rakishev B.R. Copper ore mining at the Bozshakol and Aktogai deposits of Kazakhstan // Mining journal. Moscow, 2019, N 1. P. 89-93.
- [15] Meisam Saleki, Reza Kakaie, Mahammad Ataei. Mathematical relationship between ultimate pit limits generated by discounted and undiscounted block value maximization in open pit mining // Journal of Sustainable Mining. May 2019. Vol. 18, Issue 2. P. 94-99.
- [16] Giovanni Franco-Sepulveda, Juan Camilo Del Rio-Cuervo, Maria Angelica, Pachon-Hernandez. State of the art about metaheuristics and artificial neural networks applied to open pit mining // Resources Policy. March 2019. Vol. 60. P. 125-133.
- [17] Whittlea D., Brazilb M., Grossmana P.A., Rubinsteinc J.H., Thomasa D.A., Combined optimisation of an open-pit mine outline and the transition depth to underground mining // European Journal of Operational Research. July 2018. Vol. 268, Issue 2,16. P. 624-634.
- [18] Hongquan Guo, Hoang Nguyen, Diep-Anh Vu, Xuan-Nam Bui Forecasting mining capital cost for open-pit mining projects based on artificial neural network approach // Resources Policy. Available online 23 August 2019,101474.

G. Zhumatayeva¹, Z. Bitileuova¹, Zh. Bayburayeva¹, Zh. Zhanbirov¹, I. Taran²

¹Kazakh Academy of Transport and Communication named after M. Tynyshpaev, Almaty, Kazakhstan;

²Department of Transportation Management, National TU Dnipro Polytechnic, Dnipro, Ukraine.

E-mail: gaziza_zhumataeva@mail.ru, zuhra_kadesovna@mail.ru,
Janna76077@mail.ru, janbirov_jg@mail.ru, taran7077@gmail.com

PROBLEMS OF OPERATION OF TRUCKS IN THE REGIONS OF KAZAKHSTAN

Abstract. Improving the efficiency of the transport system will make it a competitive element of the Kazakh economy. Will be achieved the highest level of security needs of the economy and population in a safe and secure transportation services. This research work, according to the current economic policy of the Republic, taking into account the specific conditions of development, aimed at improving the efficiency of trucks on the basis of theory and methods of transportation logistics and management in accordance with the level of a modern transport system.

Key words: the region, transport, transportation system, transportation, a factor, the economy, supply and quality.

Introduction. Road transport plays a significant role in the transport sector of the country. They are regularly serviced by more than 1.0 million businesses, organizations and other corporate clients of the national economy and population. Annual transport by road is more than 80% of goods by public transport – more than 75% of passengers. At the same time, road transport is a major consumer of resources spent transport complex: 66% of the fuel of petroleum origin, 70 – the labor force and about 50 – all investments [1].

It should be noted that the regional aspects of transport logistics in relation to the conditions of Kazakhstan have not been sufficiently studied. There are such Kazakh authors, who research this problem: Burkotov E.V., Tuleushin S.T., V.P. Dobritsa, Sisekenova M.B., and others [2]

They created theoretical scientific base of logistics management on transport. At the same time, the development of information technologies, globalization of goods and transport markets, the integration of Kazakhstan into the world transport system require new scientific generalizations and determine the range of tasks to be solved. Transport affects the results of logistics activities and, of course, it influences production and sale. In the logistics system, transportation cost could be regarded as a restriction of the objective market. Value of transportation varies with different industries. For those products with small volume, low weight and high value, transportation cost simply occupies a very small part of sale and is less regarded; for those big, heavy and low-valued products, transportation occupies a very big part of sale and affects profits more, and therefore it is more regarded [3].

Transportation is now the industry is not only satisfying the current needs in the transportation of freight and passengers, but also inter-branch system, transforming economic conditions. Mutual influence of economy and transport causes directly proportional dependence of their main targets. If in the early 2000s, the share of transport in GDP of Kazakhstan was estimated at 8% by the end of the decade it had risen to 9.3% [4].

This work is based on the economic policy of the republic, focus on more efficient use of trucks on the basis of the theory and methods of transportation logistics and management in accordance with the level of a modern transport system of the Republic of Kazakhstan. The paper presents the results of analyzes of the characteristics of operation of trucks and determining the level of their research, as well as assessment of the impact the effectiveness of the use of trucks on the economic development of Kazakhstan.

Main part. The main problems of business structures in the Republic of Kazakhstan are under development, unpredictability, "close horizons" of activity planning. The demand for strategic planning of transport business development is currently dictated by the need to calculate their actions in the market and be ready for possible changes, as well as the ability of business structures to justify their applications for funding and prove that it is able to successfully implement the proposed projects and get a significant financial return in the long term.

Currently, one of the main tasks for Kazakhstan is to increase the competitiveness of the country's economy, its regions and enterprises. Modern trends in the development of the country's economy are characterized by a variety of forms of entrepreneurship with different organizational and legal status and type of ownership [5].

Currently, the country and some regions are actively integrating into the global economy. The regions are moving to the status of full participants in the market, as well as the target of the regional economy and state policy. The dynamics of the internal development of the regions can have both positive and negative trend.

To solve these problems using tools such as structural analysis, economic and mathematical and cartographic modeling (figure 1).

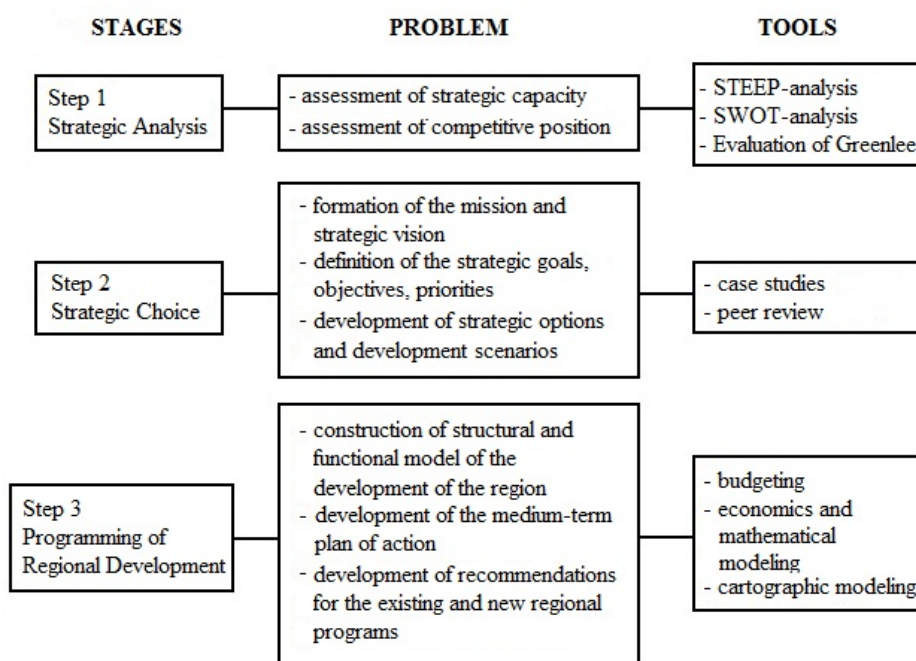


Figure 1 – Scheme of the strategy development

The main objective of developing a strategy of regional development - defining the strategic vision of development up to 2015 by determining the potential of the region's competitiveness on the basis of analysis of the strategic capacity and strategic climate, identifying strengths and weaknesses of competitive products, followed by the elaboration of strategic alternatives.

Speaking about the strategic planning, process planning is important to distinguish, designed for different periods - short, medium and long term (table 1).

Table 1 – Elements of Strategic Planning

<i>Long-term prospects</i>	<ul style="list-style-type: none"> ➤ strategic doctrine ➤ structural-functional model of the region ➤ management system of strategic development
<i>Medium prospects</i>	<ul style="list-style-type: none"> ➤ medium-term program of socio-economic development ➤ encapsulation of strategic investment projects ➤ medium-term budget
<i>Short-term prospects</i>	<ul style="list-style-type: none"> ➤ operational plan ➤ an annual budget of a region

Gradual conduct of policy analysis is to use a significant amount of empirical data and various sources of information (figure 2).

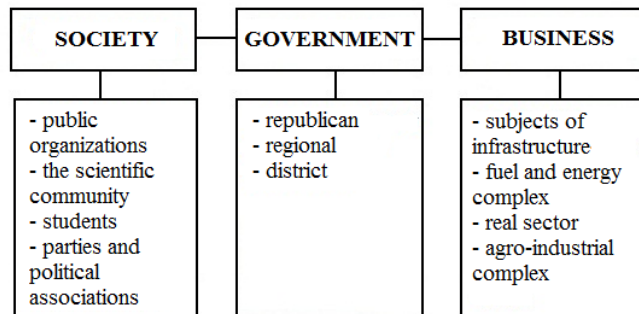


Figure 2 – Information sources of empirical material

Terms of the modern information age necessitates consideration of the intellectual and innovative capacity of regions, which represents the possibility of staffing the strategic directions of socio-economic development, future development of new products, business areas, based on high-tech entrepreneurship, commercialization of scientific and technical ideas.

The basis of studies was based on existing domestic and international applications of the theory of regional development and the formation of the competitive strategies of territorial development, as well as methodological approaches to organizing the activity.

The primary material used official sources of information (statistics, reports of regional departments, local government offices of cities and districts of the region), as well as the results of survey conducted by entrepreneurs in the region, public opinion polls, analyzes of local and foreign scientists. Currently, a major economic factor in the development of regions of the Republic of Kazakhstan is the level of development of the transport system and its infrastructure. The consumers of transport services in the regions of the Republic of Kazakhstan becoming an increasingly important factor in ensuring timely and reliable delivery of goods and passengers.

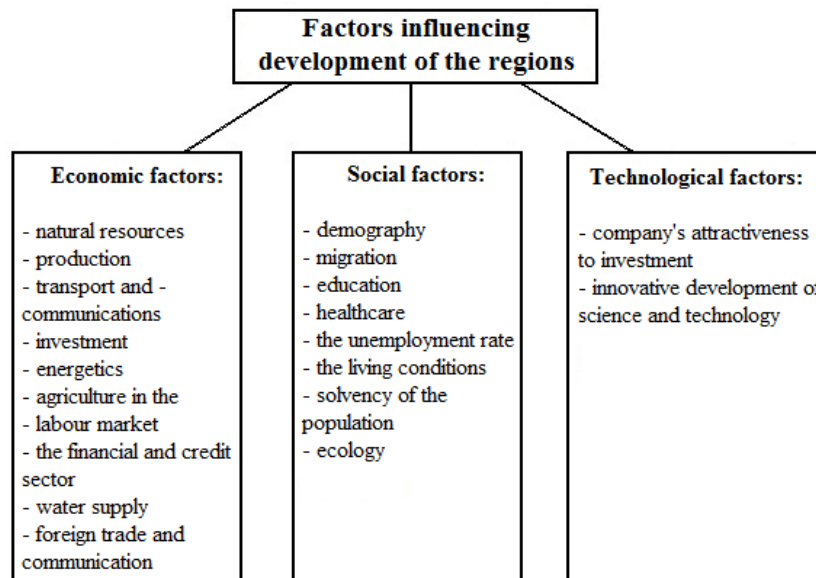


Figure 3 – Factors influencing development of the regions in Kazakhstan

In freight transport becomes dominant factor in compliance with established supplier delivery times, and not all carriers are able to ensure that the delivery parameters that affect the optimal mode of operation. This, in turn, leads to competition for the provision of quality transport services and to obtain a

competitive advantage. In such circumstances, the importance of the transportation process to reduce the duration of the logistics cycle, and the total cost increases.

Unfortunately, the use of trucks or utilization in the regions of the country leaves much to be desired. For the research was adopted southern region of Kazakhstan and more in-depth studies, the introduction of the work carried out in the road companies of Kyzylorda region. In tables 2-4 presents quantitative indicators of the truck by regions of the southern region for the years 2010-2017.

Table 2 – The presence of trucks in the Republic of Kazakhstan by regions of the southern region (units)

	Years							
	2010	2011	2012	2013	2014	2015	2016	2017
The Republic of Kazakhstan	223063	224872	281538	311828	359194	414332	410793	397598
Zhambyl	9891	9422	9335	10575	11126	11276	11307	15202
Kyzylorda	7636	7654	9679	10264	16412	17406	17675	18653
South Kazakhstan	17283	18271	20554	28808	36614	38574	38791	41546
Total for the region	34810	35347	39568	49647	64152	67256	67773	75401

Table 3 – Throughput of road transport by regions of the southern region of Kazakhstan (million tons km)

	Years							
	2010	2011	2012	2013	2014	2015	2016	2017
The Republic of Kazakhstan	40158,4	43909,7	47122,5	53815,8	61459,0	63481,0	66253,7	80260,6
Zhambyl	1260,2	1307,4	2034,2	2227,9	2360,3	2328,4	2237,9	2827,7
Kyzylorda	5605,1	5727,4	1061,7	1242,6	3712,7	3376,6	5314,8	6748,3
South Kazakhstan	2165,6	2349,9	1281,2	1435,3	1588,6	1667,3	1654,6	1707,7
Total for the region	9031,8	9384,7	4377,1	4905,8	7661,6	7372,3	9207,3	11283,7

Table 4 – Transportation of goods by road (million tons)

	Years							
	2010	2011	2012	2013	2014	2015	2016	2017
The Republic of Kazakhstan	1318,2	1444,8	1511,1	1582,6	1667,4	1721,0	1687,5	1971,8
Zhambyl	38,5	44,6	43,2	44,8	46,6	48,5	46,8	56,0
Kyzylorda	54,5	61,3	61,3	63,2	65,1	66,0	60,9	66,3
South Kazakhstan	58,0	63,0	63,6	65,2	66,7	69,4	69,3	77,5
Total for the region	151	168,9	168,1	173,2	778,7	183,9	177	199,8

In the future, taking into account the strategy of industrial-innovative development and prospects for regional development, as well as by improving the quality of transport services will be reduced to 5 cargo intensity of the economy t-km/doll. of GDP.

The transport component in the cost of final products and services will decline to 7%, increase the competitiveness of domestic exports. Share of GDP (without personal automobiles) of 8% (in 2016 - 11%). The current level of funding for transport, amounting to about 1.5% of GDP, much lower than in countries with similar territorial characteristics [6].

Actively developing countries invest in the transport sector to 4-7% of GDP. Given the trends in socio-economic development, it is projected that in road transport by 2018, according to experts, the turnover will increase from 33 to 75 billion ton-kilometers. Therefore, more efficient use of vehicles especially for regions of the country is an urgent task. Since in the modern market economy the main competitive advantage of any enterprise is the quality of the products or services, including transportation [7].

Leading experts in the field of quality found that the quality of its products to 95% depending on the organization's quality processes, activities, and only 5% - on the other. The quality management system

defines the transport requirements for the organization and implementation of the intermediate processes of the supply chain so that the end result was the quality of services and timely from the standpoint of the consumer.

Influence of the transport process in the supply chain appears to change the parameters, at first glance, has no direct relationship, in particular the efficiency of intermediate processes, depending on the human factor [8].

Optimizing the supply chain by improving and increasing the productivity of intermediate production processes, is a business strategy that ensures effective management of material, financial and information flows to ensure synchronization in distributed organizational structures of the area.

Supply chain management is a holistic concept of doing business, from supply chain management depends to 30% efficiency of the business of industrial, logistics and trading companies. The value of the supply chain as a key to improving profitability and competitiveness of the business is steadily growing. Supply chain management is growing rapidly, and investment in the supply chain will grow in the future.

Conclusion. Completed projects and studies to introduce the concept of supply chain management have shown the possibility of reducing overall costs in the supply chain up to 50%, the time of admission and preparing cargo to be loaded up to 50%, increasing the accuracy of deliveries to 55%, improve the use of trucks up to 20% increase profits through optimization of the process up to 25%, improve customer service and 35% increase in turnover and market share by increasing the reaction rate and flexibility of supply chains of up to 55%. Given that the share of costs in the value chain, attributable to the supply chain, is 75% and 80% of the final product depends on the decisions taken during the construction supply chain, the value of effective supply chain management can not be overestimated.

Insufficient development of advanced logistics automobile transport technology systems leads to an increase in transport costs, therefore, the loss of the market. Now the transport industry has the task of forming multi-criteria optimization functions on the basis of one criterion functions [9].

The main results of the economic reforms in Kazakhstan depends on the effectiveness of regional development. Features of the regions of our state characterized by the fact that the only mode of transport connecting towns and district centers are the cars on the effectiveness of which depends on the level and pace of development of regions.

Ғ. Жұматаева¹, З. Битилеуова¹, Ж. Байбураева¹, Ж. Жанбиров¹, И. Таран²

¹М. Тынышпаев атындағы Қазақ көлік және коммуникация академиясы, Алматы, Қазақстан;

²Ұлттық техникалық университет, Днепр, Украина

ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ ӨНІРЛЕРІНДЕ ЖҮК АВТОМОБИЛЬДЕРІН ПАЙДАЛАНУ МӘСЕЛЕЛЕРІ

Аннотация. Автокөлік кәсіпорындары меншік түріне, көлеміне қарамай, үлкен бір күрделі жүйелі механизм тәрізді. Бұндай автокөлікпен тасымалдау кәсібімен айналысатын кәсіпорындардың басқа дайын бұйымдар немесе өнімдермен шикізаттар шығаратын мекемелерге қарағанда, өздері нақты өнім шығармай, басқа тұтынушылармен жүк тапсырушылаға байланыстылығы. Яғни өз беттерімен тасымалдауға тапсырыс жұмыстарын жасай алмайды, бірақ соны іздестіріп, тауып, келісіп, қарамағындағы автомобильдерді жұмыс істетуге олардың басты мақсаты. Бірақ нақты нарық сұраныстары болған күннің өзінде, автокөлік кәсіпорының жұмысын ұйымдастыру, көптеген қосымша дайындықтар мен ұйымдастыру жұмыстарын, қыруар қаржы салуды және керекті жанар-жағар майлармен қамтамасыздандыруды керек қылады.

Бірақ автокөлік кәсіпорындарының ұйымдастыру және басқару жүйесінің тек қана өзіне тән бірнеше ерекшеліктерін зерттеушілер қарастырмайды.

Бірінші, автокөлік кәсіпорындарының экономикалық тиімділігі оның құрамындағы автомобильдердің техникалық жағдайымен қатар түрлеріне, бағасына жүккөтерімділігі мен пайдалану шығындарына байланысты.

Екінші, кез келген автокөлік кәсіпорындары ұдайы түрде бәсекелестікке дайын болып, тез арада ұтымды шаралар қолданып, тұтынушылар тапсырысын орындауға бейімдеу.

Үшінші, тұтынушылар арасында жақын арада және болашақтағы сұраныстар түрінің өзгеруін, көлемін, ерекшеліктерін болжау.

Төртінші, автокөлік мекемесінің басқа көлік түрлеріне қарағандағы бәсекелестіктегі ең басты қатері – жүргізушілер. Өйткені нақты тұтынушыға қызмет көрсету сапасы мен құндылығы, тек қана осы жүргізушілердің кәсіби дайындығы мен адамгершілігі, жауапкершілігі сияқты рухани-тәрбиеге тікелей байланысты.

Бесінші, автокөліктерді пайдалану тек қана техниканың жағдайына және жүргізушілерге емес, сонымен қатар оны ұйымдастыру, басқару, ақпарат алмасу және бақылауды керек етеді.

Атқарылған ғылыми-зерттеу жұмыстарында автокөлік кәсіпорының ұйымдастыру және оны тиімді басқарып, тұрақты ұжым жинап, жоғары еңбек өнімділігіне жету үшін ішкі және сыртқы әсер етер факторларды ұдайы есте ұстап, алдын ала нақты шаралар қабылдап отыруды талап етеді. Нарықтық экономикада үлкен бәсекелестікпен өз ара қайшылықтар жиі кездесетін фактор екені баршаға мәлім.

Көлік жүйесінің тиімділігін арттыру оны қазақстандық экономиканың бәсекеге қабілетті элементіне айналдыруға мүмкіндік береді. Экономика мен халықтың сенімді және қауіпсіз көлік қызметтеріне қажеттіліктерін қамтамасыз етудің ең жоғары деңгейіне қол жеткізілетін болады. Осы ғылыми жұмыс республиканың экономикалық саясатына сәйкес дамудың нақты жағдайларын ескере отырып, көліктік логистиканың теориясы мен әдістемесі негізінде жүк автомобильдерін пайдаланудың тиімділігін арттыруға және қазіргі заманғы көлік кешенінің деңгейіне сәйкес ұтымды пайдалануға бағытталған.

Түйін сөздер: өңір, көлік, көлік жүйесі, тасымалдау, фактор, экономика, жеткізу, сапа.

Г. Жуматаева¹, З. Битилеуова¹, Ж. Байбураева¹, Ж. Жанбиров¹, И. Таран²

¹Казахская академия транспорта и коммуникации имени М. Тынышпаева, Алматы, Казахстан;

²Национальный технический университет, Днепр, Украина

ПРОБЛЕМЫ ЭКСПЛУАТАЦИИ ГРУЗОВЫХ АВТОМОБИЛЕЙ В РЕГИОНАХ РЕСПУБЛИКИ КАЗАХСТАН

Аннотация. Автотранспортные предприятия независимо от форм собственности, размеров, действуют как и один большой сложный системный механизм. Это связано с тем, что предприятия, занимающиеся перевозкой автотранспортом, в отличие от других предприятий, выпускающих готовые изделия или сырье, не сами выпускают конкретную продукцию, а с другими потребителями. То есть не умеют делать заказы на самостоятельную перевозку, их главная цель – искать, находить, договариваться и обеспечивать работой подчиненные автомобили. Но даже при наличии реальных рыночных потребностей необходимо организовать работу автотранспортного предприятия, много дополнительных заготовок и организационных работ, вложить большие средства и обеспечить необходимыми горюче-смазочными материалами. В целом, грузоперевозки автотранспортом зависят от влияния факторов людей, непосредственно связанных между собой, организационных уровней обеспечения и условий в различных отраслях или направлениях, таких как хозяйство и ремонтные работы.

Но исследователи рассматривают лишь несколько специфических особенностей системы организации и управления автотранспортными предприятиями.

Во-первых, экономическая эффективность автотранспортных предприятий зависит как от технического состояния, так и от видов, стоимости, грузоподъемности и эксплуатационных затрат автомобилей, находящихся в его составе.

Во-вторых, любые автотранспортные предприятия всегда будут готовы к конкуренции, будут быстро принимать оптимальные меры и ориентироваться на выполнение заказов потребителей.

Третье – прогнозирование, объем, особенности изменения видов запросов в ближайшем и будущем между потребителями.

Четвертое – самый главный риск конкуренции автотранспортного предприятия в отношении других видов транспорта – водители. Так как качество и ценность обслуживания конкретного потребителя зависит только от духовно-нравственного воспитания, профессиональной подготовки и нравственности, ответственности этих водителей.

Пятое - эксплуатация автомобилей требует не только состояния техники и водителей, но и его организации, управления, обмена информацией и контроля.

В выполненной научно – исследовательской работе организация и эффективное управление автотранспортным предприятием требует постоянного отбора персонала, запоминания внешних и внутренних факторов для достижения высокой производительности труда, принятия конкретных мер. Как известно, в рыночной экономике часто встречаются конфликты с большой конкуренцией.

Повышение эффективности транспортной системы позволит сделать ее конкурентоспособным элементом казахстанской экономики. Будет достигнут максимальный уровень обеспечения потребностей экономики

ки и населения в надежных и безопасных транспортных услугах. Данная научная работа, согласно проводимой экономической политике республики с учетом конкретных условий развития, нацелена на повышение эффективности использования грузовых автомобилей на основе теории и методики транспортной логистики и рационального использования в соответствии с уровнем современного транспортного комплекса.

Ключевые слова: регион, транспорт, транспортная система, перевозки, фактор, экономика, поставки, качество.

Information about authors:

Zhumatayeva G., master of science, Kazakh Academy of Transport and Communications, Almaty, Kazakhstan; gaziza_zhumataeva@mail.ru; <https://orcid.org/0000-0002-3835-1346>

Bitileuova Z., Assistant Professor, Candidate of Technical sciences, Kazakh Academy of Transport and Communications, Almaty, Kazakhstan; zuhra_kadesovna@mail.ru; <https://orcid.org/0000-0001-9260-7034>

Baiburaeva Zh., master of science, Kazakh Academy of Transport and Communications, Almaty, Kazakhstan; Janna76077@mail.ru; <https://orcid.org/0000-0002-7848-7782>

Zhanbirov Zh., Professor, Doctor of Technical sciences, Kazakh Academy of Transport and Communications, Almaty, Kazakhstan; janbirov_jg@mail.ru; <https://orcid.org/0000-0002-6444-0836>

Taran I., Professor, Doctor of Technical sciences, Department of Transportation Management, National TU Dnipro Polytechnic; taran7077@gmail.com; <https://orcid.org/0000-0002-3679-2519>

REFERENCES

[1] Collection of statistical data of the Republic of Kazakhstan. Transport and communication. Statistics Agency of the Republic of Kazakhstan. Astana, 2011.

[2] Burkhutov E., Tuleushin Sh. About forming of the national transport-logistics systems: the ways of the modernization of the transportation // *Magistral*. Almaty, 2006. Vol. 1. P. 38-41 (in Russ.).

[3] Dauzova A.M., Dyrka S., Nazarova V.L., Korzhengulova A.A., Alaidarkyzy K. (2018) Scientific-methodical bases of the development of transport logistics in the republic of Kazakhstan // *Bulletin of the National Academy of Sciences of the Republic of Kazakhstan*. 2018. Vol. 6, N 376 (2018), 201 p. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print) <https://doi.org/10.32014/2018.2518-1467.46>

[4] Linnik A. Entrepreneurial activity as a field of strategic planning // *News of the national academy of sciences of the republic of Kazakhstan. A series of social and human sciences*. 2019. Vol. 6, N 328 (2019), P. 111-112. ISSN 2224-5294 <https://doi.org/10.32014/2019.2224-5294.219>

[5] Zhanbirov Zh.G., Improving the efficiency of operation of trucks in the regions of the Republic of Kazakhstan / Zhanbirov Zh.G., Zh. U. Ibraev // *the Collection of materials of the 70th Nmint MADI*. M.: MADI, 2012. P. 101-105.

[6] Ibrayev Zh.U. Response of the transport system of socio-economic development in Kyzyda region / Zh.O.Ibrayev // *Vestnik KazATK*. Almaty: KazATK, 2009. N 5.

[7] Rakishev B.R., Shashenko A.N., Kovrov A.S. Trends of the rock failure conceptions development // *News of the National Academy of Sciences of the Republic of Kazakhstan. Series of geology and technical sciences*. 2018. Vol. 5, N 431. P. 161-169. ISSN 2224-5278. <https://doi.org/10.32014/2018.2518-170X.46>

[8] Bepayev Kh.A., Mukayeva A.E., Grebennikov S.I. General patterns of formation and placement and forecasting-prospecting criteria of gold ore deposits in the black shale strata of the West Kalba belt of East Kazakhstan // *News of the National Academy of Sciences of the Republic of Kazakhstan. Series of geology and technical sciences*. Vol. 5, N 431 (2018), P. 172-183. ISSN 2224-5278 <https://doi.org/10.32014/2018.2518-170X.23>

[9] Sabraliev N., Abzhapbarova A., Nugymanova G., Taran I., Zhanbirov Zh. Modern aspects of modeling of transport routes in Kazakhstan // *News of the National Academy of Sciences of the republic of Kazakhstan. Series of geology and technical sciences*. 2019. Vol. 2, N 434 (2019), P. 62-68. ISSN 2224-5278 <https://doi.org/10.32014/2019.2518-170X.39>

N. V. Gaponov¹, S. V. Svistunov^{2,3}, N. N. Bondarenko², I. A. Romanenko⁴

¹FSBSI "Research Institute of Medical Primatology", Sochi, Russia;

²Kuban State Agrarian University named after I. T. Trubilin, Krasnodar, Russia;

³Krasnodar Research Centre for Animal Husbandry and Veterinary Medicine, Russia;

⁴Krasnodar Interregional Veterinary Laboratory, Russia.

E-mail: nv.1000@bk.ru, svistunov@list.ru, bondarienko.49@mail.ru, romanenko_ia@bk.ru

EFFECT OF DEUTERIUM WATER ON BLOOD VALUES AND DIGESTIBILITY OF NUTRIENTS OF RHESUS MACAQUE

Abstract. The use of water with a modified isotopic composition in the diet of humans and animals, for example, with a reduced deuterium content, affects the rate of biological processes. In this regard, the targeted formation of the isotopic D / H gradient in the body can be used to increase its adaptive properties to external influences. Primates have a high anatomical and physiological similarity with humans, therefore, are an indispensable model for reproducing various pathological and toxic conditions in humans. The aim of the study was to study the effect of water with a low deuterium content on the hematological and biochemical blood parameters of rhesus monkeys and on the digestibility of nutrients of the diet. In the control group, primates consumed water with a natural regional content of deuterium equal to 150 mg / l, and in the experimental group - with reduced to 50 mg/l. The duration of the experiment was 35 days. The material for the study was venous blood, serum and feces of primates. Blood was drawn from monkeys before the use of deuterium depleted water and after the completion of the experiment. All blood samples (2.5-3.0 ml) were taken from the cubital or femoral veins of animals on an empty stomach and stabilized with a heparin solution. Laboratory studies of animal blood were performed on an automatic hematological analyzer (Beckman Coulter, USA) of the CoulterAcT 5diffCP brand. In order to study the effect of water with a reduced deuterium content on hematological parameters, we determined the number of red blood cells, white blood cells, platelets, hemoglobin concentration, hematocrit, the average volume of red blood cells, red blood cell anisocytosis, and erythrocyte sedimentation rate (ESR).

The metabolism trial was divided into two periods. Preliminary - to exclude the influence of previous feeding and accustoming primates to cage conditions of keeping. Experimental - conducting a thorough accounting of consumed feed, excreted excrement. Feces were collected daily at the same time (morning and evening), weighed and ground in a mortar. At each collection, 50% of the homogenized mass was taken for analysis. The collected portions were stored in the refrigerator. After the end of the experimental (accounting) period in the collected feces, the initial moisture was determined by drying at 60-70 °C to constant weight. The resulting air-dry mass was thoroughly ground and analyzed.

It has been found that the introduction of water with a reduced deuterium content into the diet of primates has a positive effect on feed conversion rate and blood biochemical parameters.

Key words: digestibility, feed, blood, additives, primates, rhesus macaques, water with a low deuterium content, hematological and biochemical blood value.

Introduction. Among the wide variety of water molecules that exist, deuterium or heavy water molecules are of particular importance. Deuterium is an isotope of hydrogen with a molecular mass of 2 and has one proton and one neutron in the nucleus of an atom. For living organisms, the ratio of light water with a molecular weight of 18 and heavy water with a molecular mass of 20 is important. It leads to their differences in physical properties. The natural ratio of light and heavy water in the oceans was disrupted after nuclear testing, when spent heavy water (used as a neutron moderator) was pumped deep underground, and it spread to all water bodies. In addition, deuterium accumulates in the surface layers of water bodies due to the loss of lighter protium during dissociation into the surrounding space [1].

The use of water with a modified isotopic composition in the diet of humans and animals, for example, with reduced deuterium content, affects the rate of biological processes. Moreover, in living organisms, protective systems counteract changes occurring in the internal isotope environment, striving to achieve a natural isotope ratio [2,3,4].

At present, there are a sufficient number of experiments in which the effects of various ratios of deuterium and protium (D / H) on the functional activity of living systems [5,6,7], as well as hypotheses that explain the results of studies [8,9,10], are studied. However, the mechanisms of action of ultralow concentrations of D water, affecting the metabolism, have been less studied and are presented only for lipids [11], serotonin [12] and deoxyribonucleic acid [13]. But, despite this, there is no data on the effect of deuterium-depleted water on metabolic processes in the body under conditions of body pre-adaptation to a lower level of deuterium compared to the natural level. In this case, the influence of isotope exchange reactions on biochemical processes and the state of the body remains poorly studied due to the low rate of behaviour of these reactions under physiological conditions, which is due to the phenomenon of constancy of the isotopic composition of the substance in the natural environment. Therefore, the targeted formation of the isotopic D / H gradient in the body can be used to increase its adaptive properties to external influences [14].

Given the above, the aim of the study was to study the effect of water with a reduced deuterium content on hematological, biochemical blood parameters of primates and on the digestibility of nutrients in the diets of male rhesus macaques.

Materials and research methods. Water with a reduced composition of deuterium was obtained at a facility created at Kuban State University. The mineral composition of water with a reduced content of deuterium (50 mg / l) and ordinary fresh water (150 mg / l), which the animals received, was identical. The daily water intake by animals of all groups during the experiment averaged 1200 ml per head.

All animals received a complete granular feed. In the control group, primates consumed water with a natural regional content of deuterium equal to 150 mg / l, and in the experimental group - with reduced to 50 mg / l. The duration of the experiment was 35 days. The experimental design is presented in table 1.

Table 1 – The scheme of the experiments, n=5

Groups	Feeding conditions
	<i>Macaca mulatta</i> at the age of 7- 15.
Control	CF* + water with a natural (regional) concentration of deuterium
Trial	CF + water with reduced concentration of deuterium
*CF- complete feed.	

Complete granular compound feed for the experiment was made at the production site of the FSBSI "Research Institute of Medical Primatology". In the feed used 21.4% of energy nutrition accounted for wheat. The share of soybean meal in the structure of feed was 17.42%. Sunflower meal amounted to 13.83%. A significant part of the diet's energy - 14.39%, is skimmed milk powder. The diet is balanced in energy by the introduction of sunflower oil, which amounted to 0.8%. The remaining 32.16% of the energy came from corn gluten - 11.24%, corn - 13.35%, egg powder - 3.3% and sugar - 4.27%.

The material for the study was venous blood, blood serum and feces of primates. Blood was drawn from monkeys prior to the use of deuterium depleted water and 35 days after the completion of the experiment. All blood samples (2.5-3.0 ml) were taken from the ulnar or femoral veins of animals on an empty stomach and stabilized with a heparin solution. Laboratory studies of animal blood were performed on an automatic hematological analyzer (Beckman Coulter, USA) of the Coulter AcT 5diff CP brand. In order to study the effect of water with a reduced deuterium content on hematological parameters, we determined the number of red blood cells, white blood cells, platelets, hemoglobin concentration, hematocrit, the average volume of red blood cells, red blood cell anisocytosis, and erythrocyte sedimentation rate (ESR). ESR was determined by the Panchenkov method.

Blood serum was obtained according to a standard method. Venous blood without anticoagulants in a centrifuge glass tube was settled at room temperature (+15 - + 20°C) until a clot formed. A thin glass rod was passed along the inner walls of the tube (in a circle) to separate the clot from the walls of the tube and

centrifuged for 10 minutes (1000-1500 g). The resulting serum was poured into disposable plastic tubes with screw caps. Using standard kits of the High Technology Inc company, the biochemical parameters were determined on a BioChem SA semi-automatic analyzer: total protein, glucose, total bilirubin, calcium, phosphorus.

The metabolism trial, on determining the digestibility of the nutrients of the diet, was divided into two periods: preparatory and experimental, which lasted 5 days. The purpose of the preparatory period was to eliminate the influence of previous feeding and to teach primates to the conditions of cage keeping.

Feces were collected daily at the same time (morning and evening), weighed and ground in a mortar. At each collection, 50% of the homogenized mass was taken for analysis. The collected portions were stored in the refrigerator. After the end of the experimental (registration) period, the initial moisture was determined by drying the collected feces at 60-70 ° C to constant weight. The resulting air-dry mass was thoroughly ground and analysed.

Experiments on animal were carried out in accordance with the requirements of the order of the Ministry of Health of the Russian Federation No. 267 of June 19, 2003, "On the approval of laboratory practice rules", orders of the Ministry of Health of the USSR No. 742 of November 13, 1984 "On the approval of the rules of work using experimental animals" and No. 48 dated January 23, 1985 "On the control of work using experimental animals," the ethical standards set forth in the Laboratory Practice Rules (GLP), the Helsinki Declaration (2000) and the European Community Directives 86 / 609EEC.

The results were statistically processed using the Microsoft Excel 2010 computer program. The differences were considered significant at a level of statistical significance $p < 0.05$.

Results and discussion. Blood test is of great diagnostic value. The most important role in the animal's body is performed by blood corpuscles. The main part of the blood corpuscles are red blood cells. Having a large specific surface area, red blood cells can adsorb numerous organic and mineral substances and transport them to tissues. According to the results of our study at the beginning of the experiment (table 2), the number of red blood cells in all the studied groups is within a slight increase relative to the physiological norm (5-6.2 million in 1 mm³), this pattern can be associated with a significant increase in the ambient temperature by the moment the experiment begins.

Table 2 – Hematological blood values (X±Sx)

Values	Reference values	Groups			
		beginning of the experiment		end of the experiment	
		control	trial	control	trial
Leukocytes, ×10 ⁹ /l	5.5-13	9.8 ±1.65	11.26±0.89	10.82±1.99	11.32±0.20
Erythrocytes ×10 ¹² /l	5.0-6.2	6.30±0.05	6.76±0.32	6.43±0.17	6.40±0.27
Hemoglobin, g/l	110-145	143.40±1.40	145.20±5.04	145.00±0.50	140.40±4.51
Hematocrit, l/l	0.26-0.45	0.43±0.01	0.44±0.02	0.43±0.01	0.42±0.01
Average volume of erythrocyte, fl	52-97	67.80±0.42	65.40±2.33	68.20±0.42	66.00±2.12
Average content of hemoglobin in erythrocyte, pg	18-33	22.76±0.29	21.60±0.89	22.84±0.30	21.94±0.92
Erythrocyte anisocytosis, %	11-16	12.98±0.20	13.18±0.31	13.22±0.29	13.40±0.20
Platelets, ×10 ⁹ /l	200-400	308.40±18.15	357.20±47.30	316.00±25.62	266.00±18.13
Average platelet volume, fl	6-10	9.74±0.19	9.04±0.52	9.94±0.33	10.12±0.64
ESR, mm / h	0.5-5.0	0.89±0.10	1.10±0.27	0.91±0.12	2.60±0.78

At the final stage, the number of red blood cells became closer to the reference values and indicates the effectiveness of the use of D-water in the experimental group, which is reflected in an increase in resistance. The main function of erythrocyte is respiratory, inextricably linked to the properties of the hemoglobin protein contained in them. Therefore, an important indicator is the level of hemoglobin, which depends on the content of protein, iron, copper and cobalt in the diet, as well as on the functioning of the liver and blood-forming organs. In our experiment, the results of the studies indicate that the level of hemoglobin in the blood before setting up the experiment is within the physiological norm, but there is a

slight increase in hemoglobin (HGB) in the control group after the experiment is completed. This may be due to the above physiological increase in the level of erythrocytes in the blood.

The level of leukocytes in the blood is of great importance. The overall functioning of the immune system directly depends on the concentration of these white blood bodies in the blood. And this means that the level of leukocytes in the blood can also indicate the degree of protection of the body as a whole. In our experiment, the level of leukocytes was within normal limits. But at the end of the experiment there was a slight increase in the experimental group by 4.62% compared with the control. This phenomenon may have a natural physiological character, since this slight increase is within the physiological norm. An increase in white blood cell count is observed with increasing ambient temperature. This type of increase is reversible; in this case leukocytosis is able to independently return to the normal range of values.

Platelets take an active part in blood coagulation and nonspecific defense reactions of the body. At the beginning of our experiment, the platelet count in animals was within the range of reference indicators (200-400 billion / liter), but before the experiment, in the experimental group there was a slight increase in the values in comparison with the control variant by 48.8 billion/ l. The results of blood tests at the end of the experiment showed that in the experimental and control groups, as a result of the use of D-water, the platelet count was within the reference values.

Erythrocyte sedimentation rate (ESR) depends on the size, volume of red blood cells, their number, hemoglobin concentration in the red blood cells, viscosity and other factors. In connection with the optimal picture presented by the above indicators (table 2), ESR is within normal limits (0.5-5.0 mm / h). A slight increase in the values of hemoglobin, erythrocytes and leukocytes, and the level of hematocrit in the blood of monkeys of the experimental groups within the upper limits of physiological norms may indicate that water with a reduced concentration of deuterium stimulates erythropoiesis and leukopoiesis, without changing the stability of hematopoiesis and constancy in the composition and total amount of peripheral blood.

Biochemical blood parameters have a certain value with internal non-communicable diseases, intoxications, but to a greater extent reflect the level of feeding and metabolic processes. In this regard, biochemical indicators cannot provide answers to all questions, but with the correct understanding of physiological changes, they become a solid basis for decision-making on the development of scientifically based norms of feeding (table 3).

Table 3 – Biochemical parameters of blood serum ($X \pm Sx$)

Values	Groups			
	beginning of the experiment		end of the experiment	
	control	trial	control	trial
Glucose (mmol / l)	4.43±0.44	5.39±0.90	3.32±0.38	4.58±0.45
Bilirubin (µmol / l)	6.99±2.74	5.92±2.11	6.98±1.47	4.79±2.21
Phosphorus (mmol / l)	1,17±0,19	1,29±0,10	0,61±0,12	0,48±0,13
Calcium (mmol / l)	2,56±0,06	2,41±0,11	2,01±0,17	2,38±0,06
Protein (g / l)	89,31±8,40	89,76±6,12	80,12±1,66	101,72±5,48

Blood glucose was determined to monitor the state of carbohydrate metabolism. At the beginning of the experiment, the glucose level was within the physiological norm. As with hematological parameters, there is a slight increase in the experimental group. But at the end of the experiment, after applying deuterium-depleted water, the glucose level in the experimental group approached the parameters of the control variant with a slight deviation upward by 1.26 mmol / l.

Bilirubin is a bile pigment formed from hemoglobin due to the breakdown of erythrocytes in the liver cells. In our experiment, the level of bilirubin at the end of the experiment decreases by 2.19 mmol / l, which indicates a positive effect of D-water on primate liver cells, thereby optimizing the rate of hemoglobin breakdown.

The level of phosphorus in the blood of primates of the experimental group at the beginning of the experiment was slightly higher than the control option, but was within the reference values. By the end of the experiment, the values in the experimental group decreased to the control level.

The level of calcium in the serum depends on the content of calcium, phosphorus and vitamin D in the diet, the state of the hormonal system, and the gastrointestinal tract. In our experiment, the level of calcium at the beginning and end of the experiment was within the normal range. But in the experimental group, the level of calcium is lower by 0.37 mmol / l.

Analysis of protein metabolism showed that in the experimental group there were deviations from the values in the control upward by 21.60 g / l of total protein levels, which indicates a positive effect of deuterium water on the body of primates.

Daily accounting of animal feed eaten and analysis of their chemical composition made it possible to establish the amount of nutrients consumed per day. A calculation of feces and its chemical composition made it possible to determine the amount of digested nutrients and establish the digestibility coefficient (table 4).

Table 4 – Digestibility of nutrients, % (X±Sx)

Indicators	Groups	
	control	trial
Crude protein	27.34±1.04	50.67±1.31
Crude fat	20.09±0.98	20.92±1.53
Crude fiber	16.88±1.01	18.00±1.81*
Crude ash	49.58±0.88	49.27±2.01
Crude NFE	54.05±1.12	57.37±0.97*
Calcium	18.37±1.94	53.92±2.11
Phosphorus	21.79±2.01	30.51±1.99
*p<0.05.		

The digestibility of crude protein in the experimental group is 85.33% higher than this indicator in the control group. A slight increase in digestibility is observed in the experimental group in raw fat by 4.13%. Within such limits, there is a significant increase in the digestibility of fiber by 6.63%. The digestibility rate of NFE in the experiment was significantly higher by 6.14%. But the highest assimilation, as can be seen from the table, is observed for inorganic substances Ca and P.

Conclusions. The use of depleted deuterium water in the diets of primates does not lead to a deviation of the hematological indices of rhesus monkeys relative to reference indices, and, as the studies confirm, it has a positive effect on feed conversion and biochemical values of blood.

Н. В. Гапонов¹, С. В. Свистунов^{2,3}, Н. Н. Бондаренко², И. А. Романенко⁴

¹Ғылыми-зерттеу институты медициналық приматологии, Сочи, Ресей;

²Кубань мемлекеттік аграрлық университеті, Краснодар, Ресей;

³Краснодар зоотехни және ветеринария бойынша ғылыми орталығы, Ресей;

⁴Краснодар облыс аралық мал дәрігерлік зертхана, Ресей

ҚАН КӨРСЕТКІШТЕРІНЕ ДЕЙТЕРИЙ СУЫНЫҢ ӘСЕРІ ЖӘНЕ МАКАК-РЕЗУСТАРДЫҢ ҚОРЕКТІК ЗАТТАРЫНЫҢ ҚОРЫТЫЛУЫ

Аннотация. Адам мен жануарлардың рационында модификацияланған изотоптық құрамы бар, мысалы, дейтерийдің азайған құрамы бар суды пайдалану биологиялық процестердің жылдамдығына әсер етеді. Осыған байланысты, ағзадағы Краснодар облыс аралық мал дәрігерлік зертхана изотоптық D/H градиенттің мақсатты қалыптасуы оның сыртқы әсерлерге бейімделу қасиеттерін арттыру үшін пайдаланылуы мүмкін. Приматтар адаммен жоғары анатомиялық-физиологиялық ұқсастыққа ие, сондықтан адамның әртүрлі патологиялық және уытты жағдайларын ойнату үшін таптырмас үлгі болып табылады. Зерттеудің мақсаты – құрамында дейтерий бар судың макак-резус қанының гематологиялық және биохимиялық көрсеткіштеріне және рационның қоректік заттарының қорытылуына әсерін зерттеу. Бақылау тобында приматтар 150 мг/л тең табиғи аймақтық дейтерий бар суды, ал тәжірибелік топта 50 мг/л дейін төмендетілген суды тұтынды. Эксперимент ұзақтығы 35 тәулікті құрады. Зерттеу үшін материал көктамырлық қан, қан сарысуы және

примат нәжісі болды. Маймылдан ішетін дейтерий суын қолдану басталғанға дейін және тәжірибе аяқталғаннан кейін қан алынды. Қанның барлық үлгілері (2.5-3.0 мл) шынтак немесе сан тамырынан алынған және гепарин ерітіндісімен тұрақтандырылған. Жануарлардың қандарының зертханалық зерттеулерін «Beckman Coulter», USA фирманың CoulterAcT 5diffCP маркасының автоматты гематологиялық анализаторында жүргізілді. Дейтерий мөлшері төмен судың гематологиялық көрсеткіштерге әсерін зерттеу мақсатында біз эритроциттер, лейкоциттер, тромбоциттер санын, гемоглобин концентрациясын, гематокрит, эритроциттердің орташа көлемін, эритроциттер анизоцитозын, эритроциттер шөгү жылдамдығын анықтадық.

Баланстық тәжірибе екі кезеңге бөлінді. Дайындық кезеңі – алдыңғы азықтандырудың әсерін болдырмау және жасушалық ұстау жағдайларына приматтарды үйрету үшін. Тәжірибелік кезеңі – тұтынылған жемді, бөлінген экскременттерді мұқият есепке алу. Нәжіс күн сайын бір уақытта (таңертең және кешке) жиналып, өлшеп, Ұсақталған. Әрбір жинақта талдауға гомогенизацияланған массаның 50 % алынды. Жиналған порциялар тоңазытқышта сақталды. Тәжірибелік (есептік) кезең аяқталғаннан кейін жиналған нәжісте бастапқы ылғалды 60-70 °С кезінде тұрақты массаға дейін кептіру арқылы анықтады. Алынған ауа-құрғақ массаны Мұқият Ұсақтап, талдауға жіберілді.

Құрамында дейтерий азайған судыприматтардың рационына енгізу жемнің конверсиясына және қанның биохимиялық көрсеткіштеріне оң әсер ететіні анықталды.

Түйін сөздер: қорытылу, жем, қан, коспалар, приматтар, макак-резустар, дейтерий мөлшері төмен су, қанның гематологиялық және биохимиялық көрсеткіштері.

Н. В. Гапонов¹, С. В. Свистунов^{2,3}, Н. Н. Бондаренко², И. А. Романенко⁴

¹ФГБНУ «НИИ медицинской приматологии», Сочи, Россия;

²ФГБОУ ВО «Кубанский государственный аграрный университет им. И. Т. Трубилина, Краснодар, Россия;

³ФГБНУ «Краснодарский научный центр по зоотехнии и ветеринарии», Россия;

⁴ФГБУ «Краснодарская межобластная ветеринарная лаборатория», Россия

ВЛИЯНИЕ ДЕЙТЕРИЕВОЙ ВОДЫ НА ПОКАЗАТЕЛИ КРОВИ И ПЕРЕВАРИМОСТЬ ПИТАТЕЛЬНЫХ ВЕЩЕСТВ МАКАК-РЕЗУСОВ

Аннотация. Использование в рационе человека и животных воды с модифицированным изотопным составом, например, со сниженным содержанием дейтерия, влияет на скорость биологических процессов. В связи с этим, целенаправленное формирование изотопного D/H градиента в организме может быть использовано для повышения его адаптационных свойств к внешним воздействиям. Приматы обладают высоким анатомо-физиологическим сходством с человеком, поэтому являются незаменимой моделью для воспроизведения различных патологических и токсических состояний человека. Целью исследования являлось изучение влияния воды с пониженным содержанием дейтерия на гематологические и биохимические показатели крови макак-резусов и на переваримость питательных веществ рациона. В контрольной группе приматы потребляли воду с естественным региональным содержанием дейтерия, равном 150 мг/л, а в опытной группе – с пониженным до 50 мг/л. Длительность эксперимента составила 35 суток. Материалом для исследования служила венозная кровь, сыворотка крови и кал приматов. Кровь у обезьян брали до начала применения обеднённой дейтериевой воды и после завершения опыта. Все образцы крови (2,5-3,0 мл) были взяты из локтевой либо из бедренной вены животных натошак и стабилизированы раствором гепарина. Лабораторные исследования крови животных проводили на автоматическом гематологическом анализаторе фирмы «Beckman Coulter», USA марки CoulterAcT 5diffCP. С целью изучения влияния воды с пониженным содержанием дейтерия на гематологические показатели нами определялись количество эритроцитов, лейкоцитов, тромбоцитов, концентрация гемоглобина, гематокрит, средний объём эритроцитов, анизоцитоз эритроцитов, скорость оседания эритроцитов (СОЭ).

Балансовый опыт разделяли на два периода. Подготовительный – для исключения влияния предшествующего кормления и приучения приматов к условиям клеточного содержания. Опытный – для проведения тщательного учёта потреблённого корма, выделенных экскрементов. Кал собирали ежедневно в одно и то же время (утром и вечером), взвешивали и растирали в ступке. При каждом сборе на анализ брали 50% гомогенизированной массы. Собранные порции хранили в холодильнике. После окончания опытного (учётного) периода в собранном кале определяли первоначальную влагу высушиванием при 60-70°C до постоянной массы. Полученную воздушно-сухую массу тщательно размалывали и передавали на анализ.

Установлено, что введение в рацион приматов воды со сниженным содержанием дейтерия положительно влияет на конверсию корма и биохимические показатели крови.

Ключевые слова: переваримость, корма, кровь, добавки, приматы, макаки резусы, вода с пониженным содержанием дейтерия, гематологические и биохимические показатели крови.

Information about authors:

Gaponov Nikolay Vasilyevich, candidate of biological sciences, FSBSI "Research Institute of Medical Primatology", Sochi, Russia; nv.1000@bk.ru; <https://orcid.org/0000-0002-5086-7943>

Svistunov Sergey Vladimirovich, candidate of agricultural sciences, department of cultivation of farm animals and zootechnologies of the Kuban State Agricultural University named I.T. Trubilin, Krasnodar, Russian Federation; senior researcher of the FSBSI "Krasnodar Research Center for Animal Husbandry and Veterinary Medicine", Krasnodar, Russia; svistunov@list.ru; Web of Science Researcher ID I-5812-2014; <https://orcid.org/0000-0002-9098-9953>

Bondarenko Nina Nikolaevna, doctor of agricultural sciences, professor, department of parasitology, veterinary sanitary inspection and zoohygiene of the Kuban State Agricultural University named I.T. Trubilin, Krasnodar, Russia; bondarienko.49@mail.ru; Web of Science Researcher ID U-8391-2019; <https://orcid.org/0000-0003-0232-4861>

Romanenko Irina Aleksandrovna, candidate of agricultural sciences, veterinarian of FSBSI "Krasnodar Interregional Veterinary Laboratory", Krasnodar, Russia; romanenko_ia@bk.ru; <https://orcid.org/0000-0001-8633-624X>

REFERENCES

[1] Baryshev M.G., Dzhimak S.S., Dolgov M.A., Dydykin A.S., Kas'ianov G.I. (2012) Primenenie vody s modifitsirovannym izotopnym sostavom i pH v miasnoi promyshlennosti Izvestiia vuzov // Pishchevaia tekhnologiya. 2-3: 42-44 (in Russ.).

[2] Basov A.A., Bykov I.M., Baryshev M.G., Dzhimak S.S., Bykov M.I. (2014) Kontsentratsiia deiteriia v pishchevykh produktakh i vliianie vody s modifitsirovannym izotopnym sostavom na pokazateli svobodnoradikal'nogo okisleniia i sodержanie tiazhelykh izotopov vodoroda u eksperimental'nykh zhivotnykh // Voprosy pitaniia. 83 (5): 43-50 (in Russ.).

[3] Dzhimak S.S., Areybasheva O.M., Baryshev M.G., Basov A.A., Bikov I.M., Fedulova L.V., Didikin A.S., Naumov G.N. (2015) Correction of metabolic processes in rats during chronic endotoxycosis using isotope (D/H) exchange reactions // Biology bulletin. 42 (5): 440-448. DOI: 10.1134/S1062359015050064 (in Eng.).

[4] Vladymyrova I., Georgiyants V., Savelieva E. (2019) Pharmacotherapeutic action analysys of mineral substances of medicinal plants, which are used in thyroid gland diseases // Bulletin of national academy of sciences of the Republic of Kazakhstan. 2019. Vol. 1. P. 6-13. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print). DOI: <https://doi.org/10.32014/2019.2518-1467.1>

[5] Lisicin A.B., Didikin A.S., Fedulova L.V., Chernuha I.M., Barishev M.G., Tekutskaya E.E., Dzhimak S.S., Basov A.A., Barisheva E.V., Bikov I.M., Timakov A.A. (2014) Influence of deuterium depleted water on the organism of laboratory animals in various functional conditions of nonspecific protective systems // Biophysics. 59 (4): 620-627. DOI: 10.1134/S0006350914040186 (in Eng.).

[6] Shikhliarova A.I., Zhukova G.V., Kit O.I., Kurkina T.A., Shirmina E.A., Protasova T.A., Elkina A.A., Baryshev M.G. (2018) Influence of drinking diet with low content of deuterium on the indicators of the estrous cycle and the adaptive capabilities of the organism in female rats in the presenile age // Medical News of North Caucasus. 13 (1-1): 85-90. DOI: 10.14300/mnnc.2018.13024 (in Eng.).

[7] Kravtsov A.A., Kozin S.V., Elkina A.A., Shashkov D.I., Baryshev M.G., Vasilevskaya E.R., Fedulova L.V., Popov K.A., Malyshko V.V., Moiseev A.V. (2018) Effect of Drinking Ration with Reduced Deuterium Content on Brain Tissue Prooxidant-Antioxidant Balance in Rats with Acute Hypoxia Model // Journal of pharmacy and nutrition sciences. 8 (2): 42-51 DOI: 10.6000/1927-5951.2018.08.02.3 (in Eng.).

[8] Parmon V.N. (2015) O vozmozhnosti nabludeniia kineticheskikh izotopnykh effektov v zhiznennykh tsiklakh zhivykh organizmov pri sverkhnikzikh kontsentratsiakh deiteriia // Vestnik Rossiiskoi Akademii Nauk. 85 (3): 247-249. DOI: 10.7868/S0869587315030093 (in Russ.).

[9] Boros L.G., D'Agostino D.P., Katz H.E., Roth J.P., Meuillet E.J., Somlyai G. (2016) Submolecular regulation of cell transformation by deuterium depleting water exchange reactions in the tricarboxylic acid substrate cycle // Medical Hypotheses. 87: 69-74. DOI: 10.1016/j.mehy.2015.11.016 (in Eng.).

[10] Yuldashbayev Yu.A., Selionova M.I., Aibazov M.M., Svetlichny S.I., Bondarenko N.N., Svistunov S.V., Baimukanov D.A., Chylbak-Ool S.O., Tlepov A.A. (2019) Estrus induction in dairy sheep during the anestrous period // Bulletin of national academy of sciences of the Republic of Kazakhstan. 2019. Vol. 3. P. 64-71. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print) <https://doi.org/10.32014/2019.2518-1467.70>

[11] Nikitin D.I., Oranskaya M.N., Lobyshev V.I. (2003) Specificity of bacterial response to variations of the isotopic composition of water // Biophysics. 48 (4): 636-640 (in Eng.).

[12] Strekalova T., Evans M., Chernopiatko A., Couch Y., Costa-Nunes J., Cespuglio R., Chesson L., Vignisse J., Steinbusch H.W., Anthony D.C., Pomytkin I., Lesch K.P. (2015) Deuterium content of water increases depression susceptibility: the potential role of a serotonin-related mechanism // Behavioural Brain Research. 277: 237-244. DOI: 10.1016/j.bbr.2014.07.039 (in Eng.).

[13] Dzhimak S.S., Basov A.A., Baryshev M.G. (2015) Content of deuterium in biological fluids and organs: Influence of deuterium depleted water on D/H gradient and the process of adaptation // Doklady biochemistry and biophysics. 465 (1): 370-373. DOI: 10.1134/S1607672915060071 (in Eng.).

[14] Kalashnikov A.P. i dr. (2003) Normy i ratsiony kormleniia sel'skokhoziaistvennykh zhivotnykh: spravochnoe posobie. 3-e izd. pererab. i dop. Znanie, Moskow. ISBN: 5-94587-093-5.

A. Kokhmetova^{1,2}, M. Atishova¹¹Institute of Plant Biology and Biotechnology, Almaty, Kazakhstan;²Kazakh National Agrarian University, Almaty, Kazakhstan.

E-mail: gen_kalma@mail.ru, maki_87@mail.ru

**IDENTIFICATION WHEAT GENOTYPES RESISTANT
TO TAN SPOT *PYRENOPHORA TRITICI-REPENTIS***

Abstract. Intensified wheat production, changes in cultural practices including shifts from conventional tillage to reduced tillage practices, and wheat monoculture involving cultivation of susceptible cultivars has resulted in development of tan spot to epidemic proportions in Kazakhstan. *Pyrenophora tritici-repentis*, causal agent of tan spot on wheat. In recent years, there has been increasing distribution and harmfulness of *P. tritici-repentis* on wheat. The aim of the study was to identify and select wheat germplasm resistant to tan spot *P. tritici-repentis* using molecular markers. The results of field evaluation showed resistant reaction to tan spot in 76 wheat varieties (68%). Molecular screening of wheat germplasm was carried out based on the reaction to the fungal inoculum and to host-specific toxins (HST) produced by the *P. tritici-repentis*. The wheat germplasm insensitive to the toxins HST Ptr ToxA and Ptr ToxB was selected. As a result of molecular screening of 111 wheat genotypes using SSR marker *Xfcp623* linked to insensitivity gene to the selective toxin Ptr ToxA of tan spot, 31 carriers of effective *tsn1* gene were identified, which accounted for 27,9% of the genotypes studied. Ten samples of wheat (Jubileynaya 60, TOO11/TOOOO7, F3.71/TRM/VORONA/3/OC14, NANJTNG 82149 KAUZ, ECHA/LI115, Akmola 2, Kazakhstanskaya rannespelaya, Kazakhstanskaya 25, 428g/MK-122A and 190-Naz/GF55) are characterized with complex resistance to the races Ptr 1 and 5, as well as to 2 toxins (ToxA and ToxB) and to the *Septoria nodorum blotch* isolate SNB7k. 20 promising wheat lines resistant to tan spot were selected. These genotypes also showed a moderate and high level of field resistance and recommended to use in the breeding programs for resistance to tan spot.

Key words: wheat, tan spot, resistance genes, molecular markers.

Introduction. The Kazakhstan is one of the major wheat producers in the world. However, diseases and pests play an important role in yield reduction in Kazakhstan. Tan spot is one of the most harmful diseases of soft and hard wheat in many agricultural regions of the world including Kazakhstan. The causative agent of this disease is the homotallic ascomycete *P. tritici-repentis* (Died.) Drechsler; imperfect stage *Drechslera tritici-repentis* (Died.) Shoem. In Central Asia the disease was discovered in 1980s in Tajikistan and in recent years it has spread throughout Central Asia and Kazakhstan [1,2,3].

Five toxins (Ptr ToxA, ToxB, ToxC, and 2 toxins, united in a group Ptr ToxD) have been identified; three of them are well characterized while two are tentative. The *Tsn1* – Ptr ToxA, *Tsc2* – Ptr ToxB, and *Tsc1* – Ptr ToxC interactions have all been shown to play significant roles in the development of tan spot in common (hexaploid) wheat [4,5].

P. tritici-repentis isolates has been grouped in 8 races based on their ability to produce two distinct symptoms, necrosis and/or chlorosis on appropriate wheat differential [6]. Races 1 and 2 of *P. tritici-repentis* produce a host-selective toxin (HST), Ptr ToxA that induces necrosis symptoms [7]. Ptr ToxA is a well-characterized HST of *P. tritici-repentis* and the gene that encodes for Ptr ToxA production including the endogenous promoter has been cloned [8]. *Tsn1*, a single dominant gene that conditions sensitivity to Ptr ToxA on the long arm of chromosome 5B, has recently been cloned [9, 10]. Eight major genes for resistance to tan spot (*Tsr1-Tsr6*, *Tsr Har*, *TsrAri*) have been characterized and designated [11]. They located on chromosomes 2BS, 3A, 3BL, 3DS and 5BL.

In the CIS countries, the pathogen in Moldova, Ukraine, Belarus, Central Asia and Kazakhstan was found [12]. There are a number of studies on the racial composition of *P. tritici-repentis* in Asia and Kazakhstan. The greatest diversity was observed in Azerbaijan, where races 1, 2, 3, 5, 7, and 8 were identified, and in Syria, where races 1, 3, 5, 7, and 8 were detected; the little variation was found in the virulence of isolates from Kazakhstan (race 1 and race 2) [1]. It has been revealed that race 1 is the most widespread race in Central Asia and Kazakhstan (87%), and races 2, 3 and 4 were minor [13]. It was found that races 1 and 2 dominate in the North Caucasus in Russia, and races 1 and 8 *P. tritici-repentis* dominate in Kazakhstan [14]. The results of previous studies indicate the possibility of identifying recessive alleles of genes resistant to *P. tritici-repentis* toxins using molecular markers [15,16]. Since Ptr ToxA toxin can be synthesized in races 1, 2, 7, and 8, and race 1 is widespread in Kazakhstan, the present study is dedicated to the search for gene carriers of resistance to Ptr ToxA toxin.

Currently, there is an increasing prevalence and increased damage of wheat by tan spot in Kazakhstan. The majority of commercial wheat cultivars currently grown in Kazakhstan are still susceptible to tan spot. The presence and activation of *P. tritici-repentis* requires the rapid development of new varieties resistant to disease. The relevance of such studies is due to the need to develop genetically diverse sources of resistance, donors and promising wheat lines that can be used in breeding of resistant varieties. The main objective of this study was the identification of wheat genotypes resistant to tan spot *P. tritici-repentis*.

Materials and methods. A collection of 111 common wheat germplasms, including elite lines and cultivars of wheat from Kazakhstan, Russia and CIMMYT evaluated for *P. tritici-repentis* resistance and were characterized using the molecular markers. The field experiments conducted at the Southeast Kazakhstan, Kazakh Research Institute of Agriculture and Plant Growing (KRIAPG), Almalybak (43°13'N, 76°36'E, and 789 masl), Almaty Reg., in the 2017-2018 crop seasons. The experiment conducted in a completely randomized design with three replications. The field evaluation of adult plants assessed three times according to the scale for appraising the foliar intensity of diseases [17] in the modification for tan spot [18]. The standard international wheat differentials included Glenlea and Salamouni cultivars, as well as 6B662 and 6B365 lines and used in the field and seedling tests.

Selection of resistant wheat genotypes based on germplasm screening against fungal inoculum and HST selective toxin of *P. tritici-repentis* was carried out on the basis of HST tests. The purified HST toxins provided by foreign collaborator, Dr. Ali S., University of South Dakota, USA. Toxins injected into wheat leaves. The presence or absence of necrosis / chlorosis symptoms on the infiltrated side of the leaf indicates sensitivity or insensitivity to HST.

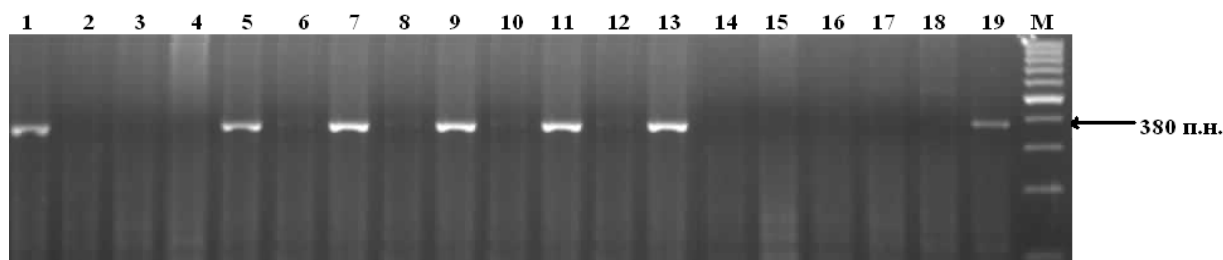
Genomic DNA extracted at two-leaf seedling stage for each individual plant using the CTAB method [19]. DNA concentration measured using a spectrophotometer SmartSpecTMPlus (Bio RAD). The DNA concentration for each sample was adjusted to 30 ng/μl. Samples were genotyped using the SSR marker *Xfcp623* designed to detect alleles of the *Tsn1* gene. The sequence of primers and PCR reaction conditions are given by [10]. The carriers of the *Tsn1* gene was also were detected using PCR protocol for SSR marker *Xfcp1* published at the WheatCAP website <http://maswheat.ucdavis.edu/protocols>. The amplification products were separated on 2%-agarose gels, to determine the length of the amplification fragment 100 bp DNA Ladder (Ferments, Lithuania) was used. Gels were visualized on Gel Documentation System (Gel Doc XR+, BIO-RAD, Hercules, USA) for documentation of allele types in cultivars. Wheat entries 6B662 and Glenlea served as positive and negative controls, respectively.

Results. The results of field evaluation the resistance of 111 genotypes of wheat to tan spot showed, that immune and resistant (0 - 10%) were 76 varieties (68%) of the total number of wheat entries. The immune type of reaction to tan spot demonstrated 16 varieties of wheat, including Princes, Koksus, Opaks 18, Odesskaya 120, Pyrotiks-50, Polovchanka, Raminal, Rasad, Sanzar 8, Taza, Tyniysh, Umanka, Sharora and Erythrospermum 78. The most susceptible varieties were Azharly, Basar, Batyr, Bulava, Bezostaya 1, Kyzylbidai, Lutescens 9 and others. Thus, the results of the field evaluation of tan spot allowed to rank the material studied on the level of resistance. Immune and resistant reaction type to tan spot showed 76 wheat cultivars.

In previous studies, we used markers *Xfcp1*, *Xfcp393*, *Xfcp394* and *Xfcp620*. Our results using these markers enabled the screening of a large number of wheat accessions for resistance to the Ptr ToxA [15, 16]. However, the repeatability and matching molecular data and phytopathological evaluations was not

always complete. With further development of PCR, we found, that the most adequate for the identification of carriers of resistance to tan spot is a molecular marker *Xfcp623* [20,21,22]. This functional marker was developed by Faris et al., 2013 as a result of mapping, sequencing and cloning of the *Tsn1* locus (intron 5). From a practical point of view this marker is the most effective and reliable [4].

In this regard, to identify genes *Tsn1* and *tsn1* in the studied wheat material the SSR marker *Xfcp623* was used. As an example, the results of the PCR amplification products, when the *Xfcp623* primers were tested on 17 wheat genotypes, are shown in the figure. Marker *Xfcp623* formed fragment size 380 bp, which is associated with a dominant allele *Tsn1* sensitive to ToxA *P. tritici-repentis*.



DNA amplification profile for of wheat cultivars and lines obtained with diagnostic marker *Xfcp623* linked to the *Tsn1* gene sensitive to Ptr ToxA. 1– Kazakhstanskaya 4, 2 – Kazakhstanskaya 19, 3 – Omskaya 28, 4 – Omskaya 35, 5 – Zhalyln, 6 – Kargaly 9, 7 – Karaspan, 8 – Akmola 3, 9 – Severyanka, 10 – Albidum 31, 11 – BR35/BR14, 12 – CEP80111/VEE, 13 – ALTAR 84/AE, 14 – TPAP#1/OPATA, 15 – CROC 1AE, 16 – TALHUENJNJA, 17 – Kenzhegaly, 18 – Salamouni (the insensitive control for toxin Ptr ToxA, carrier of recessive gene *tsn1*), 19 – Glenlea (negative control), M – marker for molecular weight (Gene Ruler 100 bp DNA Ladder)

As shown in figure, 6 out of 17 samples (Kazakhstanskaya 4, Zhalyln, Karaspan, Severyanka, BR35/BR14, ALTAR 84/A) had polymorphic band identical to molecular marker *Xfcp623*, linked the dominant *Tsn1* allele conferring toxin Ptr ToxA sensitivity. Ten entries including Kazakhstanskaya 19, Omskaya 28, Omskaya 35, Kargaly 9, Akmola 3, Albidum 31, CEP80111/VEE, TPAP#1/OPATA, CROC 1AE, TALHUENJNJA, and Kenzhegaly showed null-allele, linked the recessive *tsn1* allele conferring toxin Ptr ToxA insensitivity. Thus, of the 17 analyzed promising wheat lines 10 wheat genotypes insensitive to the ToxA toxin of *P. tritici-repentis* were identified.

As a result of molecular screening of total 111 wheat genotypes using SSR marker *Xfcp623*, 31 carriers of *tsn1* gene accounted for 27,93% of the samples studied were identified. It should be noted that the phytopathological evaluation of wheat samples in which the genes for resistance to tan spot toxins were found, showed a high and moderate degree of field resistance (5-15%) to diseases. The association between resistance to tan spot and the presence of a toxin toxicity gene ToxA, *tsn1* was noted. The correspondence between phenotypic and molecular analyzes was 95-98%.

Molecular screening of wheat germplasm and screening based on the reaction to the fungal inoculum and to HST toxins allowed selecting of wheat genotypes resistant to leaf spot diseases based. As an example, the table shows the 10 most resistant and the 10 most sensitive genotypes to the the 2 races and toxins of *P. tritici-repentis* (Ptr), and to the race of *S. nodorum* blotch (SNB7k). In the table the results of PCR to identify genes for resistance to toxin Ptr ToxA, as well as the response to fungal inoculum: race 1 of Ptr, toxin HST ToxA, race 5 of Ptr, toxin HST ToxV, race of Septoria SNB7k has shown.

In PCR using SSR marker *Xfcp1* first 10 genotypes formed DNA fragment of 374 bp which is associated with the presence of the recessive allele *tsn1*, insensitive to Ptr ToxA, and the next 10 wheat samples formed fragment of 402 bp, typical for dominant allele *Tsn1*, susceptible to Ptr ToxA. Thus, the complex resistance to two races of Ptr (1 and 5), two toxins (HST ToxA and HST ToxB) and the race of Septoria SNB7k were found in Kazakhstani commercial varieties (Yubileynaya 60, Jubileynaya 60, Akmola 2, Kazakhstanskaya rannespelaya, Kazakhstanskaya 25), as well as in developed in our laboratory advanced lines (428g/MK-122A and 190-Naz/GF55), and aslso lines from CIMMYT (TOO11/TOOOO7, F3.71/TRM/ VORONA/3/OC14, NANJTNG 82149 KAUZ and ECHA/LI115). Using the technology of selection for HST-toxins and marker assisted selection, a new wheat material adapted for Kazakhstan, resistant to the aggressive toxins of LSD, was selected.

Selection of disease resistant wheat genotypes based on germplasm screening using inoculum of fungi and HST toxins

Name of entry	Marker <i>Xfcp1</i>		Reaction to inoculum of Ptr				
	I	S	Race 1	HST ToxA	Race 5	HST ToxB	SNB7k
Jubileynaya 60	374 п.н.	–	1	I	1	I	1
TOO11/TOOOO7	374 п.н.	–	1	I	2	I	1
F3.71/TRM/VORONA/3/OC14	374 п.н.	–	1	I	2	I	1
NANJTNG 82149 KAUZ	374 п.н.	–	1	I	2	I	2
ECHA/LI115	374 п.н.	–	1	I	2	I	2
Akmola 2	374 п.н.	–	3	I	2	I	2
Kazakhstanskaya rannespelaya	374 п.н.	–	1	I	2	I	2
Kazakhstanskaya 25	374 п.н.	–	2	I	1	I	3
428g/MK-122A	374 п.н.	–	1	I	1	I	1
190-Naz/GF55	374 п.н.	–	1	I	1	I	1
Bogarnaya 56	–	402 п.н.	4	S	2	I	4
Bulava	–	402 п.н.	4	S	2	I	5
Mereke75	–	402 п.н.	4	S	1	I	5
Nureke	–	402 п.н.	4	S	2	I	4
Steklovinaya 24	–	402 п.н.	3	S	2	I	4
Saratovskaya 42	–	402 п.н.	5	S	2	I	4
Farabi	–	402 п.н.	4	S	2	I	4
Karlygash	–	402 п.н.	4	S	3	I	2
Gozgon	–	402 п.н.	4	S	1	I	5
Kysylbiday	–	402 п.н.	4	S	2	I	2

Note: Ptr – tan spot, SNB – Septoria, HST ToxA and ToxB – tan spot toxins, SNB7k – race od Septoria; I – insensitivity, S – sensitivity to toxins.

Discussion. ToxA toxin is synthesized by races 1, 2, 7, and 8, and the ToxB toxin is synthesized by races 2, 7, and 8 [23]. Previous studies have shown that races 1 and 8 are widespread in Kazakhstan [14]. The comparative analysis of phenotypic and molecular data on the presence or absence of resistance genes and expression of resistance to disease in the field was carried out. Sensitivity to the toxin Ptr ToxA produced by isolates of race 1 (*nec+chl-*), controlled by one dominant gene *Tsn1*, located on the long arm of chromosome 5B [10]. It is assumed that the sensitivity to the toxin Ptr ToxA and susceptibility to necrosis of the fungus is controlled by the same gene [24]. The *Tsn1* gene responsible for sensitivity to the protein components of plant toxins, Ptr ToxA, produced by the fungus *P. tritici-repentis*; this toxin is one of the main factors associated with the development of *P. tritici-repentis* in susceptible wheat genotypes [25].

In this regard, the present study was aimed at assessing varieties and promising lines of wheat from Kazakhstan and abroad for resistance to race 1 and race 5 and sensitivity to toxins Ptr ToxA and Ptr ToxB *P. tritici-repentis*. The results of field evaluation showed resistant reaction to tan spot in 76 wheat varieties (68%); almost the same results were obtained in previous study [21]. Results molecular screening for resistance to tan spot obtained in this study contradict the previous data related to field evaluation to tan spot in Kazakhstan and in South Russia that showed a low level of resistance among most commercial wheat cultivars [26]. Based on our results, it is important to carry out breeding for resistance to most common races of pathogen.

For successful selection of immunity, international cooperation with CIMMYT is of great importance. Our studies have shown that varieties resistant to tan spot must be developed using a variety of germplasm. Broad based tan spot resistance sources from the CIMMYT may contribute to the resistance observed in our study and can be utilized to develop cultivars with broad-genetic base durable resistance to wheat tan spot.

Conclusion. Results of field phytopathological screening of 111 commercial wheat varieties tan spot allowed ranking the studied material according to the level of resistance. The immune and resistant type of reaction to tan spot showed 76 varieties of wheat. As a result of molecular screening of 111 wheat genotypes using SSR marker linked to insensitivity genes to the HST Ptr ToxA, 31 carriers of effective *tsn1* gene were identified, which accounted for 27,9% of the 111 samples studied. Based on the results of molecular screening and the study of the reaction of wheat samples to the inoculum and to the toxins of diseases, 10 disease-resistant lines have been identified. These genotypes also showed a moderate and high level of field resistance and recommended to use in the breeding programs for resistance to tan spot. The results of study are used in wheat breeding programs for tan spot resistance with the Marker Assisted Selection.

Acknowledgements. This study was supported by the Kazakhstan Ministry of Education and Sciences, project AP05132540. The authors are sincerely grateful to Dr. Ali S. (Wheat Pathologist, Department of Plant Pathology, North Dakota State University, Fargo, USA) for advice on research.

А. Кохметова^{1,2}, М. Атишова¹

¹Өсімдіктер биологиясы және биотехнологиясы институты, Алматы, Қазақстан;

²Қазақ ұлттық аграрлық университеті, Алматы, Қазақстан

ПИРЕНОФОРОЗҒА *PYRENOPHORA TRITICI-REPENTIS* ТӨЗІМДІ БИДАЙ ГЕНОТИПТЕРІН ИДЕНТИФИКАЦИЯЛАУ

Аннотация. Бидай өндірісінің қарқынды дамуы, тәжірибие алаңында бидай өндірісінің өзгерістері, дәстүрлі топырақты өңдеуден минималды тәжірибиеге өту және төзімсіз бидай сорттарының монокультура ретінде өсіру пиренофороздың дамуының эпидемия көлеміне әкеліп соқтырады. Пиренофороз дүниежүзінің көптеген ауылшаруашылық аймақтары мен Қазақстанның жұмсақ және қатты бидайының аса қауіпті ауруларының бірі болып табылады. Пиренофороздың қоздырушысы *Pyrenophora tritici-repentis*. Соңғы жылдары бидайда *P. tritici-repentis*-тің дамуы мен қауіптілігі бақылануда. Қазіргі таңда бес токсин (Ptr ToxA, ToxB, ToxC және 2 токсин, Ptr ToxD тобына біріктірілген) идентификацияланған.

Зерттеудің мақсаты – молекулалық әдістерді қолданып, *P. tritici-repentis* пиренофорозға төзімді бидай гермоплазмаларын анықтау және іріктеу. Дала жағдайында бағалау нәтижесінде бидайдың 76 сорты (68 %) пиренофорозға төзімді реакция танытты. Пиренофорозға 16 бидай сорты иммунды реакция типін көрсетті, олар Princes, Коксу, Опакс 18, Одесская 120, Пиротрикс-50, Половчанка, Раминал, Расад, Санзар 8, Таза, Тунгыш, Уманка, Шарора және Эритроспермум 78. Ажарлы, Басар, Батыр, Булава, Безостая 1, Кызылбидай, Лютеценс 9 және басқада сорттар ауруға төзімсіз болды. *P. tritici-repentis* продуцирлейтін, (HST) ие қожайынның спецификалық токсини мен саңырауқұлақ инокулятының реакция негізінде бидайдың ұрықтық плазмасының молекулалық скринингі жүргізілді. HST Ptr ToxA мен Ptr ToxB токсиндеріне төзімді бидай гермоплазмасы іріктелінді. Пиренофороздың Ptr ToxA селективті токсиніне төзімді генмен байланысқан SSR типті *Xfcp623* маркерлері қолданылып, бидайдың 111 генотипіне молекулалық скрининг жүргізу нәтижесінде, эффективті *tsn1* генінің 31 тасымалдаушысы идентификацияланды, ол зерттелген генотип-тердің 27,9% құрады. Токсиндерге төзімділік гендері бар бидай үлгілерін фитопатологиялық бағалау нәтижесінде ауруға дала жағдайында орташа және жоғары (5-15 %) төзімділік танытты. Ауруға төзімділік пен ToxA токсиніне төзімді *tsn1* генінің арасындағы байланыс анықталынды. Молекулалық және фенотиптік анализдердің арасындағы сәйкестілік 95-98 % құрады.

SSR-типті *Xfcp1* маркерін қолданып ПЦР анализ жүргізу нәтижесінде Ptr ToxA-ға төзімді *tsn1* рецессивті генімен байланысқан көлемі 374 ж.н. құрайтын ДНК фрагменттері бар 10 генотип анықталынды, сонымен қатар Ptr ToxA-ға төзімсіз көлемі 402 ж.н. құрайтын *Tsn1* доминантты гені бар бидайдың 10 үлгісі идентификацияланды.

Бидайдың 10 үлгісі (Юбилейная 60, TOO11/TOOOO7, F3.71/TRM/ VORONA/3/ OC14, NANJTNG 82149 KAUZ, ECHA/LI115, Акмола 2, Казахстанская раннеспелая, Казахстанская 25, 428g/MK-122A и 190-Naz/GF55) раса 1 мен 5-ке, сонымен қатар 2 токсинге (ToxA мен ToxB) және *Septoria nodorum blotch* SNB7k изолятына кешенді төзімділігімен сипатталды. Зерттеу нәтижесінде, пиренофорозға төзімді, бидайдың перспективті линиялары таңдалынды. Бұл генотиптер дала жағдайында да орташа және жоғары төзімділік танытты және пиренофорозға төзімділік селекция бағдарламаларында қолдануға ұсынылды.

Түйін сөздер: бидай, пиренофороз, төзімділік гендері, молекулалық маркерлер.

А. Кохметова^{1,2}, М. Атишова¹

¹Институт биологии и биотехнологии растений, Алматы, Казахстан;

²Казахский национальный аграрный университет, Алматы, Казахстан

ИДЕНТИФИКАЦИЯ ГЕНОТИПОВ ПШЕНИЦЫ, УСТОЙЧИВЫХ К ПИРЕНОФОРОЗУ *PYRENOPHORA TRITICI-REPENTIS*

Аннотация. Интенсивное производство пшеницы, изменения в практике возделывания пшеницы, включающие переход от традиционной обработки к минимальной обработке почвы, и монокультура пшеницы, включающая возделывание восприимчивых сортов, способствуют развитию пиренофороза до масштабов эпидемии. Пиренофороз является одним из самых вредных заболеваний мягкой и твердой пшеницы во многих сельскохозяйственных регионах мира, включая Казахстан. *Pyrenophora tritici-repentis* – возбудитель пиренофороза пшеницы. В последние годы наблюдается рост распространения и вредоносности *P. tritici-repentis* на пшенице. К настоящему времени идентифицировано пять токсинов (Ptr ToxA, ToxB, ToxC и 2 токسينа, объединенных в группу Ptr ToxD).

Целью исследования было выявление и отбор гермоплазмы пшеницы, устойчивой к пиренофорозу *P. tritici-repentis*, с использованием молекулярных маркеров. Результаты полевой оценки показали устойчивую реакцию к пиренофорозу у 76 сортов пшеницы (68%). Иммунный тип реакции к пиренофорозу показали 16 сортов пшеницы, в том числе Princes, Коксу, Опакс 18, Одесская 120, Пиротрикс-50, Половчанка, Раминал, Расад, Санзар 8, Таза, Тунгыш, Уманка, Шарора и Эритроспермум 78. Наиболее восприимчивыми оказались сорта Ажарлы, Басар, Батыр, Булава, Безостая 1, Кызылбидай, Лютеценс 9 и другие. Молекулярный скрининг гермоплазма пшеницы проводился на основе реакции к инокулуму гриба и специфические для хозяина токсины (HST), производимые *P. tritici-repentis*. Отобрана гермоплазма пшеницы, нечувствительная к токсинам HST Ptr ToxA и Ptr ToxB. В результате молекулярного скрининга 111 генотипов пшеницы с использованием SSR маркера Xfcp623, сцепленного с геном нечувствительности к селективному токсину Ptr ToxA пиренофороза, был идентифицирован 31 носитель эффективного гена *tsn1*, что составило 27,9% от числа изученных генотипов. Фитопатологическая оценка образцов пшеницы, в которых были обнаружены гены устойчивости к токсинам, показала высокую и умеренную степень полевой устойчивости (5-15%) к болезням. Была отмечена связь между устойчивостью к болезни и наличием нечувствительного к токсину ToxA гена *tsn1*. Соответствие между фенотипическим и молекулярным анализами составило 95-98%.

В результате ПЦР анализа с использованием SSR-маркера Xfcp1 10 генотипов формировали ДНК фрагмент размером 374 п.н., что указывает на наличие рецессивного гена *tsn1* нечувствительного к Ptr ToxA. Десять образцов пшеницы формировали фрагмент размером 402 п.н., характерный для доминантного гена *Tsn1*, чувствительного к Ptr ToxA. Выявлено десять образцов пшеницы (Юбилейная 60, ТОО11/ТОО007, F3.71/TRM/ VORONA/3/ OC14, NANJTNG 82149 KAUZ, ECHA/LI115, Акмола 2, Казахстанская раннеспелая, Казахстанская 25, 428g/МК-122А и 190-Naz/GF55), которые характеризовались комплексной устойчивостью к расам 1 и 5, к 2 токсинам (ToxA и ToxB), а также к изоляту *Septoria nodorum blotch* SNB7k. Таким образом, в результате исследований отобраны перспективные линии пшеницы, устойчивые к пиренофорозу. Эти генотипы также показали умеренный и высокий уровень полевой устойчивости и рекомендованы для использования в программах селекции на устойчивость к пиренофорозу.

Ключевые слова: пшеница, пиренофороз, гены устойчивости, молекулярные маркеры.

Information about authors:

Alma Kokhmetova, Institute of Plant Biology and Biotechnology, Kazakh National Agrarian University, Almaty, Kazakhstan; gen_kalma@mail.ru; <https://orcid.org/0000-0002-0186-7832>

Makpal Atishova, Institute of Plant Biology and Biotechnology, Almaty, Kazakhstan; maki_87@mail.ru; <https://orcid.org/0000-0002-2270-571X>

REFERENCES

[1] Lamari L., Strelkov S.E., Yahyaoui A., Amedov M., Saidov M., Djunosova M., Koichibayev M. (2005) Virulence of *Pyrenophora tritici-repentis* in the countries of the Silk Road, Can. J. Plant Pathol., 27(3):383-388. DOI:10.1080/07060660509507236.

[2] Koyshibayev M.K. (2018) Diseases of wheat [Bolezni rastenii]. Ankara: FAO. 365 p. ISBN: 978-92-5-130142-5 (in Russ.).

[3] Tagayev K.Zh., Morgounov A.I., Yessimbekova M.A., Abugalieva A.I., Bayadilova G.O. (2018) Effect of common bunt infection on agronomic traits and resistance in winter wheat lines. News NAS RK. Series of Agricultural Sciences,

5(47): 12-19. ISSN 2224-526X <https://doi.org/10.32014/2018.2224-526X.2>

[4] Faris J.D., Liu Z., Xu S.S. (2013) Genetics of tan spot resistance in wheat. *Theor Appl Genet*, 126:2197-2217. DOI:10.1007/s00122-013-2157-y.

[5] Kariyawasam G.K., Carter A.H., Rasmussen J.B., Faris J., Xu S.S., Mergoum M., Liu Z. (2016) Genetic relationships between race-nonspecific and race-specific interactions in the wheat-*Pyrenophora tritici-repentis* pathosystem. *Theor Appl Genet*, 129(5):897-908. DOI:10.1007/s00122-016-2670-x.

[6] Lamari L., Sayoud R., Boulif M., Bernier C.C. (1995) Identification of a new race of *Pyrenophora tritici-repentis* implications for the current pathotype classification system, *Can. J. Plant Pathol*, 17(4):312-318. DOI:10.1080/07060669509500668.

[7] Tuori R.P., Wolpert T.J., Ciuffetti L.M. (1995) Purification and immunological characterization of toxic components from cultures of *Pyrenophora tritici-repentis*, *Mol Plant Microbe Interact*, 8(1):41-8. DOI:10.1094/mpmi-8-0041.

[8] Manning V.A., Pandelova I., Ciuffetti L.M. (2002) A race for a novel host-selective toxin, *Phytopathology*, 92: S51. ISSN: 0031-949X.

[9] Anderson J.A., Effertz R.J., Faris J.D., Franel L.J., Meinhardt S.W., Gill B.S. Genetic analysis of sensitivity to a *Pyrenophora tritici-repentis* necrosis inducing toxin in durum and common wheat, *Phytopathology*, 89:293-297. DOI:10.1094/PHYTO.1999.89.4.293.

[10] Faris JD, Zhang Z, Lu H, Lu S, Reddy L, Cloutier S, Fellers JP, Meinhardt SW, Rasmussen JB, Xu SS, Oliver RP, Simons KJ, Friesen TL. (2010) A unique wheat disease resistance-like gene governs effector-triggered susceptibility to necrotrophic pathogens, *Proc Natl Acad Sci U S A.*, 107(30):13544-13549. DOI: 10.1073/pnas.1004090107.

[11] McIntosh R.A., Yamazaki Y., Dubcovsky J., Rogers J., Morris C., Appel R., Xia X.C. (2013) Catalogue of Gene Symbols for Wheat, supplement 204-2017. Available at: www.shigen.nig.ac.jp/wheat/komugi/genes.

[12] Kokhmetova A., Sapakhova Z., Urazaliev R., Yessimbekova M., Yeleshev R., Morgounov, A. (2014) Effect of spring biomass removal on expression of agronomic traits of winter wheat, *World Applied Sciences Journal*, 30 (3): P. 322-329. DOI: 10.5829/idosi.wasj.2014.30.03.14026.

[13] Maraite H., Mercado-Vergnes D., Renard M.E., Zhanarbekova A., Duveiller E. (2006) Relevance of pathogen diversity in management of leaf spot and leaf blight diseases on wheat in Central Asia, *Agronomer*, 2(3):105-114.

[14] Kokhmetova A.M., Kremneva O., Keyshilov Zh.S., Sultanova N.Zh. (2016) Race structure and virulence of isolates *Pyrenophora tritici-repentis* in the Republic of Kazakhstan and north Caucasus region of Russia [Rasovaya struktura i virulentnost' izoljativ *Pyrenophora tritici-repentis* v Respublike Kazahstan i Severo-Kavkazskom regione Rossii], *Eur. J. Appl. Biotech*, (3):57-66. (in Russ.).

[15] Kokhmetova A.M., Atishova M.N., Sapakhova Z.B., Urazaliev R.A. (2015) Molecular screening of wheat samples for resistance to tan spot *Pyrenophora tritici-repentis* [Molekularnyi skringing obrazcov pshenicy na ustojchivost pirenoforoza *Pyrenophora tritici-repentis*], *Izvestija NAN RK, Ser. Biol. i med*, 3(309):48-56. ISSN 2224-5308 (in Russ.).

[16] Kokhmetova A., Kremneva O., Volkova G., Atishova M., Sapakhova Z. (2017) Evaluation of wheat cultivars growing in Kazakhstan and Russia for resistance to tan spot, *Plant Pathol*, 99(1):161-167. DOI:10.4454/jpp.v99i1.3812.

[17] Saari E.E., Prescott L.M. (1975) A scale for appraising the foliar intensity of wheat diseases, *Plant Dis. Reporter*, 59: 377-380.

[18] Kremneva O.Yu., Volkova G.V. (2007) Diagnostics and methods for assessing the wheat resistance to the causative agent of tan spot, *Guidelines, Moscow* [Diagnostika i metody ocenki ustojchivosti pshenicy k vzbuditelju zheltoj pjatnistosti, Metodika, Moskva], P. 19 (in Russ.).

[19] Riede C.R., Anderson J.A. (1996) Linkage of RFLP markers to an aluminum tolerance gene in wheat, *Crop Sci*, 36(4):905-909. DOI:10.2135/cropsci1996.0011183X0036000400015x.

[20] Kokhmetova A.M., Ali Sh., Sapakhova Z., Atishova M.N. (2018) Identification of genotypes-carriers of resistance to tan spot Ptr ToxA and Ptr ToxB of *Pyrenophora tritici-repentis* in common wheat collection [Identifikacija genotipov-nositelej ustojchivosti k toksinam pirenoforoza Ptr ToxA i Ptr ToxB *Pyrenophora tritici-repentis* v kollekcii mjadgkoj pshenicy], *Vavilov Journal of Genetics and Breeding*, 22(8):978-986. DOI 10.18699/VJ18.440. (in Russian).

[21] Kokhmetova A.M., Atishova M.N., Kumarbayeva M.T., Leonova I.N., (2019) Phytopathological screening and molecular marker analysis of wheat germplasm from Kazakhstan and CIMMYT for resistance to tan spot, *Vavilov Journal of Genetics and Breeding*, 23(7):879-886. DOI10.18699/VJ19.562 (in Russ.).

[22] Kokhmetova A., Atishova M., Madenova A., Kumarbayeva M. (2019) Genotyping of wheat germplasm for resistance to toxins of tan spot *Pyrenophora tritici-repentis*, *Journal of Biotechnology*, 305:S53- S53. DOI: 10.1016/j.jbiotec.2019.05.188.

[23] Mikhailova LA, Terniuk IG, Mironenko NV (2010) Characteristics of populations of *Pyrenophora tritici-repentis* on the basis of virulence [Harakteristika populjacij *Pyrenophora tritici-repentis* na osnove virulentnosti], *Mycology and phytopathology*, 44(3):263-272 (in Russ.).

[24] Lamari L., Bernier C.C. (1989) Toxin of *Pyrenophora tritici-repentis*: Host-specificity, significance in disease, and inheritance of host reaction, *Phytopathology*, 79(7):740-744. DOI: 10.1094/Phyto-79-740.

[25] Friesen T.L., Stukenbrock E.H., Liu Z.H., Meinhardt S., Ling H., Faris J.D., Rasmussen J.B., Solomon P.S., McDonald B.A., Oliver R.P. (2006) Emergence of a new disease as a result of interspecific virulence gene transfer, *Nature Genetics*, 38: 953-956. DOI:10.1038/ng1839.

[26] Kremneva O.Y., Volkova G.V., (2013) ES Szeged resistant varieties of winter wheat to the tan spot pathogen, *Multidisciplinary network electronic scientific journal of the Kuban State Agrarian University* [Ustojchiyye sorta ozimoy pshenicy k vzbuditelju zheltoj pjatnistosti E.S. Seged, *Mnogoprofil'naja set', jelektronnyj nauchnyj zhurnal Kubanskogo gosudarstvennogo agrarnogo universiteta*], 7:1741-1751 (in Russ.).

V. A. Doronin¹, V. Sinchenko¹, V. V. Driga¹, Yu. A. Kravchenko¹,
V. V. Polishchuk², V. P. Mykolayko³, T. V. Polishchuk³

¹Institute of Bioenergetic Crops and Sugar Beet NAAS, Kyiv, Ukraine;

²Uman National University of Horticulture, Ukraine;

³Pavlo Tychyna Uman State Pedagogical University, Ukraine

FEATURES OF FORMATION OF MISCANTHUS PLANTING MATERIAL IN CONDITIONS OF DRIP IRRIGATION

Abstract. To establish the biological characteristics of growth and development of plants and the formation of planting material of miscanthus under conditions of drip irrigation. **Methods.** Field, laboratory, visual, measuring, weight, mathematical-statistical. **Results.** Represented the effectiveness of cultivation of planting material of miscanthus under conditions of drip irrigation without the application of Maxi Marin absorbent and when it is added to the period of planting of the rhizome. High survival of miscanthus plants in transplanting them from growing to open ground is established. In the conditions of drip irrigation it was 4.9% (without absorbent) and 3.3% (for making absorbent) more than without irrigation was. Drip irrigation significantly influenced the plant height and the formation of stems, while the introduction of absorbent was observed only a tendency of increase of these indicators. Introducing absorbent in rainfed conditions has resulted in a substantial increase in the content of free water in the leaves of miscanthus. Drip irrigation has contributed to intensive growth of not only land mass, and the mass of roots that provided a significant increase in the yield of planting material - the rhizome. The average for years of research weight uterine rhizome in drip irrigation was greater in control (without absorbent) by 62.8%, or 917,9 g than the absorbent application, respectively, the 61.8% or 912,7 g compared to irrigated conditions. **Conclusions.** The use of an absorbent as in rainfed conditions without irrigation, and in drip irrigation did not provide the increase of biometric parameters of the plants, weight of roots and, consequently, the output of planting material - the rhizome. The increase of these indicators was significantly affected only drip irrigation. In drip irrigation without any absorbent and when it is added from one of the ovaries rhizomes obtained mass was 15-20 g in 1.5 and weighing 25-30 g in 1.4 times more compared to the cultivation of ovaries without irrigation.

Key words: plant height, number of stems, free water, bound water, mass of rhizomes, rhizome.

Introduction. The signing by Ukraine of the Association Agreement with the European Union requires a review of the strategic priorities for the development of the main sectors of the national economy, especially those that base their activities on the use of natural resources and influence the formation of the assimilation potential of the territories [1].

Ukraine is energy dependent and only partially supplies itself with its own energy resources, so it has to import about 65% of fossil energy resources [2,3]. Traditional fuel due to combustion increases the carbon dioxide content of the atmosphere. Bioenergy crops are a more environmentally friendly source of energy. The use of biofuels will contribute to the epidemiological situation; meeting the requirements of the Kyoto Protocol to the United Nations Framework Convention on Climate Change [4].

A significant alternative to traditional fuels today is biofuels, which are produced from plant bioenergy raw materials grown on low-productive and degraded lands, removed from crop rotation and not used for crop production [5]. Ukraine has all the opportunities to grow bioenergy crops for biofuels: favorable soil and climate conditions for growing plants, low-productive land, a variety of adapted plant species usable in biofuels, varieties of bioenergy crops, science-based technologies and their cultivation.

The leading place among bioenergy crops used for the production of solid fuels is miscanthus. It is a very strong and hardy plant and after a single planting, its creeping rhizome will give new shoots annually [6].

Since miscanthus is a water-loving culture, providing it with moisture is very important for enhancing the photosynthetic activity of plants and, accordingly, improving its productivity. The formation of

moisture in the soil is possible due to rainfall, the application of irrigation or absorbents, which contribute to the planting of seedlings in the soil. In conditions of insufficient and unstable moisture, irrigation is one of the main factors for the intensification of agriculture, where guaranteed yields can be obtained only if it is applied.

One way to increase the yield of planting material is to grow miscanthus under drip irrigation. Irrigation drip is not only a means of saving water, but also a mechanism for significantly increasing crop yields [7,8]. This method allows to save up to 450% of water in comparison with irrigation on furrows, in comparison with micro-sprinkling - almost 3 times. provides the normalized supply of water directly to the area of the root system of plants, improve the physic-chemical processes in the soil, as well as to create optimal conditions for the growth and development of the seed plants [9]. Drip irrigation for growing crops has allowed to increase their productivity by 30-50% with savings of irrigation water 3-5 times, mineral fertilizers by 20-40%, energy resources by 50-70%, etc. [10,11]. This irrigation reduces the evaporation of water from the soil surface, since part of the area remains dry [12];

Research on the effectiveness of drip irrigation has been carried out on many crops: corn [13], soybean [14], chicory [15], milk thistle [16], rice [17] and others. There is no information on the effectiveness of drip irrigation for the cultivation of miscanthus planting material.

For industrial miscanthus cultivation, as a raw material for biofuels, it is important to provide its producers with sufficient quality planting material. At present, there is no technology for growing miscanthus planting material, which would ensure a high viability of the rhizome and maximize their yield. Therefore, it is relevant to study the peculiarities of formation of miscanthus planting material in the conditions of drip irrigation, which was the task of research.

The purpose of the research is to establish biological features of plant growth and development and the formation of miscanthus planting material in the conditions of drip irrigation.

Materials and methods of research. The research program was intended to determine the peculiarities of the formation of miscanthus planting material in the conditions of drip irrigation and the use of absorbent both without irrigation and with irrigation for the accumulation of moisture near the plants.

Field and laboratory studies of miscanthus giganteus (*Miscanthus giganteus* JM Greef & Deuter ex Hodkinson & Renvoize) were carried out at the Institute of Bioenergy Crops and Sugar Beets of NAAS and Uman (now - the NASU Tobacco Research Station), located in the central part of the Right-bank Forest Steppe of Ukraine, in the zone of unstable humidity, characterized by temperate continental climate, during 2013-2015.

The scheme of the experiment provides for the complex application of technology elements: factor A - growing conditions: without irrigation and in conditions of drip irrigation; factor B - introduction of MaxiMarin absorbent: control - without absorbent; absorbent granules per well of 1 g. The area of the sowing area - 50 m², the accounting area - 25 m², the repetition - 4 times.

The soil of the Uman DST chernozem is gravelly loamy with low humus content in the arable layer of 0-30 cm - 3.31%. The thickness of the humus profile is 52–60 cm. The reaction of the soil solution is slightly acidic, pH 6.0–6.1, the hydrolytic acidity is 1.5–2.5 mmol / 1 kg of soil, the degree of saturation of the alkalis is 85–93%. The content of mobile phosphorus compounds is 119 mg / kg and exchange potassium 101 mg / kg soil (according to Chirikov - increased availability). Provision of soil with nitrogen is average (Cornfield) and is 64 mg / kg soil.

Meteorological conditions during the years of research (2013-2015) were difficult, deviations from typical weather conditions were noted. From the three years of the 2013 and 2015 research, there was an insufficient amount of rainfall; accordingly, during the growing season, the moisture deficit was 58.1 and 73.2 mm (figure 1).

During these years, the effectiveness of the use of drip irrigation and absorbent for the accumulation of moisture that was in the soil around the rhizome was better demonstrated. Only in 2014, the amount of precipitation during the growing season was higher than the average of many years by 31.8 mm, which effectively negated the effect of drip irrigation and absorbent.

The limiting factor for obtaining high crop yields in Ukraine is the insufficient and uneven supply of plants with moisture during the growing season. At the present stage of agriculture, a number of effective agro-measures aimed at increasing the production of soil moisture and rational use of soil have been

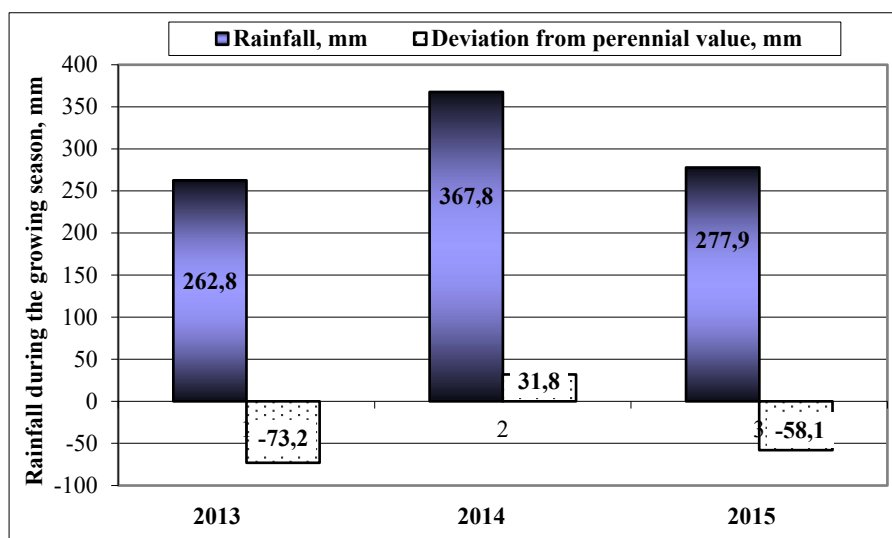


Figure 1 – Supply of moisture during the growing season during the years of research

studied and tested, but the search for new and more effective measures is continuing. One such measure is the use of environmentally friendly polymers in agriculture [18].

To improve the water supply of miscanthus plants, drip irrigation and granules of MaxiMarin absorbent were used, which at a time when soil moisture was sufficient, absorbed and retained it, turning it into jelly-like granules. Absorbent pellets contain a quantity of liquid that is hundreds of times greater than their own mass: one kilogram of absorbent holds 400 liters of water [19], and during drought give this moisture to the plants, which creates favorable conditions for maximum survival of the planting material, for plant growth and development, and thus significantly affect the yield of planting material (rhizome). The combined use of drip irrigation and absorbent granules will ensure a stable water supply to plants at a lower water consumption for irrigation.

MaxiMarin absorbent - insoluble in water, cross-linked copolymer of polyacrylamide and potassium polyacrylate, which has a nutrient humane component of natural origin. The drugs optimize plant growth by significantly reducing water and fertilizer losses during washing and evaporation, especially in harsh soil conditions with sharp variations in temperature and humidity.

All records and observations were performed on the plants of the first year of vegetation. The field experiments determined: the dynamics of emergence of seedlings (from the first single sprouting to full sprouting) by the method of the Institute of Bioenergy Crops and Sugar Beet NAAS [20], plant survival (the ratio of similar to planted rhizomes) [21], the intensity of plant growth (height of plants, number of stems) by developmental stages [20], free and bound water content in plant ovaries. The mass fraction of free water in the leaves of plants was determined by the refractometric method according to the method of A. F. Marynychk (1957). The amount of bound water was set as the difference between the amount of total water and conditionally free water. Weight of rhizomes by weighing them. Statistical processing of experimental data was carried out using Fischer method of variance and correlation [22] using StatSoft computer program Statistica 6.0.

Research results. The planting material was propagated through in vitro culture by growing and transplanting into open ground. The survival rate of miscanthus plants for transplants from growing in the open ground for an average of three years was high and was 90.0% in rainfed conditions without the use of absorbent (control), with its use 93,4%, 94.4% in the conditions of drip irrigation, respectively 94.9 % and 96.7%

Autumn-winter moisture reserve in the soil and spring precipitation contributed to the common shoots appear. In all the years of research, the emergence of stairs started after 10-12 days from planting in the soil regardless of growing conditions. Full germination was obtained by 24-27 days from the date of planting in the open ground. There was no significant difference in the intensity of germination in the control and depending on the absorbent application because all the plants were in the same soil and climatic conditions. There were no significant deviations in the passage of the phases of development of

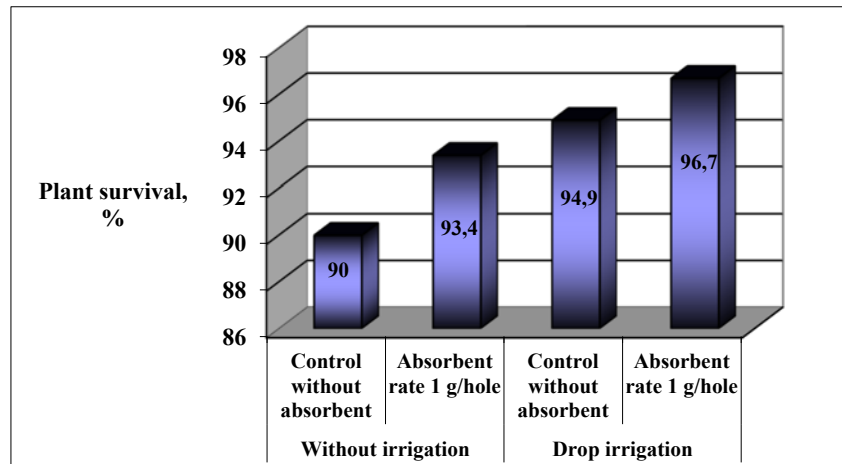


Figure 2 – Miscanthus survival rate (%) for open-field grafting transplantation (Uman RSS, 2013-2015)

miscanthus under conditions of drip irrigation as in the control and use of absorbent compared to bogarne conditions – without the use of irrigation.

But plants under drip irrigation had the best view and all the phenological phases of development took place for 2-3 days longer than in plants where there was no irrigation, which affected the duration of the vegetative period, which was in irrigated condition longer than 6-7 days and was 191 (for making absorbent) and 192 (control – without making absorbent) days. In rainfed conditions, the duration of the vegetation period as in control – without absorbent, and with its use was the same and amounted to 185 days (figure 3).

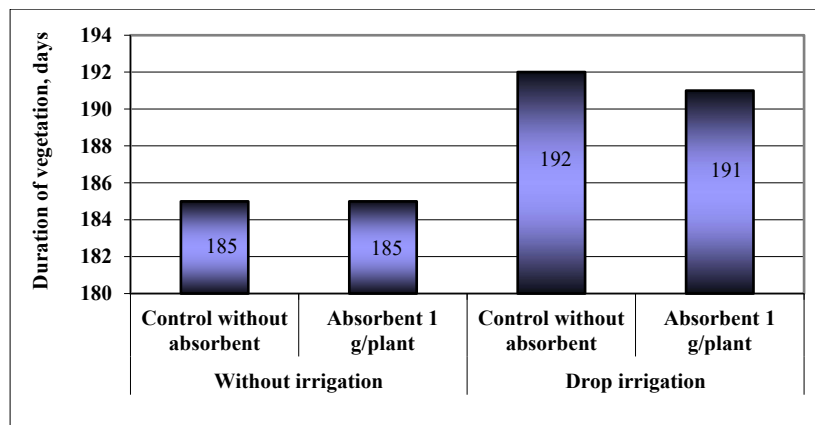


Figure 3 – The duration of the growing season, depending on the growing conditions of miscanthus (average for 2013-2015)

The use of absorbent in rainfall - without irrigation, and in the conditions of drip irrigation did not increase the biometric characteristics of plants. For an average of three years, the height of the plants in the tillering phase (mid-May) in rainy conditions in control - without the introduction of absorbent and when it was introduced was the same and was 88.9 cm in irrigation conditions 92.7 in control and 91.8 cm in application absorbent $HIP_{0,05}$ absorbent = 2.3 cm). No significant difference was found from the height of the plants in the tube exit phase (end of August), depending on the absorbent application in both rainy conditions and drip irrigation.

It was found that growing miscanthus under drip irrigation provided a significant increase in plant height compared to rainy conditions. Thus, on average, of three years into the control phase of the tube exit - without irrigation, the plant height was 180.8 cm, and in the conditions of drip irrigation the plants were 34,2 cm higher, with the introduction of absorbent and drip irrigation the plants were higher by 34,9 cm. A significant increase was obtained from the number of stems both in the tillering phase and in the tube exit phase by drip irrigation (table 1).

Table 1 – Plant biometric indices for miscanthus cultivation under drip irrigation conditions (Uman RSS, 2014-2015)

Variant		The tillering phase		Exit into the tubus	
Growing conditions	Introduced absorbent, g/hole	plant height, cm	number of stems, pcs.	plant height, cm	number of stems, pcs.
Without irrigation	Control without absorbent	88,9	35,5	180,8	47,6
	1,0	88,9	38,3	184,7	51,0
Drop irrigation	Control without absorbent	92,7	47,8	215,0	68,2
	1,0	91,8	48,0	219,6	71,7
HIP _{0,05} common		3,2	2,4	2,4	2,8
HIP _{0,05} irrigation		2,3	2,1	2,1	2,2
HIP _{0,05} absorbent		2,3	2,1	2,1	2,2

The use of absorbent in rainfall conditions significantly influenced the formation of the number of stems. On average, during the years of research, the introduction of absorbent provided an increase in the number of stems in the tillering phase by 2.8 pcs., In the tube exit phase by 3.4 pcs. (HIP_{0,05} absorbent = 2.1 and 2.2 pcs, respectively). In the conditions of drip irrigation, there was no significant increase in the number of stems depending on the absorbent application in the tillering phase, either on average during the years of research or separately during the years of experiments. In the phase of the tube was observed a significant increase in the number of stems, depending on the use of absorbent.

In plant ovaries, two states of water are noted, one is similar to that of pure water (free water), the other is the result of favorable energy interactions with macromolecular macromolecules, molecules and cellular juice ions (bound water) [23]. In case of excessive humidity, the ratio of free and bound water in the leaves is in favor of free water, and in the absence of moisture, on the contrary, in favor of bound water [24].

Water supply to plants affects the amount of bound and free water in the leaves and their ratio. For excess moisture, the ratio of free and bound water in the leaves in favor of free water, and in the absence of moisture on the contrary - in favor of bound water. It was found that of drip irrigation both in control and in the introduction of absorbent, the free water in the ovaries was significantly greater than without irrigation (table 2).

Table 2 – The content of free and bound water in plant ovaries depending on the growing conditions of miscanthus (Uman RSS, the average for 2013-2015)

Variant		Water content in plants, %	
Growing conditions	Introduced absorbent, g/hole	free	bound
Without irrigation	Control without absorbent	31,8	35,9
	1,0	32,7	36,0
Drop irrigation	Control without absorbent	33,1	36,3
	1,0	33,2	36,6
HIP _{0,05} common		0,5	0,6
HIP _{0,05} irrigation		0,4	0,4
HIP _{0,05} absorbent		0,4	0,4

The use of absorbent in rainy conditions provided a significant increase in the amount of free water in the leaves compared to the control - without absorbent. In the conditions of drip irrigation there was no significant increase in free water in the leaves compared to the control. The content of bound water in the leaves of plants also varied depending on the water supply. There was a tendency to reduce the content of this water in the control - without absorbent compared to the variants, where the absorbent was applied both without irrigation and for its use. For an average of three years in rainy conditions, the content of bound water was 36.0% for the introduction of the absorbent, and 35.9% for the control without the absorbent. In the conditions of drip irrigation with the introduction of absorbent, the content of bound

water was 36.6%, in the control - without absorbent - 36.3%. Similar results were obtained from years of research

The productivity of plants depends on the intensity of photosynthesis, the content of chlorophyll in plants, which is determined primarily by the genotypic features and conditions of its cultivation within the norm of the genotype reaction. It was found that the content of chlorophyll in the leaves was influenced by both the use of absorbent and drip irrigation. Growing miscanthus under drip irrigation provided a significant increase in the amount of chlorophyll compared to non-irrigation conditions. On average, over the three years in the control without irrigation and without absorbent, the chlorophyll content was 2.45%, while in the conditions of drip irrigation it increased by 0.16%. Similar results were obtained in variants with the introduction of absorbent.

Soil-climatic and agrotechnological conditions contributed to the intensive growth of not only the terrestrial mass of plants, but also the mass of rhizomes, which provided an increase in the yield of planting material - rhizomes. It was found that the mass of uterine rhizomes was significantly influenced by drip irrigation. On average, during the years of research, the weight of uterine rhizomes under drip irrigation was 62.8% or 917.9 g higher in control (without absorbent) by 61.8% or 912.7 g, respectively, compared to non-irrigated conditions (figure 4).

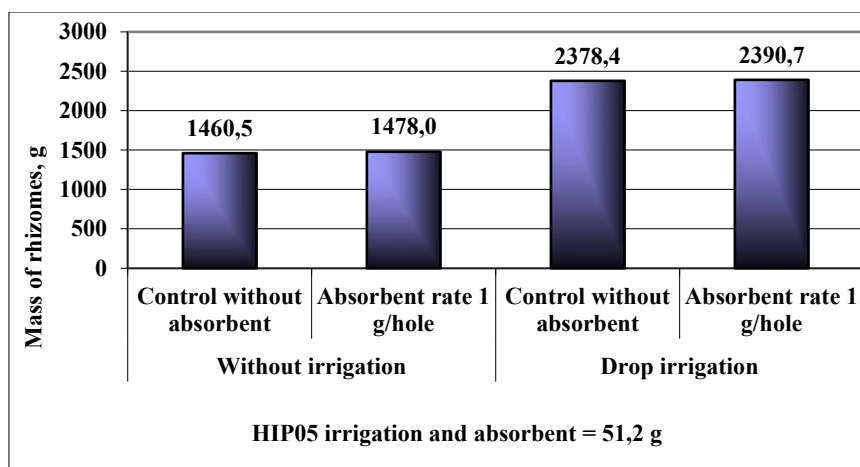


Figure 4 – The mass of rhizomes at the end of the growing season depending on the growing conditions of miscanthus (Uman RSS, average for 2014-2015)

The use of absorbent both without the irrigation, and in drip irrigation did not significantly increase the uterine weight of rhizomes, there was only a tendency to increase it. So, on average, for two years under rainfed conditions of use of the absorbent contributed to the increase in mass of rhizomes 17.5 g, in the conditions of drip irrigation by 12.3 g ($HIP_{0,05} \text{ absorbent} = 51 \text{ g}$). Similar results were obtained for the study years.

The mass of rhizomes of miscanthus modifiable by soil-climatic and agro-technological conditions of its cultivation. The variability of the mass of uterine rhizomes over the years of research reproduces the phenotypic nature of this trait, where the cultivation of seedlings without irrigation and without making absorbent (control) in average for two years, 45.2% of uterine roots had a mass from 1451 g to 1475 g, and only 22,6%, from 1476 to 1500 g, rhizomes of more than 1500 g was only 3.2%. The deviation between the extremes variants ranged from 1423 to 1498 grams for the average of 1461. When making absorbent, there were no uterine rhizomes weighing less than 1425 grams, and 50% had a weight of more than 1476 g with variation of the sign from 1445 to 1515,0 grams for the average value of 1478 grams.

In the conditions of drip irrigation all uterine rhizomes weighing more than 2325 g. Without the use of absorbent (control) 46.7% of rhizomes had a mass of 2376 to 2425 g. When making absorbent, there were no uterine rhizomes weighing less than 2350 g, and 86,7% - had weight from 2376 to 2425 g. The deviation between the extremes variants ranged from 2355 to 2425 grams for the average 2391 g. That is, the use of absorbent during the period of rhizome planting and drip irrigation the mass of the uterine rhizomes increased but the deviation between the minimum and the maximum mass decreases which indicates phenotypic changes in this index.

With the increase in the uterine weight of rhizomes increased the yield of rhizome. It is proved that the use of drip irrigation both without the absorbent and when its using in average for years of researches provided the receipt from one of the ovaries of the rhizome weight of 15-20 g in 1.5 and rhizome weighing 25-30 g in 1.4 times more compared to the cultivation of ovaries without irrigation (table 3).

Table 3 – The exit of the rhizomes at the end of the growing season, depending on the growing conditions of miscanthus (Uman RSS, the average for 2014-2015.)

Variant		Number of rhizomes, pcs.	
Growing conditions	Introduced absorbent, g/hole	weighing 15-20 g	weighing 25-30 g
Without irrigation	Control without absorbent	28,0	28,5
	1,0	28,5	29,6
Drop irrigation	Control without absorbent	42,1	40,1
	1,0	42,4	40,6
HIP _{0,05} common		1,2	1,3
HIP _{0,05} irrigation		0,9	1,2
HIP _{0,05} absorbent		0,9	1,2

The use of absorbent did not provide a reliable increase in the yield of rhizomes in rainfall conditions and drip irrigation, there was only a tendency to increase them. Thus, on average during the years of the study for drip irrigation (control - without absorbent) from one uterine rhizome was obtained rhizomes weighing 15-20 g 42.1 pieces, rhizomes weighing 25-30 g - 40.1 pieces, at the same time as the introduction the absorbent was obtained rhizomes, respectively - 42,4 and 40,6 pieces or more by 0.3 HIP_{0,05} absorbent = 0.9 pcs.) and 0.5 pcs. HIP_{0,05} absorbent = 1.2 pcs.). In rainy conditions, similar results were obtained. That is, the use of absorbent with a flow rate of 1 g / well did not provide a significant increase in the weight of the rhizome and, accordingly, the yield of planting material.

Conclusions. 1. The survival rate of miscanthus for transplants from growing in the open ground, both in the conditions of drip irrigation, and without its use was higher with the introduction of absorbent, compared with options where the drug was not introduced and was without the use of absorbent (control) 92.5%, with its use - 95.1%.

2. The introduction of absorbent in rainy conditions provided a significant increase in the amount of free water in the leaves compared to the control - without absorbent. In the conditions of drip irrigation there was no significant increase in free water in the leaves compared to the control.

3. The use of absorbent in rainfall conditions - without irrigation, and in the conditions of drip irrigation did not provide an increase in biometric indices of plants, rhizome mass and, accordingly, the yield of planting material – rhizomes. Only drip irrigation was significantly affected by the increase in these indicators.

4. The use of drip irrigation, both without the introduction of absorbent, and for its application has ensured obtaining from one ovariy rhizomes weighing 15-20 g in 1.5 and weighing 25-30 g in 1.4 times more than growing ovaries without irrigation.

**В. А. Доронин¹, В. Синченко¹, В. В. Дрига¹, Ю. Кравченко¹,
В. В. Полищук², В. П. Николайко³, Т. В. Полищук³**

¹Биоэнергия дақылдары және қант қызылшасы институты, НААС, Киев, Украина;

²Уман ұлттық бау-бақша университеті, Украина;

³Павло Тычына атындағы Уман мемлекеттік педагогикалық университеті, Украина

**ТАМШЫЛАТЫП СУАРУ ЖАҒДАЙЫНДА МИСКАНТУС ОТЫРҒЫЗУ
МАТЕРИАЛЫН ҚАЛЫПТАСТЫРУ ЕРЕКШЕЛІКТЕРІ**

В. А. Доронин¹, В. Синченко¹, В. В. Дрига¹, Ю. Кравченко¹,
В. В. Полищук², В. П. Николайко³, Т. В. Полищук³

¹Институт биоэнергетических культур и сахарной свеклы НААН, Киев, Украина;

²Уманский национальный университет садоводства, Украина;

³Уманский государственный педагогический университет им. Павла Тычины, Украина

ОСОБЕННОСТИ ФОРМИРОВАНИЯ ПОСАДОЧНОГО МАТЕРИАЛА МИСКАНТУС В УСЛОВИЯХ КАПЕЛЬНОГО ОРОШЕНИЯ

Аннотация. Поставлена цель – установить биологические особенности роста и развития растений и формирования посадочного материала мискантуса в условиях капельного орошения.

Методы. Программой исследования предполагалось определить особенности формирования посадочного материала мискантуса в условиях капельного орошения и применения абсорбента как без орошения, так и с поливами для аккумуляции влаги у растений. Основными методами исследования являются: полевой, лабораторный, визуальный, измерительно-весовой, математически-статистический.

Результаты. Освещены эффективность выращивания посадочного материала мискантуса в условиях капельного орошения как без применения абсорбента MaxiMarin, так и при его внесении в период посадки ризом. Установлена высокая приживаемость растений мискантуса при пересадке их для доращивания в открытый грунт, который в условиях капельного орошения был на 4,9% (без абсорбента) и на 3,3% (при внесении абсорбента) больше, чем без поливов. Капельное орошение существенно влияло на высоту растений и формирования стеблей, в то время как после внесения абсорбента наблюдалась лишь тенденция повышения этих показателей. Внесения абсорбента в богарных условиях обеспечило существенное повышение содержания свободной воды в листьях мискантуса. Капельное орошение способствовало интенсивному нарастанию не только наземной массы растений, а и массы корневища, что обеспечило достоверное повышение выхода посадочного материала – ризом. В среднем за годы исследований масса маточных корневищ при капельном орошении была больше в контроле (без применения абсорбента) на 62,8% или на 917,9 г при внесении абсорбента – соответственно на 61,8% или 912,7 г по сравнению с поливными условиями.

Продуктивность растений зависит от интенсивности прохождения фотосинтеза, от содержания в растениях хлорофилла, что обусловлено, прежде всего, генотиповыми особенностями и, в пределах нормы, реакции генотипа – условиями его выращивания. Установлено, что на содержание хлорофилла в листьях влияли как применение абсорбента, так и капельное орошение. Выращивание мискантуса в условиях капельного орошения обеспечило существенное увеличение количества хлорофилла по сравнению с не поливными условиями. В среднем за три года в контроле – без полива и без абсорбента содержание хлорофилла составил 2,45%, в то время как в условиях капельного орошения он увеличился на 0,16%. Аналогичные результаты получены в вариантах с внесением абсорбента.

Ограничивающим фактором получения высоких урожаев сельскохозяйственных культур в Украине является недостаточное и неравномерное обеспечение растений влагой в течение вегетации. На современном этапе земледелия изучен и апробирован целый ряд эффективных агромероприятий, направленных на увеличение запасов продуктивной влаги в почве и рационального ее использования, на поиск новых и эффективных мероприятий. Одним из таких мероприятий является применение в земледелии экологически безопасных полимеров.

Выводы. Применение абсорбента как в богарных условиях – без орошения, так и в условиях капельного орошения не обеспечило увеличение биометрических показателей растений, массы корневища и, соответственно, выхода посадочного материала – ризом. На увеличение этих показателей существенно влияло только капельное орошение. При капельном орошении без внесения абсорбента и при его внесении с одного маточника получено ризом массой 15-20 г в 1,5 раза и массой 25-30 г в 1,4 раза больше по сравнению с выращиванием маточников без орошения.

Ключевые слова: высота растений, количество стеблей, свободная вода, связанная вода, масса корневища, ризом.

Information about authors:

Doronin V.A., Doctor of Agricultural Sciences, Professor, Institute of Bioenergetic Crops and Sugar Beet NAAS, Kyiv, Ukraine; <http://orcid.org/0000-0001-9355-881X>

Sinchenko V., Doctor of Agricultural Sciences, Corresponding Member of NAAS, Deputy Director for Research Institute of Bioenergy Crops and Sugar Beet of NAAS, Ukraine, Kyiv; <https://orcid.org/0000-0002-6571-2522>

Driga V.V., Postgraduate Student, Institute of Bioenergetic Crops and Sugar Beet NAAS, Kyiv, Ukraine; <http://orcid.org/0000-0001-8085-5313>

Kravchenko Yu. A. PhD of Agricultural Sciences, Senior Scientist, Institute of Bioenergetic Crops and Sugar Beet NAAS, Kyiv, 03110, Ukraine; <http://orcid.org/0000-0001-7561-1023>

Polishchuk V.V., Professor, Doctor of Agricultural Sciences, Dean of the Faculty of Forestry and Gardening of the Uman National University of Horticulture, Uman, Ukraine; <http://orcid.org/0000-0001-8157-7028>

Mykolayko V.P., Doctor of Agricultural Sciences, Professor of the Department of Biology and its teaching methods, Pavlo Tychyna Uman State Pedagogical University, Uman, Ukraine; <https://orcid.org/0000-0002-5894-240X>

Polishchuk T.V., Candidate of Agricultural Sciences Pavlo Tychyna Uman State Pedagogical University, Uman, Ukraine; <https://orcid.org/0000-0002-0645-6872>

REFERENCES

[1] Hmyria V.P., Polishchuk V.V., Kozachenko I.V., Sovgira S.V. (2019) Investment support for the development of the forestry of Ukraine in the context improving the country forest resource potential. *Bulletin of National Academy of sciences of the Republic of Kazakhstan*, 1 (377): 249–255 (in Eng.).

[2] Royik M.V., Kurylo V.L., Hanzhenko O.M., Humentyk M.Ya. (2012) Perspectives of bioenergy development in Ukraine. *Sugar beet*. N 2–3. P. 6–8 (in Ukr.).

[3] Blyum Ya.B., Hryhoryuk I.P., Dmytruk K.V. (2014). System of use of bioresources in the latest biotechnologies of alternative fuels production. Kiev: Agrarian Media Group. 360 p. (in Ukr.).

[4] Kaletnyk H.M. (2008) Development of the biofuels market in Ukraine. *Kiev. Agrarian Science*. 461 p. (in Ukr.).

[5] Vojodymyr A. Doronin, Viktoriya V. Dryha, Lesia M. Karpuk, (2018). Specific aspects of the formation of *Miscanthus* planting material depending on cultivation conditions. *EurAsian Journal Biosci*. 12 (2). P. 325–331 (in Ukr.).

[6] Humentyk M.Ya. (2011) Similarity of *Miscanthus* depending on variation of planting depth of rhizomes. *Scientific papers of the Institute of Bioenergy Crops and Sugar Beets: Coll. Sciences*. Kiev. Issue 12. P. 55–61 (in Ukr.).

[7] Romashchenko M.I., Koryunenko V.M., Kalyenikov A.T. (2004). Micro-irrigation of agricultural crops. Melioration and water management. Issue 90. P. 63–86 (in Ukr.).

[8] Pysarenko V.A., Kokovikhin S.V., Pysarenko P.V. (2005) Recommendations on crop irrigation regimes in Kherson region. *Kherson: Island*. 20 p. (in Ukr.).

[9] Kutovyy V.A. (2007) Irrigation efficiency depending on irrigation methods on seeds of two-year crops. *Vegetables and melons*. Issue 53 (in Ukr.).

[10] Koryunenko V.M., Matviyets' O.H. (2004) Drop irrigation - the basis of agrotechnology of the XXI century. *Panorama*. 14 (9288), 8 (in Ukr.).

[11] Molyanov V.D., Moiseyev M.Yu. (2003) Drip irrigation on potato fields. *Potatoes and vegetables*. 1, 24–25. (in Ukr.).

[12] Romashchenko M.I. (2012) Drop irrigation of vegetables and potatoes in the conditions of the Steppe of Ukraine. *K.: DIA*. 248 p. (in Ukr.).

[13] Lavrynenko Yu.O., Kokovikhin S.V., Pysarenko P.V. (2009). Corn on irrigated lands of southern Ukraine. *Kherson: Island*. 428 p. (in Ukr.).

[14] Netis V.I. (2017) Soybean cultivation technologies under irrigation conditions. *Irrigated agriculture: present, problems, prospects: materials of a regional scientific-practical Internet conference (Dnipro, November 2-3, 2017) [To the 80th anniversary of Professor Kiver V.H.]*. Dnipro: SDAUU. P. 71–73 (in Ukr.).

[15] Mykolayko V.P. (2016) Features of growth and development of seed plants of chicory root crops depending on agrotechnological conditions of seed cultivation. *Scientific works of Podilsky Agrarian and Technological University: Coll. Sciences*. Kamyants-Podilskyi Ave. Issue 24. Part I. P. 151–158 (in Ukr.).

[16] Domyan A.V., Tkachova Ye.S., Hamayunova V.V. (2015) Advantages and prospects of drip irrigation in the Steppe zone of Ukraine. *The latest technologies of agro-industrial production: materials of the All-Ukrainian Scientific and Practical Conference of Students (Kirovograd, April 15-17, 2015)*. Kirovograd. P. 21–23 (in Ukr.).

[17] Averchev O. Osiniy O. (2016) Agroecological substantiation of rice cultivation on drip irrigation in the south of Ukraine. Breeding, seed production, technologies for growing cereals and other crops, achievements and prospects: International materials. scientific and practical conference. (Kamianets-Podilskyi City, April 26–28, 2016) Ternopil: Step. P. 100–102. (in Ukr.).

[18] Horobets' A.M., Moroz O.V., Smirnykh V.M., Most'ovna N.A., Shopsha H.M., Repa L.P., Yaroshchuk T.A. (2012) Use of Maximarin Superabsorbent to Improve Sugar Beet Moisture. *Sugar beet*. N 2. P. 20–22 (in Ukr.).

[19] MaxiMarin - Superabsorbent. 2013. URL: <https://fialka.tomsk.ru/forum/viewtopic.php?t=35416> (in Eng.).

[20] *Methods of Research in Beet Growing* / Ed. M.V. Royika, N.H. Hizbullina. Kyiv: FOP Korzun D. Yu., 2014. 374 p. (in Ukr.).

[21] Kovalchuk V.P., Vasil'yev V.G., Boyko L.V., Zosimov V.D. (2010) Collection of methods for studying soils and plants. Kiev: Trud-GriPol-XXI century. 252 p. (in Ukr.).

[22] Fisher R. A. (2006) *Statistical methods for research workers*. New Delhi : Cosmo Publications. 354 p. (in Eng)

[23] Mykhaylyk V.A., Davydova O.O. (2019) The state of water during dehydration of parenchymal tissues of sugar beet before and after long-term storage. *Bioenergy*. N 1 (13). P. 31–34 (in Ukr.).

[24] Ushkarenko V. O. (1994) *Irrigated agriculture*. Kiev: Harvest. 325 p. (in Ukr.).

UDC: 632.42: 633:576.3/7.086.83:581.4
IRSTI 68.37.31; 34.23.37; 34.15.23**A. M. Kokhmetova^{1,2}, M. N. Atishova¹, K. Galymbek¹**¹Institute of Plant Biology and Biotechnology, Almaty, Kazakhstan;²Kazakh National Agrarian University, Almaty, Kazakhstan.

E-mail: gen_kalma@mail.ru, maki_87@mail.ru, kanat.galymbek@mail.ru

**IDENTIFICATION OF WHEAT GERMPLASM RESISTANT TO LEAF,
STRIPE AND STEM RUST USING MOLECULAR MARKERS**

Abstract. Wheat leaf rust, stripe and stem rust are major wheat diseases in Kazakhstan that reduce yield and quality and cause considerable economic damage. This study utilized winter wheat germplasm from different national and international nurseries to evaluate their value for genetic and breeding programs directed towards improvement of wheat rust resistance in Kazakhstan. Based on the data from field experiments, the most valuable sources, combined resistance to both leaf and stripe rust were 16 lines and cultivars (28.6%), including mainly entries from CIMMYT and IWWIP. Nineteen entries (30.6%) had high level of resistance to leaf rust in the field tests. Thirty-three entries (53%) were effective to control stripe rust. In our study 22% wheat accessions studied had polymorphic band linked to leaf rust resistance gene *Lr10*. Based on rust reactions and data of molecular analysis, 3% entries were found to have *Lr19/Sr25*, 11% entries – *Lr26/Sr31/Yr9/Pm8*, 43% entries – *Lr34/Yr18*, 12% entries – *Lr37/Yr17/Sr38*, 17% – *Lr68* gene and 6% entries – *Yr10* gene. Only one line from IWWIP nursery showed presence of *Yr15* gene. Out of 38 studied entries, the fragment of DNA associated with *Sr22* gene in 13 wheat entries observed. Gene *Sr22* was identified in five Kazakhstani and in 8 Belarusian wheat entries. The results obtained used for developing wheat cultivars resistant to rust.

Key words: wheat, rust species, molecular markers, resistance genes.

Introduction. The region of Central Asia is one of the most important wheat areas in the world. Currently Kazakhstan produces 18-20 million tons of wheat grain [1,2]. Wheat production in Kazakhstan is seriously constrained due to rust diseases, including stem rust caused by *Puccinia graminis* f. sp. *tritici*, stripe rust caused by *Puccinia striiformis* f.sp. *tritici* and leaf rust caused by *Puccinia recondita* f. sp. *tritici* [3,4]. In the period between 2001 and 2007 in north Kazakhstan, epidemic development of *Puccinia triticina* *Ericks* occurred four times (2002, 2003, 2005 and 2007). Leaf rust had severe development in south and south-east of Kazakhstan. Infection on commercial cultivars was up to 20%, collection accessions in demonstrative plots were damaged up to 20-70% [3,5,6]. Currently, more than 110 leaf rust, 86 stem rust, and 83 stripe rust resistance genes have been reported in wheat or wild relatives, most conferring race-specific resistance [7]. Some of the important stem rust resistance genes are *Sr2*, *Sr23*, *Sr24*, *Sr25*, *Sr31*, *Sr33*, *Sr35*, *Sr36*, *Sr38*, *Sr45*, *Sr50*, *SrTmp*, and *Sr1RSAmigo*. Important stripe rust resistance genes are *Yr2*, *Yr6*, *Yr7*, *Yr8*, *Yr9*, *Yr17* and *Yr27*; and leaf rust resistance genes are *Lr9*, *Lr14a*, *Lr16*, *Lr17a*, *Lr21*, *Lr22*, *Lr24*, *Lr26*, *Lr32*, *Lr39* and *Lr41* [8,9]. In order to more reliably select and deploy disease resistance it is very important to use molecular-genetic markers tightly linked to this trait.

The current study undertaken to assess of 62 wheat cultivars and lines developed in Kazakhstan and in International Centers ICARDA-CIMMYT and Kazakhstan to stripe, leaf and stem rust and to screen wheat material using molecular markers.

Materials and methods. The 62 wheat entries were evaluated for stripe, leaf and stem rust at the adult plant stage under natural conditions. Field test, according to complete randomized block design with three replicates were conducted during the 2017-2019 cropping seasons at the experimental station in v. Almalybak, Almaty oblast, Kazakhstan. The wheat variety, susceptible check Morocco, was planted all-

around the experimental field in order to create a stripe and leaf rust epidemic. Disease severity and adult plant response to stripe and leaf rust recorded following McIntosh et al., 1995 [10]. Evaluation of the development of stripe and leaf rust was carried out in phase milky-wax ripeness according to procedure adopted in CIMMYT. Stripe and leaf rust infection type (IT) and disease severity (DS; percentage leaf area infected) based on the modified Cobb's scale; the IT data for stem rust using the methods described by Stakman and Levine (1922) were analysed [11]. Disease severity was recorded following Peterson et al. (1948) [12].

Genomic DNA was extracted at two-leaf seedling stage for each individual plant using the CTAB method [13]. The DNA concentration for each sample was adjusted to 30 ng/μl. Samples were genotyped using the markers designed to detect alleles of the *Yr*, *Lr* and *Sr* genes. PCR amplification was undertaken in 25-μl volumes, in thermal cycler (Bio-Rad, France). For each PCR reactions, reaction volume contained 30 ng of template DNA, 0.5 of each primer (1pM/μl) synthesized by Sigma-Aldrich, 2.5 μl dNTP mixture (2.5 mM of each nucleotide) (ZAO Sileks, Russia), 2.5 μl of MgCl₂ (25mM), 0.5 μl TaqDNA polymerase (0.5 U, 5 U/μl (ZAO Sileks, Russia), 2.5 μl 10X PCR buffer (ZAO Sileks, Russia), 16.0 μl of MQ-H2O. Temperature profiles consisted of an initial denaturation at 94°C for 3 min, and then 45 cycles of the following program: 94°C for 1 min, 60°C for 1 min, and 72°C for 2 min, and final extension in 72°C for 10 min. The amplification products were separated on 2%-agarose gels in the TBE buffer (45mM Tris borate, 1 mM EDTA, pH 8); gene-Ruler™, 100 bp DNA Ladder (Ferments, Lithuania). Gels were visualized on Gel Documentation System (Gel Doc XR+, BIO-RAD, Hercules, USA) for documentation of allele types in cultivars.

Results. The resistance evaluation (infection types and severity) of the 62 entries in field test are listed in Table. Accessions studied had variable reactions to leaf and stripe rust from 40MS to high resistant (0-R). The maximum disease recorded for entries studied was 40MS for leaf rust and 30MS for stripe rust, compared to 100S for susceptible check Morocco. Based on field reactions, the 62 entries could be classified into 3 groups. The first group consisted of 16 lines and cultivars that were resistant to both leaf and stripe rust (IT – 0-5R). This group consisted of 28.6% entries with codes 18, 23, 24, 26, 27, 30, 31, 32, 34, 38, 39, 41, 42, 43, 58, 59 and includes mainly entries from CIMMYT and IWWIP, as shown in Table. The second group consisted of nineteen entries (30.6%) that have high level of resistance to leaf rust in the field tests. The third group consisted of thirty-three entries (53%) that were resistant to stripe rust in the field and have great effectiveness to control stripe rust. The remaining 10 entries were moderately susceptible (MS) to both leaf and stripe rust. Sixty two wheat cultivars (lines) were examined by using molecular markers for eight *Lr* and *Yr* genes against the fungal pathogen of wheat (table). Data presented in Table illustrates, that leaf rust resistance gene *Lr10* was identified in 14 entries used (22.6%), including five CIMMYT lines, seven IWWIP lines and one cultivar from Kazakhstan. In these accessions DNA amplification products 310 bp, corresponding to STS marker of *Lr10* – F1.2245Lr10-6/r2. The disease severity in these entries to leaf rust was estimated between 0 – 20MS. Amplification products of marker for *Lr19/Sr25* was found in two Russian accessions Lyubava and 113/00i-4, accounting for 3,2% of 62 wheat entries studied, suggesting that leaf rust resistance was from *Lr19*. The dominant marker *Gb* amplified a 130 bp fragment only in the *Lr19/Sr25*-positive lines and no PCR product was obtained in wheat lines that lack this complex. Marker analyses indicate that *Lr26/Yr9/Sr31/Pm8* gene block is present in approximately 11% of tested cultivars (lines) (Table). Disease severity in these entries to leaf rust was estimated between 5MR – 40MS, and to yellow rust – 5R – 20MS. Amplification products 150 bp, csLV34 corresponds with homozygous resistant allele of *Lr34/Yr18* gene were detected in 27 wheat entries, including 15 CIMMYT lines, 6 IWWIP lines and 6 cultivars from Kazakhstan. These 27 cultivars (lines) accounting for almost 44% of genotypes studied, suggesting that the stripe rust resistance of this breeding material was from *Lr34/Yr18* (Table). Disease severity in these entries to leaf rust was estimated between 5MR – 40MS, and to yellow rust – 5R – 20MS. Eight of 62 tested cultivars showed the 262-bp diagnostic DNA fragment associated to *Lr37/Yr17*. Of the 62 cultivars (lines) identified to carry these resistance genes in our study, 8 accessions (13%), including 2 lines from CIMMYT and 6 IWWIP lines amplified 262 bp fragment indicating the presence of the *Lr37/Yr17/Sr38* resistance gene block. *Lr37/Yr17* carriers have been found from immune to susceptible against field collection of leaf and stripe rust at adult plant stage. Disease severity in these entries to leaf rust was estimated between 0 – 40MS, and to stripe rust – 0 – 30MS. Amplification products of marker for *Lr68* gene were found in 11 wheat accessions

Field responses of wheat entries to leaf and yellow rust and molecular identification of *Lr* and *Yr* resistance genes among wheat entries

Accessions	Origin*	Field responses**		<i>Lr</i> 10	<i>Lr</i> 19/ <i>Sr</i> 25	<i>Lr</i> 26/ <i>Yr</i> 9/ <i>Sr</i> 31	<i>Lr</i> 34/ <i>Yr</i> 18/ <i>Pm</i> 38	<i>Lr</i> 37/ <i>Yr</i> 17/ <i>Sr</i> 38	<i>Lr</i> 68	<i>Yr</i> 10	<i>Yr</i> 15
		Leaf rust	Stripe rust								
1	2	3	4	5	6	7	8	9	10	11	12
338-K1-1//...MLT	CIMMYT	5MR	5MS	0	0	0	1	0	0	0	-
KINACI97/4//.../MLT	CIMMYT	10MR	5MR	1	0	0	1	0	0	0	-
AGRI/...PYN/BAU	CIMMYT	5R	30MS	0	0	0	1	0	0	0	-
TAM200/3//.../MLT	CIMMYT	5R	30MS	0	0	0	1	0	0	0	-
WRM/4/FN/...ATR71/	CIMMYT	20MR	5MR	0	0	0	1	0	0	1+	-
T-2003...1D13.1/MLT	CIMMYT	10MS	20MS	0	0	0	1	0	0	0	-
TAM10...BONITO-36	CIMMYT	5MR	10MR	0	0	0	1	0	0	0	-
TX87V161...ATTILA	CIMMYT	30MS	20MS	0	0	1	0	0	0	0	-
PASTOR/.../KARL	CIMMYT	10MR	5R	1	0	0	0	0	1	0	-
EMB16/.../3/LIRA	CIMMYT	10MR	5R	0	0	0	0	0	0	0	-
EMB16/CBRD//...//MCD/3 /LIRA	CIMMYT	10MR	5MR	0	0	1	0	0	0	0	-
AUS4930.6//.../4/ ZARGANA4	CIMMYT	20MR	5MR	0	0	0	1	0	0	0	-
AUS4930.7/2*PASTOR.../ KAUZ	CIMMYT	10MR	5R	1	0	0	1	0	0	0	-
AUS4930.7//.../5/TAM200/ KAUZ	CIMMYT	10MR	5R	1	0	0	1	0	0	0	-
338-K...ZARGANA-3	CIMMYT	20MS	5R	0	0	0	0	1	0	0	-
338-K...ZARGANA-3	CIMMYT	30MS	5R	0	0	0	1	0	0	0	-
338-K1-1//ANB...BCN	CIMMYT	10MR	0	1	0	0	1	0	0	0	-
DALNI...GALVEZ87	CIMMYT	5R	5R	0	0	0	1	0	0	0	-
TREGO/.../KAUZ	CIMMYT	20MS	10MS	0	0	0	1	0	0	0	-
DIAMONDB...KAUZ	CIMMYT	10MR	5R	0	0	0	1	1	0	0	-
U11AGEC-1 (Krasnodar 99)	Russia - IWWIP	20MR	15MR	1	0	0	0	0	1	0	-
U11AGEC-2 (VEE...200/KAUZ)	IWWIP	5MS	5R	0	0	0	0	0	1	0	-
U11AGEC-3 (GAN...WRB860365)	IWWIP	0	0	0	0	0	1	0	1	0	-
U11AGEC-4 (GANSU170 WRB860365)	IWWIP	0	0	0	0	0	0	0	1	0	-
U11AGEC-5 (AMSE...F4105W2.1)	IWWIP	20MR	50S	1	0	0	0	0	1	0	-
U11AGEC-6 (ZOLOTA...MILAN)	IWWIP	0	5R	1	0	0	0	0	0	0	-
U11AGEC-7 (4WON-IR-.../MOS)	IWWIP	0	5R	0	0	0	0	0	1	1+	-
U11AGEC-8 (YMH/.../KAUZ)	IWWIP	20MR	5R	1	0	0	0	1	0	0	-
U11AGEC-9 (CADET.../CANON)	IWWIP	30MS	5R	0	0	0	0	0	1	0	1
U11AGEC-10 (AGRI/...//KAUZ)	IWWIP	0	5R	1	0	0	0	0	0	0	-
U11AGEC-11 (HK1/6//.../3NAI60)	IWWIP	0	5R	1	0	0	1	0	1	0	-
U11AGEC-12 (CATBIR...HE 1)	IWWIP	0	5R	0	0	0	1	0	0	0	-

Table continuation											
1	2	3	4	5	6	7	8	9	10	11	12
U11AGEC-13 (ZANDER...BCN)	IWWIP	30MS	5R	0	0	0	1	0	0	0	–
U11AGEC-15(MILAN..WEAVER)	IWWIP	0	5R	0	0	0	1	1	1	0	–
U11AGEC-16 (DORADE-...MLT)	IWWIP	40MS	5R	0	0	1	0	0	0	0	–
U11AGEC-17 (DORADE.../MLT)	IWWIP	20MS	5R	0	0	1	0	0	0	0	–
U11AGEC-21 (Drujba)	Russia	5MS	5R	0	0	0	1	0	1	0	–
U11AGEC-24 (PYN/.../ Bluegil)	IWWIP	0	5R	0	0	0	0	1	0	0	–
U11AGEC-25 (4WON-IR...MOS)	IWWIP	0	5R	0	0	0	0	1	0	0	–
U11AGEC-26-(GRECUM BAU)	IWWIP	10MS	5R	0	0	1	0	0	0	0	–
U11AGEC-27 (PBI1013...STAR)	IWWIP	0	5R	0	0	0	0	0	0	0	–
U11AGEC-28 (PYN...Bluegil)	IWWIP	0	5R	0	0	0	0	1	0	0	–
U11AGEC-29 (PYN/... Bluegil)	IWWIP	0	5R	0	0	0	0	1	0	0	–
U11AGEC-30 (PSK...MNCH)	IWWIP	10MS	5R	1	0	0	0	0	0	0	–
Egemen	KZ	10MS	20MS	1	0	0	0	0	0	0	–
Almaly	KZ	30MS	20MS	0	0	0	1	0	0	0	–
Bezostaya 1	KZ	40MS	30MS	0	0	0	1	0	0	0	–
Karasai	KZ	30MS	20MR	0	0	0	0	0	0	0	–
Maira	KZ	20MR	30MS	0	0	0	1	0	0	0	–
Mereke	KZ	40MS	30MS	0	0	0	1	0	0	0	–
Naz	KZ	40MS	30MR	0	0	0	0	0	0	0	–
Nureke	KZ	20MS	10MR	0	0	0	1	0	0	0	–
Ramin	KZ	30MS	10MR	0	0	0	1	0	0	0	–
Sapaly	KZ	30MS	20MR	0	0	1	0	0	0	0	–
Yubileinaya 60	KZ	40MS	20MS	1	0	0	0	0	0	0	–
Akdan	KZ	20MR	30MS	0	0	0	0	0	0	1+	–
Lyubava	RU	0	30MS	0	1	0	0	0	0	0	–
KSI 16/12	BEL	20MS	0	0	0	0	0	0	0	1+	–
KSI 27/12	BEL	20MS	0	0	0	0	0	0	0	0	–
113/00i-4	RU	5MR	10MR	0	1	1	0	0	0	0	–
Steklovidnaya 24 (local susceptible check)	KZ	30S	80S	0	0	0	0	0	0	0	–
Morocco (susceptible check)	Morocco	100S	100S	0	0	0	0	0	0	0	–

Note: *Origin include countries: KZ - Kazakhstan, RU – Russia, Bel – Belorussia, IWWIP – International Winter Wheat Improvement Program; **Field responses, max from three years, rust severity (%): MR – moderately resistant, MS – moderately susceptible, S – susceptible; “1”, “0”, “1+0” and “-” refer to having same polymorphic bands as, different polymorphic bands with the linked markers, heterozygote allele of gene, and no polymorphic bands, respectively.

(17.5%) (table). The disease severity in these entries to leaf rust was estimated between 0 – 30MS. Four genotypes, one CIMMYT, one IWWIP line, one Kazakh cultivar and one Belorussian line amplified two PCR products (200 bp and 180 bp) for resistant and susceptible alleles of *Yr10*, indicating that these four

entries appeared to be heterozygotes (Table). Disease severity in these entries to stripe rust was estimated between 0 – 5MR. Out of 62 genotypes tested for *Yr15* the expected PCR product was not amplified in any of the entries, excluding IWWIP line U11AGEC-9. The expected size of the fragment amplification for locus Xbarc8 coupled to resistant allele of *Yr15* gene is 250 bp (table). The disease severity in these entries was as 5R. To identify sources of *Sr* resistance genes PCR analysis was performed. The gene of *Sr22* is localized on the short arm of chromosome 7A. PCR analysis with primers to the *Xcfa2123* SSR locus located at a distance 6 of cM from the *Sr22* gene was done for identification of the *Sr22* carriers [14].

PCR analysis showed that of 38 studied entries, the fragment of DNA associated with gene *Sr22* with size 245 bp in 13 samples wheat was observed. Gene *Sr22* was identified in 5 Kazakhstani and in 8 Belarusian wheat entries.

Discussion. Utilization of foreign germplasms is the best way to solve the problem of development new rust resistant cultivars. Based on data from field test can be concluded that the most valuable sources, combined resistance to both leaf and stripe rust were 16 lines and cultivars (28.6%), including mainly entries from CIMMYT and IWWIP. Nineteen entries (30.6%) had high level of resistance to leaf rust in the field tests. Thirty-three entries (53%) were resistant to stripe rust in the field and have great effectiveness to control stripe rust. Application of molecular genetic markers allowed to identify efficient rust resistance genes in wheat cultivars and hybrids [15,6,16,17,18,4,19,20].

Under molecular screening in this study eight genes were detected: three seedling genes (*Lr10*, *Lr19*, *Lr26*) and three adult plant resistance genes (*Lr34*, *Lr37*, *Lr68*). Wheat accessions for the presence of two *Yr* genes – *Yr10* and *Yr15* was also screened. In our study using STS marker, F1.2245Lr10-6/r2, we detected the diagnostic fragment in 15 entries (22.6%). In moderately resistant lines (cultivars) carrying *Lr10* neither *Lr34* nor *Lr68* were detected, suggesting a combination of *Lr* genes different than *Lr10* + *Lr34* + *Lr68* associated with high or moderate level of resistance to leaf rust. Molecular data confirmed the detection of the *Lr19* diagnostic fragment only in two entries. *Lr19* in combination with other gene, *Lr26*, was more effective in the field. In our study marker analyses indicate that *Lr26/Yr9/Sr31* gene block was present in seven (11%) of tested cultivars (lines). Because of its agronomic benefits (yield increase, rusts and powdery mildew resistance), the chromosome 1R of rye (*Secale cereale* L.) has been widely used in wheat breeding.

Yessenbekova et al., 2014, identified *Lr34/Yr18* genes in 14 germplasms from CIMMYT and in 6 wheat entries from Kazakhstan. In our study, occurrence of adult plant resistance genes *Lr34* in 27 (44%) and *Lr68* in 11 entries (18%) was confirmed [21]. In present study combinations of *Lr34* with seedling resistance genes *Lr10* in five entries observed and provided moderate level of resistance. The same resistance was observed in entries with combination of APR *Lr68* with *Lr10*. The most level of resistance to leaf rust had the IWWIP line U11AGEC-11 with immune reaction to leaf rust. Of the 62 cultivars/lines studied, eight accessions (12.7%) had the *Lr37/Yr17/Sr38* resistance genes block. In our previous study it was found that *Lr34* provided some protection, *Lr37* occurred in cultivars/lines L-1090, Krasnovodapadskaya 210 and Madsen; *Lr19* and *Lr68* were present in cultivars Pallada and Yegemen [22,6,18].

Based on recent evaluation in China and Kazakhstan, [23,5,24] stripe rust resistance genes *Yr5*, *Yr10*, *Yr15* are still effective and could be useful in breeding programs. Out of 62 genotypes tested for *Yr15* the expected PCR product for locus Xbarc8 coupled to resistant allele of *Yr15* gene not amplified in any of the entries, excluding the IWWIP line U11AGEC-9.

So, in our study marker *Lr10* found in entries with moderate resistance and moderate susceptible reaction. Using molecular markers, the *Lr10* gene identified in 15 entries; the *Lr19/Sr25* gene, in two entries; the *Lr26/Yr9/Sr31* gene block, in seven entries; the *Lr34/Yr18/Pm38* gene block, in 27 lines; the *Lr68* gene, in seven entries; the *Yr10* gene, in four entries and *Yr15* gene, in one entry. Four CIMMYT lines and thirteen IWWIP lines were resistant to leaf/stripe rust, respectively. To identify sources of effective stem rust resistance *Sr22* gene PCR analysis with primers to the *Xcfa2123* SSR locus PCR analysis performed. The fragment of DNA associated with gene *Sr22* in 13 samples wheat observed. Gene *Sr22* was identified in five Kazakhstani and in eight Belarusian wheat entries.

Conclusion. Thus, due to the threat of disease epiphytotics, it is necessary to create new donors of stripe and leaf rust resistance and wheat breeding material based on them. We selected a number of wheat lines resistant to *P. recondita* f. sp. *tritici*, *P. striiformis* f.sp. *tritici* and *P. graminis* sp. *tritici*. The selected

material revealed the resistance to the Kazakh population of rusts. These genotypes were intensively involved in crosses in national breeding programs for wheat improvement. To accelerate the breeding process, we will continue selection of cultivars (lines) that are resistant to disease using molecular markers linked with this trait

Acknowledgements. This study was supported by the Kazakhstan Ministry of Agriculture, project BR06249329.

А. М. Кохметова^{1,2}, М. Н. Атишова¹, К. Ғалымбек¹

¹Өсімдіктер биологиясы және биотехнологиясы институты, Алматы, Қазақстан;

²Қазақ ұлттық аграрлық университет, Алматы, Қазақстан

МОЛЕКУЛАЛЫҚ МАРКЕРЛЕРДІ ПАЙДАЛАНА ОТЫРЫП, ҚОҢЫР, САРЫ ЖӘНЕ САБАҚТЫ ТАТҚА ТӨЗІМДІ БИДАЙДЫҢ ГЕРМОПЛАЗМАЛАРЫН СӘЙКЕСТЕНДІРУ

Аннотация. Орталық Азия аймағы дүниежүзіндегі бидай өндірісі бойынша ең маңызды аймақтардың бірі болып табылады. Бидай 15 млн га егіледі, соның ішінде 5 млн га күздік және 10 млн га жаздық бидай. Қазақстан бидайды аса көп өндіруші, сонымен қатар экспорттаушы мемлекеттердің бірі болып табылады және Орталық Азияның азық-түлік қауіпсіздігін қамтамасыз етуде маңызды рөл атқарады. Қазақстандағы бидайдың негізгі аурулары болып қоңыр, сары және сабақты тат аурулары табылады, олар өнімнің сапасы мен өнімділігін төмендетіп, экономикалық шығынға әкеліп соқтырады. Төзімді ұрықтық плазманы халықаралық серіктестік шеңберінде қолдану, Қазақстандағы татқа төзімді жаңа сорттарды шығаруда маңызы болып табылады. Бұл зерттеуде Қазақстанда татқа төзімділікті жақсартуға бағытталған, генетикалық және селекциялық программаларда өнімнің құндылығын бағалау негізінде әртүрлі ұлттық және халықаралық питомниктердің күздік бидай ұрықтық плазмалары қолданылады. Дала жағдайындағы зерттеулердің мәліметтеріне сүйене отырып, қоңыр және сары татқа бірдей төзімділік танытқан, ең құнды көздер болып 16 линиялар мен сорттар (28,6 %) табылады, оларға негізінен CIMMYT және IWWIP үлгілері кіреді. Он тоғыз үлгі (30,6 %) дала жағдайындағы зерттеулер кезінде қоңыр татқа жоғары төзімділік көрсетті. Отыз үш үлгі (53 %) сары татты бақылауға эффективті болды. Молекулалық маркерлердің көмегімен бидайдың сары және қоңыр татына қарсы төзімділік гендері идентификацияланды. Молекулалық маркерлерді қолдана отырып бидайдың 62 сортын сегіз *Lr* және *Yr* төзімділік гендеріне молекулалық скрининг жүргізілді. Осы гендердің ішінде үш төзімділік гені өскін кезіндегі (*Lr10*, *Lr19*, *Lr26*) және 3 төзімділік гені (*Lr34*, *Lr37*, *Lr68*) ересек кезеңдегі төзімділікті қамтамасыз етеді. Сонымен қатар бидай үлгілерін *екі Yr гендеріне*, яғни *Yr10* және *Yr15* гендерін анықтау жұмыстары жүргізілді. *Lr10*, *Lr19/Sr25*, *Lr26/Yr9/Sr31*, *Lr34/Yr18*, *Lr37/Yr17/Sr38*, *Lr68*, *Yr10*, *Yr15* гендері үшін маркерлердің амплификацияланған фрагменттерінің көлемі 310 ж.н, 130 ж.н, 1100 ж.н, 150 ж.н, 262 ж.н, 385 ж.н, 200 ж.н және 250 ж.н құрады. Біздің зерттеуімізде бидай үлгілерінің 22 %-да қоңыр таттың *Lr10* төзімділік генімен байланысқан, STS F1.2245Lr10-6 / r2 маркерінің полиморфты фрагменті анықталынды. Молекулалық зерттеулердің мәліметтері мен татқа реакция негізінде, үлгілердің 3 %-да *Lr19/Sr25* төзімділік гендері, 11 %-да *Lr26/Sr31/Yr9/Pm8*, 43 %-да *Lr34/Yr18*, 12 %-да *Lr37/Yr17/Sr38* төзімділік ген кешендері, 17 %-да қоңыр таттың *Lr68* APR төзімділік гені мен 6 %-да сары татқа *Yr10* төзімділік гендері бар болуы мүмкін екендігі анықталынды. IWWIP тәлімбағының тек бір линиясынан сары таттың *Yr15* төзімділік гені анықталынды. Бидайдың сабақты татына қарсы зерттелген 38 үлгінің 13 линиясында *Sr22* генімен байланысқан, көлемі 245 ж.н. құрайтын ДНК фрагменттері анықталынды. Бұл ген 5 қазақстандық және 8 белорустық бидай үлгілерінде идентификацияланды. Алынған нәтижелер Қазақстанда татқа төзімді бидай сорттарын шығаруда қолданылады. Біздің зерттеулердің нәтижелері, молекулалық генетика әдістерін қолдану нәтижесінде Қазақстандағы селекциялық процесстерді жаңа ғылыми деңгейге шығаруға мүмкіндік береді.

Түйін сөздер: бидай, таттың түрлері, молекулалық маркерлер, төзімділік гендері

А. М. Кохметова^{1,2}, М. Н. Атишова¹, К. Галымбек¹

¹Институт биологии и биотехнологии растений, Алматы, Казахстан;

²Казахский национальный аграрный университет, Алматы, Казахстан

ИДЕНТИФИКАЦИЯ ГЕРМОПЛАЗМА ПШЕНИЦЫ, УСТОЙЧИВОЙ К БУРОЙ, ЖЕЛТОЙ И СТЕБЛЕВОЙ РЖАВЧИНЕ С ИСПОЛЬЗОВАНИЕМ МОЛЕКУЛЯРНЫХ МАРКЕРОВ

Аннотация. Регион Центральной Азии является одним из самых важных пшеничных районов в мире. Пшеница выращивается на 15 млн га, в том числе 5 млн га озимой и 10 млн га яровой пшеницы. Казахстан является одним из крупнейших производителей и экспортеров пшеницы и играет важную роль в обеспечении продовольственной безопасности Центральной Азии. Бурая, желтая и стеблевая ржавчина пшеницы являются основными заболеваниями пшеницы в Казахстане, которые снижают урожайность и качество и наносят значительный экономический ущерб. Использование устойчивой зародышевой плазмы в рамках международного сотрудничества играет важную роль в разработке новых устойчивых к ржавчине сортов для Казахстана. В этом исследовании использовалась зародышевая плазма озимой пшеницы из различных национальных и международных питомников для оценки их ценности для генетических и селекционных программ, направленных на улучшение устойчивости пшеницы к ржавчине в Казахстане. Основываясь на данных полевых экспериментов, наиболее ценными источниками, комбинированной устойчивости как к бурой, так и к желтой ржавчине, были 16 линий и сортов (28,6%), включая в основном образцы из CIMMYT и IWWIP. Десять образцов (30,6%) имели высокий уровень устойчивости к бурой ржавчине в полевых испытаниях. Тридцать три образца (53%) были эффективны для контроля желтой ржавчины. Проведен молекулярный скрининг 62 сортов и линий пшеницы с использованием молекулярных маркеров, разработанных для восьми *Lr* и *Yr* генов устойчивости к ржавчине пшеницы. Три из этих генов (*Lr10*, *Lr19*, *Lr26*) проростков и три гена (*Lr34*, *Lr37*, *Lr68*) контролируют устойчивость к бурой ржавчине на стадии взрослых растений. Кроме того, был проведен скрининг на наличие двух *Yr* генов устойчивости (*Yr10* и *Yr15*). Размеры ПЦР-продуктов маркеров составляет 310 п.н, 130 п.н, 1100 п.н, 150 п.н, 262 п.н, 385 п.н, 200 и 250 п.н для *Lr10*, *Lr19/Sr25*, *Lr26/Yr9/Sr31*, *Lr34/Yr18*, *Lr37/Yr17/Sr38*, *Lr68*, *Yr10* и *Yr15* соответственно. В нашем исследовании 22% образцов пшеницы имели полиморфный фрагмент маркера F1.2245Lr10-6 / r2, сцепленный с геном устойчивости к бурой ржавчине *Lr10*. На основании реакции к ржавчине и данных молекулярных анализов было обнаружено, что 3% образцов, возможно, имеют гены устойчивости *Lr19/Sr25*, 11% образцов – комплекс генов устойчивости *Lr26/Sr31/Yr9/Pm8*, 43% образцов – комплекс генов устойчивости *Lr34/Yr18* APR, 12 % образцов – комплекс генов устойчивости *Lr37/Yr17/Sr38*, 17% образцов – APR ген устойчивости к бурой ржавчине *Lr68* и 6% образцов – ген устойчивости к желтой ржавчине *Yr10*. Только одна линия из питомника IWWIP показала наличие гена устойчивости к полосовой ржавчине *Yr15*. Из 38 исследованных образцов *Sr22* в 13 линиях пшеницы обнаружен фрагмент ДНК с размером 245 п.н., сцепленный с геном *Sr22*. Этот ген был идентифицирован в 5 казахстанских и 8 белорусских пшеничных записях. Полученные результаты используются в Казахстане для создания сортов пшеницы, устойчивых к ржавчине. Результаты нашего исследования создают возможности для перевода селекционного процесса в Казахстане на новый научный уровень благодаря применению методов молекулярной генетики.

Ключевые слова: пшеница, виды ржавчины, молекулярные маркеры, гены устойчивости.

Information about authors:

Alma Kokhmetova, Laboratory of Genetics and Breeding, Institute of Plant Biology and Biotechnology, Kazakh National Agrarian University, Kazakhstan; gen_kalma@mail.ru; <https://orcid.org/0000-0002-0186-7832>

Makpal Atishova, Laboratory of Genetics and Breeding, Institute of Plant Biology and Biotechnology, Almaty, Kazakhstan; maki_87@mail.ru; <https://orcid.org/0000-0002-2270-571X>

Kanat Galymbek, Laboratory of Genetics and Breeding, Institute of Plant Biology and Biotechnology, Almaty, Kazakhstan; galymbek@mail.ru; <https://orcid.org/0000-0001-7260-3669>

REFERENCES

[1] Morgounov A., Akin B., Demir L., Keser M., Kokhmetova A., Martynov S., Orhan Ş., Özdemir F., Özseven İ., Sapakhova Z., Yessimbekova M. (2015) Yield gain due to fungicide application in varieties of winter wheat (*Triticum aestivum*) resistant and susceptible to leaf rust, *Crop and Pasture Science*, 66(7): 649-659. DOI: 10.1071/CP14158.

[2] Tagayev K.Zh., Morgounov A.I., Yessimbekova M.A., Abugalieva A.I., Bayadilova G.O. (2018) Effect of common bunt infection on agronomic traits and resistance in winter wheat lines, *News NAS RK, Series of Agricultural Sciences*, 5(47): 12-19. ISSN 2224-526X <https://doi.org/10.32014/2018.2224-526X.2>.

- [3] Koyshibayev MK (2018) Diseases of wheat, Ankara. P. 365.
- [4] Galymbek, K., Kokhmetova A.M., Akan K., Madenova A.K., Atishova M.N. (2017) Identification of germplasm of Wheat on leaf rust (*Puccinia recondita* rob. ex *desm. f.sp. tritici*), Ecology, Environment and Conservation, 23(2): 1207-1214.
- [5] Kokhmetova A., Sapakhova Z., Urazaliev R., Yessimbekova M., Yeleshev R., Morgounov, A. (2014) Effect of spring biomass removal on expression of agronomic traits of winter wheat, World Applied Sciences Journal, 30 (3): P. 322-329. DOI: 10.5829/idosi.wasj.2014.30.03.14026.
- [6] Madenova A., Kokhmetova A., Kampitova G., Purnhauser L., Atishova M. (2015) Identification of the carriers of genes for resistance to wheat leaf rust using molecular markers, Biosciences Biotechnology Research Asia, 12(2):1683-1690. DOI: 10.13005/bbra/1831.
- [7] McIntosh R.A., Dubcovsky J., Rogers J.W., Morris C., Appels R., Xia X. (2014) Catalogue of gene symbols for wheat: 2013-2014 Supplement. Annu. Wheat Newsl, P. 52. <http://digital.cic.gba.gov.ar/handle/11746/6438>.
- [8] Singh R., Hodson D., Jin Y., Lagudah E., Ayliffe M.A., Bhavani S., Rouse MN., Pretorius Z.A., Szabo L.J., Huerta-Espino J., Basnet B.R., Lan C., Hovmöller M.S. (2015) Emergence and Spread of New Races of Wheat Stem Rust Fungus: Continued Threat to Food Security and Prospects of Genetic Control. Phytopathology, 105(7):872–884. doi: 10.1094/phyto-01-15-0030-fi.
- [9] Ali S., Rodriguez-Algaba J., Thach T., Sørensen C.K., Hansen J.G., Lassen P., Nazari K., Hodson D.P., Justesen A.F., Hovmöller M.S. (2017) Yellow Rust Epidemics Worldwide Were Caused by Pathogen Races from Divergent Genetic Lineages. Front Plant Sci, 20(8):1057. DOI: 10.3389/fpls.2017.01057.
- [10] McIntosh R.A., Wellings C.R., Park R.F. (1995) Wheat Rusts: An atlas of Resistance Genes. CSIRO. Australia. P. 200.
- [11] Stakman E.C., Levine M.N. (1922) The determination of biologic forms of *Puccinia graminis* on *Triticum* spp. Minn. Agric. Exp. Stn. Tech. Bull. P. 8.
- [12] Peterson R F, Campbell A B., Hannah A E. (1948) A diagrammatic scale for estimating rust intensity of leaves and stem of cereals. Can J Res (C) 26: 496-500.
- [13] Riede C.R., Anderson J.A. (1996) Linkage of RFLP markers to an aluminum tolerance gene in wheat, Crop Science, 36(4):905–909. DOI.org/10.2135/cropsci1996.0011183X0036000400015x.
- [14] Khan RR, Bariana HS, Dholakia BB, Naik SV, Lagu MD, Rathjen AJ, Bhavani S, Gupta VS. (2005) Molecular mapping of stem and leaf rust resistance in wheat, Theor Appl Genet, 111(5):846–850. DOI:10.1007/s00122-005-0005-4.
- [15] Kokhmetova A.M., Atishova M.N. (2012) Identification of sources of resistance to wheat stem rust using molecular markers, Russian Journal of Genetics: Applied Research, 2(6): 486-493. DOI: 10.1134/S2079059712060081.
- [16] Baranova O.A., Lapochkina I.F., Anisimova A.V., Gajnullin N.R., Iordanskaya I.V., Makarova I. (2016) Identification of Sr Genes in New Common Wheat Sources of Resistance to Stem Rust Race Ug99 Using Molecular Markers, Russian Journal of Genetics: Applied Research, 6(3):344-350. <https://doi.org/10.1134/S2079059716030011>.
- [17] Xu X.F., Li D.D., Liu Y., Gao Y., Wang Z.Y., Ma Y.C., Yang S., Cao Y., Xuan Y., Li T. (2017) Evaluation and identification of stem rust resistance genes *Sr2*, *Sr24*, *Sr25*, *Sr26*, *Sr31* and *Sr38* in wheat lines from Gansu Province in China, PeerJ 5(12):e4146, DOI:0.7717/peerj.4146.
- [18] Kokhmetova A.M., Atishova M.N., Kumarbayeva M.T., Leonova I.N., (2019) Phytopathological screening and molecular marker analysis of wheat germplasm from Kazakhstan and CIMMYT for resistance to tan spot, Vavilov Journal of Genetics and Breeding, 23(7):879-886. DOI10.18699/VJ19.562 (in Russ.).
- [19] Lapochkina I.F., Baranova O.A., Gainullin N.R., Volkova G.V., Gladkova E.V., Kovaleva E.O., Osipova A.V. (2018) Creating lines of winter wheat with several resistance genes to *Puccinia graminis* Pers. f. *sp. tritici* for use in breeding programs in Russia, Vavilovsky Journal of Genetics and Breeding 22(6):676-684. DOI 10.18699/VJ18.410.
- [20] Kokhmetova A., Morgounov A., Rsaliev S., Rsaliev A., Yessenbekova G., Typina L. (2011) Wheat germplasm screening for stem rust resistance using conventional and molecular techniques, Czech J. Genet. Plant Breed., 47: S146-S154. <https://doi.org/10.17221/3270-CJGPB>.
- [21] Yessenbekova G., Kokhmetova A., Madenova A., Amanov O., Dutbayev Y., Kampitova G. (2014) Identification of *Lr34/Yr18* gene in wheat germplasm in Kazakhstan, Proc. APS-CPS Joint Meeting, Minneapolis, Minnesota. P. 252.
- [22] Kokhmetova A., Madenova A., Kampitova G., Urazaliev R., Yessimbekova M., Morgounov A., Purnhauser L. (2016) Identification of leaf rust resistance genes in wheat cultivars produced in Kazakhstan // Cereal Research Communications, 44(2):240-250. DOI: 10.1556/0806.43.2015.056.
- [23] Zeng Q.D., Han D.J., Wang Q.L., Yuan F.P., Wu J.H., Zhang L., Wang X.J., Huang L.L., Chen X.M., Kang Z.S. (2014) Stripe rust resistance and genes in Chinese wheat cultivars and breeding lines. Euphytica, 196(2):271-284. doi: 10.1007/s10681-013-1030-z.
- [24] Kokhmetova A., Sharma R., Rsaliyev S., Galymbek K., Baymagambetova K., Ziyaev Z., Morgounov A. (2018) Evaluation of Central Asian wheat germplasm for stripe rust resistance. Plant Genetic Resources, 16(2): 178-184. DOI:10.1017/S1479262117000132.

UDC 68.05.01; 68.05.29

IRSTI 68.05.29

B. N. Nasiyev,¹ I. G. Manolov², A. K. Bekkaliyev¹¹ Zhangir Khan West Kazakhstan Agrarian - Technical University, Uralsk, Kazakhstan;² Agrarian University Plovdiv, Republic of Bulgaria.

E-mail: veivit.66@mail.ru, manolov_ig@yahoo.com, bekkaliyev_askhat@mail.ru

CHANGE OF PHOSPHORUM AND EXCHANGE SODIUM CONDITIONS OF CHESTNESS SOILS UNDER THE INFLUENCE OF GRAZING

Abstract. In order to prevent adverse anthropogenic effects on pastures in modern agricultural agriculture, an adaptive strategy for further increasing food production and agricultural raw materials must be based on the principles of environmental management, which includes a number of activities, the most important of which are seasonality of pasture release taking into account the state of vegetation cover and its yield; determination of optimal livestock load per unit area. The research aim is agrochemical assessment of grazing land cover depending on grazing technology. As a result of the carried out studies, the negative influence of intensive grazing of farm animals on the content of mobile forms of phosphorus and exchanged sodium chestnut types of pasture soils of West Kazakhstan region was found. As a result of excessive grazing, the content of moving phosphorus of chestnut soils decreased, the content of exchange sodium increased as part of exchange bases and non-salt soils became a medium degree of salt content. The results of the studies confirmed the existence of a statistical pattern of reduction of mobile phosphorus content and increase of exchange sodium content as grazing intensity increases across all soil types.

Key words: pastures, soil cover, mobile phosphorus, sodium exchange, degradation, grazing.

Introduction. As everywhere else, the problems of combating the degradation of grazing lands and rational use of grazing ecosystems are also relevant for West Kazakhstan. At present in West Kazakhstan region, the area of pastures grassless and overgrown with unseemly and poisonous plants is growing. The area of degraded land in places of waterfall and recreation of animals is particularly large. Grazing failure around villages expanded to 7-9 km. In general, the dynamics of these processes currently allow to predict with a high degree of confidence the expansion of degradation of pastures to 50% of their area.

Unfavorable condition of pastures is not only due to natural characteristics of the region. This is even more the result of anthropogenic influence. Thus, in recent years, in pursuit of profit, agricultural formations, especially farms without taking into account the conditions of grazing lands, have begun to increase the number of farm animals intensively. As a result, this led to a significant increase in grazing load, reduced yield and fodder intensity of grazing lands, and increased desertification in huge areas. Particularly dysfunctional is the condition of sand pastures used before, mainly as winter ones, today they are used in other seasons as well [1,2,3,4,5].

In this regard, agrochemical monitoring of grazing ecosystems to identify grazing-induced animal processes is relevant. At the same time, agrochemical surveys of grazing phytocenoses for their rational use become a special priority due to the new tasks set for livestock farmers of the country to increase export capacity for the supply of quality domestic meat [6,7,8,9].

Research methods. The research is carried out in Zhangir Khan WKATU within the framework of the program-targeted financing of the Ministry of Agriculture of Kazakhstan on the topic BR 06249365 "Creation of highly productive grazing lands in the conditions of North and West Kazakhstan and their rational use" and on the topic of PhD thesis "Agrochemical assessment of indicator changes in the soil cover of WKO pastures depending on grazing technology".

Study area. The studies were conducted in 3 edaphic-climatic zones of Western Kazakhstan.

Soil sampling. In order to determine the grazing influence on the indices, soil samples were taken from 3 farms with pastures of moderate, weak and intensive grazing, located in 3 zones of Western Kazakhstan with dark chestnut, chestnut and light chestnut types of soil in the layer of 0-10 cm, 10-20 cm and 20-30 cm. In addition, to identify changes in soil parameters by comparison in each zone, soil samples were taken from the reference sites (grazing free) in the layer of 0-10 cm, 10-20 cm and 20-30 cm. Sampling procedure is 4-fold frequency.

Soil analyses. Soil cover research was carried out on pasture by sampling and determination of physicochemical parameters in agrochemical laboratories.

The available phosphorus (P_2O_5) content, according to Machigin's method in modification by the TsINAO (State Standard 26205-91) [10].

The adsorption capacity and the contents of exchange sodium by the State Standards 17.4.4.01-84. and 26950-86 [11,12].

The soil cover degradation factor was determined on the basis of physical criteria of the land assessment [13].

Statistical analyses. Statistical processing of the study results was carried out by the method of dispersion analysis [14], using the program Statistica 6.0. Statistical graphs and non-parametric analysis of 2 independent samples using Mann-Whitney U-test were conducted.

Results and discussion. In chestnut soil types one of the limiting elements of soil fertility is the content of phosphorus [15,16,17,18]. In this regard, the mobile phosphorus content in chestnut soils is of great importance for agricultural use. As research data show, the farm animals grazing modes insignificantly change the content of mobile phosphorus in the chestnut soil types of zones 3 in Western Kazakhstan (figure 1, table 1). In zone of dark chestnut soils the decrease in mobile phosphorus content compared to the control (reference) site was from 0.23 to 0.59 mg/100 g of soil. On chestnut soils of pastures in zones 2, the change of mobile phosphorus content from the control level is 0.43-0.69 mg/100 g of soil. In zone 3, the content of mobile phosphorus in light chestnut soils decreased from 0.10 to 0.41 mg/100g of soil in comparison with control site.



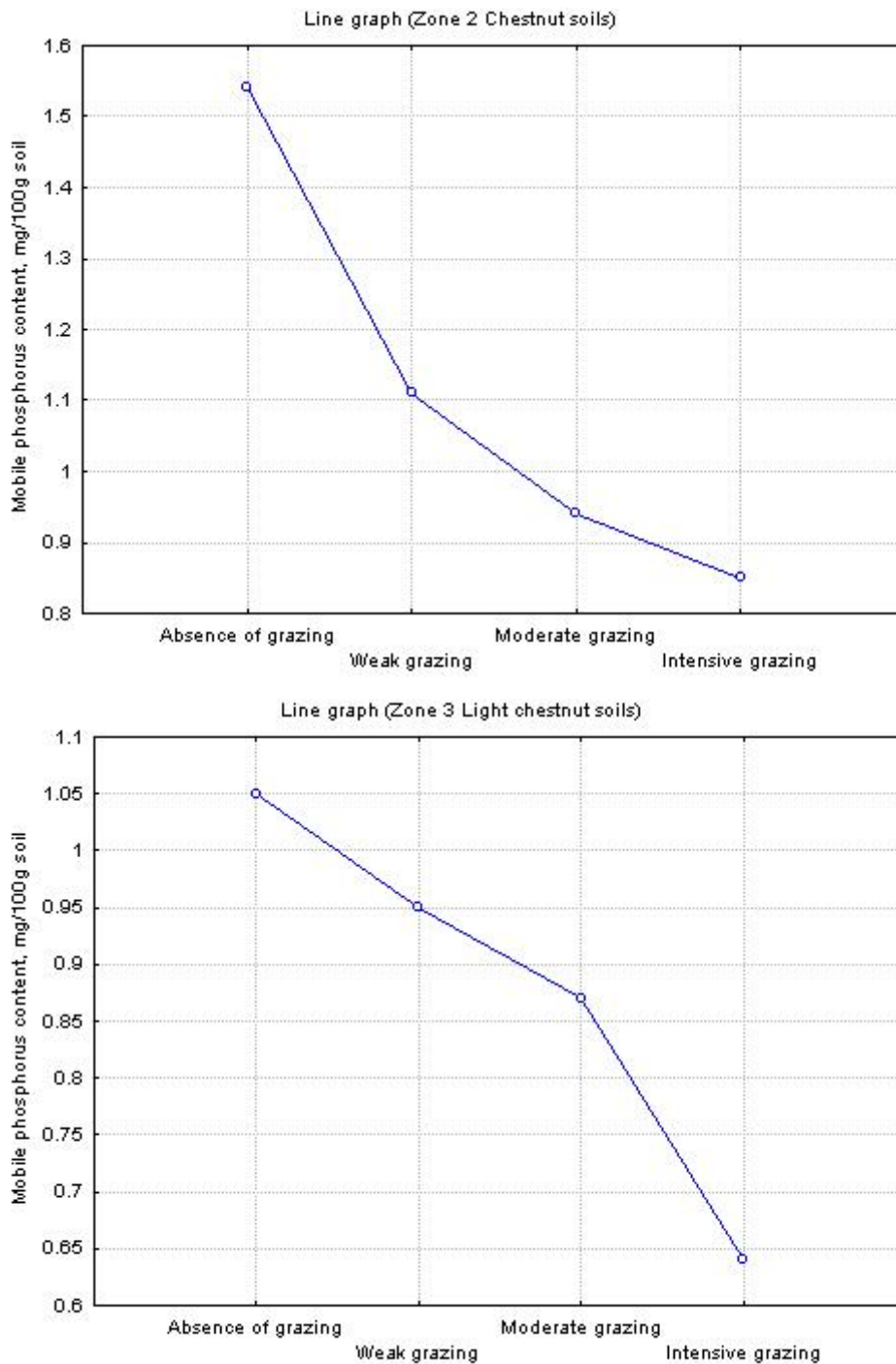


Figure 1 – Dynamics of mobile phosphorus content in chestnut soils depending on grazing technology, mg/100g

The conducted U-test showed the influence of grazing technology factor on the response of the effective factor of mobile phosphorus content. In *p-value* column of the table the importance of the effective factor (F) response from technologies by soil zones take the value of $p < 0.05$. An exception is the technology of moderate grazing for zone 3. On the basis of this factor it can be concluded that all technologies for zones 1, 2, 3 have a significant impact on the content of mobile phosphorus.

The quantitative concept of this influence is determined by the difference between the median of corresponding technology and technology of grazing absence.

Table 1 – Content of mobile phosphorus in chestnut soil types on pastures in Western Kazakhstan depending on the grazing technology, in the soil layer of 0-30 cm

Grazing technology	1 zone Dark chestnut soils		2 zone Chestnut soils		3 zone Light chestnut soils	
	Mobile phosphorus content, mg/100g	Differ from reference, mg/100g	Mobile phosphorus content, mg/100g	Differ from reference, mg/100g	Mobile phosphorus content, mg/100g	Differ from reference, mg/100g
Absence of grazing	2.00 ± 0.047	–	1.54 ± 0.023	–	1.05 ± 0.008	–
Weak grazing	1.77 ± 0.016	- 0.23	1.11 ± 0.015	- 0.43	0.95 ± 0.009	- 0.10
Moderate grazing	1.60 ± 0.018	- 0.40	0.94 ± 0.009	- 0.60	0.87 ± 0.093	- 0.18
Intensive grazing	1.41 ± 0.030	- 0.59	0.85 ± 0.007	- 0.69	0.64 ± 0.004	- 0.41

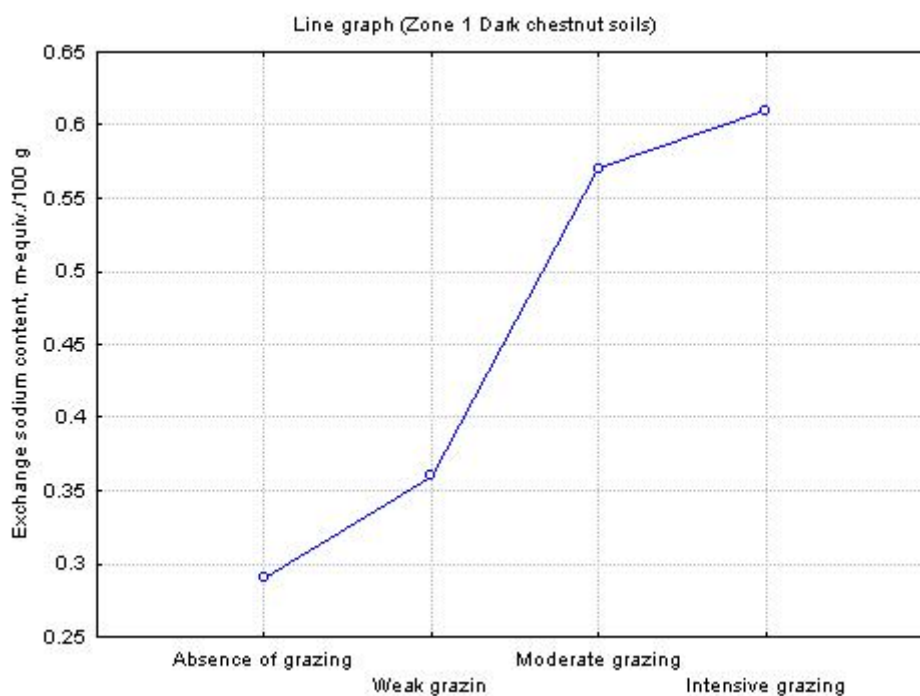
On dark chestnut soils of zone 1 the difference in median value of mobile phosphorus at technology of weak grazing, in comparison with technology of grazing absence makes – 0.24 mg/100g, at technology of moderate grazing the difference makes – 0.41 mg/100g, and at intensive grazing – 0.61 mg/100g.

For the chestnut soils of zone 2, the difference of mobile phosphorus content in median value from the technology of grazing absence, at weak grazing technology was – 0.45 mg/100g, at technology of moderate grazing – 0.61 mg/100g, and at intensive grazing technology – 0.69 mg/100g

For light chestnut soils of zone 3, the response to grazing technology was accordingly: weak grazing - 0.1 mg/100g; intensive grazing -0.41 mg/100g. According to significance level of *p*, the moderate grazing technology in this sampling does not cause a significant response for quantitative factor of mobile phosphorus content (F, mg/100g).

Thus, it was established that the content of mobile phosphorus increases with the increase in the intensity of grazing on all types of soils except for the technology of moderate grazing in zone 3 of light chestnut soils.

Deterioration of physical and chemical properties in turn leads to an increase in the content of sodium exchange in soil, which is an indicator of salinity and increase in the process of alkalization of soils [4,19,20]. On chestnut soils of pastures in zone 2 the content of sodium exchange, depending on the grazing technology, has increased in comparison with control (reference) value from 0.08 to 0.32 m-equiv./100 g (figure 2).



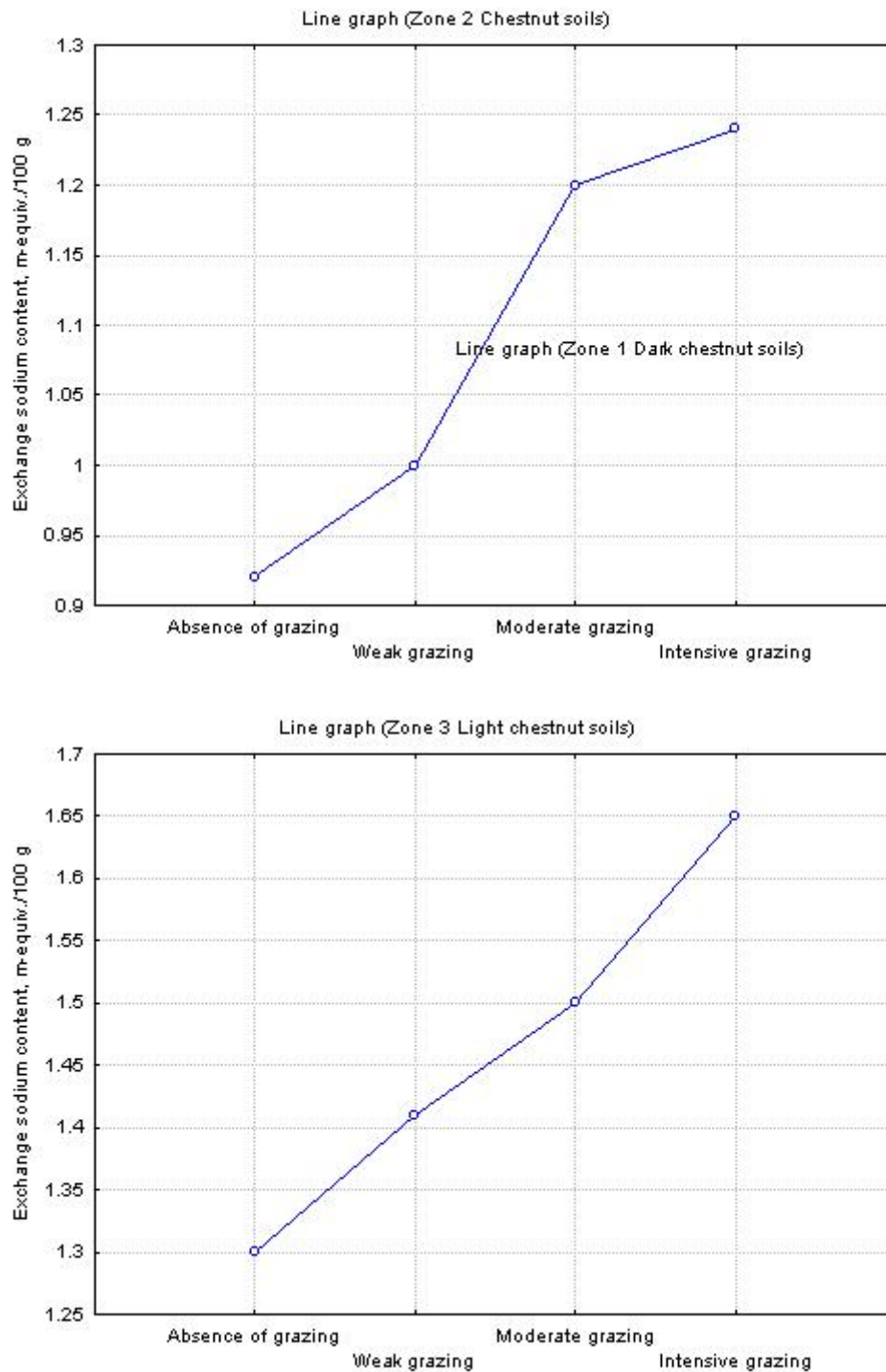


Figure 2 – Dynamics of exchange sodium content in chestnut soils depending on grazing technology, m-equiv./100 g

In pasture soils the content of sodium exchange rate ranges from 4.98 to 5.92% of the sum of exchange bases, which corresponds to the degree of weak salinity. In light chestnut soils of zone 3 with the sum of exchange bases at 15.10-15.65 m-equiv./100g the content of sodium exchange rate was 1.41-1.65 m-equiv./100 g or 9.33-10.54% of exchange capacity. The pasture soils of weak and moderate grazing in terms of sodium exchange rate belong to weak saline soils, and for intensive grazing - to medium saline soils.

On dark chestnut soils the content of sodium exchange depending on the grazing technology was at the level of 0.36-0.61 m-equiv./100 g or 1.71-2.77% of the sum of exchange bases. In terms of sodium exchange content, the dark chestnut m-equiv./100 g soils of pastures in zone 1 are non-saline soils (table 2).

Table 2 – Sodium exchange content in chestnut soil types on pastures of Western Kazakhstan depending on grazing technology, soil layer 0-30 cm

Grazing technology	1 zone Dark chestnut soils		2 zone Chestnut soils		3 zone Light chestnut soils	
	Exchange sodium content, m-equiv./100 g	Differ from reference, m-equiv./100 g	Exchange sodium content, m-equiv./100 g	Differ from reference, m-equiv./100 g	Exchange sodium content, m-equiv./100 g	Differ from reference, m-equiv./100 g
Absence of grazing	0.29 ± 0.011	–	0.92 ± 0,014	–	1.30 ± 0.010	–
Weak grazing	0.36 ± 0.005	+ 0.07	1.00 ± 0,015	+ 0.08	1.41 ± 0.004	+ 0.11
Moderate grazing	0.57 ± 0.007	+ 0.28	1.20 ± 0.013	+ 0.28	1.50 ± 0.015	+ 0.20
Intensive grazing	0.61 ± 0.015	+0.32	1.24 ± 0.012	+0.32	1.65 ± 0.015	+0.35

The conducted U-test showed the influence of grazing technology factor on the response of the effective factor of sodium exchange content. In *p-value* column of the table the importance of the effective factor response from technologies by soil zones take the value of $p < 0.05$. Consequently, all technologies for zones 1, 2, 3 have a significant impact on the content of sodium exchange. Technology in this sampling causes a significant response to the quantitative factor of sodium exchange content.

The quantitative concept of this influence is determined by the difference between the median of corresponding technology and technology of grazing absence.

According to the grazing technology for dark chestnut soils of zone 1, the difference in the median value of sodium exchange at the weak grazing technology in comparison with grazing-free technology is 0.09 m-equiv./100 g, at technology of moderate grazing the difference will be 0.29 m-equiv./100 g, and at intensive grazing - 0.33 m-equiv./100 g.

For chestnut soils, there is a difference in the median value from the grazing-free technology, for weak grazing technology - 0.09 m-equiv./100g, moderate grazing - 0.29 m-equiv./100g, and for intensive grazing technology - 0.33 cmol(equiv.)/kg.

For light chestnut soils of zone 3, the response to grazing technology was respectively: weak grazing - 0.10 m-equiv./100g; moderate grazing - 0.19 m-equiv./100 g; and intensive grazing - 0.34 m-equiv./100 g.

Conducted tests have confirmed the available statistical regularity of increasing the sodium exchange rate, as the grazing intensity for all soil types increases.

Conclusion. Chestnut soil types of pastures of West Kazakhstan under the influence of grazing of farm animals are subject to change. Increasing pressure on pastures through intensive grazing has a negative impact on chemical performance of chestnut soil types. Grazing land soil is degraded by excessive grazing and negative chemical processes are occurring in the soil cover, enhancing the process of sedimentation.

Б. Н. Насиев¹, И. Г. Манолов², А. К. Беккалиев¹

¹Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университеті, Орал, Қазақстан;

²Пловдив аграрлық университеті, Болгария Республикасы

КАШТАН ТОПЫРАҚТАРДАҒЫ ФОСФОР МЕН АЛМАСПАЛЫ НАТРИЙ МӨЛШЕРІНІҢ МАЛ ЖАЮ ӘСЕРІНЕН ӨЗГЕРУІ

Аннотация. Қазіргі ауылшаруашылық өндірісіндегі жайылымдарға теріс антропогендік әсерді болдырмау үшін, азық-түлік және ауылшаруашылық өндірісін одан әрі ұлғайтудың бейімделу стратегиясы табиғатты ұтымды пайдалану қағидаттарына негізделуі керек, олардың жүйесіне бірқатар шаралар кіреді, олардың ішіндегі ең маңыздылары: жайылымдардың өсімдік жамылғысының жай-күйін және оның өнімділігін ескеру арқылы маусымдық режимде пайдалану және жайылымға түсетін малдың оңтайлы жүктемесін қадағалау. Зерттеу мақсаты – мал жаю технологиясына байланысты жайылымдардың топырақ

жамылғысын агрохимиялық бағалау. Зерттеулер нәтижесінде Батыс Қазақстан облысындағы жайылымдардың каштан типті топырақтарының құрамындағы жылжымалы фосфор мен алмаспалы натрий мөлшерінің ауылшаруашылық малдарын қарқынды жаюдың теріс әсерінен өзгеретіні анықталды. Шектен тыс мал жаюдың әсерінен каштан топырақтардың құрамындағы жылжымалы фосфор мөлшері азайып, алмаспалы натрий мөлшері артты, соның әсерінен аз деңгейде тұздалған топырақтар орташа тұздану сатысына ауысты. Зерттеу нәтижелері бойынша, мал жаю қарқынының өсуімен каштан топырақтардың барлық түрлерінің құрамындағы жылжымалы фосфор мөлшерінің күрт азайып, алмаспалы натрий мөлшерінің артуының статистикалық заңдылығы дәлелденді.

Зерттеулерді Батыс Қазақстанның топырақ-климаттық 3 аймағында Жәңгір хан атындағы БҚАТУ ғалымдары жүргізді. Топырақ сынамаларының агрохимиялық талдаулары Қазақстан Республикасында қабылданған дәстүрлі әдістемелер бойынша жүргізілді: P2O5 жылжымалы қосылыстары – И. Мачигин, МЕМСТ 26205-91; алмаспалы натрий – МЕМСТ 26950-86 бойынша.

Топырақтың каштан типтерінде топырақтың құнарлылығын шектейтін элементтердің бірі – фосфор мөлшері. Осыған байланысты, ауыл шаруашылығында пайдаланылған кезде, каштан топырақтың құрамында жылжымалы фосфор қосылыстарының болуы зор маңызға ие. Зерттеу деректері көрсеткендей, ауыл шаруашылығы малдарын жаю режимі Батыс Қазақстанның 3 аймағындағы каштан топырақ типтерінің құрамында жылжымалы фосфордың мөлшерін айтарлықтай өзгертпейді. Қара каштан топырақ аймағында бақылаумен (тың жермен) салыстырғанда, жылжымалы фосфор мөлшерінің төмендеуі 100 г топырақта 0,23-0,59 мг/100 г-ды құрады. 2-аймақ жайылымдарының каштан топырақтарында жылжымалы фосфордың мөлшері бақылаумен салыстырғанда 100 г топырақта 0,43-0,69 мг аралығында өзгерді. 3-аймақтағы ақшыл каштан топырақта бақылаумен салыстырғанда жылжымалы фосфор мөлшерінің төмендеуі 100 г топырақта 0,10-0,41 мг құрады.

t-критерий бойынша статистикалық бағалау маңыздылығы 95 % деңгейінде каштан топырақтың барлық типтеріндегі жайылымдарда жылжымалы фосфор мөлшерінің азайғанын анық көрсетті. Студент критерийінің нақты мәні (t-факт) 1,88-47,72, ал теориялық шамасы (t-теор) 2,45 болды. Фосфор мөлшерінің едәуір төмендеуі бұл ретте 3-жартылай шөлейтті аймағының ашық каштан топырағында шамадан тыс көп жайған кезде байқалады (t-факт 47,72 t-теор.мәні 2,45). 1 және 2-аймақтардағы қара каштан және каштан топырақты жайылымдарда мал жаю технологиясына қарамастан, жылжымалы фосфор мөлшері едәуір азайған.

Физикалық-химиялық қасиеттерінің нашарлауы, өз кезегінде, топырақта алмаспалы натрий мөлшерінің ұлғаюына алып келеді, бұл топырақтағы тұздану және сортаңдану процесінің қарқындау индикаторы болып саналады. 2-аймақ жайылымдарының каштан топырағында мал жаю технологиясына байланысты бақылаумен (тың жермен) салыстырғанда, алмаспалы натрий мөлшері 0,08-ден 0,32 мг-ға, экв/100 г-ға дейін өсті. Жайылым топырақтарында алмаспалы натрий мөлшері алмаспалы негіздер сомасының 4,98-ден 5,92 %-ына дейін құрайды, бұл сортаңданудың орташа дәрежесіне сәйкес келеді. 3-аймақтың ашық-каштан топырағында алмаспалы негіздер сомасы 15,10-15,65 мг, экв./100г, алмаспалы натрий мөлшері 1,41-1,65 мг, экв./100г немесе катиондық алмасу сыйымдылығының 9,33-10,54 %-ды құрады. Мал аз және бірқалыпты жайылатын топырақ алмаспалы натрий мөлшері жөнінен шамалы сортаң топыраққа, ал қарқынды жайылым орташа сортаң топыраққа жатады.

Қара каштан топырақта мал жаю технологиясына байланысты алмаспалы натрий мөлшері 0,36-0,61 мг, экв./100 г деңгейінде немесе алмаспалы негіздер сомасының 1,71-2,77 %-ын құрады. Алмаспалы натрий мөлшері жөнінен 1-аймақтың қара каштан топырағы сортаң емес. t-критерий бойынша, статистикалық бағалау маңыздылығы 95 % деңгейінде Батыс Қазақстанның 3 аймағындағы каштан топырағының барлық түрлерінде алмаспалы натрий мөлшерінің нақты артқанын көрсетті. Студент критерийінің нақты мәні (t-факт) мал жаю технологиясына байланысты 4,25-21,10 теориялық мәні (t-теор) 2,45 болды.

Түйін сөздер: жайылым, топырақ қабаты, жылжымалы фосфор, алмаспалы натрий, күйзелу, мал жаю.

Б. Н. Насиев¹, И. Г. Манолов², А. К. Беккалиев¹

¹Западно-Казахстанский аграрно-технический университет им. Жангир хана, Уральск, Казахстан;

²Пловдивский Аграрный университет, Республика Болгария

ИЗМЕНЕНИЕ СОДЕРЖАНИЙ ФОСФОРА И ОБМЕННОГО НАТРИЯ КАШТАНОВЫХ ПОЧВ ПОД ВОЗДЕЙСТВИЕМ ВЫПАСА

Аннотация. В целях предотвращения отрицательного антропогенного воздействия на пастбища в современном сельскохозяйственном производстве в основу адаптивной стратегии дальнейшего наращивания производства продуктов питания и сельскохозяйственного сырья должны быть положены принципы

рационального природопользования, в систему которого входит целый ряд мероприятий, из которых наиболее важными являются: сезонность стравливания пастбищ с учетом состояния растительного покрова, его урожайности; установление оптимальной нагрузки скота на единицу площади. Целью исследований является агрохимическая оценка почвенного покрова пастбищ в зависимости от технологии выпаса. В результате проведенных исследований установлено отрицательное влияние интенсивного выпаса сельскохозяйственных животных на содержание подвижных форм фосфора и обменного натрия каштановых типов почв пастбищ Западно-Казахстанской области. Под воздействием чрезмерного выпаса снизилось содержание подвижного фосфора каштановых почв, в составе обменных оснований увеличилось содержание обменного натрия и несолонцоватые почвы перешли в разряд средней степени солонцоватости. Результаты исследований подтвердили наличие статистической закономерности уменьшения содержания подвижного фосфора и увеличения содержания обменного натрия по мере увеличения интенсивности выпаса по всем видам почв.

Исследования проводились в 3-х почвенно-климатических зонах Западного Казахстана учеными ЗКАТУ имени Жангир хана. Агрохимические анализы почвенных проб проводили по традиционным методикам, принятым в Республике Казахстан: подвижные соединения P_2O_5 – по И. Мачигину, ГОСТ 26205-91; обменный натрий – по ГОСТ 26950-86.

В каштановых типах почв одним из лимитирующих элементов почвенного плодородия является содержание фосфора. В связи с этим, при сельскохозяйственном использовании важное значение имеет сохранение содержаний подвижного фосфора в составе каштановых почв. Как показывают данные исследований, режимы выпаса сельскохозяйственных животных не значительно изменяют содержание подвижного фосфора в составе каштановых типов почв 3-х зон Западного Казахстана. В зоне темно-каштановых почв снижение содержаний подвижного фосфора по сравнению с контролем (целина) составила от 0,23 до 0,59 мг/100 г почвы. На каштановых почвах пастбищ 2 зоны изменение содержания подвижного фосфора от контроля на уровне 0,43-0,69 мг/100г почвы. В 3 зоне на светло-каштановых почвах содержание подвижного фосфора по сравнению с контролем снижалась от 0,10 до 0,41 мг/100г почвы.

Статистическая оценка по *t*-критерию на 95% уровне значимости показала достоверное уменьшение содержаний подвижного фосфора на пастбищах всех типов каштановых почв. Фактическое значение критерия Стьюдента (*t*-факт) составило 1,88-47,72 при теоретическом значении (*t*-теор) 2,45. Наиболее существенное снижение содержания фосфора при этом отмечается при сильном выпасе на светло-каштановых почвах 3 полупустынной зоны *t*-факт. 47,72 при *t*-теор. 2,45. На пастбищах 1 и 2 зоны темно-каштановых и каштановых почв независимо от технологии выпаса снижение содержаний подвижного фосфора также существенно.

Ухудшение физико-химических свойств, в свою очередь, приводит к увеличению содержания в почве обменного натрия, что является индикатором засоленности и увеличения процесса осолонцевания почв. На каштановых почвах пастбищ 2 зоны содержание обменного натрия в зависимости от технологии выпаса увеличилось по сравнению с контролем (целина) от 0,08 до 0,32 мг,экв./100г. В почвах пастбищ содержание обменного натрия составляет от 4,98 до 5,92% от суммы обменных оснований, что соответствует степени слабосолонцеватости. В светло-каштановых почвах 3 зоны при сумме обменных оснований 15,10-15,65 мг,экв./100г содержание обменного натрия составило 1,41-1,65 мг,экв./100г или 9,33-10,54% от емкости катионного обмена. Почва пастбищ слабого и умеренного выпаса по содержанию обменного натрия относится к слабосолонцеватым почвам, а интенсивного выпаса к среднесолонцеватым.

На темно-каштановых почвах содержание обменного натрия в зависимости от технологии выпаса было на уровне 0,36-0,61 мг,экв./100г или 1,71-2,77% от суммы обменных оснований. По содержанию обменного натрия темно-каштановые почвы пастбищ 1 зоны несолонцеватые. Статистическая оценка по *t*-критерию на 95% уровне значимости показала достоверное увеличение содержания обменного натрия во всех типах каштановых почв в 3-х зонах Западного Казахстана. Фактическое значение критерия Стьюдента (*t*-факт) в зависимости от технологии выпаса составило 4,25-21,10 при теоретическом значении (*t*-теор) 2,45.

Ключевые слова: пастбища, почвенный покров, подвижный фосфор, обменный натрий, деградация, выпас.

Information about authors:

Nasiyev B.N., Doctor of agricultural sciences, Corresponding member of NAS RK, Professor of Higher School "Technology of crop production" West Kazakhstan agrarian-technical university named after Zhangir khan, Uralsk, Kazakhstan; veivit.66@mail.ru; <https://orcid.org/0000-0002-3670-8444>

Manolov I.G., Professor, Doctor PhD, Agrarian University Plovdiv, Republic of Bulgaria; manolov_ig@yahoo.com; <https://orcid.org/0000-0002-0381-7564>

Bekkaliev A.K., PhD Doctoral Student West Kazakhstan agrarian-technical university named after Zhangir khan, Uralsk, Kazakhstan; bekkaliev_askhat@mail.ru; <https://orcid.org/0000-0001-9850-452X>

REFERENCES

- [1] Asanov K.A. (1992) Pastures of Kazakhstan – complex development. Fodder cultures. N 1. P. 37-46 (in Russ.).
- [2] Zhambakin Zh.A. (1995) Desert pastures and their use // Improvement and rational use of pastures of Kazakhstan. Alma-Ata, P. 84-101 (in Russ.).
- [3] Kirichenko N.G. (2012) Pastures of Kazakhstan's deserts. Alma-Ata, P. 20-24 (in Russ.).
- [4] Nasiyev B.N. (2016) The study of the processes, degradation factors and the selection of crops for the restoration of bioresources capacity of the grassland and of semi-desert zones. Research Journal of Pharmaceutical, Biological and Chemical Sciences, N 7. P. 2637-2646.
- [5] Scollan N.D, Enser M, Richardson R.I, Wood J.D. (2002) Effect of forage legumes on the fatty acid composition of beef. The Proceedings of the Nutrition Society. 61(3A). P. 97-99.
- [6] Alentayev A.S., Baimukanov D.A, Smailov S.D., Semenov V.G., Abdrakhmanov K.T., Begaliyeva D.A., Omarov M.M. (2018) Efficiency of breeding of the Alatau breed of brown cattle in the Adal Agroindustrial company JSC. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Vol. 5, N 375. P. 12-29. <https://doi.org/10.32014/2018.2518-1467.2>. ISSN 1991-3494 (Print)
- [7] Akimbekov A.R., Iskhan K.Zh., Aldanazarov S.S., Aubakirov Kh.A., Karynbayev K.A., Rzabayev T.S., Mukhatai Geminguli, Asylbekov S.B., Baimukanov A.D. (2019) Meat productivity of young stock of the Kazakh horse of jabe type in the conditions of the Almaty region. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Vol. 2, N 378. P. 146–160. <https://doi.org/10.32014/2019.2518-1467.52>. ISSN 1991-3494 (Print)
- [8] Baimukanov D.A., Pristupa B.N., Kolosov Yu. A., Donnik I.M., Torosyan D.S., Kolosov A.Yu., Orlova O.N., Yuldashbayev Yu.A., Chylbak S.O. (2019) Improvement of breeding and productive traits of Kalmyk cattle breed. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Vol. 2, N 378. P. 128–145. <https://doi.org/10.32014/2019.2518-1467.51>. ISSN 1991-3494 (Print)
- [9] Koshen B.M., Shayakhmetova A.S., Toktar M. (2019) The process of dehumification of humus in the soil Sarikol district of Kostanay region. News of the National Academy of Sciences of the Republic of Kazakhstan. Series of agrarian sciences. Vol. 2, N 50. P.105-109. <https://doi.org/10.32014/2019.2224-526X.26>. ISSN 2224-526X (Print)
- [10] SS 26205-91. Soils. Determination of mobile phosphorus and potassium compounds by Machigin method in CINAO modification. (1992) M, Standard, 10 p. (in Russ.).
- [11] SS 17.4.4.01-84. Soils. Methods for determining cationic exchange capacity. (2008) M, Standard, 6 p. (in Russ.).
- [12] SS 26950-86. Soils. Method of determining exchange sodium. (1986) M, Standard, 8 p. (in Russ.).
- [13] Order No.185 of the Minister of Agriculture of the Republic of Kazakhstan dated 27 April 2017. On approval of the Measuring method to combat the degradation and desertification of pastures, including arid areas. https://tengrinews.kz/zakon/pravitelstvo_respubliki_kazahstanpremer_ministr_rk/selskoe_hozyaystvo/idV1700015128/ (in Russ.).
- [14] Dospechov B.A. (1985) Field experiment methodology. M, Agropromizdat, P. 12-45 (in Russ.).
- [15] Rusanov A.M. (1995) Ecology of humification in the Ural steppe zone. Dis. abstract,... Doct. Biol. Sc., Orenburg, 43 p. (in Russ.).
- [16] Angassa A. (2014) Effects of grazing intensity and bush encroachment on herbaceous specie and rangeland condition in southern Ethiopia. Land Degradtion and Development. N 25. P. 438–451. <https://doi.org/10.1002/ldr.2160>
- [17] Baez-Gonzalez A.D. (2002) Using Satellite and Field Data with Crop Growth Modeling to Monitor and Estimate Corn Yield in Mexico. Crop science. N 42. P. 1943-1949.
- [18] Bigon M., Harper J., Townsend K. (1989) Ecology. Species, populations and communities. N 1. P. 625-667.
- [19] Nasiyev B.N., Yessenguzhina A.N. (2019) Assessment of conditions of vegetable cover of semidesertic zone pastures. Intelligence, idea, innovation. N 2. P. 70-75 (in Russ.).
- [20] Nasiyev B.N., Manolov I.G., Bekkaliyev A.K. (2019) Assessment of grazing technology impact on soil indicators. News of the National Academy of Sciences of the Republic of Kazakhstan. Series of agrarian sciences. Vol. 6, N 53. P. 66-72. <https://doi.org/10.32014/2019.2224-526X.81>. ISSN 2224-526X (Print)

V. S. Sherne¹, Kh. A. Aubakirov², A. Yu. Lavrentiev¹, V. G. Semenov¹, D. A. Baimukanov³

¹Chuvash State Agricultural Academy, Cheboksary, Chuvash Republic, Russia;

²M.H. Dulati Taraz State University, Kazakhstan;

³Kazakh National Agrarian University, Almaty, Kazakhstan.

E-mail: v.sherne@mail.ru, hamit_a57@mail.ru, lavrentev65@list.ru,
semenov_v.g@list.ru, dbaimukanov@mail.ru

USE OF ENZYME PREPARATIONS IN COMPOUND FEED FOR DUCKLINGS

Abstract. The paper presents the results of the influence of enzyme (ferment) preparations in various combinations on the dynamics of growth and development and slaughter qualities of ducklings. The scientific and economic experience was conducted in the Chuvash Republic. For carrying out experiments 3 groups of ducklings on 50 heads in everyone were selected and formed. Ducklings of the 1st experimental group received enzyme preparations amylosubtilin in the amount of 0.05 kg/t and protosubtilin in the amount of 0.05 kg/t during the entire period of growing together with feed. Ducklings for the 2nd experimental group of compound feed were enriched with enzyme preparations amylosubtilin in the amount of 0.1 kg/t and celloviridin in the amount of 0.075 kg/t.

It was found that ducklings receiving enzyme preparations in addition to feed had increased growth energy throughout the experiment. By the end of the experiment, the live weight of ducks of the control group was 3,424 kg, the first experimental group receiving in addition to the feed enzyme preparations amylosubtilin in an amount of 0.05 kg/t and protosubtilin in the amount of 0.05 kg/t – 3,712 lbs. In the second experimental group, where the ducks advanced to the feed received enzyme preparations amylosubtilin in the amount of 0.1 kg/t and celloviridin in the amount of 0.075 kg/t, live weight to the end of the experiment amounted to 3,804 kg.

The average daily live weight gain of animals in the control group was 53.52 g, and in the first experimental group - 58,10 g, in the second one - 59,56 g. The inclusion of a mixture of enzyme preparations with a compound feed of the experimental animals have contributed to the increase in body length compared to the control on average by 0.9 cm and 1.6 cm, length of tarsus by 2.5 cm and 4.3 cm, chest girth by 1.8 cm and 2.5 cm, respectively. The increased productivity of ducklings in growth was reflected in the reduction of feed costs and unit costs, which contributed to multiplying profits in the experimental groups.

Key words: ducklings, enzyme preparations, daily average gain, growth and development, meat productivity, efficiency.

Introduction. Poultry farming is one of the most important branches of agriculture, designed to provide the population with dietary foods: eggs and poultry meat, characterized by a high content of animal protein at low calorific value [1].

Farms and private farms can make a big contribution to the scale-up in poultry meat production. Depending on the existing conditions in such farms, it is possible to keep poultry from several birds to several hundred and even thousands. Birds, when feeding with compound feeds give 3-5 times more increase in live weight per unit of consumed feed than other farm animals.

The main goal in the poultry industry at the present stage is the efficient production of industrial products, with the lowest cost and high quality. Achieving this goal is possible by increasing the productivity of birds, which is currently extremely relevant [2,3,4].

One of the precocious branches in meat poultry farming is utensil farming, which in recent years, like other branches of poultry farming, has been gradually increasing the production. The duck meat in its chemical composition is featured by a high content of protein, mineral elements, vitamins. Due to the relative unpretentiousness of ducks to the conditions of maintaining and feeding, they are easy to breed in

any climatic zone of the country. The production of duck meat is recognized as one of the promising areas in this branch. The current level of duck breeding in Russia and countries with a market economy is characterized by a continuous concentration of production process, deepening of its specialization, improving the technology of keeping and conditions for feeding poultry, as well as mechanization and automation of labor-intensive processes. Also relevant are issues of improving the technology of growing and keeping poultry, rational use of feed, saving material and labor resources [5,6,7].

To reduce the production cost, poultry farmers are tasked with increasing live weight at the end of growing with a relative reduction in their terms.

To save the production cost everywhere the composition of the compound feed includes components of local production, such as grain cereals, oilcake and meal, sunflower and many others. However, due to the significant content of fiber and non-amyloidal polysaccharide they have low nutritional value and poor digestibility. Studies by many authors show that this problem is solved by the inclusion of biologically active substances (BAS) in the composition of compound feeds, and enzymes play a great role in this, helping to increase the efficiency of feed nutrient use [8].

In poultry farming, as in other branches of animal husbandry, there is some experience in the use of enzymes, but some questions on their use in animal husbandry have not been studied enough. Therefore, to increase the gain in live weight and meat productivity, there is a need to study them and is an urgent problem of modern livestock and practice [9].

The work aims to study the impact of using a mixture of domestic enzyme preparations in compound feeds for ducklings on their productive qualities.

Materials and research methods. The experimental part of the work was carried out using the purebred young stock of ducks of the cross Agidel. The materials were normally developed healthy ducklings. For experiments, three groups of young ducklings were formed according to the principle of analog groups.

The age of ducklings was 1 day. The duration of the experiment is 63 days. Birds of the control group received ПК 21-2 compound feed from days 1 to 20, ПК 22-2 feed - from days 21 to 56, and ПК-23-1 feed - from 57 to 63 days. The formula and nutritional value of compound feed for ducks are presented in table 1.

Table 1 – Composition and nutritional value of feed for ducklings by age, %

Components	Age of ducklings in weeks		
	1-3 (ПК-21-2)	4-8 (ПК-22-2)	9-22 (ПК-23-1)
1	2	3	4
Corn	15.0	40.8	20.5
Wheat	45.0	30.0	15.0
Barley	17.45	9.50	25.0
Oat	–	–	4.0
Pea	–	–	3.0
Wheat bran	–	–	15.0
Sunflower meal	7.0	5.0	3.6
Hydrolyzed yeast	3.0	3.0	2.0
Fish flour	7.0	5.0	1.0
Meat and bone meal	–	2.0	2.0
Grass meal	4.0	3.0	5.0
Defluorinated phosphate	–	–	0.8
Chalk	1.4	1.5	2.6
Salt	0.15	0.2	0.5
For 1 ton of compound feed added, g:			
Lysine	1200	–	250

Table continuation			
1	2	3	4
Methionine	500	400	800
Antioxidants	150	150	150
Antibiotics	20	–	–
100 g of compound feed contains, %:			
Metabolizable energy (MJ)	1.197	1.241	1.240
Crude protein	18.09	16.47	14.62
Crude fiber	4.6	3.8	6.0
Calcium	1.17	1.16	1.44
Phosphorus	0.84	0.76	0.78
Sodium	0.39	0.35	0.36
Lysine without supplement (mg)	888.7	776.8	628.7
Methionine + Cystine without supplement (mg)	685.0	567.9	450.7

The microclimate conditions in the poultry house during the scientific and economic experiments corresponded to the specified zoohygienic standards. The experimental bird was fed with loose full diet compound feed, twice a day (morning and evening).

Productivity control was carried out by studying live weight and daily average gains by individually weighing at the beginning, at the end, and during the experiment at each defined time intervals.

To better understand the proportionality of the physique, the mutual development of different parts of the body relative to each other, typicality of birds, it was used the method of analysis and comparison of physique indices, which are the ratio of one measurement to another measurement anatomically associated with it, expressed in percentage.

Ducklings of the 1st experimental group during the entire growing period along with compound feed received amylosubtilin enzymes in the amount of 0.05 kg/t and protosubtilin in the amount of 0.05 kg/t. For the 2nd experimental group, the feed was enriched with amylosubtilin enzymes in the amount of 0.1 kg/t and celloviridin in the amount of 0.075 kg/t.

The biometric processing of digital data obtained in the studies was carried out according to the variational-statistical method described by N. A. Plokhinsky.

Research results. Recording of the consumption of the given feed and their residues showed that during the tested period the experimental ducklings had no difference in the amount of eaten feed, they willingly ate the given feed.

During the entire growing period, the safety of ducklings in the control group was 94.0%, in the experimental group I - 96.0% and in the experimental group II - 98%. The live weight of ducklings when feeding was almost the same and varied within 52 g.

The highest gain in live weight in all studied groups was noted in the 6th week of the experiment. In the control group, on average, 680 g of gain was obtained per bird during this period, in the 1st experimental group - 706 g, which is 103.8% of the control group. In the 2nd experimental group for the same period, 714 g of gain was obtained, which concerning the control group is 105% and, accordingly, 101.1% compared with the 1st experimental group.

By the end of the experiment, the live weight of the ducklings of the control group was 3.424 kg, in the first experimental group - 3.712 kg, in the second experimental group - 3.804 kg. At the end of the growing, the live weight of ducklings of the experimental groups was higher compared to the control by 8.4 and 11.27%.

In the first weeks of growing (3.5 weeks of age) in all groups of experimental birds, a sharp increase in the average daily gain in live weight was observed, the next 2 weeks were more stable (a slight increase from 3.5 to 4.5 weeks and a slight decrease from 4.5 to 6.5 weeks). In general, during the growing period, the average daily gain in live weight of birds in the control group was 53.52 ± 4.6 g, and in the first experimental group – 58.10 ± 4.9 g, in the second one – 59.56 ± 4.9 g.

After that, a sharp decrease in productivity occurs, which is reflected in the diagram in figure. In general, during the growing period, the average daily gain in live weight of birds in the control group was 53.52 ± 4.6 g, and in the first experimental group - 58.10 ± 4.9 g, in the second one - 59.56 ± 4.9 g.

In the scientific and economic experiment, the parameters of body development at the age of 63 days in the studied groups corresponded to the cross standard and were better in ducks of the second experimental group relative to the control and the first experimental group. The measurement results of the ducklings are presented in table 2.

The inclusion of the mixture of enzyme preparations in compound feed in experimental animals contributed to the increase in body length, compared with the control, by an average of 0.9 cm in the 1st experimental group and 1.6 cm in the 2nd experimental group, the tarsus length was 2.5 cm and 4.3 cm, chest girth - 1.8 cm and 2.5 cm, respectively. A similar pattern took place like changes in the width of the pelvis and the length of legs of birds of the compared groups. Therefore, the introduction of enzyme preparations into the compound feed of ducklings has a positive effect on their growth and development.

Table 2 – Exterior measurements of ducklings (on average per 1 bird in groups), cm

Indicators	Group		
	Control	I experimental	II experimental
Body length	43.4±0.61	44.3±0.49*	45.0±0.52*
Width of pelvis	9.7±0.32	11.6±0.44	12.1±0.50
Keel length	16.8±0.29	17.4±0.4*	17.7±0.44*
Tarsus length	11.9±0.21	14.4±0.33	16.2±0.34
Leg length	17.4±0.33	20.3±0.41*	21.9±0.38*
Chest girth	38.8±0.51	40.6±0.51*	41.3±0.49*
*P≥0.01.			

Table 3 – Body indices of ducklings (on average per 1 bird in groups), %

Indicators	Group		
	Control	I experimental	II experimental
Massiveness (Body Weight/Body Length)	78.85±0.52	83.71±0.51*	84.47±0.53*
Body width (Pelvis width (in hook bones) x 100/body length)	22.35±0.33	26.19±0.31*	26.89±0.34*
Shortening of the lower body part (Keel length x 100/Body length)	38.70±0.42	39.28±0.43*	39.33±0.43*
Long-leg (Tarsus length, thigh (lower leg) x 100/Total leg length)	68.39±0.55	70.93±0.54*	73.97±0.55*
Eirisomy (Keel length/body length x 100)	89.40±0.58	91.65±0.57*	91.7±0.56*
*P≥0.01.			

Table 4 – Slaughter qualities of ducklings, g

Indicators	Group		
	Control	I experimental	II experimental
Pre-slaughter live weight	3424±4.6	3712±4.9*	3804±4.9*
Uneviscerated carcass weight	3111.0±4.4	3378.6±4.6*	34658±4.6*
Uneviscerated carcass output, %	90.86±4.1	91.02±4.2	9111±4.4
Semi-eviscerated carcasses weight	2968.9±4.3	3229.0±4.3*	3331.9±4.5**
Semi-eviscerated carcasses output, %	86.71±4.1	87.26±4.2	87.59±4.4
Eviscerated carcass weight	2320.1±4.1	2671.5±4.2*	2751.4±4.3**
Eviscerated carcass output, %	67.76±4.2	71.97±4.4	72.33±4.3
The output of eviscerated carcasses by grade, %			
1 grade	92	94	96
2 grade	8	6	4
*P<0.05, ** P<0.01.			

Based on the taken measurements, body indices were calculated. The results of the body indices of ducks are presented in table 3. Each of these indices allows evaluating one or another productivity of the bird.

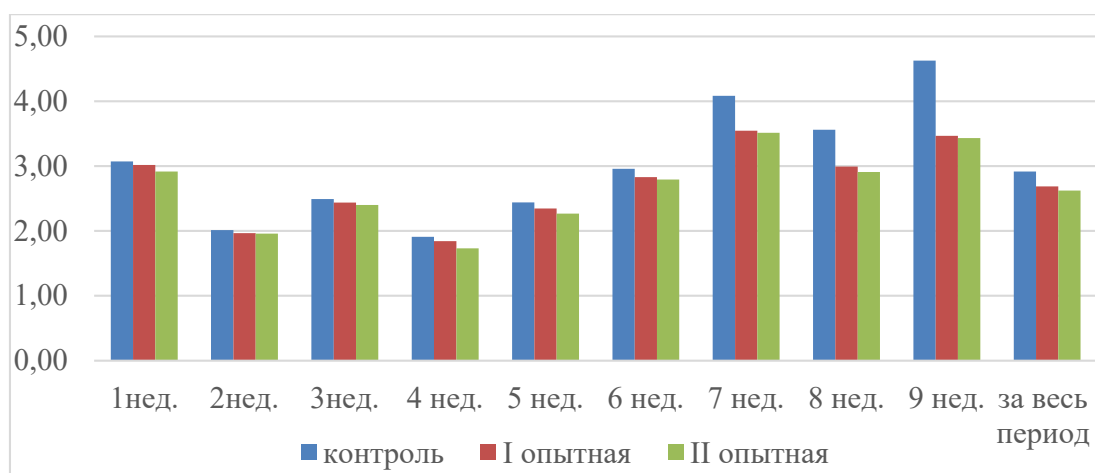
The research results of the slaughter qualities of ducklings are given in table 4. It was found that the use of the mixture of enzyme preparations in compound feed in experimental birds contributed to an increase in slaughter qualities of ducks. Pre-slaughter live weight in the first experimental group was higher by 8.4%, and in the second experimental group by 11.1% than in the control group.

As a result of the carcass deboning, it was established (table 5) that, according to the absolute muscle tissue output of the carcasses of ducklings in the 1st experimental group were higher than in the control group by 228.6 g (114.7%) and in the 2nd experimental group by 297.3 g (119.2%) ($P < 0.05-0.01$), and the output of skin with fat was 35.0 and 45.3 g, respectively. The yield of edible parts in the second group was higher than in the control by 15.0%, and in the first group by 11.0%. The yield of inedible parts (bones) in the control group was 9.05%, in the 1st experimental group - 9.31%, and in the 2nd experimental group - 9.49%.

Table 5 – The ratio of the edible and inedible parts of the carcass

Indicators	Group		
	Control	I experimental	II experimental
Edible parts:			
Muscles, g.	1547.6±14.7	1776.2±16.3*	1844.9±17.1**
%	45.20	47.85	48.50
skin with subcutaneous fat, g.	681.3±4.6	716.3±4.7	726.6±4.8
%	19.90	18.30	19.10
Kidneys+Fat+Lungs	104.4±1.3	110.2±1.5	111.0±1.45
%	3.05	2.97	2.92
Total, g.	2335.2	2592.8	2685.6
%	68.20	69.85	70.60
Inedible parts:			
Bones, g.	309.8±3.2	345.6±3.4*	360.9±3.6**
%	9.05	9.31	9.49
The ratio of the edible and inedible parts	7.54	7.50	7.44
The ratio of muscle mass to bone mass	4.99	5.14	5.11
* $P < 0.05$, ** $P < 0.01$.			

Since the accounting for the given feed was carried out across the group, not individually, and statistical processing of indicators on the use of feed was not possible. Since the highest gains in live weight were noted in the first 6 weeks of growing, respectively, and during these growing periods, the lowest feed costs per 1 kg of gain were observed (figure).



Feed costs by growing periods in groups

At the end of the growing period, when there was a decline in average daily gain, feed costs increased.

In general, 9.835 kg of compound feed in each group was consumed during the experiment (figure). 2.91 kg of feed were spent per 1 kg of gain in the control group, while in the first experimental group – 2.64 kg or 9.28% less than in the control group and the second experimental group – 2.62 kg or 9.97% less than in the control group and 2.26% less than in the first experimental group.

Conclusion. Analysis of the results shows that under the influence of enzyme preparations in compound feed for ducklings of the Agidel cross, the growth and development are accelerated during the growth period. This leads to their higher slaughter and meat qualities and, as a result, the output of the mass of uneviscerated, semi-eviscerated and eviscerated carcasses, as well as the output of eviscerated carcasses of grade 1 and muscle tissue. It has been experimentally proved that the use of enzyme preparations in feed for ducklings helps to achieve higher absolute and average daily gains in live weight and increases the economic efficiency of its production. Since the growth intensity of ducklings after 7 weeks of age decreases, the optimal period of their growth, in our opinion, should not exceed 8 weeks. The obtained research results indicate that when choosing enzyme preparations, a mixture of amylosubtilin and celloviridin should be preferred.

В. С. Шерне¹, Х. А. Аубакиров², А. Ю. Лаврентьев¹, В. Г. Семенов¹, Д. А. Баймуканов³

¹"Чуваш мемлекеттік ауылшаруашылық академиясы" ФМБЖББМ, Чебоксары, Ресей;

²М. Х. Дулати атындағы Тараз мемлекеттік университеті, Қазақстан;

³Қазақ ұлттық аграрлық университеті, Алматы, Қазақстан

ҮЙРЕКТЕР ҮШІН АРАЛАС АЗЫҚТАРДА ЭНЗИМДІ ПРЕПАРАТТАРДЫ ҚОЛДАНУ

Андатпа. Жұмыста энзимді (ферментативті) препараттардың түрлі үйлесімде үйректедің өсуі мен дамуына және сойыс шығымы сапасына әсер ету нәтижелері келтірілген. Ғылыми тәжірибиелер чубаш мемлекетінде іске асырылған. Тәжірибие үшін 3 топ таңдалып құрастырылды. Әр топта 50 бас үйректен болды. 1-топтағы үйректер жетілу барысында аралас азықпен бірге 0,05 кг/тмөлшерде амилосубтилин және 0,05 кг/т протосубтилин алып отырды. 2-тәжірибиелі топтың үйректерінің аралас азықтарын 0,1 кг/т мөлшерде амилосубтилин және 0,075 кг/т мөлшерде целловиридин энзимді препараттармен байытылды.

Үйректерді өсіру барысында ферментті препараттар амилосубтилин және протосубтилин амило-субтилин және целлолюксінді жасалған сьзба нұсқаға сәйкес қолдану тәжірибиелі жануарлардың өсуі мен дамуына оң әсер етті.

Аралас азыққа қосымша энзимді препараттар алып отырған үйректер тәжірибие барысында қарқынды өсу қабілетіне ие болды. Тәжірибие соңында бақылау тобындағы үйректердің тірі салмағы 3,424 кг, бірінші тәжірибиелі тобындағы аралас азығына қосымша 0,05 кг/т мөлшердегі амилосубтилин және 0,05 кг/т мөлшерінде протосубтилин алған үйректің тірі салмағы 3,712 кг құрады. Аралас азығына қосымша 0,1 кг/т мөлшерде амилосубтилин және 0,075 кг/т целловиридин алған үйректердің тірі салмағы – 3,804 кг құрады.

Бақылаумен салыстырғанда, бірінші бақылау тобындағы амилосубтилин және протосубтилин қоспасын алған тәжірибиелі жануарлардың өсімі 8,54%, ал амилосубтилин және целлолюкс қоспасын алған екінші бақылау тобындағы жануарлардың орташа тәуліктік өсімі 11,3 % басым болды. Екінші топта абсолютті өсім бірінші топтан 2,76 % үстем болды.

Аралас азыққа ферментті препараттардың қоспасын қосу тәжірибиедегі жануарлардың бақылаумен салыстырғанда көкірек ұзындығының 0,9 см и 1,6 см, жіліншектің 2,5 см және 4,3 см, көкірек орамының 1,8 см и на 2,5 см ұлғаюына әсер етті. Бақылаумен салыстырғанда, индекс бойынша: массивтілік – біріншіде 4,86 %, екіншіде – 5,62 %, сүйек жалпақтығы бойынша біріншіде – 3,84 % және екіншіде – 4,54 %, аяқ ұзындығы бойынша біріншіде 2,54 % және екіншіде 5,58 % және эйрисоми бойынша сәйкесінше 2,51 % және 2,66 % басым болды.

Үйректерді өсіру технологиясында түрлі қатынвстағы энзимді препараттарды қосу ет сапасының жақсаруына оң әсер етті. Сойыс алдындағы тірі салмағы бақылауға қарағанда, бірінші топта 8,4 %, ал екінші топта 11,1 % басым болды. Амилосубтилин және протосубтилин энзимдерін алған бірінші тәжірибиелік топтағы тазаланған үйректе бақылаудағы аналогтық көрсеткіші 267,6 г пайыздық көрсеткіші – 8,6 %, амилосубтилин және целловиридин ферменттерін алған екінші топта – 354,8 г сәйкесінше 11,4 % басым.

Бірінші тәжірибиелі топтағы үйректердегі ұша етінің абсолютті шығымы бақылаумен салыстырғанда 228,6 (114,7 %) және 2-тәжірибиелі топта 297,3 г (119,2 %) ($P < 0,05-0,01$), сәйкесінше майлы терінің шығымы

35,0 және 45,3 г басым болды. Жеуге жарамды бөлшектерінің шығымы бақылаумен салыстырғанда екінші топта 15,0 % және бірінші топта 11,0 % үстем болды. Жеуге жарамсыз бөліктер (сүйектер) бақылау тобында 9,05%, 1-тәжірбиелі топта 9,31 % және 2-тәжірбиелі топта 9,49 % құрады.

Энзимді препараттарды үйректерді өсіру технологиясына қолдану азыққа кететін шығындарды азайтуға мүмкіндік береді. Бақылау тобында 1 кг өсімге 2,91 кг аралас азық, бақылаумен салыстырғанда, 1-бақылау тобында 2,64 немесе 9,28 % аз шығын жұмсалды. 2-бақылау тобында біріншімен салыстырғанда 2,26 % және бақылаумен салыстырғанда қаражат 9,97 %-ға кем жұмсалды.

Аралас азықтардың қоректік заттарының сіңімділігін және етті және өнімділікті арттыру үшін «Агидель» кросс үйректеріне энзимді препараттарды келесідей нұсқамен беру керек: амилосубтилин Г3х және протосубтилин, амилосубтилин Г3х в количестве 0,1 кг/т және целловиридин.

Үйрек етінің өндіріс тиімділігін арттыру мақсатында оларды 50-60 күндік жасқа дейін өсіру ұсынылады. 60 күннен кейін үйректерде түлеу басталады, өсу қарқындылығы төмендейді және азыққа шығындар көбейеді.

Ферментті препараттарды таңдауда амилосубтилин Г3х 0,1 кг/т мөлшерде + целловиридин 0,075 мөлшерде кг/т алған тиімді.

Түйін сөздер: үйректер, энзимді препараттар, орташа тәуліктік өсім, өсу мен даму, ет өнімділігі, тиімділік.

В. С. Шерне¹, Х. А. Аубакиров², А. Ю. Лаврентьев¹, В. Г. Семенов¹, Д. А. Баймуканов³

¹ФГБОУ ВО «Чувашская государственная сельскохозяйственная академия», Чебоксары, Россия;

²Таразский Государственный университет им. М. Х. Дулати, Казахстан;

³Казахский национальный аграрный университет, Алматы, Казахстан

ИСПОЛЬЗОВАНИЕ ЭНЗИМНЫХ ПРЕПАРАТОВ В КОМБИКОРМАХ ДЛЯ УТЯТ

Аннотация. В работе приведены результаты влияния энзимных (ферментных) препаратов в различных сочетаниях на динамику роста и развития, и убойные качества утят. Научно-хозяйственный опыт проведен в Чувашской Республике. Для проведения опытов были отобраны и сформированы 3 группы утят по 50 голов в каждой. Утята 1-й опытной группы в течение всего периода выращивания вместе с комбикормом получали энзимные препараты амилосубтилин в количестве 0,05 кг/т и протосубтилин в количестве 0,05 кг/т. Утятам для 2-й опытной группы комбикорма обогащали энзимные препараты амилосубтилин в количестве 0,1 кг/т и целловиридин в количестве 0,075 кг/т.

Использование при выращивании уток смеси ферментных препаратов амилосубтилина и протосубтилина, амилосубтилина и целлолюкса согласно разработанной схеме оказало положительное влияние на рост и развитие подопытных животных.

Установлено, что утята, получавшие дополнительно к комбикормам энзимные препараты, обладали повышенной энергией роста на протяжении всего опыта. К концу опыта живая масса утят контрольной группы составляла – 3,424 кг, первой опытной группы, получавшие дополнительно к комбикормам энзимные препараты амилосубтилин в количестве 0,05 кг/т и протосубтилин в количестве 0,05 кг/т – 3,712 кг. Во второй опытной группы, где утята дополнительно к комбикорму получали энзимные препараты амилосубтилин в количестве 0,1 кг/т и целловиридин в количестве 0,075 кг/т, живая масса к концу опыта составила – 3,804 кг.

Абсолютный прирост живой массы у подопытных животных в первой опытной группе, получавших смесь амилосубтилина и протосубтилина был выше на 8,54%, а во второй опытной группе, получавших смесь амилосубтилина и целлолюкса на 11,3 %, чем в контрольной группе. Во второй опытной группе абсолютного прироста было получено больше, чем в первой опытной группе на 2,76 %.

Включение смеси ферментных препаратов в комбикорма у подопытных животных способствовало увеличению длины туловища, по сравнению с контрольным в среднем на 0,9 см и 1,6 см, длины плюсны на 2,5 см и 4,3 см, обхват груди на 1,8 см и на 2,5 см соответственно. По индексам: массивности – на 4,86 % в первой и 5,62 % – во второй, по широкотелости – на 3,84% в первой и 4,54% – во второй, по длинноногости – на 2,54 % в первой и 5,58 % – во второй и по эйрисомии соответственно – на 2,51% и 2,66% по сравнению с контролем.

Включение в технологию выращивания утят энзимных препаратов в различных сочетаниях способствует улучшению мясных качеств. Предубойная живая масса в первой опытной группе была выше на 8,4%, а во второй опытной группе на 11,1 %, чем в контрольной группе. Масса непотрошенной тушки превосходила в первой опытной группе, получавшие энзимы амилосубтилин и протосубтилин аналогичские показатели в контроле на 267,6 г, т.е. на 8,6 %, во второй опытной группе, получавшие ферменты амилосубтилин и целловиридин на 354,8 г, соответственно на 11,4%.

Абсолютный выход мышечной ткани туши утят 1-й опытной группы был выше, чем в контрольной группе на 228,6 (114,7%) и во 2-й опытной группе на 297,3 г (119,2%) ($P < 0,05-0,01$), а по выходу кожи с жиром, соответственно – на 35,0 и 45,3 г. Выход съедобных частей во второй опытной группе был выше, чем в контрольной на 15,0 %, и в первой опытной группе на 11,0 %. Выход несъедобных частей (костей) в контрольной группе составил 9,05%, в 1 опытной группе 9,31% и во 2 опытной группе 9,49%.

Применение энзимных препаратов в технологии выращивания влияет на снижение затрат корма на единицу продукции. На 1 кг прироста в контрольной группе затрачено 2,91 кг комбикорма, а в первой опытной группе 2,64 или на 9,28 % меньше, чем в контрольной группе и во второй опытной группе 2,62 кг или на 9,97 % меньше, чем в контрольной группе и на 2,26 %, чем в первой опытной группе.

Для увеличения усвояемости питательных веществ комбикормов и продуктивных и мясных качеств утят кросса «Агидель» рекомендуем применять энзимные препараты в сочетании амилосубтилин ГЗх и протосубтилин, и амилосубтилин ГЗх в количестве 0,1 кг/т и целлюлозагин.

В целях повышения эффективности производства мяса утят рекомендуем выращивать до 56-60-дневного возраста, так как в 60-дневном возрасте у утят начинается линька и у них заметно снижается интенсивность прироста, и повышаются затраты кормов.

При выборе ферментных препаратов предпочтение должно быть отдано смеси амилосубтилин ГЗх в количестве 0,1 кг/т + целлюлозагин в количестве 0,075 кг/т.

Ключевые слова: утята, энзимные препараты, среднесуточный прирост, рост и развитие, мясная продуктивность, эффективность.

Information about the authors:

Sherne Vitaliy Sergeevich, Candidate of Agricultural Sciences, Associate Professor, the Department of General and Private Zootechnics, Chuvash State Agricultural Academy, Chuvash Republic, Russia; v.sherne@mail.ru; <https://orcid.org/0000-0003-4924-0796>

Aubakirov Khamit Abilgazievich, Candidate of Agricultural Sciences, Associate Professor of the Department of Biotechnology, M. H. Dulati Taraz State University, Taraz, Kazakhstan; hamit_a57@mail.ru; <https://orcid.org/0000-0003-2670-4834>

Lavrentiev Anatoly Yurievich, Doctor of Agricultural Sciences, Professor, Head of the Department of General and Private Zootechnics, Chuvash State Agricultural Academy, Chuvash Republic, Russian; lavrentev65@list.ru; <https://orcid.org/0000-0001-5793-8786>

Semenov Vladimir Grigoryevich, Doctor of Biological Science, professor, honored worker of science of the Chuvash Republic, professor of Department of Morphology, Obstetrics and Therapy of the Chuvash State Agricultural Academy, Cheboksary, Chuvash Republic, Russia; semenov_v.g@list.ru; <https://orcid.org/0000-0002-0349-5825>

Baimukanov Dastanbek Asylbekovich, Corresponding Member of the National Academy of Sciences of the Republic of Kazakhstan, Doctor of Agricultural Sciences, Professor of the Department of Physiology, Morphology, and Biochemistry named after academician N. U. Bazanova, NJSC “Kazakh National Agrarian University”, Almaty, Kazakhstan; dbaimukanov@mail.ru; <https://orcid.org/0000-0002-4684-7114>

REFERENCES

- [1] Alekseev I.A., Semenov V.G., Baimukanov D.A., Alekseev V.A., Evdokimov N.V., Yakimov A.V., Obukhova A.V. (2019). Basulifor probiotic supplement, its impact on the body and productivity of young quails. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. Vol. 4, N 380 (2019), 27–37. [HTTPS://DOI.ORG/10.32014/2019.2518-1467.89](https://doi.org/10.32014/2019.2518-1467.89). ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).
- [2] Zazhivikhina E.I., Markova S.A. (2000). The use of biologically active substances based on terpenoids in farm animals and birds. Chemical-forest complex - scientific staffing in the XXI century. Problems and solutions. International Scientific-practical conference. Proceedings of the conference. Krasnoyarsk. Publishing House of SibGTU. P. 287-289 (in Russ.).
- [3] Ivanova E.Yu., Lavrentiev A.Yu. (2015). The effectiveness of the inclusion of enzyme preparations in compound feed for laying hens. Poultry and poultry products. N 2. P. 43-45 (in Russ.).
- [4] Ageev V.N., Egorov I.A., Okolelova T.M. (1987). Feeding poultry. Reference book, Moscow. Agropromizdat. 192 p. (in Russ.).
- [5] Lavrentiyev A.Yu., Sherne V.S., Yakovlev V.I. (2016). The effect of enzyme preparations on goslings productivity. Compound feed. N 7-8. P. 78-79 (in Russ.).
- [6] Petryankin F.P., Semenov V.G., Ivanov N.G. (2015). Immunostimulants in the practice of veterinary medicine. Monograph. Cheboksary. Publishing House New Time. 272 p. (in Russ.).
- [7] Petryankin F.P. (2011). Feeding, metabolism, and immunity in animals. Monograph. Cheboksary. 100 p. (in Russ.).
- [8] Fisinin V.I., Tischenkov A.N., Egorov I.A. (1998). Evaluation of the quality of feed, organs, tissues, eggs, and poultry. Methodical guide. Sergiev Posad. Publishing House VNITIP. 114 p. (in Russ.).
- [9] Sherne V.S., Lavrentiyev A.Yu. (2019). The use of enzymes in the technology of growing ducklings. Poultry and poultry products. N 1. P. 36-38 (in Russ.).

A. A. Balykin, L. G. Shashkarov, G. A. Mefodyev, V. G. Semenov

Chuvash State Agricultural Academy, Cheboksary, Chuvash Republic, Russia.

E-mail: ab-66@mail.ru, leonid.shashckarow@yandex.ru, mega19630703@mail.ru, semenov_v.g@list.ru

LEAVES AREA OF SPRING WHEAT PLANTS DEPENDING ON PRESEEDING TREATMENT OF SEEDS AND VARIETIES

Abstract. The article deals with the formation of the area of leaves of spring wheat depending on the treatment of seeds and varieties in the conditions of the Chuvash Republic. Three varieties of Margarita, Simbircite, and Prokhorovka were studied. The second factor is seed treatment in three gradations: 1. Without processing (control). 2. Seed treatment with the drug Benlate. 3. Seed treatment with Nano-Gro. The results of the analysis of leaves area formation are presented. Determining the optimal leaves area is a very complex problem. Solar radiation at an insufficient leaves area of field plants is absorbed not completely; at the greatest developed leaf surface the same phenomenon occurs. In combination with the seed protectant of spring grain crops – Benlate, the authors also studied the effect of Nano-Gro. The presowing treatment of seeds with the Nano-Gro solution significantly affects the increase in the formation of the leaves area of spring wheat.

Key words: spring wheat, leaf area, varieties, growth regulator Nano-Gro, seed protectant Benlate.

Introduction. During photosynthesis, crop formation occurs as a result of the accumulation of organic matter and directly depends on the assimilation surface of plant leaves. However, in literature, it is noted that a large area of leaves, as revealed (A. Nichiporovich), does not always correspond to a high stable yield of field crops. Plants only absorb and use solar radiation most fully when creating the optimal crop structure, in which case the coefficient of PAR use is increased in plants.

The structure of crops should provide absorption of at least 2% of PAR. The main part of PAR absorption in field crop plants is the leaf, and crops should always be formed with the optimal leaf surface area [1,2,3,4,5,6,7]. In the conditions of biologization of agriculture, this is especially important when the means of plant chemicalization by agricultural producers are used very limitedly and it is necessary to use the full range of biological agents [8,9,10,11].

The aim of the research is to explore and determine the effect of preseedling treatment on the formation of the plant assimilation apparatus in the studied spring wheat varieties.

Conditions, materials, and research methods. To implement the tasks in 2015-2017, the field experiment was laid at the Komsomolsk State Variety Testing Site. The objects of the research were the varieties: Margarita, Simbircite, and Prokhorovka.

Design of the experiment: Factor A - variety in three gradations: 1. Margarita; 2. Symbircite; 3. Prokhorovka. Factor B - seed treatment in three gradations: 1. Without treatment (control). 2. Seed treatment with Benlate. 3. Seed treatment with Nano-Gro. The total area of the plot is 50 m², accounting area - 40 m². The predecessor is winter wheat.

The location of the plots is systematic. The repetition in the experiment is fourfold. The total area of the plot is 50 m², the accounting area is 35 m².

The soil is leached chernozem, the content of humus is in the range of 6.4-7.2%. The content of mobile phosphorus is 211-221 mg per 1 kg of soil, exchange potassium - from 142 to 146 mg per 1 kg of soil, pH salt. - 5.26-6.10.

The predecessor is winter wheat. Ammonium nitrate, double granular superphosphate and potassium chloride were used as fertilizers.

The experimental field was cultivated with the KPS-4 aggregate, sowing was carried out with the ZST-3.6 seeder. Harvesting was carried out by the SAMPO - 500 combine. Accounting and analysis in the studies were carried out according to the methodology of the State Variety Test.

Analysis and discussion of the research results. The greatest crop yield is possible only if we achieve that the leaf area of the plants reaches its optimal size and remains in this active state for a long time, while the leaves supply the reproductive organs with photosynthesis products.

We found that the leaf surface reached the maximum sizes on all the studied variants by the heading stage, and then this indicator significantly decreased by the milk stage. On average, over three years of the research during the tillering stage of the Margarita variety, the leaf surface area varied from 7.81 to 8.38 thousand m²/ha, in the Prokhorovka it varied from 6.98 to 7.40 thousand m²/ha and the variety Simbircite varied - from 7.18 to 7.96 thousand m²/ha. The Margarita variety was characterized by the largest leaf surface area of 8.38 thousand m²/ha, the minimum leaf surface area was for Prokhorovka variety of 7.40 thousand m²/ha.

In all the studied varieties of spring wheat, a more active building up in the leaf area was on the variants with seed treatment with Benlate, and the seed treatment with Nano-Gro. During the tillering stage, in Margarita variety, the leaf area of the plants after the seed treatment increased by 0.27 thousand m²/ha, the leaf area of the Prokhorovka variety - by 0.23 and the leaf area of the Simbircite variety - by 0.41 thousand m²/ha. The seed treatment with Nano-Gro was more effective, which significantly build up the leaf area compared to the control by 0.57 thousand m²/ha in Margarita, by 0.42 thousand m²/ha - in Prokhorovka and 0.78 thousand m²/ha - in the Simbircite.

Leaf surface area of spring wheat, thousand m²/ha (average for 2015-2017)

Factors		Tillering	Stooling	Heading	Milk
Variety	Treater				
Margarita	<i>Control</i>	7.81	21.40	36.81	9.97
	Benlate	8.08	23.29	38.47	10.62
	Nano-Gro	8.38	24.39	38.95	10.90
Simbircite	<i>Control</i>	7.18	20.43	36.59	9.39
	Benlate	7.59	22.58	37.98	9.69
	Nano-Gro	7.96	23.77	38.65	10.04
Prokhorovka	<i>Control</i>	6.98	20.20	34.20	8.32
	Benlate	7.21	21.93	35.41	8.76
	Nano-Gro	7.40	22.60	36.38	9.31

In all of the varieties under study, in all phases of plant growth and development, the lowest leaf area was in the control variant without treatment.

The values of the leaf area of wheat plants in the stage of maximum growth (heading) in the experimental variants were close to those parameters that are recommended as optimal for grain crops.

These indicators for the Margarita variety on the variant without treatment amounted to 36.81 thousand m²/ha, for the Prokhorovka variety - 34.20 thousand m²/ha and the Simbircite variety - 36.59 thousand m²/ha. During the pre-seeding treatment, the leaf surface of the Margarita variety increased by 1.66-2.14 thousand m²/ha, the Prokhorovka variety increased by 1.21-2.18 thousand m²/ha and the Simbircite variety increased by 1.39-2.06 thousand m²/ha. The plants characterized by the largest leaf area were varieties; during seed treatment with the Nano-Gro preparation, in the Margarita variety, this indicator was 38.95 thousand m²/ha, 36.38 thousand m²/ha in the Prokhorovka variety and 38.65 thousand m²/ha in the Simbircite variety.

By the milk stage, the area of plant leaves significantly reduced, but this indicator remained quite high in the range of 9.97-10.90 thousand m²/ha for Margarita, 8.32-9.13 thousand m²/ha for Prokhorovka, and 9.39-10.04 thousand m²/ha for the variety of Simbircite. As at the previous stages of the growing season, it was maximum in the variants with seed treatments, in the Margarita variety - 10.90 thousand m²/ha, in

the Prokhorovka variety - 9.31 thousand m²/ha, and 10.04 thousand m²/ha - in the Simbircite variety. This contributed to the formation of higher crop yields in all studied varieties.

In different weather conditions over the years, the effectiveness of using the Nano-Gro preparation and seed dressing was not the same. In 2015, all varieties formed the maximum area of plant leaves. The area of plant leaves under the conditions of this year was formed in the stage of maximum growth in the Margarita variety, 37.88 thousand m²/ha in the Prokhorovka variety, and 37.04 thousand m²/ha in the Simbircite variety. The area of leaves during seed treatment was higher than the control and varied from 39.24 thousand m²/ha for the variety of Simbircite, up to 40.86 thousand m²/ha for the variety of Prokhorovka and 42.02 thousand m²/ha for the variety of Margarita.

The leaves area of the plants in the variants with Nano-Gro seed treatment was maximum and exceeded the control version (without treatment) by 3.45 thousand m²/ha for Margarita, 3.14 thousand m²/ha for Prokhorovka and 3.06 thousand m²/ha - in the variety of Simbircite.

At all vegetation stages of spring wheat plants, the lowest values of leaves area were observed under the conditions of 2017 and during the tillering stage, the leaf area of 2017 did not differ significantly from the values of 2016, which according to the experimental variants ranged from 6.13 to 6.44 thousand m²/ha - in the variety Prokhorovka, 5.04-5.49 thousand m²/ha - in the variety Simbircite, 5.21-6.03 in the variety Prokhorovka. However, due to moisture deficiency in the subsequent stages of plant growth and development, the value of this indicator was significantly lower than in previous years. In the maximum growth stage under the conditions of 2017, according to the experimental schemes, the leaf area varied within the range of 25.67-27.04 thousand m²/ha for Margarita, 25.08-26.19 thousand m²/ha for the Prokhorovka, and 21.78-23.12 thousand m²/ha for the variety Simbircite. The leaf area of plants in the given year conditions, during the growing season of plants, more intensively developed in the variants with seed treatment.

Conclusions. In the conditions of gray forest soils of the Chuvash Republic, the maximum leaf surface area of spring wheat plants is formed during the heading phase when seeds are treated with Nano-Gro and equals to 38.95 thousand m²/ha for Margarita, 38.65 thousand m²/ha for Simbircite and 36.38 thousand m²/ha - for Prokhorovka. Seed dressing increases the leaf surface area of spring wheat plants.

А. А. Балыкин, Л. Г. Шашкаров, Г. А. Мефодьев, В. Г. Семенов

"Чуваш мемлекеттік ауылшаруашылық академиясы" ФМБЖББМ, Чебоксары, Ресей

ЖАЗДЫҚ БИДАЙ ӨСІМДІГІ ДӘНДЕРІН ЖӘНЕ СОРТЫН ЕГУ АЛДЫНДА ӨНДЕУГЕ БАЙЛАНЫСТЫ ЖАПЫРАҚ АУДАНЫ

Аннотация. Мақалада Чуваш Республикасы жағдайында дәндер мен сорттарды өндеудің жаздық бидай жапырағы ауданының қалыптасуына тәуелділігі қарастырылды.

Ғылыми зерттеудің мақсаты – зерттелген жаздық бидай сорттарының дәндерін егу алдында өндеудің өсімдік ассимиляциянды аппаратының қалыптасуына әсері анықталды.

Мargarita, Симбирцит және Прохоровка сорттары зерттелді. Екінші фактор – дәндерді үш нұсқада өндеу: 1. Өндеусіз (бақылау). 2. Дәндерді Бенлатпрепаратымен өндеу. 3. Дәндерді Нано-Гропрепаратымен өндеу. Жапырақ ауданының қалыптасу нәтижелері көрсетілген. Жапырақ ауданының оптималды қалыптасуы – күрделі мәселе. Күн радиациясы далалық өсімдіктерде жапырақ ауданы жетіспегенде толығымен жұтылмайды; жапырақ ауданы қарқынды дамығанда да аталған құбылыс орын алады. Ізденушілер жаздық дәнді дақылдар дәндерін Бенлатоммен өндеу және Нано-Гро әсерінде зерттеген.

Зерттелген барлық нұсқаларда жапырақтың максималды ауданы масақтану фазасында, кейін сүтті жетілу фазасында бұл көрсеткіш айтарлықтай төмен. Үш жыл зерттеу барысында түптену фазасында Margarita сортында жапырақ бетінің ауданы 7,81-ден 8,38 мың. м²/га-ға, Прохоровка сортында 6,98-ден 7,40 мың. м²/га-ге өзгерді және Симбирцит сортында 7,18-ден 7,96 мың. м²/га-ға алмасты. Margarita сортында ең үлкен жапырақ ауданымен сипатталады – 8,38 мың. м²/га, минималды жапырақ ауданына Прохоровка сорты ие – 7,40 мың. м²/га.

Зертелген барлық жаздық бидайларда жапырақ аудандарының қарқынды өсуі Бенлатпен, Нано-Гро препараттарымен өңделген нұсқаларда болды. Бақылаумен салыстыру бойынша түптену фазасында Маргарита сортында жапырақ ауданының 0,27 мың. м²/га, Прохоровка сортында – 0,23 және Симбирцит сортында 0,41 мың. м²/га ұлғаюы. Нано-Гро препаратымен өңдеу бақылаумен салыстырғанда жапырақ ауданының Маргарита сортында 0,57 мың. м²/га, Прохоровка сортында - 0,42, Симбирцит сортында 0,78 мың. м²/га ұлғайды.

Өсімдіктің барлық өсу және даму фазасында жапырақ ауданының төмен көрсеткіштері өңделмеген бақылау нұсқасында болды. Қарқынды өсу фазасында (масақтану) тәжірбиелі барлық нұсқаларда жапырақ ауданының мәндері дәнді дақылдар үшін ұсынылған оптимумдарға жақын болды.

Маргарита сортында өңделмеген нұсқасында көрсеткіштер 36,81 мың. м²/га, Прохоровка – 34,20 мың м²/га және Симбирцит нұсқасында - 36,59 тыс. м²/га құрады. Егу алдында өндеген кезде Маргарита сортында жапырақ ауданы 1,66-2,14 мың. м²/га-ға, Прохоровкада – 1,21-2,18 мың м²/га және Симбирцит-сортында 1,39-2,06 мың м²/га ұлғайды. Жапырақ ауданының ұлғаюы дәндерді Нано – Гро препаратымен өндегенде жүзеге асты. Маргарита сортында аталған көрсеткіш - 38,95 мың м²/га, ал Прохоровка сортында 36,38 мың м²/га және Симбирцит сортында – 38,65 мың м²/га ие болды.

Сүтті жетілу фазасында өсімдіктердің жапырақ ауданы айтарлықтай кішірейді, алайда аталған көрсеткіш жоғары мәндерге ие, Маргарита сортында – 9,97-10,90 мың м²/га, 8,32-9,13 мың м²/га – Прохоровка сортында, Симбирцит сортында – 9,39-10,04 мың м²/га. Бұл жағдай барлық зертелген сорттарда жоғары өнімділіктің қалыптасуына әсер етті.

Ауа-райы жағдайларына орай, Нано-Гро препаратын қолдану және дәндерді өңдеу бірдей болған жоқ. Нано-Гро препаратымен дәндерді өңдеу нұсқаларында өсімдіктердің жапырақ ауданы бақылаумен салыстырғанда максималды үлкен болды. Маргарита сортында – 3,45 мың м²/га, 3,14 мың м²/га – Прохоровка сортында және Симбирцит сортында 3,06 мың м²/га басым болды.

Чуваш Республикасының сұр орманды топырақтарында жаздық бидай өсімдіктерінде жапырақ бетінің максималды ауданы Нано-Гро препаратымен өңдеу барысында масақтану фазасында қалыптасады. Бұл көрсеткіш Маргарита сортында – 38,95 мың м²/га, Симбирцит сортында 38,65 мың м² және Прохоровка сортында – 36,38 мың болды. Дәндерді өңдеу жаздық бидай өсімдігінің жапырағының ұлғаюына әсер етеді.

Түйін сөздер: жаздық бидай, жапырақ ауданы, сорттар, Нано-Гро өсу регуляторы, дәндерді өңдеуші Бенлат.

А. А. Балыкин, Л. Г. Шашкаров, Г. А. Мефодьев, В. Г. Семенов

Чувашская государственная сельскохозяйственная академия, Чебоксары, Чувашская Республика, Россия

ПЛОЩАДЬ ЛИСТЬЕВ РАСТЕНИЙ ЯРОВОЙ ПШЕНИЦЫ В ЗАВИСИМОСТИ ОТ ПРЕДПОСЕВНОЙ ОБРАБОТКИ СЕМЯН И СОРТА

Аннотация. В статье рассмотрены вопросы формирования площади листьев яровой пшеницы в зависимости от протравливания семян и сортов условиях Чувашской Республики.

Цель научных исследований – изучить и определить влияние предпосевной обработки семян на формирование ассимиляционного аппарата растений у изучаемых сортов яровой пшеницы.

Изучены три сорта – Маргарита, Симбирцит и Прохоровка. Второй фактор – обработка семян в трех градациях: 1. Без обработки (контроль). 2. Протравливание семян препаратом Бенлат. 3. Обработка семян препаратом Нано-Гро. Представлены результаты анализа формирования площади листьев. Определение формирования оптимальной площади листьев – проблема очень сложная. Солнечная радиация при недостаточной площади листьев полевых растений поглощается не полностью; при наибольшей развитой листовой поверхности происходит то же самое явление. В сочетании с протравителем семян яровых зерновых культур – Бенлатом соискателем изучено и действие Нано-Гро. На повышение формирования площади листьев яровой пшеницы существенно влияет предпосевная обработка семян раствором Нано-Гро.

Выявлено, что листовая поверхность максимальных размеров на всех изучаемых вариантах достигала в фазу колошения, а затем к фазе молочной спелости этот показатель значительно уменьшалась. В среднем за три года исследований в фазу кущения у сорта Маргарита площадь листовой поверхности изменялась от 7,81 до 8,38 тыс. м²/га, у сорта Прохоровка изменялась – от 6,98 до 7,40 тыс. м²/га, и у сорта Симбирцит изменялась – от 7,18 до 7,96 тыс. м²/га. Сорт Маргарита характеризовался наибольшей площадью листовой

поверхности 8,38 тыс. м²/га, минимальной площадью листовой поверхности характеризовался – сорт Прохоровка 7,40 тыс. м²/га.

У всех изучаемых сортов яровой пшеницы более активное нарастание площади листьев было на вариантах с протравливанием семян с протравителем Бенлати, обработкой семян препаратом Нано-Гро. В фазу кущения у сорта Маргарита площадь листьев растений при протравливании семян повышалась на 0,27 тыс. м²/га, площадь листьев у сорта Прохоровка – на 0,23 и площадь листьев у сорта Симбирцит – на 0,41 тыс. м²/га. Более эффективной была обработка семян с препаратом Нано-Гро, которая существенно повышала площадь листьев, по сравнению с контролем на 0,57 тыс. м²/га у сорта Маргарита, на 0,42 тыс. м²/га – у сорта Прохоровка и на 0,78 тыс. м²/га – у сорта Симбирцит.

Во все фазы роста и развития растений наиболее низкие показатели площади листьев были на контрольном варианте без обработки. Значения площади листьев у растений пшеницы в фазу максимального прироста (колошения) на вариантах опыта были близки к тем параметрам, которые рекомендуются как оптимальные для зерновых культур.

Данные показатели у сорта Маргарита на варианте без обработок составили 36,81 тыс. м²/га, у сорта Прохоровка – 34,20 тыс. м²/га и у сорта Симбирцит – 36,59 тыс. м²/га. При предпосевной обработке семян листовая поверхность у сорта Маргарита повысилась на 1,66-2,14 тыс. м²/га, у сорта Прохоровка повысилась на 1,21-2,18 тыс. м²/га и у сорта Симбирцит повысилась – на 1,39-2,06 тыс. м²/га. Наибольшей площадью листьев характеризовались растения на вариантах, при проведении обработки семян с препаратом Нано-Гроу сорта Маргарита данный показатель составил – 38,95 тыс. м²/га, у сорта Прохоровка – 36,38 тыс. м²/га и у сорта Симбирцит – 38,65 тыс. м²/га.

Площадь листьев растений к фазе молочной спелости существенно уменьшалась, но данный показатель оставался достаточно высоким – в пределах 9,97-10,90 тыс. м²/га у сорта Маргарита, 8,32-9,13 тыс. м²/га – у сорта Прохоровка и 9,39-10,04 тыс. м²/га – у сорта Симбирцит. Как и в предыдущие фазы вегетации, максимальной она была в вариантах с обработками семян, у сорта Маргарита – 10,90 тыс. м²/га, у сорта Прохоровка – 9,31 тыс. м²/га, и 10,04 тыс. м²/га – у сорта Симбирцит. Это способствовало формированию более высокой урожайности у всех изучаемых сортов. В разные по погодным условиям годы эффективность использования препарата Нано-Гро и протравливания семян была неодинаковой. Площадь листьев растений в вариантах с обработкой семян с препаратом Нано-Гро была максимальной и превышала контрольный вариант (без обработки) на 3,45 тыс. м²/га у сорта Маргарита, 3,14 тыс. м²/га – у сорта Прохоровка и 3,06 тыс. м²/га – у сорта Симбирцит.

В условиях серых лесных почв Чувашской Республики максимальная площадь листовой поверхности у растений яровой пшеницы формируется в фазу колошения при обработке семян препаратом Нано-Гро и составляет 38,95 тыс. м²/га у сорта Маргарита, 38,65 тыс. м² – у сорта Симбирцит и 36,38 тыс. м²/га – у сорта Прохоровка. Протравливание семян способствует повышению площади листовой поверхности у растений яровой пшеницы.

Ключевые слова: яровая пшеница, площадь листьев, сорта, регулятор роста Нано-Гро, протравитель семян Бенлат.

Information about authors:

Balykin Alexey Anatolyevich, post-graduate student of the Department of Agriculture, Crop Production, Breeding and Seed Production, Chuvash State Agricultural Academy, Cheboksary, Russia; ab-66@mail.ru; <http://orcid.org/0000-0002-0600-2184>

Shashkarov Leonid Gennadievich, Doctor of Agricultural Sciences, Professor, Academician of RANS, Honored Worker of Agriculture of the Chuvash Republic, Professor of the Department of Agriculture, Crop Production, Breeding and Seed Production, Chuvash State Agricultural Academy, Cheboksary, Chuvash Republic, Russia; leonid.shashkarow@yandex.ru; <http://orcid.org/0000-0001-9965-9953>

Mefodyev Georgiy Anatolyevich, Candidate of Agricultural Sciences, Associate Professor, Head of the Department of Agriculture, Crop Production, Breeding and Seed Production of the Chuvash State Agricultural Academy, Cheboksary, Chuvash Republic, Russia; mega19630703@mail.ru; <http://orcid.org/0000-0002-3969-931X>

Semenov Vladimir Grigoryevich, Doctor of Biological Sciences, professor, Honored Worker of Science of the Chuvash Republic, professor of the Department of Morphology, Obstetrics and Therapy of the Chuvash State Agricultural Academy, Cheboksary, Chuvash Republic, Russia; semenov_v.g@list.ru; <http://orcid.org/0000-0002-0349-5825>

REFERENCES

- [1] Pretoris Z.A. (1988). Effect of adult plant resistance on leaf rust development and grain yield in wheat / Z.A. Pretoris, G.H.J.Kemp. *Phitophilactica*. N 20. P. 341- 343.
- [2] Okon Y., Labandera Gonzalez C. (1994). Agronomic applications of asospirillum an evaluation of 20 years worldwide field inoculation e [perimtns. *Sol. Biol. Biochem*. Vol. 26. P. 1591-1601.
- [3] Mefodyev G.A., Shashkarov L.G., Semenov V. G., Baimukanov D.A., Karibayeva D.K. (2019). Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. Vol. 1, N 377 (2019), 21–26, <https://doi.org/10.32014/2019.2518-1467.3>
- [4] Aldesuquy H.S., Abbas M.A., Abohamed S.A., Elhakem A.H., Alsokari S.S. (2012). Glycine betaine and salicylic acid induced modification in productivity of two different cultivars of wheat grown under water stress. *Journal of Stress Physiology & Biochemistry*. Vol. 8, N 2. P. 72-89.
- [5] Aldesuquy H.S., Ibraheem F.I., Gahnem H.E. (2014). Comparative Morpho-Biochemical responses of wheat cultivars Sensitive and Tolerant to water stress. *Journal of Stress Physiology & Biochemistry*. Vol. 10, N 2. P. 168-189.
- [6] Piskaeva A.I., Babich O.O., Dolganyuk V.F., Garmashov S. Yu. (2017). Analysis of the influence of biohumus on the basis of consortium of effective microorganisms on the productivity of winter wheat Foods and Raw materials. Vol. 5, N 1. P. 90-99.
- [7] Batalova G.A., Shirokikh I.G., Tulyakova M.V., Shevchenko S.N., Rusakova I.I., Abubakirova R.I., Zhuykova O.A. (2015). Some results and issues on the methodology of oat selection for resistance to edaphic stress. *Agrarian science of the Euro-North-East*, N 4 (47). P. 9-15 (in Russ.).
- [8] Agro Nanotechnology Corporation. Home. (2007). Web site: // www.Agronano.Com/nanogro.Html
- [9] Machaffee W.F., Kloepper J.F. (1996). Temporal changes in the bacterial communities of soil, rhizosphere and endoriza associated with field ground cucumber (*Cucumeis sativus* L). *Microb. Ecjl*. Vol. 34. P. 210-223.
- [10] Merker A. (1983). Cytogenetic investigations in hexaploid triticales. II Mciosis and fertility in F₁ and F₂ *Hereditas*. P. 285-290.
- [11] Kloepper J.W. Kloepper J.W., Scher F.M., Laliberte M., Zaleska I. (1985). Measuring the spermosphere colonizing capacity (spermosphere competence) of bacterial inoculants. *Can. J. Microbiol*. Vol. 31. 926 p.

B. N. Nasiyev¹, H. G. Yancheva², N. Zh. Zhanatalapov¹

¹Zhangir khan West Kazakhstan Agrarian-Technical University, Uralsk, Kazakhstan;

²Agrarian University Plovdiv, Republic of Bulgaria.

E-mail: veivit.66@mail.ru, christina@au-plovdiv.bg, Nurbolat-z86@mail.ru

PASTURE MODE FOR USE OF SUDAN GRASS

Abstract. The main task of fodder production in West Kazakhstan region is to provide the livestock industry with fodders stable in yield, balanced in nutritional value and low in cost. An important point is that the supply of green feed, especially during the summer depression, should not be interrupted. All these requirements are met by Sudan grass. Having high plasticity to growing conditions and unique drought resistance for fodder crops, it becomes an indispensable component of green conveyor. Sudan grass is used as grazing feed, to produce green mass and hay. A significant share of Sudan grass in feed crops is provided by its high nutritional value for farm animals. The research aim is to study the technology of Sudan grass cultivation to provide livestock with full feed. As a result of the carried out studies, the data on productivity and feed value of Sudan grass in conditions of West Kazakhstan region during cultivation in grazing mode were obtained. For the studies in 2018 and 2019 in total for 4 browsing, Sudan grass provided collection of 87.06-107.44 c/ha green mass for use as feed to cattle.

Key words: sudan grass, grazing regime, green feed, browsing, yield, feed value.

Introduction. The main direction in agro-industrial complex of the Republic of Kazakhstan is animal husbandry. Increasing meat production is currently the most important task facing Kazakhstan's domestic livestock industry. In the coming years, agriculture is tasked with increasing export potential of the country through the supply of quality domestic meat [1,2,3,4]. In order to achieve these objectives, it is important to provide livestock production with high-quality fodder raw materials. Among many feed crops, Sudan grass deserves special attention [5].

Sudan grass is a universal feed culture, as it is used on green feed, hay, silage, and as a grazing plant. It is characterized by high exuberance, good mobile education capacity, abundant artisanal growth and rapid growth. The hay of Sudan grass is relatively rich in protein, which is the most valuable part of feed, and in this regard ranks first among all cereal one-year-old herbs cultivated in the North Caucasus, second only to legume crops. The hay of Sudan grass is also superior in quality to hay of perennial cereal meadow herbs. It is rich in mineral salts, especially phosphorus and calcium salts. The hay contains some, though insignificant, amount of carotene, which is provitamine A, which is of great importance for normal growth and development of animal body. In terms of amount of digested protein, the hay of Sudan grass stands above that of sorghum, mogar, and steppe herbs and is inferior only to the lucerne hay and vicooose mixture. The transportability of basic nutrients is quite high [6]. Sudan grass is of exceptional importance as grazing feed. Sudan grass gives fresh green food during any period of vegetation, even in July, August and early September, is characterized by high exuberance, good bathing capacity, abundant tilling capacity and rapid growth [7, 8]. Sudan grass is among the late grazing. To start pastries on Sudan grass is recommended when the plant is sufficiently rooted. It is not recommended to graze cattle on Sudan grass for a long time without changing the feed. Much less life-threatening cyanide compounds are formed in Sudan grass, compared to sorghum and Sorghum halepense. The formation of this acid is most common in Sudan grass which has been damaged by drought or any other adverse climatic conditions. The amount of cyanide acid is the largest in young plants [9].

Sudan grass is better than others to withstand grazing. According to Chkalovsky Institute of Meat and Milk Cattle Breeding, the amount of plants pulled out by cattle was at grazing on the pasture of Sudan grass in the phase of cutting 1%, and in the phase of complete stem elongation 0.3%. At the same time, in pastures, the number of plants pulled out by cattle increased by 13-16%, respectively, and in corn pasture to 29.4-43.25% of total herbal area. Sudan grass is also distinguished by the fact that it is better than other one-year-old fodder herbs carry trampling, which significantly increases the value of pasture. After the regrowth of Sudan grass, the growth of its seedlings comes from shoots of three types: developing from underground stem nodes, forming from underground stem nodes and growing from cut shoots, which have maintained a growth point. This bathing ability provides multiple mowings of Sudan grass during the year [10].

Sudan grass as a green feed can be used both by browsing by cattle to the root and by mowing green mass to the feed to animals in the stall. The latter method makes it possible to consume fodder mass more economically and to prevent crops from being pulled out by cattle. For grazing or green feed, Sudan grass begins to be used from the time its stem elongation, when plants grow at 30-40 cm height and take root [11].

The vegetative renewal capacity of Sudan grass after mowing is of great importance in increasing its productivity and lengthening its useful life, as well as in ensuring uniform feeding at different periods of vegetation. The timing of Sudan grass mowing depends on its emptiness, the magnitude of total crop, its distribution by bites and quality of feed [12].

M.G. Muslimov's study of the optimal timing of Sudan grass mowing for green mass showed that the best results on the yield of green mass and the yield of gross energy are provided by cleaning at the beginning of ear formation. A number of researchers have expressed themselves in favor of mowing use in the phase of ear formation beginning, considering the dynamics of accumulation of absolutely dry matter, leaf surface, sugar and other nutrients. When cleaning during this period the largest harvest was received in total for two mowings [13].

Other times (the end of stem elongation and full ear formation) were somewhat inferior to it, but if manufactured they can also be used [13, 14].

It is recommended that Sudan grass be mown for green feed from stem elongation to ear formation. Mowing during this period positively affects the intensity of forthputting and provides obtaining the maximum number of mowing, significantly increases the excretion and quality of fodder due to increase of nutrient content, subtlety and increase of leaf formation [15,16,17].

Research methods. The research is carried out on the experimental field of Zhangir Khan West Kazakhstan Agricultural and Technical University. (Republic of Kazakhstan, Uralsk).

The research is carried out within the framework of the grant financing program of the Science Committee of the Ministry of Science of Kazakhstan on the project AP05130172 "Development of adaptive technologies for the cultivation of fodder and oilseeds in relation to the conditions of West Kazakhstan" and on the topic of PhD thesis "Formation of Sudane grass harvest in fodder lands of West Kazakhstan region".

According to morphological characteristics of profile genetic horizons and agrochemical indicators of arable layer, soil of the test area is characteristic for dry steppe zone of West Kazakhstan. The area of divisions is 50 m², the repetition is three-fold, and the location of the divisions is random. Agricultural machinery of Sudan grass cultivation is accepted for 1 zone of West Kazakhstan region. Brodskaya 2 zoned sort of Sudan grass grass was used in the experiment. Agricultural machinery of Sudanese grass cultivation accepted for West Kazakhstan region. Nitrogen (ammonium nitrate) and phosphorus (double superphosphate) fertilizers are added to the soil in recommended doses for West Kazakhstan region.

During field tests, accounting, observation of the beginning of phenological phases and growth of Sudan grass were carried out according to generally accepted methods [18]. Photosynthetic activity of Sudan grass crops was studied according to the generally accepted method [19]. Harvesting and registration of crops is performed by continuous method.

When using Sudan grass in grazing mode, the first browsing of plant formations was carried out by simulating in the interval of phases tillering - stem elongation. In the future, repeated browsing of plant formations of Sudan grass was carried out as the grazing vegetative mass grew to a height of 40-50 cm.

Based on the results of chemical analysis of green mass of Sudan grass, bioenergetic evaluation of the studied methods was carried out according to the accepted method [20]. Statistical processing of the study

results was carried out by the method of dispersion analysis [21], statistical graphs were constructed using the program Statistica 6.0.

Results and discussion. Due to its aftermathability, Sudan grass is also a promising crop for use in grazing mode. When growing in grazing mode, the time of beginning of phenological phases and length of growing period are of great practical importance, as these indicators determine the time of economic use.

In 2018, weather conditions at the time of Sudan grass planting were favorable, the seedlings appeared on day 11. The density of Sudan grass seedlings at 95% of the ascended plants was 142.5 pcs m². Interphase period of sprouting - growth lasted 12 days. Since the beginning of the first decade of June, due to the decrease in air temperature in the absence of precipitation, there has been a decrease in the growth rate of Sudan grass. Sudan grass tillering came on 12 June. The first browsing was carried out at an average plant height of 39.45 cm on the 33rd day after sowing. By the time of 1 browsing, the area of Sudan grass leaves was 4.39 thousand m²/ha, with a photosynthetic potential of 0.14 million m² days/ha. The length of the growing period of Sudan grass in the grazing regime up to 2 browsing was 15 days, i.e. the browsing was performed on 27 July. In conditions of insufficient heat supply during the initial periods of development, the periods of Sudan grass are extended between after-grass browsing. High temperature of air 35-38, 38-40 degrees in the absence of atmospheric precipitation developed in the 3rd decade of June and in July of month promoted lengthening of the period between 2 and 3 and also 3 and 4 browsing. The 3rd browsing of Sudan grass was carried out 23 days after the 2nd (20 July), and 4 after 30 after the 3rd browsing (20 August).

The number of vegetating plants at the time of herbal harvesting is of great importance for obtaining a guaranteed harvest of grazing grass. According to the counting data, in the conditions of 2018, the density of plant standing at the first browsing was 125 pcs m². At the same time, the safety of Sudan grass plants in grazing grass amounted to 87.72%. The number of seedlings is 145 plants/m². In the second browsing, there was a decrease in the density of plant formation. Thus, when cleaning on 27 June (15 days after 1 browsing), the density of Sudan grass crops amounted to 118 pcs m². During the period between 1 and 2 browsing, 7 plants fell from the plant formation per m². In the second browsing, the conservation of Sudan grass plants decreased by 4.941% compared to the first browsing and the density of grazing grass was 118 plants per m². When the green mass is alienated, a decrease in the standing density of herbal plants is observed in all subsequent excesses. Plant falling out throughout the growing period after alienation was independent of weather conditions. With an increase in air temperature and a decrease in moisture supply, artisanal growth increased and plant growth slowed. 9-11 plants fell out of grazing grass in 3 and 4 after-grass browsing. The fall of Sudan grass plants from the grazing grass in total for 4 alienations was 47 or 32.41%.

The yield of vegetative mass of grazing plants depends on the coefficient of reproduction, which in turn is determined by the indicator of artisanal activity. With the increase in artisanal production, the specific weight of leaves in the crop structure increases, the content of nutrients increases, the quality of crop increases, as well as the eating capacity and transportability of grazing grass. As 2018 data count shows, tilling capacity of Sudan grass at the first browsing (June 12) was 3.3 stems per plant. In 2 browsing, more than 0.6 shoots were formed on Sudan grass plants compared to 1 browsing and tilling capacity was 3.9 pcs/plant. The formation of after-grass was mainly due to the growth of stems and scions from tillering node. The period between the first and second alienations is characterized by intense appreciation. In the third alienation, the artisanal nature of the plants of the second term exceeded the plants of the first by 1.0 of a stem. With the third alienation, the artisanal content of Sudan grass increased to 4.3, and in 4 browsing this figure was 4.7. In our 2018 studies, the yield of the green mass of Sudan grass used in grazing mode in 1 browsing was 27.25 c/ha with a dry mass collection of 4.36 c/ha.

At the second alienation, the crop of the second sowing term amounted to 29.12 c/ha of green mass and dry mass of 5.01 c/ha. The harvest of the second browsing exceeded the harvest of the first by 6.42%. This confirms the influence of temperature factor on the growth intensity of Sudan grass. At the same time stem of the second term of sowing by density was inferior to the first, increase of green mass crop took place due to increase of a plant mass. In the future, due to the weather conditions, the productivity of Sudan grass was further reduced in 3 and 4 browsing. The yield of green mass in 3 and 4 browsing was 19.45 and 11.24 c/ha, respectively, with a dry mass collection of 3.63 and 2.14 c/ha.

The total productivity of Sudan grass at grazing mode of use for the season 2018 was 87.06 c/ha green collection, 15.14 c/ha dry mass, 13.17 c/ha feed units, 1.52 c/ha digestible protein and 15.73 GJ/ha exchange energy (table 1).

Table 1 – Productivity and fodder value of Sudan grass for pasture mode in dry steppe zone of WKO c/ha, 2018

Indicators	Sequence of browsing:				Total for 4 browsing
	1	2	3	4	
Green material, c/ha	27.25	29.12	19.45	11.24	87.06
Dry weight, c/ha	4.36	5.01	3.63	2.14	15.14
Fodder units, c/ha	3.79	4.36	3.16	1.86	13.17
Digestible protein, c/ha	0.47	0.50	0.36	0.19	1.52
Exchange energy, GDj/ha	4.54	5.21	3.76	2.22	15.73
LSD ₀₅ Dry weight – 0,36 c/ha.					

In 2019, weather conditions at the time of Sudan grass planting were favorable, but due to the returned cold sprouts appeared on day 15. The density of Sudan grass seedlings at 93.66% of the braided plants was 140.5 pcs m². Interphase period sprouting - tillering lasted 14 days. Sudan grass tillering came on 26 May. Overall, 2019 was a favorable year for the growth and development of Sudan grass grazing use regime. The first browsing was carried out at an average plant height of 42.50 cm on the 39th day after sowing. By the time of 1 browsing, the area of Sudan grass leaves was at 5.71 thousand m²/ha, with a photosynthetic potential of 0.22 million m² days/ha. The length of the growing period of Sudan grass in grazing mode up to 2 browsing was 16 days, i.e. the browsings were performed on 21 June. In the future, weather conditions during the growing period were favourable for the growth and development of Sudan grass grazing regime. 3 browsings of Sudan grass was carried out 23 days after the 2nd (14 July), and 4 after 34 days after the 3rd browsing (18 August).

The growth and development of Sudan grass was significantly influenced by the prevailing weather conditions of the growing period. According to weather conditions, the most favorable conditions for the growth and development of Sudan grass were in 2019. In June 2019, when there was intense growth and harvest of Sudan grass, 40.2 mm of precipitation fell, which is more than the multi-year data by 8.2 mm. By contrast, 6.2 mm of rainfall fell in 2018 in June, down from the norm of 25.8 mm. In addition, in 2018 there were not quite favorable conditions in temperature. In June 2018, the average monthly air temperature was lower than the norm at 0,6⁰C and was 19,8⁰C. Cool weather in June 2018 held back the growth and development of Sudan grass.

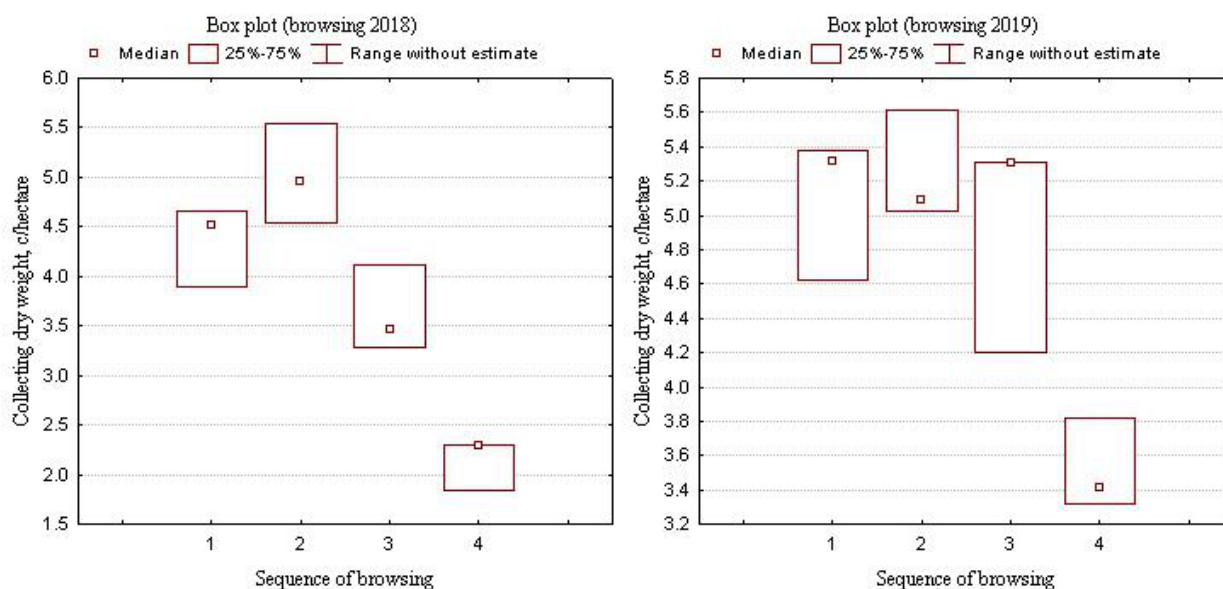
Due to the prevailing weather conditions of vegetation periodicity in studies, higher productivity rates have been lost in 2019 conditions. The yield of green mass of Sudan grass used in grazing mode in 1 browsing was 32.15 c/ha with a dry mass collection of 5.11 c/ha. At the second alienation, the crop of the second sowing term amounted to 30.40 c/ha of green mass and dry mass of 5.24 c/ha. The harvest of the second release exceeded the harvest of the first by 5.75%. This confirms the influence of temperature factor on the growth intensity of Sudan grass. At the same time, haulm stand of the second term of sowing by density was inferior to the first; increase of green mass crop took place due to increase of mass of one plant. In the following, 3 and 4 browsings showed a further decrease in the productivity of Sudan grass, which is related to its biological features. The yield of green mass in 3 and 4 browsings was 26.45 and 18.44 c/ha, respectively, with a dry mass collection of 4.94 and 3.52 c/ha.

The total productivity of Sudan grass under the grazing regime for season 2019 was 107.44 c/ha green, 13.81 c/ha dry mass, 16.36 c/ha feed units, 1.95 c/ha digestible protein and 19.52 GJ/ha exchange energy (table 2).

Table 2 – Productivity and fodder value of Sudan grass for pasture mode in dry steppe zone of WKO c/ha, 2019

Indicators	Sequence of browsing:				Total for 4 browsing
	1	2	3	4	
Green material, c/ha	32.15	30.40	26.45	18.44	107.44
Dry weight, c/ha	5.11	5.24	4.94	3.52	13.81
Fodder units, c/ha	4.44	4.56	4.30	3.06	16.36
Digestible protein, c/ha	0.56	0.55	0.51	0.33	1.95
Exchange energy, GDj/ha	5.31	5.44	5.12	3.65	19.52
LSD ₀₅ Dry weight – 0,98 c/ha.					

The dispersion analysis of the experiment data on the collection of dry mass of Sudan grazing grass showed sufficient accuracy in estimating the characteristic of total population for 2018, 2019. If Student t-test = 4.3, differences between arithmetic mean of different levels are significant (figure).



Productivity of Sudan grass under pasture mode used in 2018, 2019, c/ha

Conclusion. In the dry-steppe zone of West Kazakhstan region, to provide animals with full-fledged fodders during summer depression, it is effectually to use Sudan grass in pasture mode. Whereby browsing is performed in the period of tillering periods - leaf-tube formation.

Б. Н. Насиев¹, Х. Г. Янчева², Н. Ж. Жанаталапов¹

¹Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университеті, Орал, Қазақстан;

²Пловдив аграрлық университеті, Болгария Республикасы

СУДАН ШӨБІН ЖАЙЫЛЫМДЫҚ РЕЖИМДЕ ПАЙДАЛАНУ

Аннотация. Батыс Қазақстан облысындағы жемшөп өндірісінің негізгі мақсаты – мал шаруашылығы саласын өнімділігі тұрақты, қоректілігі жағынан теңгерімді және өзіндік құны төмен мал азығымен қамтамасыз ету. Мал шаруашылығында жазғы күйзеліс кезінде, мал азығына қажетті жасыл балауса шөп тұрақты түрде өндіріліп отыруы қажет. Судан шөбі осы талаптардың бәріне жауап береді. Өсу ортасына аса жоғары деңгейде бейімделуімен ерекшелене отырып, судан шөбі шөлге аса төзімділігінің арқасында жасыл конвейердің таптырмас компоненті болып саналады. Судан шөбі жайылымдық режимде, жасыл балауса және бос шөп өндірісінде де қолданылады. Мал азықтық дақылдар танабының басты бөлігін ала отырып, судан

шөбі ауыл шаруашылық малдары үшін құнды азықтық қасиетімен де ерекшеленеді. Зерттеудің мақсаты – мал шаруашылығын сапалы жем-шөппен қамтамасыз ету үшін судан шөбінің технологиясын зерттеу. Зерттеу нәтижесінде Батыс Қазақстан облысы жағдайында судан шөбін жайылымдық режимде пайдалану бойынша өнімділік пен өнім құндылығы жөнінде деректер алынды. 2018 және 2019 зерттеу жылдарында судан шөбі 87,06-107,44 ц/га көлемінде малға үстеме қоректендіру үшін пайдалануға қажетті жасыл балауса өнімін берді.

Зерттеулер Жәңгір хан атындағы Батыс Қазақстан аграрлық-техникалық университетінің (Қазақстан Республикасы, Орал қ.) тәжірибелік танаптарында қабылданған әдістемелерге сәйкес жүргізіледі.

2018 жылғы біздің зерттеулерімізде жайылымдық режимде пайдаланылатын судан шөбінің жасыл массасының түсімділігі 1-орым кезінде – 27,25 ц/га, құрғақ масса жиымы 4,36 ц/га болды. Екінші рет оталау кезінде, себудің екінші мерзіміндегі балауса массасының түсімі 29,12 ц/га және құрғақ масса 5,01 ц/га құрады. Екінші оталау түсімі бірінші түсімнен 6,42 %-ға асып түсті. Бұл температура факторының судан шөбі өсімінің қарқындылығына әсерін растайды. Бұл ретте себудің екінші мерзімінің сабақтары қалыңдығы жөнінен бірінші мерзімнен кем түсті, жасыл масса түсімінің артуы бір өсімдік салмағының артуы есебінен болды. Одан әрі қалыптасқан ауарайы жағдайларына байланысты, 3 және 4-оталау кезінде, судан шөбі өнімділігінің одан әрі төмендеуі байқалды. 3 және 4-оталаудағы жасыл массаның өнімділігі, тиісінше, 19,45 және 11,24 ц/га, құрғақ массаны жинау кезінде 3,63 және 2,14 ц/га құрады.

2018 жылғы маусымда, жайылымдық пайдалану режимінде судан шөбінің жалпы өнімділігі 87,06 ц/га балауса массаны, 15,14 ц/га кепкен массаны, 87,06 ц/га жем-шөптік бірлікті, 1,52 ц/га қайнатылған протеин және 15,73 ГДж/га алмасу энергиясын құрады. Судан шөбінің өсуі мен дамуына вегетация кезеңінде қалыптасқан ауарайы жағдайлары айтарлықтай әсерін тигізді. Ауарайы жағдайлары бойынша, 2019 жылы судан шөптерінің өсуі мен дамуы үшін қолайлы жағдайлар қалыптасты. 2019 жылдың маусым айында, судан шөбінің қарқынды өсуі мен түсім қалыптастыру кезінде, 40,2 мм жауын-шашын түсті, бұл көпжылдық мәліметтермен салыстырғанда 8,2 мм-ге артық. Керісінше, 2018 жылы маусым айында 6,2 мм жауын-шашын түсті, бұл нормадан 25,8 мм-ге аз. Сонымен қатар, 2018 жылы температура жөнінен қолайлы жағдай қалыптасты. 2018 жылдың маусым айында орташа айлық ауа температурасы нормадан 0,60 °C-қа төмен болды және 19,80 °C-ты құрады. 2018 жылдың маусым айында салқын ауарайы судан шөптерінің өсуі мен дамуын тежеді.

Вегетация кезеңінде қалыптасқан ауарайы жағдайларына байланысты зерттеулерде өнімділіктің жоғары көрсеткіштері 2019 жылы орын алғаны байқалды. Жайылымдық режимде пайдаланылатын судан шөбінің жасыл массасының түсімділігі 1-орымда 32,15 ц/га, құрғақ масса жиымы 5,11 ц/га құрады. Екінші рет оталау кезінде себудің екінші мерзімінің жасыл масса өнімі 30,40 ц/га және құрғақ масса 5,24 ц/га құрады. Екінші оталау түсімі бірінші түсімнен 5,75 %-ға асып түсті. Бұл температура факторының судан шөбі өсімінің қарқындылығына әсерін растайды. Бұл ретте себудің екінші мерзімінің сабақтары қалыңдығы жөнінен бірінші мерзімнен кем түсті, жасыл масса түсімінің артуы бір өсімдік салмағының артуы есебінен болды. Одан әрі 3 және 4-оталау кезінде судан шөбі өнімділігінің одан әрі төмендеуі байқалды, бұл судан шөбінің биологиялық ерекшеліктерімен байланысты. 3 және 4-оталаудағы жасыл массаның өнімділігі, тиісінше, 26,45 және 18,44 ц/га, құрғақ массаны жинау кезінде 4,94 және 3,52 ц/га құрады. 2019 жылы маусымда жайылымдық режимде судан шөбінің жалпы өнімділігі 107,44 ц/га балауса массасын, 13,81 ц/га кепкен массаны, 19,49 ц/га жем-шөптік бірлікті, 1,95 ц/га сіңімді протеин және 19,52 ГДж/га алмаспалы энергияны құрады.

Осылайша, Батыс Қазақстан облысының шөлейтті дала аймағында ауыл шаруашылығы жануарларын толық құнарлы азықпен қамтамасыз ету үшін жазғы депрессия кезеңінде судан шөптерін жайылымдық режимде тиімді пайдалану қажет. Бұл ретте оталау түптену-түтікке кезеңдерінде жүргізілуі тиіс.

Түйін сөздер: судан шөбі, жайылымдық режим, жасыл балауса, мал жаю, өнімділік, мал азықтық құндылық.

Б. Н. Насиев¹, Х. Г. Янчева², Н. Ж. Жанаталапов¹

¹Западно-Казахстанский аграрно-технический университет им. Жангир хана, Уральск, Казахстан;

²Пловдивский аграрный университет, Республика Болгария

ИСПОЛЬЗОВАНИЕ СУДАНСКОЙ ТРАВЫ В ПАСТБИЩНОМ РЕЖИМЕ

Аннотация. Основной задачей кормопроизводства в Западно-Казахстанской области является обеспечение животноводческой отрасли стабильными по урожайности, сбалансированными по питательности и низкой по себестоимости кормами. Важным моментом является то, что поступление зеленого корма, особенно в период летней депрессии, не должно прерываться. Всем этим требованиям отвечает суданская трава. Обладая высокой пластичностью к условиям произрастания и уникальной для кормовых культур

засухоустойчивостью, она становится незаменимым компонентом зеленого конвейера. Суданскую траву используют в качестве пастбищного корма, для производства зеленой массы, сена. Значительная доля суданской травы в посевах кормовых культур обеспечивается за счет ее высокой питательной ценностью для сельскохозяйственных животных. Целью исследований является изучение технологии возделывания суданской травы для обеспечения животноводства полноценными кормами. В результате проведенных исследований получены данные по продуктивности и кормовой ценности суданской травы в условиях Западно-Казакстанской области при возделывании в пастбищном режиме. За 2018 и 2019 годы исследований в сумме за 4 стравливания суданская трава обеспечил сбор 87,06-107,44 ц/га зеленой массы для использования в качестве подкорма скоту.

Исследования проводятся на опытном поле Западно-Казакстанского аграрно-технического университета имени Жангир хана. (Республика Казахстан, г. Уральск) согласно принятых методик.

В исследованиях 2018 года урожайность зеленой массы суданской травы, используемой в пастбищном режиме в 1 стравливании, составила 27,25 ц/га при сборе сухой массы 4,36 ц/га. При втором отчуждении урожай второго срока посева составил 29,12 ц/га зеленой массы и сухой массы 5,01 ц/га. Урожай второго стравливания превысил урожай первого на 6,42%. Это подтверждает влияние температурного фактора на интенсивность роста суданской травы. При этом стеблестой второго срока посева по густоте уступал первому, увеличение урожая зеленой массы происходило за счет увеличения массы одного растения. В дальнейшем в связи с установившимися погодными условиями в 3 и 4 стравливаниях отмечено дальнейшее снижение продуктивности отавы суданской травы. Урожайность зеленой массы в 3 и 4 стравливаниях составила соответственно 19,45 и 11,24 ц/га при сборе сухой массы 3,63 и 2,14 ц/га.

Суммарная продуктивность суданской травы при пастбищном режиме использования за сезон 2018 года составила 87,06 ц/га сбор зеленой, 15,14 ц/га сухой массы, 87,06 ц/га кормовых единиц, 1,52 ц/га переваримого протеина и 15,73 ГДж/га обменной энергии. На рост и развитие суданской травы значительное влияние оказывали сложившиеся погодные условия периода вегетации. По погодным условиям наиболее благоприятные условия для роста и развития суданской травы сложились в 2019 году. В июне месяце 2019 года, когда шел интенсивный рост и формирование урожая суданской травы, выпало 40,2 мм осадков, что больше по сравнению с многолетними данными на 8,2 мм. Напротив, в 2018 году в июне месяце выпало 6,2 мм осадков, что меньше от нормы на 25,8 мм. Кроме того, в 2018 году сложились не совсем благоприятные условия по температуре. В июне месяце 2018 года среднемесячная температура воздуха была ниже от нормы на 0,6⁰С и составила 19,8⁰С. Прохладная погода в июне месяца в 2018 году сдерживала рост и развитие суданской травы.

В связи с сложившимися погодными условиями период в вегетации в исследованиях более высокие показатели продуктивности установлены в условиях 2019 года. Урожайность зеленой массы суданской травы используемой в пастбищном режиме в 1 стравливания составила 32,15 ц/га при сборе сухой массы 5,11 ц/га. При втором отчуждении урожай второго срока посева составил 30,40 ц/га зеленой массы и сухой массы 5,24 ц/га. Урожай второго стравливания превысил урожай первого на 5,75%. Это подтверждает влияние температурного фактора на интенсивность роста суданской травы. При этом стеблестой второго срока посева по густоте уступал первому, увеличение урожая зеленой массы происходило за счет увеличения массы одного растения. В дальнейшем в 3 и 4 стравливаниях отмечено дальнейшее снижение продуктивности отавы суданской травы, что связано с биологическими особенностями суданской травы. Урожайность зеленой массы в 3 и 4 стравливаниях составила соответственно 26,45 и 18,44 ц/га при сборе сухой массы 4,94 и 3,52 ц/га. Суммарная продуктивность суданской травы при пастбищном режиме использования за сезон 2019 года составила 107,44 ц/га сбор зеленой, 13,81 ц/га сухой массы, 19,49 ц/га кормовых единиц, 1,95 ц/га переваримого протеина и 19,52 ГДж/га обменной энергии.

Таким образом, в сухо-степной зоне Западно-Казакстанской области для обеспечения с.х. животных полноценными кормами в период летней депрессии целесообразно использовать суданскую траву в пастбищном режиме. При этом стравливание произвести в период фаз кушения – выход в трубку.

Ключевые слова: суданская трава, пастбищный режим, зеленый корм, стравливания, урожайность, кормовая ценность.

Information about authors:

Nasiyev B.N., Doctor of agricultural sciences, Corresponding member of NAS RK, Professor of Higher School "Technology of crop production" West Kazakhstan agrarian-technical university named after Zhangir khan, Uralsk, Kazakhstan; veivit.66@mail.ru; <https://orcid.org/0000-0002-3670-8444>

Yancheva H.G., Professor, Doctor PhD, Agrarian University Plovdiv, Republic of Bulgaria; christina@au-plovdiv.bg; <https://orcid.org/0000-0002-2392-915x>

Zhanatalapov N.Zh., PhD Doctoral Student West Kazakhstan agrarian-technical university named after Zhangir khan, Uralsk, Kazakhstan; Nurbolat-z86@mail.ru; <https://orcid.org/0000-0002-5946-3929>

REFERENCES

- [1] Alentayev A.S., Baimukanov D.A., Smailov S.D., Semenov V.G., Abdrakhmanov K.T., Begaliyeva D.A., Omarov M.M. (2018) Efficiency of breeding of the Alatau breed of brown cattle in the Adal Agroindustrial company JSC. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Vol. 5. N 375. P. 12–29. <https://doi.org/10.32014/2018.2518-1467.2>. ISSN 1991-3494 (Print)
- [2] Akimbekov A.R., Iskhan K.Zh., Aldanazarov S.S., Aubakirov Kh.A., Karynbayev K.A., Rzbayev T.S., Mukhatai Geminguli, Asylbekov S.B., Baimukanov A.D. (2019) Meat productivity of young stock of the Kazakh horse of jabe type in the conditions of the Almaty region. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. Vol. 2. N 378. P. 146–160. <https://doi.org/10.32014/2019.2518-1467.52>. ISSN 1991-3494 (Print)
- [3] Baimukanov D.A., Pristupa B.N., Kolosov Yu. A., Donnik I.M., Torosyan D.S., Kolosov A.Yu., Orlova O.N., Yuldashbayev Yu.A., Chylbak S.O. (2019) Improvement of breeding and productivite traits of Kalmyk cattle breed. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. – Vol. 2, N 378. P. 128–145. <https://doi.org/10.32014/2019.2518-1467.51>. ISSN 1991-3494 (Print)
- [4] Rakhimzhanova G.M. (2019) The role of investments in the current state of the food market in the Republic of Kazakhstan. News of the National Academy of Sciences of the Republic of Kazakhstan. Series of agrarian sciences. Vol. 1, N 49. P. 29–39. <https://doi.org/10.32014/2019.2224-526X.4>. ISSN 2224-526X (Print)
- [5] Nasiyev B., Tlepov A., Zhanatalapov N., Bekkaliev A., Yeleshev R. (2018) Studing agrophytocenoses of sudan grass in the dry steppe zone of West Kazakhstan // Asian Jr. of Microbiol. Biotech. Env. Sc. N 20(2). P. 594-600. ISSN-0972-3005.
- [6] Shumilin I.S., Derzhavin G.P. (1986) Composition and nutrition of fodders: Handbook. M, Agropromizdat, P. 50–55 (in Russ.).
- [7] Bikbulatov Z.G., Leontiev I.P., Lukmanova F.H., Nikonov V.I. (1997) Sudane grass – valuable fodder culture. Fodder production. N 7. P. 22–23 (in Russ.).
- [8] Nasiyev B.N., Yancheva H.G., Zhanatalapov N.Zh. (2019) Cultivation of Sudan grass in different ways of economic use of West Kazakhstan. News of the National Academy of Sciences of the Republic of Kazakhstan. Series of agrarian sciences. Vol. 6, N 53. P. 38-44. <https://doi.org/10.32014/2019.2224-526X.76>. ISSN 2224-526X (Print)
- [9] Malinovsky B.N. (1992) Sorgo in the North Caucasus. Rostov-on-Don, University of Rostov, P. 38-42 (in Russ.).
- [10] Nasiyev B., Zhanatalapov N., Yessenguzhina A., Yeleshev R. (2019) The use of sudan grass for the production of green fodder, hay and haylage in Western Kazakhstan. Ecology, Environment and Conservation. N 25(2). P. 295-302.
- [11] Soloviev B.F. (1960) Sudan Grass. M, Selkhozgiz, P. 25-30 (in Russ.).
- [12] Antonov V.N. (2007) Productivity of Sudan grass in clean and mixed crops depending on the sowing norm and modes of mowing and feeding on chestnut soils of Saratov Left Bank in irrigation conditions: Autoref. thesis of Cand. Agr.Sci. Orenburg, 22 p. (in Russ.).
- [13] Muslimov M.G. (2003) Sudan grass is a reliable source of fodder in the southern regions. Fodder production. N 6. P. 26-27 (in Russ.).
- [14] Elsukov M.P., Movsisyantz A.P. (1951) Sudan Grass. M, Selkhozgiz, P. 25-28 (in Russ.).
- [15] Almazharova M.A. (1979) Productivity of Sudane grass in multi-cutting use. Journal of Science of Kazakhstan. N 10. P. 36–58 (in Russ.).
- [16] Fribourg H.A. (1995) Summer annual grasses. Forages. N 1. P. 463–472.
- [17] Cole C.A., Kaiser A.G., Piltz J.W., Harden S. (1996) An evaluation of sorghums for silage production in northern New South Wales. Proceedings of the 3rd Australian Sorghum Conference, Tamworth, NSW. N 93. P. 127–139.
- [18] Methodological instructions for field experiments with fodder crops (1987) M, Agropromizdat, P. 30–38 (in Russ.).
- [19] Nichiporovich A.A. (1961) Photosynthetic activity of plants in crops: (Methods and tasks of accounting in connection with crop formation). M, Selkhozgiz, P. 20-45 (in Russ.).
- [20] Dospechov B.A. (1985) Field experiment methodology. M, Agropromizdat, P. 12-45 (in Russ.).
- [21] Methodological recommendations on bioenergetic assessment of crop rotations and technologies for growing fodder crops (1989) M, Agropromizdat, P. 5–22 (in Russ.).

L. A. Zhailibayeva¹, S. N. Oleichenko¹, M. D. Esenalieva¹, I. Demirtaş²

¹Kazakh National Agrarian University, Almaty, Kazakhstan;

²Fruit Research Institute Egerdir Isparta, Turkey.

E- mail: Lyazzat_0204@mail.ru, oleichenko@mail.ru, maira.81@mail.ru, idemirtas66@hotmail.com

STUDY AND DETERMINATION OF DISEASES AND PESTS OF REPAIR RASPBERRY «BRYANSKOE DIVO» IN THE SOUTH-EAST OF KAZAKHSTAN

Abstract. The intensity of diseases and pests was determined in LLP "Kazakh Research Institute of Plant Protection and Quarantine named after Zhazken Zhiembayev" in the test center of phytosanitary laboratory analysis for phytopathological and entomological examination.

As a result of the analysis of entomological examination on the leaves of raspberries were found pests of the plant. No pests or nematodes were found in soil samples.

On the basis of the symptoms of the disease and phytopathological analyses, it was found that the presented samples of raspberries are parasitic with purple spot, the causative agent of *Didymella applanata*, as well as secondarily inhabited by fungi of the genera *Fuzarium*, *Aspergillus*, *Alternaria*, *Penicillium*, *Mucor*.

Classical phytopathological methods were used for the phytopathological diagnosis of raspberry disease. Determination of fungal and bacterial microflora was carried out on morphological and cultural characteristics of the colony of fungi and bacteria isolated in pure culture.

Key words: repair raspberry, pathogen, disease, fungus, phytopathology, entomology.

Introduction. Over the past three years, about 300 hectares of plantations have already been laid in Almaty region, and only with remontant varieties. These varieties are technologically easier to grow than traditional ones, due to the fact that they bear fruit on annual shoots and do not require protective measures against winter damage and the installation of an expensive trellis.

Repair raspberries - a group of varieties of raspberries, characterized by the ability to bear fruit on both biennial and annual shoots [1].

Due to the fact that raspberry repair is very weakly damaged by diseases and pests, its other advantages are manifested. First, it does not need various chemical treatments and associated with this operation costs and time. And, secondly, as a consequence of the lack of treatments with chemicals dangerous to health, an environmentally friendly crop ripens on raspberries. Such berries have a special healing power, they can be used without fear for both children and people suffering from various diseases [1].

Purposeful selection of remontant raspberries in Russia is carried out a little more than four decades. The leading institution implementing this program in Russia is Kokinsky stronghold (Bryansk region) of the all-Russian selection and technological Institute of horticulture and nursery. Professor I. V. Kazakov made a special contribution to the creation of Russian varieties of repair raspberries [2].

Bryanskoe divo – a variety of raspberries which is characterized by long fruiting and high yield. Reaches a height of 1.5 - 2 meters. The flexible shoots of the Bush are covered with brown bark. They are densely arranged small spines [3].

Materials and methods of research. The intensity of diseases and pests was determined in LLP "Kazakh Research Institute of Plant Protection and Quarantine named after Zhazken Zhiembayev" test center of phytosanitary laboratory analysis for phytopathological and entomological examination.

For the analysis we took different morphological indicators formed raspberry bushes from different experimental sites. Morphological, anatomical species of the plant shows a change in the shoot and in the leaves.

For examination, the samples were provided raspberry variety "Bryanskoe divo" in the test center of phytosanitary laboratory analysis LLP "Kazakh Research Institute of Plant Protection and Quarantine named after Zh. Zhiembayev".

The intensity of diseases and pest analysis took samples of the whole stalk, leaves and fruit, the soil under the plant variety of raspberry "Bryanskoe divo" 4 replications I and plot II plot III plot IV - plot.

Entomological examination tests were carried out by visual methods under a binocular microscope and soil washing methods.

Stalk examined its surface with a magnifying glass. Inspection began with the root system. The remains of the soil are cleaned with a scalpel in a Petri dish, we look through binoculars for the presence of insects and mites, the affected area was hidden and removed pests.

Soil washing is carried out to separate contaminated fractions and pollutants.

Classical phytopathological methods were used to diagnose the phytopathological disease of raspberries.

The object of General Phytopathology is:

- pathogens, causes and conditions of their occurrence;
- general anatomical and physiological changes in diseased organisms;
- plant immunity and quarantine; – means and methods of plant protection [4].

The fungus *Ascochyta soaeicola* affects all organs of the plant: cotyledons, leaves, stems, beans and seeds. In Primorsky Krai this fungus is the causative agent of soybean root rot [5].

The fungus is distributed in a number of Western European countries, in Japan, China, Georgia, Ukraine, Moldova. We have found in the far East, Central regions, the North Caucasus, Krasnodar region [6].

Didymella applanata (or purple spotting) is the most common and quite dangerous disease of raspberries. This disease weakens the plant, making it vulnerable to pathogenic microflora and insect pests [7].

Fusarium – in nature, it is represented by an extensive biologically heterogeneous group of fungi. These include parasites, semi-parasites and saprophytes of plants. There are species that parasitize insects, causing toxicosis and mycosis of warm-blooded animals and humans. Most of the species phototrophy [8]. Plant diseases caused by fungi of this genus are called fusarioses [9].

Aspergillus – a genus of higher aerobic fungi comprising several hundred species distributed worldwide in various climates [10].

For the first time, the results of studies of mass reproduction of aphids (*Schizaphis graminum*) using an improved version of the above-ground plant were obtained [11].

Results and discussion. Entomological examination tests were conducted by visual methods under the binocular Nexius Zoom NZ.1903-S and methods of soil washing.

Principle of operation. Soil washing is an external process in which contaminated soil is extracted and subjected to a process involving the use of water. It works on the principle that contaminants are associated with fractions of a certain size and these contaminants can be dissolved and suspended in an aqueous solution, or removed by separating clay and silt particles from the soil volume.

As a result of the analysis, eggs and imagos of ticks, lozhnoshitovki, nymphs of thrips, pupari of whiteflies, and beetles-weevils were found on raspberry leaves (figures 1,2,3). No pests or nematodes were found in the soil.



Figure 1 – Raspberry leaves "Bryanskoe divo" nymphs thrips council



Figure 2 – False Whiting in raspberry samples



Figure 3 – Imago weevil's

Symptoms: on the submitted samples of raspberries affected roots, stems and leaves (figure 4). Leaves, browned along the veins, marginal necrosis.



Figure 4 –
Symptoms of the disease
on raspberries "Bryanskoe divo»

The berries shrivelled. On the stem was ringed with a purple coloration along the stem. On some parts of plants and leaf petioles unilateral purple color (figure 5). Roots poorly developed, browned, maceration of lateral roots (figure 6).



Figure 5 – Symptoms on stems
and petioles of raspberry



Figure 6 –
Symptoms on the roots of raspberry

Classical phytopathological methods were used for the phytopathological diagnosis of raspberry disease. Determination of fungal and bacterial microflora was carried out by morphological and cultural characteristics of the colony of fungi and bacteria isolated in pure culture. Raspberry branches on the nutrient medium potato agar (KA) and in a wet chamber, when cultivated in a thermostat at 25-26C for 5-7 days.

Morphological characteristics of the fungi was assessed by microcapillary for sporulation. Bacterial microflora was isolated in pure culture and tested for pathogenicity on potato tubers. Pathogenic species of bacteria cause potato tubers maceration (rotting) tissue.

The results of phytopathological analysis showed that raspberry plants are infected with fungal and bacterial microflora (figure 7,8 and 9,10).



Figure 7 – Bacterial and fungal microflora
on raspberry branches (nutrient medium)



Figure 8 – Fungal and bacterial microflora
on raspberry leaf petioles (nutrient medium)



Figure 9 – Bacterial microflora on raspberry canes (nutrient medium)



Figure 10 – Bacteria Isolated in pure culture from the root

As a result of bacteriological analysis, bacteria were isolated into a pure culture. This is dominated by fungi of the genus *Didymella applanata* and *Fuzarium* sp., fungi from the genera *Aspergillus* sp, *Alternaria*, *Penicillium* sp, *Mucor* have also been found (figure 11 – 16). Their pathogenic properties were tested on test objects-potato tubers.



Figure 11 – Mycelium of the fungus *Didymella applanata*

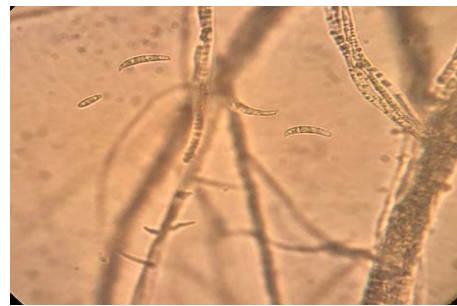


Figure 12 – Conidia of the fungus *Fuzarium* sp



Figure 13 – Conidia of the fungus *Alternaria*



Figure 14 – Conidia of the fungus *Penicillium* sp

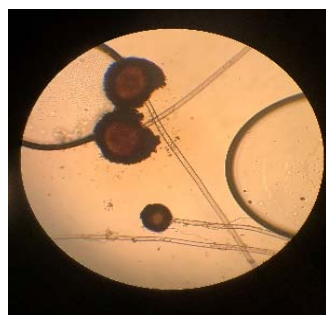


Figure 15 – Conidia of the fungus *Aspergillus* sp

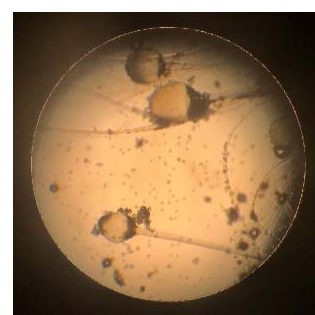


Figure 16 – Sporangia with spores of *Mucor* sp fungus

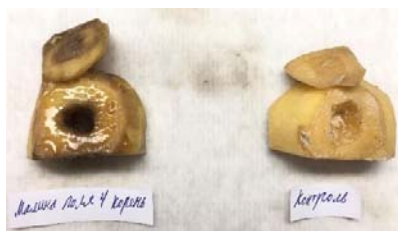


Figure 17 –
Testing of pathogenic properties
of bacteria isolated in pure culture
on potato tubers-maceration (rot)
of potato tuber

Bacteria a day later caused wet rot on potato tubers (figure 17). Maceration (decay) of potato tuber tissue (bacteria isolated from raspberry roots). According to morphological and cultural characteristics, as well as pathogenic properties, the isolated bacteria were identified as *Pectobacterium carotovorum*, the causative agent of soft rot.

Conclusion.

1. As a result of the analysis of entomological examination on the leaves of raspberries, pests of plants, nymphs of thrips, pupari whiteflies, and beetles-weevils were found. No pests or nematodes were found in the soil.

2. On the basis of the symptoms of the disease and phytopathological analyses, it was found that the presented samples of raspberries are parasitic with purple spot, the pathogen *Didymella applanata*, and secondarily inhabited by fungi of the genera *Fuzarium*, *Aspergillus*, *Alternaria*, *Penicillium*, *Mucor*.

3. The root system is affected by root rot-the causative agent of the bacterium *Pectobacteriom carolovorom*, the causative agent of soft rot.

Recommendation. Carry out pruning of the affected parts of plants, destroy them by burning; destruction of weeds; autumn deep digging; application of phosphorus-potassium fertilizers; destruction of young shoots to reduce thickening. Post-harvest spraying with copper-containing fungicides – Corset, Cosid, Jordan systemic fungicide Soon – 0,5 (50 g per 10 liters). Treatment repeat early spring until bud pushing conduct, watering under roots drugs Kuramin Foliar, consumption 25 ml on 10 l are unaware water and Fosgraf MKP (fertilizer), consumption 25 ml on 10l water. Through 5 days' conduct spraying stimulants Aminopul (10 gr on 10I are unaware), Fitop (1ml on 10l) or Ekstrasolom 0.2%. Consumption 20 ml on 10l.

Л. А. Жайлибаева¹, С. Н. Олейченко¹, М. Д. Есеналиева¹, I. Demirtaş²

¹Қазақ ұлттық аграрлық университеті, Алматы, Қазақстан;

²Fruit Research Institute Egerdir Isparta, Turkey

ҚАЗАҚСТАННЫҢ ОҢТҮСТІК-ШЫҒЫСЫНДА «БРЯНСКОЕ ДИВО» РЕМОНТАНТТЫ ТАҢҚУРАЙ СОРТЫНЫҢ ЗИЯНКЕСТЕР МЕН АУРУЛАРЫН ЗЕРТТЕУ

Аннотация. «Ж. Жиенбаев атындағы Қазақ өсімдікті қорғау және карантин ғылыми-зерттеу институты» ЖШС-де фитопатологиялық және энтомологиялық сараптамалар фитосанитарлық зертханалық талдау және сынақ орталығында аурулар мен зиянкестермен зақымдану қарқындылығын анықталды.

Таңқурай сортын талдау үшін әртүрлі тәжірибелік учаскелерден құрылған таңқурай өркенінің морфологиялық көрсеткіштер бойынша алынды. Өсімдіктің әр түрлері өркендері мен жапырақтарының морфологиялық, анатомиялық құрылысында өзгерістер байқалды.

Брянское диво таңқурай сортының аурулар мен зиянкестер зақымдану қарқындылығын талдау үшін, V-қайталымнан тұратын: I-ші бөлігі, II-ші бөлігі, III-ші бөлігі, IV-ші бөліктерінен сабақтар мен жемістері, өркен астындағы топырағынан алынды.

Энтомологиялық сынақ сараптамасы бинокулярлық микроскоппен визуалды және топырақты жуу әдістерімен жүргізілді. Лупаның көмегімен сабақтың беткі бөлігін бақылап қаралды. Тексеріп, талдай жұмыстары тамыр жүйесінен басталды. Топырақ қалдықтарын Петри тостағанына скальпельдің көмегімен тазартылды, жәндіктер мен кенелердің бар жоғын бинокуляр аппаратымен қарап анықтадық.

NexiusZoom NZ 1903-S маркалы бинокулярлық микроскоппен энтомологиялық сараптама сынағы визуалды әдістермен және топырақты жуу әдістерімен жүргізілді.

Таңқурай жапырақтарына талдау нәтижесінде кенелердің жұмыртқасы, имаго, трипстердің нимфалары, ақкөбелек пупари зиянкестері табылған. Топырақта зиянкестер мен нематодтар табылған жоқ.

Зерттеулер нәтижесінде таңқурай жапырақтарында энтомологиялық сараптама нәтижесінде өсімдік зиянкестері анықталды. Топырақ үлгілерінен зиянкестер мен нематодтар табылған жоқ.

Аурудың пайда болу белгілері мен фитопатологиялық талдаулар негізінде таңқурайдың ұсынылған үлгілерінен пурпурпурлы дақтылықпен зақымданған, *Didymella applanata* қоздырғышы, сондай-ақ екінші деңгейдегі саңырауқұлақтармен залалданған *Fusarium*, *Aspergillus*, , *Alternaria*, *Penicillium*, *Mucor* зақымданғаны анықталды.

Фитопатологиялық зерттеуде таңқурай ауруын анықтау үшін классикалық фитопатологиялық әдістер қолданылды.

Саңырауқұлақ және бактериялық микрофлораны анықтау үшін таза дақылға бөлінген саңырауқұлақтар мен бактериялар колониясының морфологиялық және мәдени белгілері бойынша жүргізілді.

Таңқурай ауруының фитопатологиялық диагностикасын анықтау мақсатында классикалық фитопатологиялық әдістер қолданылды. Саңырауқұлақ және бактериялық микрофлораны анықтау таза дақылға бөлінген саңырауқұлақтар мен бактериялар колониясының морфологиялық және мәдени белгілері бойынша жүргізілді. Құнарлы ортада картоп ағарында (КА) және ылғалды камерада таңқурай бұтақтарында, термостатта 25-26С 5-7 күн бойы өсіру кезінде бақылау жүргізілді..

Жүргізілген талдаудан кейін таңқурай зиянкестер және ауруларымен күресу шаралары анықталды:

- a) өсімдіктердің зақымданған бөліктерін кесу;
- b) оларды өртеу арқылы жою;
- c) арамшөптерді жою;
- d) күзгі терең казу;
- e) фосфор-калий тыңайтқыштарын енгізу;
- f) түптің қалыңдығын төмендету үшін жас өскіндерді жою.

Түйін сөздер: ремонтантты таңқурай, қоздырғыш, ауру, зиянкестер, саңырауқұлақ, фитопатология, энтомология.

Л. А. Жайлибаева¹, С. Н. Олейченко¹, М. Д. Есеналиева¹, I. Demirtaş²

¹Казахский национальный аграрный университет, Алматы, Казахстан;

²Fruit Research Institute Egerdir Isparta, Turkey

ИЗУЧЕНИЕ И ОПРЕДЕЛЕНИЕ БОЛЕЗНЕЙ И ВРЕДИТЕЛЕЙ РЕМОУАНТНОЙ МАЛИНЫ «БРЯНСКОЕ ДИВО» НА ЮГО-ВОСТОКЕ КАЗАХСТАНА

Аннотация. Интенсивность поражения болезнями и вредителями определяли в ТОО «Казахский научно-исследовательский институт защиты и карантина растений имени Жазкена Жиембаева» в испытательном центре фитосанитарного лабораторного анализа по фитопатологической и энтомологической экспертизе.

Для анализа взяли разные по морфологическим показателям сформированные кусты малины из разных опытных участков. По морфологическим, анатомическим видам растение видно изменение в побеге и в листьях.

В результате анализа энтомологической экспертизы на листьях малины были обнаружены вредители растений. В образцах почвы вредителей и нематоды не обнаружено.

Интенсивность поражения болезнями и вредителями на анализ взяли образцы весь стебель, листья с плодами, почвы под растением, сорт малины «Брянское диво» 4-х повторности I-делянка, II-делянка, III-делянка, IV- делянка.

На основании энтомологической экспертизы испытания проводились визуальным методом под бинокулярным микроскопом и методом промывки почвы.

Поверхность стебля осматривали с помощью лупы. Осмотр начали с корневой системы. Остатки почвы очищали скальпелем в чашку Петри, просматривали бинокулярно на наличие насекомых и клещей, вскрывали и извлекали вредителей, обнаруженные на поражённом участке.

Энтомологические экспертизы испытания проводились визуальным методом под бинокулярным микроскопом NexiusZoom NZ.1903-S и методом промывки почвы.

В результате анализа на листьях малины обнаружены яйца и имаго клещей, ложнощитовки, нимфы трипсов, пупари белокрылок, а также жуко-долгоносиков. В почве вредители и нематоды не обнаружены.

На основании симптомов проявления болезни и фитопатологических анализов установлено, что представленные образцы малины поражены пурпурной пятнистостью, возбудитель *Didymella applanata*, а также вторично заселены грибами родов *Fusarium*, *Aspergillus*, *Alternaria*, *Penicillium*, *Mucor*.

В фитопатологической диагностике заболевания малины использовались классические фитопатологические методы. Определение грибной и бактериальной микрофлоры проводили по морфологическим и культурным признакам колонии грибов и бактерий, выделенных в чистую культуру.

Для фитопатологической диагностики заболевания малины использовались классические фитопатологические методы. Определение грибной и бактериальной микрофлоры проводили по морфологическим и культурным признакам колонии грибов и бактерий, выделенных в чистую культуру, на ветках малины, в питательной среде, картофельном агаре (КА) и во влажной камере, при культивировании в термостате при 25-26С в течение 5-7 дней.

После проведенного анализа были установлены меры борьбы с вредителями и болезнями малины:

1. Проведение обрезки пораженных частей растений;
2. Уничтожение их путем сжигания;
3. Уничтожение сорняков;
4. Осенние глубокие перекопки;
5. Внесение фосфорно-калийных удобрений;
6. Уничтожение молодых порослей для снижения загущенности.

Ключевые слова: ремонтантная малина, возбудитель, болезнь, грибок, вредитель, фитопатология, энтомология.

Information about authors:

Zhailibayeva Lyazzat Asylbekovna, doctoral student of the Department "fruit and vegetable Growing and nut growing» Kazakh National Agrarian University, Almaty, Kazakhstan; Lyazzat_0204@mail.ru; <https://orcid.org/0000-0003-1403-4220>

Oleichenko Sergey Nikolaevich, doctor of agricultural Sciences, Professor of the Department "fruit and vegetable Growing and nut growing" Kazakh National Agrarian University, Almaty, Kazakhstan; oleichenko@mail.ru; <https://orcid.org/0000-0002-0611-8267>

Esenalieva Maira Danataevna Candidate of agricultural Sciences of the Department "fruit and vegetable Growing and nut growing", Kazakh National Agrarian University, Almaty, Kazakhstan; maira.81@mail.ru; <https://orcid.org/0000-0002-9896-6131>

Ismail Demirtas PhD doctor of philosophy, senior researcher of the Fruit Research Institute Egirdir, Turkey; idemirtas66@hotmail.com; <https://orcid.org/0000-0002-8951-2306>

REFERENCES

- [1] Kazakov, I. V., Sidel'nikov, A. I., Stepanov, V. V. Remontantnaya malina v Rossii. Chelyabinsk: Sad i Ogorod, 2007. 144 p. (in Russ.).
- [2] Kazakov I., Yevdokimenko S.N. Remontantnaya malina // Nauka i zhizn': zhurnal. 2007. N 9 (in Russ.).
- [3] Sort malina. Bryanskoye divo - sort-malina.ru/malina-bryanskoe-divo/ (in Russ.).
- [4] Fitopatologiya - <https://ru.wikipedia.org/wiki/> (in Russ.).
- [5] Zaostrovnykh V.I. Bolezni soi // Zashchita i karantin rasteniy. M.: 2005. N 2. P. 49-53 (in Russ.).
- [6] Naumova Ye.S., Uspenskaya G.D. Vnutrividovoye raznoobrazie griba Ascochyta sojaecola Abramov ex Nelen // Mikologiya i fitopatologiya. Leningrad. "Nauka". 1989. t. 23. Vol. 6. P. 533-53 (in Russ.).
- [7] Kak lechit' Didymellu [Elektronnyy resurs]. URL: <https://ufermer.com/sad/malina/kak-lechit-didimellu.html>
- [8] Takhtadzhyan A.L. (gl. red.) i dr. Mir rasteniy. Tom 2. Griby Moskva.: Prosveshcheniye, 1991. 475 p. (in Russ.).
- [9] Vakin A.T., Golovin P.N. i dr. Slovar'-spravochnik fitopatologa. Leningrad Izdatel'stvo.: Sel'khozgiz, 1959. 414 p. (in Russ.).
- [10] Geiser D. M. Sexual structures in Aspergillus: morphology, importance and genomics. (англ.)// Medical mycology. 2009. Vol. 47. Suppl 1. P. 21-26. -DOI:10.1080/13693780802139859
- [11] Duisembekov B. A., Chadinova A. M., Alpysbayeva K. A. Optimization of the technology of mass breeding of cereal aphids (*Schizaphis graminum*) using an aeroponic cultivation and the breeding of the *Aphidius* bioagent (*Aphidius matricariae*) News of the national academy of sciences of the republic of kazakhstan series of agricultural sciences ISSN 2224-526X Vol. 6, N 48 (2018), 74–80 <https://doi.org/10.32014/2018.2224-526X.22>

UDC 631.531.633.581.634.574/53

**A. K. Karynbayev¹, D. A. Baimukanov¹, D. M. Bekenov¹,
Yu. A. Yuldashbayev², A. E. Chindaliyev¹**

¹Educational Scientific and Production Center Bayserke-Agro LLP, Almaty region, Kazakhstan;

²Russian State Agrarian University -Moscow Agricultural Academy named after K. A. Timiryazev,
Moscow, Russia.

E-mail: Uznijrtaraz@mail.ru, dbaimukanov@mail.ru, unpcbayerke-agro@mail.ru,
zoo@rgau-msha.ru, achindaliyev@rambler.ru

ENVIRONMENTAL MONITORING AND CROP YIELD OF NATURAL PASTURES OF THE SOUTHEAST OF KAZAKHSTAN

Abstract. An analysis of the composition and structure of the vegetation cover, depending on the season of usage, shows that in the spring period of use, all groups of types contain wormwood more than others (42.3%; 48.1%; 63.1%). According to the content of teresken in the grass stand, depending on plant communities, noticeable differences were also found, and their content varied from 14.3 -28.7% and the content of Kochia changed from 8.1-9.9%. The proportion of short-vegetative ephemers and ephemerooids with a spring development cycle, depending on the type groups, ranged from 10.0 to 7.6%.

In the summer period, the use of wormwood, teresken and Kochia content increased and amounted to 44.7%, 57.8%, 68.9%; 28.1%; 29.4%; 14.7%; and 10.0%; 10.7%; 8.9%, respectively. The content of mixed herbs and saltwort during this period of the study is markedly reduced and amounts to 8.2%; 4.1% 9.0%; 2.1%; 3.5%.

The forage mass in the absinthial-ephemeral areas of the pastures consists mainly of wormwood, the remaining plants conclude no more than 15-20%.

Key words: monitoring, ecology, crop yield, pastures, palatability, feed capacity, productivity.

Introduction. The total area of agricultural lands in the arid zone of Kazakhstan is about 40 million hectares, 93.2% of which accounts for natural desert pastures with a crop yield of 1.0-3.5 cwt/ha of air-dried forage.

On the vast territory of the desert zone of Central Asia and Kazakhstan, there are a lot of varieties of pastures, which, according to the classification of S.A. Abdraitimov [1] are represented by 39 groups of types, 10 classes and 178 types of pastures.

Recent studies on arid territories were carried out in 60-70 years of the 20th century. Since then, to date, serious large-scale studies of the floristic composition, structure, and dynamics of vegetation productivity have not been carried out [2]. Therefore, the study of the formation processes of the vegetation cover of natural forage lands (NFL) of arid and semi-arid territories of southeastern Kazakhstan is of great importance not only for solving fundamental issues of ecology, geobotany, fodder production but also for developing a protection system and their rational use.

The aim of the study. To assess the actual forage - ecological condition of pastures of the Kerbulak branch of the Bayserke - Agro LLP in the Almaty region.

The investigations were carried out under the program of the Ministry of Agriculture of the Republic of Kazakhstan for 2018 - 2020. IRN: BR06249249-OT-18 Development of the integrated system for increasing productivity and improving breeding qualities of farm animals, using the example of Bayserke-Agro LLP.

Methods and research methodology. The object of the research is the pastures of the Kerbulak branch of Bayserke-Agro LLP, Talgar district of the Almaty region. In the work, it was used common methods for determining crop yield, projective cover, composition and structure of vegetation cover, as

well as phenology of the main fodder plants [3,4]. The composition and nutritional value of the feed were determined using the modern FOSS NIRS DS 2500 analyzer (Sweden).

Research results. As a result of the survey of natural pastures of the Kerbulak branch of Baysyerke-Agro LLP in Almaty region, the following groups of pasture types are noted: *Agropyreta fragilis* mixed-wormwood partly shrub pastures on hilly and plain sands, wormwood-saltwort, rarely sod grass pasture on brown and grayish-brown soils (figure 1).

Each of these groups unites various types that differ from each other both in the botanical composition of pasture plants and in the quantitative relations of the species that constitute the grass stand.

The most common association: eurotia-grayish wormwood- *Agropyreta fragilis*, prostrate summer cypress - mixed wormwood with *Agropyreta fragilis*, *Agropyreta fragilis*- sierozemic with prostrate summer cypress, mixed wormwood prostrate summer cypress - eurotia, Poaceae- *Ceratocarpetion arenarii* - grayish wormwood with *Salsola arbuscula*, mixed herbs - grayish wormwood with ferrule. On strongly damaged mostly well areas, a radical change of vegetation is noted (figure 2).



Figure 1 – absinthial-saltwort type of pasture



Figure 2 – Perennial grasses of natural pastures

An analysis of the composition and structure of the vegetation cover, depending on the season of usage, shows that in the spring period of use, all groups of types contain wormwood more than others (42.3%; 48.1%; 63.1%). According to the content of eurotia in the grass stand, depending on plant communities, noticeable differences were also found, and their content varied from 14.3 -28.7% and the content of *Kochia* changed from 8.1-9.9%. The proportion of short-vegetative ephemers and ephemeroids with a spring development cycle, depending on the type groups, ranged from 10.0 to 7.6% (table 1).

Table 1 – Dynamics of the forage structure of the main groups of pasture types according to the research periods by Baysyerke-Agro LLP in Almaty region (as a percentage of the total feedstock)

Season of usage	The percentage of feed plants				
	wormwood	teresken (eurotia)	prostrate summer cypress	ephemers and ephemeroids	annual saltwort and forbs
1 st year					
Spring	42.3	26.3	9.5	10.0	11.9
Summer	44.7	28.1	10.0	8.2	9.0
2 nd year					
Spring	48.1	28.7	9.9	9.1	4.2
Summer	57.8	29.4	10.7	-	2.1
3 rd year					
Spring	63.1	14.3	8.1	7.6	6.9
Summer	68.9	14.7	8.8	4.1	3.5

The composition of the vegetation cover in almost all group types contains plants that are not eaten by animal like astragalus, Tatar rheum, wild leek, etc.

In the summer period, the use of wormwood, teresken and Kochia content increased and amounted to 44.7%, 57.8%, 68.9%; 28.1%; 29.4%; 14.7%; and 10.0%; 10.7%; 8.9%, respectively. The content of mixed herbs and saltwort during this period of the study is markedly reduced and amounts to 8.2%; 4.1% 9.0%; 2.1%; 3.5%.

The main territory belongs to the group of semi-shrub (wormwood) pastures. The vegetation is represented by the complexes of grayish wormwood - eurotia with wheatgrass, mixed wormwood with teresken and prostrate summer cypress, wheatgrass - Kochia - grayish wormwood, grayish wormwood - Kochia - eurotia with forbs.

The vegetation of the studied area is represented by three types: tree-shrub, semi-shrub, and grass. Tree-shrub and semi-shrub types are the primary ones (figure 3).



Figure 3 – Subshrubs on natural pastures

They unite the formations of haloxylon desert, calligonum, salsola, greyish wormwood, beet, teresken and keireuk (*Salsola orientalis*). The third type is herb vegetation (erkek formation) - is common in this territory.

Almost throughout the territory, a distribution of the white-saxaul formation is widespread. As judged by the habitat map compiled by us based on the most detailed vegetation map of the project area, it is possible to consider the main pharmacy of the white-saxaul and not the greyish wormwood.

In spring, the average gross crop yield of the grayish wormwood - eurotia with wheatgrass pastures was 3.4 cwt/ha, and in summer - 5.2 cwt/ha. The forage mass consumed by animals is 1.3 cwt/ha and 2.2 cwt/ha of dry weight, respectively (table 2).

It has been established that tall-grasses (hogweed) and subshrubs, such as wormwood, although in the summer season gain maximum forage reserve, due to the bitterness, the eaten reserve is no more than 20% of the total, therefore the eaten part of these plants is much lower than the gross productivity.

The main fodder plants are replaced by unproductive ephemeral vegetation. Further unsystematic use of such sites threatens the complete disappearance of indigenous vegetation and the replacement of species of natural vegetation (harmel peganum, thrift, *Anabasis aphylla*, etc.) that are not eatable by animals.

It was found that the highest indices of fodder productivity were in the subshrub-mixed herbs group (gross - 6.8 cwt/ha, eaten - 2.7 cwt/ha of dry forage mass) (table 3).

It has been established that tall-grasses (hogweed) and subshrubs, such as wormwood, although in the summer season gain maximum forage reserve, due to the bitterness, the eaten reserve is no more than 20% of the total, therefore the eaten part of these plants is much lower than the gross productivity.

The most common associations on the surveyed pasture site are subshrub-ephemeral-mixed grass: wormwood-ephemeral, wormwood-ephemeral-mixed grass, bluegrass-mixed grass.

Depending on the grass stand and the abundance of pasture plants, the crop yield of pastures of this type and various associations of fodder vegetation have almost identical gross and forage mass eaten by animals.

Table 2 – Seasonal dynamics of pasture crop yield of various associations

Association	Crop yield	Carrying capacity, cwt/ha	Lim
Spring			
grayish wormwood - eurotia with wheatgrass	gross	3.4 ±0.5	2.2-4.5
	eaten	1.3±0.4	0.9-1.7
mixed wormwood with eurotia and prostrate summer cypress	gross	4.95±0.4	3.0-8.0
	eaten	1.69 ±0.3	1.1- 3.0
wheatgrass - Kochia - grayish wormwood	gross	3.2 ±0.4	2.0 -4.5
	eaten	0.9 ±0.3	0.5 – 1.5
grayish wormwood - Kochia - eurotia with wheatgrass	gross	6.6 ±0.4	2.0 – 12.0
	eaten	2.6 ±0.5	1.6 – 4.0
Summer			
grayish wormwood - eurotia with wheatgrass	gross	5.2±0.7	2.5- 7.1
	eaten	2.2 ±0.5	1.2 – 3.5
mixed wormwood with eurotia and prostrate summer cypress	gross	4.1 ±0.5	3.1-6.9
	eaten	1.85 ±0.6	1.2-3.0
wheatgrass - Kochia - grayish wormwood	gross	2.8 ±0.5	2.0 – 3.5
	eaten	0.9±0.4	0.5 – 1.4
greyish wormwood - Kochia - eurotia with wheatgrass	gross	2.5 ±0.4	2.0– 3.5
	eaten	1.1 ±0.3	0.53 – 1.73

Table 3 – Carrying capacity of subshrub-mixed herb-ephemeral type

Association	Crop yield	Carrying capacity, cwt/ha
subshrub-mixed herbs	gross	6.8
	eaten	2.7
subshrub - ephemeral	gross	4.3
	eaten	1.7
shrub-wormwood-saltwort-mixed herbs	gross	13.4
	eaten	5.4

As can be seen from the obtained data, the average crop yield of the subshrub-ephemeral-mixed grass type of pasture, depending on the degree of usage, is from 6.1cwt/ha to 6.5 cwt/ha; eaten - 2.6cwt/ha - 2.8 cwt/ha of dry forage mass (table 4).

Table 4 – the crop yield of pasture with subshrub-ephemeral-mixed grass type

Association	Crop yield	Carrying capacity, cwt/ha
wormwood-ephemeral	gross	6.5
	eaten	2.8
wormwood-ephemeral - mixed grass	gross	6.2
	eaten	2.7
bluegrass-mixed grass	gross	6.1
	eaten	2.6

The role of natural forage land (NFL), as a natural resource, remains indispensable. This applies primarily to pastures of arid and extra arid zones of Kazakhstan. The increasing scale of the economic impact on the pasture ecosystems of desert regions requires more and more attention to the problem of preserving their crop yield. Natural forage lands are considered highly productive if the main plants that differ in high fodder qualities to create a solid forage base for livestock have been preserved [5,6,7,8].

The protein content in the grass stand of the subshrub-saltwort-mixed grass and subshrubs-mixed grass-ephemeral associations was comparatively higher than that of the other forage land associations and amounted to 62.0 g and 59.0 g per 1 kg of feed at natural humidity, respectively (table 5).

Table 5 – The chemical composition and nutritional value of the grass stand on natural pastures

grass stand on natural forage lands	Content in 1 kg of feed at natural humidity					
	feed unit	metabolizable energy, MJ	digestible protein, g	Ca, π	P, π	carotin, ьп
Eurotia-wormwood-mixed grass	0.28	3.0	32.6	2.1	0.7	45
Eurotia - ephemeral -short grass	0.19	2.7	24.9	3.8	1.1	17
Salsola orientalis - mixed grass	0.14	2.4	27.5	3.5	1.3	21
Subshrub-saltwort- mixed grass	0.37	4.5	62.0	3.3	1.2	15
Subshrub - mixed grass - ephemeral	0.35	4.3	59.0	3.4	1.1	17
Wormwood -saltwort- mixed grass	0.30	3.9	39.0	4.0	1.5	19
Wormwood - short grass	0.27	2.7	22.2	2.3	0.7	19
Subshrub - wormwood - ephemeral - mixed grass	0.39	4.3	42.5	2.0	0.6	7
Wormwood - mixed grass	0.27	2.6	21.2	2.3	0.7	20
Subshrub - mixed grass	0.31	3.5	36.0	3.1	0.9	14
Subshrub - ephemeral	0.25	2.7	36.0	2.5	0.8	10
Shrub- wormwood - saltwort - mixed grass	0.29	2.8	37.0	2.6	0.9	11
Wormwood - ephemeral	0.28	2.9	42.0	2.4	1.1	13
Wormwood - ephemeral - mixed grass	0.29	2.9	43.0	2.4	1.2	13
Bluegrass - mixed grass	0.41	4.3	38.0	2.5	1.5	11

The protein content in 1 kg of feed at the natural humidity of the wormwood-ephemeral-mixed grass association contains 0.39 feed units and up to 42.5 g of digestible protein and pastures of the wormwood-ephemeral and wormwood-ephemeral-mixed grass associations have the same nutritional value, since during this period, in the structure of the grass stand, green ephemeral plants and spring forbs are more numerous and sheep mainly eat them.

It was established that the energy and protein nutritional value of 1 kg of pasture feed in the summer season with the average natural humidity 35% is an average of 0.35 feed units, 3.7 MJ of metabolizable energy and 35 g of digestible protein.

Discussion. The analysis of the composition and structure of the vegetation cover, depending on the season of usage, shows that in the spring period, all groups of types contain wormwood more than others (42.3%; 48.1%; 63.1%). According to the content of teresken (eurotia) in the grass stand, depending on plant communities, noticeable differences were also found, and their content varied from 14.3 -28.7% and the content of Kochia varied 8.1-9.9%. The proportion of short-vegetative ephemeroids and ephemeroids with a spring development cycle, depending on the type groups, ranged from 10.0 to 7.6%.

In the summer period, the use of wormwood, teresken and Kochia content increased and amounted to 44.7%, 57.8%, 68.9%; 28.1%; 29.4%; 14.7%; and 10.0%; 10.7%; 8.9%, respectively. The content of mixed herbs and saltwort during this period of the study is markedly reduced and amounts to 8.2%; 4.1% 9.0%; 2.1%; 3.5%.

The protein contents in the grass stand of the subshrub-saltwort- mixed grass and subshrub - mixed grass -ephemeral associations were comparatively higher than that of other forage lands associations and amounted to 62.0 g and 59.0 g per 1 kg of feed, respectively, at natural humidity. It was established that the energy and protein nutritional value of 1 kg of pasture feed in the summer season with the average natural humidity of 35% is 0.35 feed units, 3.7 MJ of exchange energy and 35 g of digestible protein.

А. К. Карынбаев¹, Д. А. Баймуканов¹, Д. М. Бекенов¹, Ю. А. Юлдашбаев², А. Е. Чиндалиев¹

¹"Байсерке-Агро ОҒӨО" ЖШС, Алматы облысы, Қазақстан;

²ЖББ ФМББМ "Ресей мемлекеттік аграрлық университеті –

К. А. Тимирязев атындағы Мәскеу ауылшаруашылық академиясы, Мәскеу, Ресей

ҚАЗАҚСТАННЫҢ ОҢТҮСТІК-ШЫҒЫС ТАБИҒИ ЖАЙЫЛЫМДАРЫНЫҢ ЭКОЛОГИЯЛЫҚ МОНИТОРИНГІ ЖӘНЕ ӨНІМДІЛІГІ

Аннотация. Қазақстанның ауылшаруашылық жерлерінің жалпы көлемінің аридті аумағының көлемі 40 млн га, өнімділігі 1,0-3,5 ц/га ауалы құрғақ азықтардың табиғи шөлді жайылымдарының 93,2 %-ды құрайды.

Зерттеу мақсаты Алматы облысы «Байсерке-Агро» ЖШС-ның Кербұлақ бөлімінің жайылымының азықтық-экологиялық жағдайының шынайы бағалауын өткізу.

Қолдану мезгіліне тәуелді өсімдік жамылғысының құрамы мен құрлымын талдау көрсеткендей, көктем мезгілінде барлық топ типтерінде жусан мөлшері көп (42,3; 48,1; 63,1%) екендігін аңғартты. Шөп қауымдастығындағы теріскен мөлшері – 14,3-28,7% ал, изен 8,1-9,9% көрсеткіші аралығында ауытқыды. Қысқа вегетативті эфимирлер және көктемгі даму циклына ие эфемероидтардың үлес салмағы топ типтеріне байланысты 10,0-нан 7,6-ға дейін болды.

Өсімдік жамылғысының құрамында мал жемейтін таспашөп, түйе жапырақ рауғаш, жабайы пияз өсімдіктері болды және т.б.

Ал әртүрлі шөпті өсімдіктер мен сабан мөлшері осы кезеңде айтарлықтай төмендеп, 8,2-4,1 % және 9,0; 2,1; 3,5%-ды құрайды.

Жаз мезгілінде теріскен және изен, жусанның мөлшері ұлғайды және сәйкесінше 44,7; 57,8; 68,9%; 28,1; 29,4; 14,7% және 10,0; 10,7; 8,9%-ды құрады. Аралас шөптердің және сор жерде өсетін өсімдіктер мөлшері азаяды және 8,2-4,1% және 9,0; 2,1; 3,5%-ды құрайды.

Жайылымның негізгі аумағы жартылай бұталы тип тобына жатады. Өсімдік қауымында сұр жусанды – теріскенді, теріскенді – изенді, бидайықты – изенді – сұр жусанды, сұр жусанды – изенді – теріскенді өсімдіктер алуандылығымен сипатталады.

Зерттелген аумақтың өсімдік жамылғысы үш типпен: ағашты – бұтасынды, жартылай бұталы және шөптермен сипатталды. Ағашты – бұтасынды және жартылай бұталысы негізгісі болып табылады (3-сурет). Олар сексеуілділер, жүзген, боялыш, сұр жусан, қызыл ши және кеурекпен біріктіріледі. Үшінші тип – шөптесін өсімдіктер (еркек шөп бірлестігі) – аталған аймаққа таралған.

Барлық аймақ көлемінде ақ сексеуілділер кең тараған. Аймақтың өсімдік жамылғысын сипаттауға жасаған ареалдар картасы бойынша сұр жусан қауымдастығы емес, ақ сексеуілділер қауымдастығы кең тарағандығы байқалды.

Ірі шөптесін өсімдіктер және жусан сияқты жартылай бұтасындылар жаз мезгілінде максималды азықтық қорын жинайды, ащы дәмінің болғандығынан желінетін қоры 20 %-ды ғана құрайды.

Негізгі азықтық өсімдіктер өнімділігі аз эфемерлі өсімдіктермен алмастырылған. Одан ары аталған аймақтарды жүйесіз қолдану негізгі өсімдіктердің толығымен жойылуына қауіп төндіреді және жануарлармен желінбейтін табиғи өсімдік жамылғысымен (адраспан, кермек, итсигек және т.б.) алмасуына алып келеді.

Жартылай бұтасынды – эфемерлі қауымдастықтың орташа үлестік өнімділігі 4,3 ц/га. Жануарлармен желінетін азықтық массасы 1,7 ц/га құрғақ массаны құрайды. Азықтық өнімділігі жоғарысы жартылай бұтасынды аралас шөптер қауымдастығы (үлестік 6,8 ц/га, мал жейтіні – 2,7 ц/га құрғақ азықтық масса). Бұтасынды – жусан – сор топырақта өсетін – аралас шөптер қауымдастығында орташа үлестік өнімділігі 13,4 ц/га құрайды, жануарлармен желінетін азықтық массасы 5,4 ц/га құрғақ масса.

Жартылай бұтасынды – эфемерлі – түрлі шөптер жайылымдарының типінде орташа өнімі 6,1-ден 6,5 ц/га дейін құрайды, құрғақ азықтық массасында жануармен желінетіні – 2,6-2,8 ц/га.

Табиғи азықтық жайылымдардың ролі, табиғи ресурстар тәрізді айырбастауға келмейді. Ол негізнен Қазақстанның аридті және экстремді зоналарының жайылымдарына байланысты. Шөлді аймақтардың жайылымды экожүйелеріне шаруашылықтар әсерінің деңгейінің ұлғаюы олардың азықтық өнімділігінің сақтап қалу мәселесіне көңіл бөлуін талап етеді. Табиғи азықтық жайылымдар, егерде олардың азықтық сапалары жоғары негізгі өсімдіктері сақталғанда берік мал шаруашылық базаларын жасауға мүмкіндік береді.

Жартылай бұталы – сортаң жерде өсетін өсімдіктерде – аралас шөптерде және бұталы өсімдіктерде – аралас шөптерде – эфемерлі қауымдастықтарда протеин құрамы мен мөлшері басқа қауымдастықтармен салыстырғанда, айтарлықтай көп және сәйкесінше 1 кг азықта қалыпты ылғалдылықта 62,0 г және 59,0 г тең.

Жусанды – эфемерлі – аралас шөпті қауымдастықта 0,39 азықтық бірлікке және 42,5 г қорытылатын протеинге ие және азықтық құндылығына жусанды – эфемерлі және жусанды – эфемерлі – аралас шөптерде ұқсас азықтық құндылыққа ие, аталған мерзімде жасыл эфемерлі шөптерде және көктемгі шөптер көп болады және қойлар негізі осылармен коректенеді.

1 кг жайылымдық азықта энергетикалық және протеинді коректілік жаз мезгілінде орташа балғындықта 35%-ды құрайды, орташа 0,35 азықтық бірлік, 3,7 МДж алмасымды энергия және 35 г қорытылатын протеин.

Түйін сөздер: мониторинг, экология, түсім, өнімділік, жайылым, жеуге жарамдылық, азық сіңімділік.

А. К. Карынбаев¹, Д. А. Баймуканов¹, Д. М. Бекенов¹, Ю. А. Юлдашбаев², А. Е. Чиндалиев¹

¹ТОО «УНПЦ Байсерке-Агро» Алматинская область, Казахстан

²ФГБОУ ВО «Российский Государственный аграрный университет – МСХА им. К.А. Тимирязева», Москва, Россия,

ЭКОЛОГИЧЕСКИЙ МОНИТОРИНГ И УРОЖАЙНОСТЬ ЕСТЕСТВЕННЫХ ПАСТБИЩ ЮГО – ВОСТОКА КАЗАХСТАНА

Аннотация. Общая площадь сельскохозяйственных угодий аридной зоны Казахстана составляет около 40 млн га, 93,2% которых приходится на долю естественных пустынных пастбищ с продуктивностью 1,0-3,5 ц/га воздушно-сухого корма.

Цель исследования – провести оценку фактического кормового-экологического состояния пастбищ отделения Кербулак ТОО «Байсерке-Агро» Алматинской области.

Анализ состава и структуры растительного покрова в зависимости от сезона использования, показывают, что в весеннем периоде использования во всех групп типов больше других содержится полыни (42,3; 48,1; 63,1%). По содержанию терескена в травостое в зависимости от растительных сообществ обнаружены также заметные различия и их содержание варьировало от 14,3-28,7 %, а изеня – от 8,1-9,9%. Удельный вес коротко-вегетирующих эфемеров и эфемероидов с весенним циклом развития в зависимости от групп типов составили от 10,0 до 7,6.

В составе растительного покрова почти во всех групп типах содержится непоедаемые виды животными растениями как астрагал, ревень татарский, дикий лук и т.д.

В летний период использования содержания полыни, терескена и изеня увеличивались и составили соответственно 44,7; 57,8; 68,9; %; 28,1; 29,4; 14,7; % и 10,0; 10,7; 8,9; %. А содержание разнотравных растений и солянки в этот период исследования заметно снижается и составляет 8,2;-;4,1% и 9,0; 2,1; 3,5%.

Основная территория относится к группе типов полукустарниковых (полынных) пастбищ. Растительность представлена комплексами серополынно-терескеновое с житняком, разнотравно-полынная с терескеном и изенью, житняково-изенено - серополынная, серополынно - изенено-терескеновым разнотравьем.

Растительность изученной территории представлена тремя типами: древесно-кустарничковым, полукустарниковым и травяным. Древесно-кустарничковый и полукустарничковый типы являются основными (рисунок 3). Они объединяют формации саксаульников, жузгуна, боялыша, серой полыни, кзылчи, терескена и кейреука. Третий тип – травянистая растительность (еркековая формация) – распространен на указанной территории.

Очень широко, почти по всей территории, распространена формация белосаксаульников. Судя по карточке ареалов, составленной нами по материалам наиболее подробной карты растительности проектной территории, можно считать основной именно фармацию белосаксаульников, а не серополынных.

Установлено, что крупнотравные растения (груботравье) и полукустарники, такие как полыни, хотя в летний сезон набирают максимальный кормовой запас, из за содержания горечи поедаемый запас составляет не более 20% от валовой, поэтому поедаемая часть этих растений значительно ниже валовой продуктивности.

Основные кормовые растения заменены малопродуктивной эфемеровой растительностью. Дальнейшее бессистемное использование таких участков грозит полным исчезновением коренной растительности и заменой непоедаемыми животными видами естественной растительности (адраспан, кермек, итсигек и др.).

Установлено, что самые высокие показатели кормовой продуктивности были у полукустарниково-разнотравной ассоциации (валовая – 6,8 ц/га, поедаемая – 2,7 ц/га сухой кормовой массы).

Установлено, что самые высокие показатели кормовой продуктивности были у полукустарниково-разнотравной ассоциации (валовая – 6,8 ц/га, поедаемая – 2,7 ц/га сухой кормовой массы). Средняя валовая урожайность полукустарниково-эфемеровой ассоциации составила 4,3 ц/га. Поедаемая животными кормовая масса составляет 1,7 ц/га сухой массы. На участке с кустарниково-полынно-солянково-разнотравной ассоциацией средняя валовая урожайность составляет 13,4 ц/га, поедаемая животными кормовая масса 5,4 ц/га сухой массы.

Средняя производительность полукустарниково-эфемерово-разнотравного типа пастбищ в зависимости от степени использования составляет от 6,1 до 6,5 ц/га поедаемая – 2,6-2,8 ц/га сухой кормовой массы.

Роль природных кормовых угодий (ПКУ) как естественного ресурса остаётся незаменимой. Это относится, прежде всего, к пастбищам *аридных* и *экстрааридных* зон Казахстана. Возрастающие масштабы хозяйственного воздействия на пастбищные *экосистемы* пустынных регионов требуют все большего внимания к проблеме сохранения их кормовой продуктивности. Естественные кормовые угодья, считаются высокопродуктивными, если сохранились основные растения, отличающиеся высокими кормовыми качествам для создания прочной кормовой базы животноводства.

Содержание протеина в составе травостоя полукустарниково-солянково-разнотравной и полукустарниково-разнотравно-эфемеровой ассоциации были сравнительно больше, чем у других ассоциации пастбищных угодий и составляет соответственно 62,0 г и 59,0 г в 1 кг корма при натуральной влажности.

Содержание протеина в 1 кг корма натуральной влажности полынно-эфемерово-разнотравной ассоциации содержится 0,39 кормовых единиц и до 42,5 г переваримого протеина и аналогичную питательную ценность имеют пастбищ полынно-эфемеровой и полынно-эфемерово-разнотравной ассоциации, так как в указанный период в структуре травостоя зеленые эфемеровые растения и весеннее разнотравье бывает больше, и овцы в основном потребляют их.

Установлен, что энергетическая и протеиновая питательность 1 кг пастбищного корма в летний сезон при средней натуральной 35% составляет в среднем 0,35 кормовых единиц, 3,7 МДж обменной энергии и 35 г переваримого протеина,

Ключевые слова: мониторинг, экология, урожайность, пастбища, поедаемость, кормоемкость, продуктивность.

Information about the authors:

Karynbayev Amanbai Kambarkovich, Doctor of Agricultural Sciences, Academician of the Russian Academy of Natural Sciences, Scientific Adviser at Educational Scientific and Production Center Baysyerke-Agro LLP, Talgar district, Almaty region, Kazakhstan; Uznijrtaraz@mail.ru; <https://orcid.org/0000-0003-4717-6487>

Baimukanov Dastanbek Asylbekovich, Doctor of Agricultural Sciences, Corresponding Member of the National Academy of Sciences of the Republic of Kazakhstan, Chief Researcher at the Educational Scientific and Production Center Baysyerke-Agro LLP, Talgar district, Almaty region, Kazakhstan; dbaimukanov@mail.ru; <https://orcid.org/0000-0002-4684-7114>

Bekenov Dauren Maratovich, Master of Natural Science and Biotechnology, Director Educational Scientific and Production Center Baysyerke-Agro LLP, Talgar district, Almaty region, Kazakhstan; unpcbaysyerke-agro@mail.ru; <https://orcid.org/0000-0003-2244-0878>

Yuldashbayev Yusupzhan Artykovich, Corresponding Member of the Russian Academy of Sciences, Doctor of Agricultural Sciences, Professor, Dean of the Faculty of Zootechnics and Biology, Professor of the Department of Private Zootechnics, Russian State Agrarian University -Moscow Agricultural Academy named after K.A. Timiryazev, Moscow, Russia; zoo@rgau-msha.ru; <https://orcid.org/0000-0002-7150-1131>

Chindaliyev Askhat Erbosynovich, Master of Agricultural Sciences, Senior Researcher at the Educational Scientific and Production Center Baysyerke-Agro LLP, Talgar district, Almaty region, Kazakhstan; achindaliyev@rambler.ru; <https://orcid.org/0000-0002-2468-3809>

REFERENCES

- [1] Abdraimov S.A. (1988). Arid pastures of Kazakhstan. Alma-Ata. Kaynar. 140 p. (in Russ.).
- [2] Bekmukhamedov N.E. (2012). Methodology for determining the productivity of natural forage lands at sub-satellite test sides of Kazakhstan. Agriculture, forestry and water management. July, 2012 [Electronic resource]. URL: <http://agro.snauka.ru/2012/07/467>
- [3] Guidelines for the study of the composition and nutritional value of feed of the USSR (1985). Moscow. VASKHNIL, Department of Livestock. 42 p. (in Russ.).
- [4] Muratova N.R., Bekmukhamedov N.E. (2013). Assessment of the environmental state of Kazakhstan's natural forage lands. Agriculture, forestry and water management. January. 2013. N 1 [Electronic resource]. URL: <http://agro.snauka.ru/2013/01/864> (дата обращения: 24.10.2013).
- [5] Kuzembayuly Zh., Karynbayev A.K. (2001). Composition and nutritional value of forage resources of desert pastures. Research in land reclamation and water management. Coll. of works at KazSRI of water management. Taraz. Aqua. Issue 1. P. 41-43. (in Russ.).
- [6] Kuzembayuly Zh., Parzhanov Zh. (2004). Feed resources of desert pastures of the south-western region of the Republic of Kazakhstan. Bulletin of Agricultural Science of Kazakhstan. Almaty. N 2. P. 27-29. (in Russ.).
- [7] Bekenov D.M., Spanov A.A., Sultanbai D.T., Zhaksylykova G.K., Baimukanov A.D. (2019). The effect of canola meal application in the diet of dairy cows of Holstein breed in «Baysyerke Agro» LLP. Bulletin of national academy of sciences of the Republic of Kazakhstan. Vol. 6, N 382 (2019), 83–86. <https://doi.org/10.32014/2019.2518-1467.148>. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print).
- [8] Karynbayev A.K., Baimukanov D.A., Bekenov D.M., Yuldashbayev Yu.A., Chindaliyev A.E. (2019). Environmental monitoring of pastures and determination of carrying capacity under the influence of anthropogenic factors. News of the National Academy of sciences of the Republic of Kazakhstan series geology and technical sciences. Vol. 6, N 438 (2019), 104–111. <https://doi.org/10.32014/2019.2518-170X.161>. ISSN 2518-170X (Online), ISSN 2224-5278 (Print).

UDC 336.025

IRSTI 06.73.07

G. S. Zhukova¹, T. A. Dolbik-Vorobey¹, N. V. Ostrovskaya², P. S. Burlankov³, N. Sh. Kremer¹¹Financial University under the Government of the Russian Federation, Moscow, Russia;²St. Petersburg branch of Financial University under the Government of the Russian Federation, Moscow, Russia;³K. G. Razumovsky Moscow State University of technologies and management, Moscow, Russia.

E-mail: GSZHukova@fa.ru, tadolbikvorobey@fa.ru,

NVOstrovskaya@fa.ru, petr1387@mail.ru, NSKremer@fa.ru

DIGITAL TECHNOLOGIES FOR IMPLEMENTING CORPORATE SOCIAL RESPONSIBILITY

Abstract. The world is undergoing significant changes in corporate social responsibility of business, caused by a number of factors and “challenges” of time, which raises the question of the fundamental transformation of CSR management principles and tools. The most significant in terms of influence on CSR and the opportunities that open up is the digitalization of public life: the development of the digital economy and its new tools (principles of a “distributed registry” or blockchain, online platforms, digital communications). At the same time, Russia has its own peculiarities, in particular, public-private partnership mechanisms are becoming one of the factors of changes and promising directions for the development of CSR. PPP models are becoming a tool for enterprises and large companies to realize their corporate responsibility in terms of maintaining, reconstructing and constructing social facilities (long-term social investments), while reducing costs for non-core activities by sharing them with the state.

Modern society is highly committed to humanitarian principles, to promote which close cooperation between community and business is required. Such close relationship between society and business is translated into the concept of corporate social responsibility. Lately, the concept of social responsibility of business has become increasingly popular though it has not been clearly defined yet.

The relevance of the topic is due to both increased attention to the issues of corporate social responsibility (CSR), and those requirements that are put forward in this area in connection with the spread of new technologies. The origin of interest in the topic is usually associated with the publication of H. Bowen's monograph. In the future, it is developed in the writings of A. B. Carroll and A. K. Bachholtz, J. Moon, D. Vogel and others. The ambiguity of the concept of corporate social responsibility causes numerous disputes both regarding the interpretation of the term and the most important business tasks in this domain. In the article, the author considers how the modern institutional environment, which is emerging in the new economy, affects the implementation of these tasks. Methodologically, we use the approaches of institutional economic theory and evolutionary economics. The new economy, in which innovative changes lead to a fundamental modification of the behavior of economic entities, puts forward new requirements for the activities of individuals and firms. The number of workers in the information sphere is growing, the requirements for the level of education of workers are increasing, and the information opportunities of top management are increasing. Under such conditions, many CSR tasks can be implemented by the company more efficiently and in fundamentally new forms: the internal control system is improved, the degree of transparency of activities is increased, the Internet helps to develop common standards, and information tasks are successfully solved. The rapid introduction of new technologies into the economic life has a tremendous impact on the company's activities in such a significant area as CSR. And although this influence is difficult to evaluate unambiguously and quantitatively, it is safe to say that it will be strengthened in the future.

Key words: accounting, social responsibility, financial statements, financial condition, financial result, consolidated statements.

Introduction. Corporate social responsibility (csr) can be understood as the business's intentional and voluntary commitment to adhere to the following principles:

- forecast the impact of its activities on society;

- prevent and mitigate the possible risks for and damage to the stakeholders and the environment;
- care for other members of society.

Social responsibility of business is solely the matter of its conscience, implying that business must be mature enough to invest in CSR activities. There are three main components in the implementation of CSR [1,5,8,11]:

- 1) motivation and goal setting;
- 2) personal and psychological aspects (emotional and volitional sphere and the hierarchy of personal beliefs);
- 3) practical aspects (actions and achievements).

It is very important to understand the possible areas of concern, the scope and legal aspects of CSR.

First of all, the concept of “business” in the context of CSR needs to be defined. It is understood as either a specific business entity or the totality of business entities in a specific region, country, or industry (business community). Considering the established practice of community commitments of corporate sponsors, it is clear that this concept only includes major entities with a significant headcount or significant revenues.

Methods.

A. GENERAL DESCRIPTION

Social responsibility is the relationship between different stratum of society, generally, between more privileged ones and those in need.

Scholars have two views on the social purpose of business: the narrow one and the broad one [6,14,19,20].

According to the narrow view, business entities have only one responsibility towards the society that is to provide the necessary goods and services and to maximize its profits.

According to the broad view, CSR also includes activities that stretch far beyond the above objectives, e.g. creating a positive and safe workplace environment, providing private health insurance schemes, social support for welfare beneficiaries, charity activities.

Only the broad view should be recognized as CSR since other interpretations only deal with the interests of the business itself or with its regulatory compliance. They do not reflect the main aspect of CSR, i.e. business’s voluntary commitment to promoting social welfare.

A wish to satisfy customers’ needs or to gain profit can hardly be recognized as socially beneficial activities. Legal compliance also has little relation to social responsibility since compliance with labor and employment laws is the prerequisite for any business activities as established by the Constitution of the Russian Federation.

CSR is actually based on the philosophical interpretation of social and business processes. The purpose of business stretches far beyond economic growth. Moreover, there are nationwide economic development programs and policies established by the Government to promote the welfare of people. Therefore, it may be concluded that a business’s development goals should not be defined by and limited to the economic tasks only.

Moreover, economic growth contributes to economic development but does not always guarantee it [3].

CSR is based on the understanding that business should be conducted in accordance with the general moral and ethical principles. Therefore, CSR should manifest itself in socially beneficial activities [9,10,17].

Given that voluntary moral commitment is the critical aspect of CSR, it should be treated as the main criterion for deciding whether activities fall under CSR or not. Since legal compliance and income-generating activities cannot be fully recognized as CSR, it may be concluded that the voluntary nonprofit nature of activities should be considered as the decisive factor to classify them as CSR.

B. ALGORITHM

Having analyzed the main principles of CSR, the authors have determined three main areas of CSR generally recognized by the business community [12,15]:

- industrial safety and a positive work environment;
- environmental protection;
- economic, social and cultural development of the local community.

These areas focus on promoting the wellbeing of people, satisfying their needs, and form the basis for the development of CSR. Next, the methods of and approaches to CSR need to be defined to get a better understanding of CSR and give specific examples of CSR activities.

According to CSR-related literature, the fundamentals of responsible behavior of business include respect for the law, which manifests itself both in regulatory compliance and in refraining from benefiting from shortcomings in the legal framework [2,13].

This principle is very important for entering into and maintaining employment and labor relationships. The labor law has a number of discrepancies and even contradictions that challenge the accomplishment of its main mission, i.e. ensuring the best possible accommodation of interests of the parties to the labor relationship. An employer is not only a party to such relationship but also the administrator of the law.

Results. A responsible employer would never apply practices that only formally comply with the labor law but infringe the interests of the other parties to the labor relationship. An example of such infringement is a reduction in pay (fixed salary) practiced by some dishonest employers who refer to changes in production technology or production reorganization as the grounds for such reduction in pay. Those changes are aimed at enhancing the productivity, improving performance and saving the labor costs that can result in the workforce optimization, i.e. reducing the headcount, but not in the reduction in pay because improved performance and enhanced productivity are the reasons for increasing a pay.

In such cases, employers have only one objective, i.e. to solve their economic problems by reducing the payroll. According to economic studies [4,7,16,18], an increase in pay is caused by the rise in labor productivity or in the inflation rate. Therefore, a slow rate of growth of wages is recognized as a negative development.

Summary table of financial investments accounting for groups

Features	TS	AFS	HTM
Types of financial investments by groups	Debt and equity	Debt and equity	Debt
Cost when registering	Purchase price + direct costs for the purchase		
Carrying value at the end of the reporting period	Fair value		Amortized cost
Reserve for impairment	Reserve is formed by comparing the book value to the market value		Not formed
Accounting transaction on the formation of reserves	Included in the non-operating income/expenses	Included in other comprehensive cost / income	Not performed
Other than temporary impairment of financial instruments	Not performed	Carrying value is written down to fair value at the expense of other income / expenses (impairment loss on investment). Further recovery of the carrying value is not performed.	
In balance sheet	Circulating balance sheet (current) assets	Current/non-current assets	Non-current assets. If maturing within 1 year - current assets.

According to the impairment test, the following indicators are the basis to decide whether that decline in market value is other than temporary:

- fair market value is significantly lower than the cost of the security;
- decline in market value of securities are a matter of specific adverse conditions that affect this financial investment;
- decline in market value of securities caused by the specific conditions encountered in industry or geographic region;
- management company at the same time has neither the capacity nor the intention to hold an investment for a long period of time sufficient for the occurrence of favorable conditions for overcoming the existing decline in market value of the investment;
- decline in market value of securities is observed over a long period;
- debt securities brought to a lower category by a rating agency;
- the financial state of the issuer of the security has deteriorated;

- value of dividends associated with these investments was reduced, or payment of dividends has been completely discontinued, or expected interest payments on debt securities have not been produced.

In conducting CSR activities, it is very important to observe international guidelines.

CSR should be based on the international CSR regulations that supersede the national ones whenever such international norms are more effective in ensuring sustainable development and promoting the welfare of society.

Moreover, a frequently met practice when a partial salary is set for the probationary period or a bonus plan is not applied during the probationary period should also be recognized as illegal. This practice is based on the wrong belief that a newly hired employee is not able to perform his/her job duties as efficiently as employees that already have experience with the company. On the surface, this approach may seem to be quite logic; however, in reality, it is discrimination against employees on probation since it is based only on the probationary nature of employment without regard to the employee's actual competencies, previous experience, and qualification. Thus, no matter how good an employee may be at his/her work, he or she would never be able to receive the same salary as an employee that already completed his/her probationary period. This explains a major difference in the capabilities of employees before and after completion of the probationary period.

Another important principle of CSR is respect for human rights. Just like regulatory compliance, this principle should be considered in conjunction with other principles.

In practice, respect for human rights should manifest itself in the commitment to regard all human rights and not just those related to a specific activity. For example, the issue of working hours deals not only with the right to rest but also with the right to family life, right to health, and, often, the right to education.

CSR policy should be based on the understanding that people have other rights and interests, besides those related to their job duties (job-related CSR activities), including raising children (corporate support for families), receiving an education (corporate support for educational institutions), etc. Therefore, CSR policy should cover several spheres of life, and not just work.

Besides the above principles, focus on moral ideals is also very important. According to this principle, the needs and expectations of society should be satisfied to a greater degree than required by the law. This is a voluntary commitment to adhere to and promote higher standards than those established by the law.

This principle is highlighted in Article 2 of the European Social Charter establishing the right to just conditions of work. Besides standard conditions of work and some guarantees, such as minimum duration of the annual holiday with pay, this Article contains certain instructions for lawmakers:

- "the working week to be progressively reduced to the extent that the increase of productivity and other relevant factors permit";

- "to eliminate risks in inherently dangerous or unhealthy occupations, and where it has not yet been possible to eliminate or reduce sufficiently these risks, to provide for either a reduction of working hours or additional paid holidays for workers engaged in such occupations";

- "to ensure that workers performing night work benefit from measures which take account of the special nature of the work", etc.

It is believed that an increase in productivity and technology enhancement would help approach the goal. Therefore, such parameters as the duration of the working week, reduction of the working week for workers engaged in dangerous and unhealthy occupations, which are initially provided at a minimum rate, should over time increasingly align with the underlying social tasks.

The last principle of CSR is the focus on current social problems. This principle reflects one of the main properties of CSR, i.e. active involvement in social life. According to this principle, it is not the business's own preferences that should govern CSR activities, but the existing local problems, such as unemployment, poverty, an insufficient number of educational institutions, insufficient funding for medical institutions, etc. The real value of CSR is that it addresses the pressing society's issues [21,22].

Probably the main idea of social responsibility of business lies in its desire and recognition of unity with society, involvement in solving its urgent problems.

The philosophical basis of CSR is a business's desire to take on some of the social worries and abandon the idea of profitmaking as the only purpose of business.

Discussions. It should be noted that the Government too can provide incentive measures to maintain and promote CSR activities.

It is important to note that the concept of social responsibility of business reflects the interests of both society and business since CSR helps to maintain social order and prevent public upheaval, thus, creating a stable environment required for doing business.

Г. С. Жуков¹, Т. А. Долбик-Воробей¹, Н. В. Островская², П. С. Бурланков³, Н. Ш. Кремер¹

¹Ресей Федерациясы Үкіметі жанындағы Қаржы университеті, Мәскеу, Ресей;

²Ресей Федерациясының Үкіметі жанындағы Қаржы университетінің Петербургтегі филиалы, Мәскеу, Ресей;

³К. Г. Разумовский атындағы Мәскеу мемлекеттік технологиялар және басқару университеті, Мәскеу, Ресей

КОРПОРАТИВТІК ӘЛЕУМЕТТІК ЖАУАПКЕРШІЛІКТІ ІСКЕ АСЫРУДЫҢ САНДЫҚ ТЕХНОЛОГИЯЛАРЫ

Аннотация. Әлемде КӘЖ менеджментінің қағидаттары мен құралдарын түбегейлі өзгерту мәселесі туындаған бірқатар факторлар мен уақыттың «қиындықтарынан» туындаған бизнестің корпоративті әлеуметтік жауапкершілігінде айтарлықтай өзгерістер болып жатыр. Қоғамдық өмірді цифрландыру: сандық экономиканың дамуы және оның жаңа құралдары («таратылған тізім» немесе блокчейн, онлайн-платформалар, цифрлық коммуникациялар): КӘЖ және ашылатын мүмкіндіктер үшін ең маңыздысы. Сонымен бірге Ресейдің өзіндік ерекшеліктері бар, атап айтсақ, мемлекеттік жекеменшік әріптестік тетіктері – КӘЖ дамуының перспективалық бағыттарының және факторларының бірі. МЖӘ модельдері кәсіпорындар мен ірі компаниялардың әлеуметтік нысандарды ұстау, қайта құру және салу (ұзақ мерзімді әлеуметтік инвестициялар) бөлігіндегі корпоративті жауапкершілігін жүзеге асырудың құралына айналады, сонымен бірге негізгі емес қызмет түрлерінің шығындарын мемлекетпен бөлісу арқылы азайтады.

Қазіргі қоғам гуманитарлық қағидаларға берік, оны алға жылжыту үшін қоғам мен бизнес арасында тығыз ынтымақтастық қажет. Қоғам мен бизнестің осындай тығыз байланысы корпоративтік әлеуметтік жауапкершілік тұжырымдамасына артылған. Соңғы уақытта бизнестің әлеуметтік жауапкершілігі тұжырымдамасы кеңінен тарала бастады, бірақ ол әлі нақты анықталмаған.

Тақырыптың өзектілігі корпоративті әлеуметтік жауапкершілік мәселелеріне (КӘЖ) көбірек назар аударумен қатар, жаңа технологиялардың таралуына қатысты осы салада қойылатын талаптармен байланысты. Тақырыпқа деген қызығушылықтың пайда болуы, әдетте Х. Боуэннің монографиясын шығарумен байланысты. Ол А. Б. Кэрролл мен А. К. Баххольц, Дж. Мун, Д. Вогель және басқалардың жазбаларында дамыған. Корпоративтік әлеуметтік жауапкершілік тұжырымдамасының анық еместігі терминді түсіндіруге және осы саладағы маңызды бизнес-міндеттерге қатысты даулы мәселелерді тудырады. Мақалада автор жаңа экономикада пайда болған заманауи институционалдық ортаның осы міндеттерді шешуге қалай әсер ететінін қарастырады. Әдістемелік тұрғыдан, біз институционалды экономикалық теория мен эволюциялық экономика тәсілдерін қолданамыз. Инновациялық өзгерістер, экономикалық субъектілердің іс-әрекетін түбегейлі өзгертуге алып келетін жаңа экономика жеке тұлғалар мен фирмалар қызметіне жаңа талаптар қояды. Ақпараттық салада жұмысшылар саны өсіп, жұмысшылардың білім деңгейіне қойылатын талаптар да өсіп, топ-менеджменттің ақпараттық мүмкіндіктері артып келеді. Мұндай жағдайда, КӘЖ бойынша, көптеген тапсырмаларды компания неғұрлым тиімді және түбегейлі жаңа формада орындай алады: ішкі бақылау жүйесі жетілдіріліп, қызметтің ашықтығы жоғарылайды, интернет жалпы стандарттарды жасауға көмектеседі, ақпараттық міндеттер сәтті орындалады. Экономикалық өмірге жаңа технологиялардың тез енуі компанияның КӘЖ сияқты маңызды бағыттағы қызметіне айтарлықтай әсер етеді. Бұл әсерді бір мәнді және сандық тұрғыдан бағалау қиын болса да, оны болашақта күшейтеміз деп сеніммен айтуға болады.

Түйін сөздер: бухгалтерлік есеп, әлеуметтік жауапкершілік, қаржылық есеп, қаржылық жағдай, қаржылық нәтиже, шоғырландырылған есеп.

Г. С. Жукова¹, Т. А. Долбик-Воробей¹, Н. В. Островская², П. С. Бурланков³, Н. Ш. Кремер¹

¹Финансовый университет при Правительстве Российской Федерации, Москва, Россия;

²Петербургский филиал Финансового университета при Правительстве Российской Федерации, Москва, Россия;

³Московский государственный университет технологий и управления им. К. Г. Разумовского, Москва, Россия

ЦИФРОВЫЕ ТЕХНОЛОГИИ РЕАЛИЗАЦИИ КОРПОРАТИВНОЙ СОЦИАЛЬНОЙ ОТВЕТСТВЕННОСТИ

Аннотация. Мир претерпевает значительные изменения в корпоративной социальной ответственности бизнеса, вызванные рядом факторов и «вызовов» времени, что ставит вопрос о фундаментальной трансформации принципов и инструментов управления КСО. Наиболее значимым с точки зрения влияния на КСО и открывающихся возможностей является цифровизация общественной жизни: развитие цифровой экономики и ее новых инструментов (принципы «распределенного реестра» или блокчейна, онлайн-платформ, цифровых коммуникаций). В то же время в России есть свои особенности, в частности, механизмы государственно-частного партнерства становятся одним из факторов изменений и перспективных направлений развития КСО. Модели ГЧП становятся инструментом для предприятий и крупных компаний для реализации своей корпоративной ответственности с точки зрения поддержания, реконструкции и строительства социальных объектов (долгосрочных социальных инвестиций), одновременно снижая затраты на непрофильные виды деятельности, делясь ими с государством.

Современное общество глубоко привержено гуманитарным принципам, для продвижения которых необходимо тесное сотрудничество между обществом и бизнесом. Такая тесная связь между обществом и бизнесом воплощается в концепции корпоративной социальной ответственности. В последнее время концепция социальной ответственности бизнеса становится все более популярной, хотя она еще не была четко определена.

Актуальность темы обусловлена как повышенным вниманием к вопросам корпоративной социальной ответственности (КСО), так и теми требованиями, которые выдвигаются в этой области в связи с распространением новых технологий. Происхождение интереса к теме обычно связано с публикацией монографии Х. Боуэна. В дальнейшем он развивается в трудах А. Б. Кэрролла и А. К. Баххольца, Дж. Муна, Д. Фогеля и других. Неоднозначность концепции корпоративной социальной ответственности вызывает многочисленные споры как в отношении толкования термина, так и в отношении наиболее важных бизнес-задач в этой области. В статье автор рассматривает, как современная институциональная среда, возникающая в новой экономике, влияет на выполнение этих задач. Методологически мы используем подходы институциональной экономической теории и эволюционной экономики. Новая экономика, в которой инновационные изменения приводят к фундаментальному изменению поведения экономических субъектов, выдвигает новые требования к деятельности отдельных лиц и фирм. Количество работников в информационной сфере растет, требования к уровню образования работников возрастают, а информационные возможности высшего руководства растут. В таких условиях многие задачи по КСО могут быть реализованы компанией более эффективно и в принципиально новых формах: совершенствуется система внутреннего контроля, повышается степень прозрачности деятельности, Интернет помогает разрабатывать общие стандарты, а информационные задачи успешно решены. Быстрое внедрение новых технологий в экономическую жизнь оказывает огромное влияние на деятельность компании в такой важной области, как КСО. И хотя это влияние сложно оценить однозначно и количественно, можно с уверенностью сказать, что оно будет усилено в будущем.

Ключевые слова: бухгалтерский учет, социальная ответственность, финансовая отчетность, финансовое состояние, финансовый результат, консолидированная отчетность.

Information about authors:

Zhukova G.S., Doctor of Physics and Mathematics (Advanced Doctor), professor of the Department of Data Analysis, Decision-making and Financial Technology, Financial University under the Government of the Russian Federation, Moscow, Russia; GSZZhukova@fa.ru; <https://orcid.org/0000-0003-1889-6223>

Dolbik-Vorobey T.A., PhD, associate professor of Department of the Accounting, Analysis and Audit, Financial University under the Government of the Russian Federation; tadolbikvorobey@fa.ru; <https://orcid.org/0000-0002-5357-8549>

Ostrovskaya N.V., PhD in Political Science, Associate Professor of the Department of Management, St. Petersburg branch of Financial University under the Government of the Russian Federation, Moscow, Russia; NVOstrovskaya@fa.ru; <https://orcid.org/0000-0003-0665-9722>

Burlankov P.S., PhD in Economic Sciences, Associate Professor of the Department of Economics and Management, K.G. Razumovsky Moscow State University of technologies and management, Moscow, Russia; petr1387@mail.ru; <https://orcid.org/0000-0002-6870-1984>

Kremer N.Sh., Ph.D., Associate Professor, Department of Data Analysis, Decision-making and Financial Technology, Financial University under the Government of the Russian Federation, Moscow, Russia; NSKremer@fa.ru; <https://orcid.org/0000-0002-9025-4746>

REFERENCES

- [1] Kevorkova Z.A., Petrov A.M., Savina N.V. Towards liabilities of corporate systems. *International Journal of Civil Engineering and Technology*. Vol. 10. Issue 2, February 2019. P. 1582-1593.
- [2] Lymar M.P., Kevorkova Z.A., Petrov A.M. The convergence of national and international accounting standards: Chinese experience. *International Journal of Civil Engineering and Technology*. Vol. 9. Issue 13, December 2018. P. 82-94.
- [3] Karpova T.P., Petrov A.M., Antonova O.V., Directions of Accounting Development in the Conditions of Digitalization. *Journal of Adv Research in Dynamical & Control Systems*, Vol. 10, 07 Special Issue, 2018. P. 117-125.
- [4] Chernysheva Natalia A., Perskaya Victoria V., Petrov Alexander M., Bakulina Anna A. Green Energy for Belt and Road Initiative: Economic Aspects Today and in the Future / *International Journal of Energy Economics and Policy*. 2019, 9 (5), 178-185.
- [5] Petrov A.M., Nikiforova E.V., Kiseleva N.P., Grishkina S.N., Lihtarova O.V., Creation of the reporting on sustainable development of companies based on socioeconomic measurement statistics / *International Journal of Recent Technology and Engineering*. Vol. 8. Issue 2, July 2019. P. 4005-4012.
- [6] Alexander M. Petrov, Marina V. Kosolapova, Igor G. Yshanov, Nataliya K. Muravitskaya, Hursheda Nurmuhamedova The Economic Significance of Statistical Research Activities of Representative Offices of Companies Abroad / *International Journal of Innovative Technology and Exploring Engineering(TM)*. Vol. 8. Issue 10, August 2019. P. 2713-2722.
- [7] Lyudmila V. Sotnikova, Svetlana N. Polenova, Nataliya A. Mislavskaya, Alexander M. Petrov, Mariya M. Basova. Sustainable development, macro and micro level: Russian and foreign model / *International Journal of Recent Technology and Engineering*. Vol. 8. Issue 2, July 2019, P. 4524-4532.
- [8] Nikiforova E.V. Paradigm of public reporting of economic entities // *World Applied Sciences Journal*. 2014. T. 29. N 5. P. 667-670.
- [9] Akhmadeev R.G., Bykanova O.A., Turishcheva T.B. (2018) Brics' foreign debt burden and its impact on core institutional basis. *Journal of Reviews on Global Economics*, 7, P. 345-359.
- [10] Akhmadeev R.G., Kosov M.E., Bykanova O.A., Turishcheva T.B. (2018) Development of venture financing to ensure economic security of a country. *Proceedings of the 32nd International Business Information Management Association Conference, IBIMA 2018 - Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth*, P. 51-56.
- [11] Akhmadeev R.G., Bykanova O.A., Philippova N.V., Vashchekina I.V., Turishcheva T.B. (2018) Macroeconomic indicators and their impact on the foreign debt burden: The case of BRICS countries. *International Journal of Economics and Business Administration*, 6 (2), P. 68-82.
- [12] Akhmadeev R.G., Bykanova O.A., Morozova T.V., Safonova E.G., Turishcheva T.B., Lehoux L. (2018) Evaluation of financial and analytical activities of the biggest car makers of the Russian federation. *Jurnal Pengurusan*, 54, P. 131-142.
- [13] Akhmadeev R.G., Kosov M.E., Bykanova O.A., Korotkova E.M., Mamrukova O.I. (2016) Assessment of the tax base of the consolidated group of taxpayers in Russia using the method of polynomial interpolation. *Indian Journal of Science and Technology*, 9 (12), P. 89533.
- [14] Petrov A. *Modern Accounting Concepts: Textbook*. M.: Vuzovsky Uchebnik: INFRA-M, 2018.
- [15] Suleymanov M.M., Magomedov R.M., Savina S.V., Fomicheva T.L. Basic models of tax federalism in global practice: Specific characteristics and structural and functional organization. *Academy of Accounting and financial studies journal*. 2018. Vol. 22. Issue 3. P. 1-9.
- [16] Petrov A.M. Problems of Preparing Consolidated Statements at the Automation Stage. *International Accounting*, 2011, N 33, P. 2-10.
- [17] Petrov A.M. "Theoretical and Methodological Background to Organization of Accounting and Tax Planning in the Enterprise Systems of the Services Sector. Monograph", A. M. Petrov, Saint-Petersburg, 2008, Ser. Library of the Eurasian International Scientific and Analytic Journal Problems of Modern Economy.
- [18] Marina V. Kosolapova, Nataliya K. Muravitskaya, Mihail N. Tolmachev, Lyubov A. Melnikova, Alexander M. Petrov Technology for solving the problems related to the implementation of the concept of preserving capital in accounting and statistics / *International Journal of Recent Technology and Engineering*. Vol. 8. Issue 3, July 2019, P. 789-792.
- [19] Petrov A.M., Kiseleva N.P., Kevorkova Z.A., Melnikova L.A., Yshanov I.G. Present development practices for tax, financial and statistical reporting in the Russian Federation / *International Journal of Innovative Technology and Exploring Engineering(TM)*. Vol. 8. Issue 12, October 2019 .
- [20] Petrov A.M., Putihin Y.E., Poluleh M.V., Yurasova I.O., Erohina V.N. Accountant Modeling Technology and Statistics in the Context of the New Educational Concept / *International Journal of Innovative Technology and Exploring Engineering(TM)*. Vol. 8. Issue 12, October 2019.
- [21] Sembiyeva L.M., Zhagyparova A.O., Makysh M.K. Role of commercial banks in innovative development of the economy. *Reports of the National Academy of Sciences of the Republic of Kazakhstan*. Almaty, 2019. N 3. from. 204-214.
- [22] Zbigniew Korzeb, Sembiyeva L., Zhagyparova A. The influence of cooperative bank outlets upon local development in the podlaskie voivodeship in Poland. *Reports of the National Academy of Sciences of the Republic of Kazakhstan*. Almaty, 2019. N 6. from. 316-327.

V. A. Naumkin

Katanov Khakass State University, Abakan, Russia.

Email: vladimir-naumkin@mail.ru

FINANCIAL RESOURCES OF SMALL BUSINESSES: INTERNAL AND EXTERNAL FACTORS INFLUENCING THE SOURCES OF THEIR FORMATION

Abstract. The development of small business is of great importance for the stable development of the economy of any country. Economically developed small business is the basis of the economy of a developed state, so many research papers are devoted to the study of small business problems.

Small businesses, because of their size, are more flexible in responding to all changes in the economy and have a greater potential for development. Recently, according to statistics, there has been a decrease in investment activity in small businesses. In other words, small business has become less invested in fixed assets. The observed crisis phenomena in the economy exacerbate the problem of investment financing and confirm the relevance of research on this topic.

According to the heads of small businesses, the main reason for weak investment is the lack of financial resources. There is a wide variety of sources of financial resources. Sources of financial resources of small businesses have their own characteristics. However, small businesses are limited in their choice of sources of financial resources, because not all existing sources of financial resources are available and can be actually used by small businesses. There are a lot of number of factors that determine the final version of the structure of sources of financial resources of a small business.

The article highlights the main external and internal factors that determine the structure of the sources of financial resources of small business. Internal factors characterize specificity of the enterprise (the legal form of the business, the sectoral specifics of small business, the stage of the life cycle of a small business and the economic characteristics of the businesses), external – the specifics of the external economic environment and industry, condition of the labor market and unemployment rate, financial and credit policy, investment sphere.

The author of the article comes to the conclusion that the stage of the life cycle is one of the most important factors that determine the structure of sources of financial resources of small enterprises, since at different stages of the life cycle, the structure of financial sources of an enterprise differs. Among external factors, the author puts the economic conditions in which a small business operates in the first place. In a stable economic situation, a small business will have access to a wide range of sources of financial resources. In an economic downturn, the availability of debt sources is sharply reduced, due to high risks of non-return of funds, in addition, there is a low investment activity of business. The article describes the influence of each factor.

Key words: Sources of financial resources, small business, the structure of financial resources.

The relevance of the topic. The level of development of small and medium-sized businesses is of great importance for the economy of any state. According to various sources, its share in the GDP of developed countries in Europe, Asia, America ranges from 40% to 60% and is the basis of their economy [8,9].

According to the Government of the Russian Federation, small and medium-sized enterprises in Russia produce 20% of the country's GDP [2]. In 2019 in Russia according to the Unified register of small and medium-sized businesses, small and medium-sized enterprises include 5.8 million economic entities, 95.9% of them are microenterprises [14]. Developed small business not only makes a significant contribution to GDP, but also performs a special social function – providing employment, the formation of

the middle class, satisfaction the daily needs of society in goods and services. As many researchers note, «according to the experience of developed countries, the development of entrepreneurship generates a self-sustaining process of development and expansion of the real sector of the economy and services to ensure growth of the population employment, promotes the growth of its business activity and solution of social problems of the population» [5]. According to Rosstat, small and medium-sized businesses employ about 25% of the total employed population (18 million jobs) [2].

Small business is more flexible in responding to all changes. According to researchers, small firms have a high turnover rate [4, p.371], they spend about 4 times less time than large enterprises to develop and bring most innovations to the industrial design stage [3]. All this indicates the presence of high potential and the need for small business development.

Materials and methods of research. Sources of financial resources of small business are analyzed using methods of observation, measurement, abstract-logical and comparative analysis, generalization and systematization of statistical data.

The research was conducted using the following materials: legislation [1-2]; articles [3-10], dissertation on competition of a scientific degree of candidate of Sciences [11,13]; monograph "Problem finansirovaniya malyh predpriyatij" [12]; Oficial'nyj resurs: Edinyj reestr sub"ektov malogo i srednego predprinimatel'stva [14].

Research results. The author researched the multifaceted aspects of the organization of financial resources in business entities and systematized the factors that influence their formation.

As noted by the heads of small enterprises, the lack of financial resources is the main reason for weak investment in fixed assets. The crisis phenomena of 2014-2016 have once again aggravated this problem. Researchers allocate up to ten different sources of financial resources of the enterprise. But, unfortunately, not all conventional sources of financial resources can be accessed and used by small businesses.

A number of internal and external factors influence the structure of the sources of financial resources that make up the finances of small enterprises in the future, and the peculiarities of its formation [7].

The main factors determining the development of small business are: the state of the labor market and the unemployment rate; financial and credit policy; transport and engineering infrastructure; investment sphere, foreign economic relations [6, p.82]. The purpose of this article is to research the factors affecting the structure of the sources of financial resources of small business.

The main internal factors include:

- organizational and legal form of business entity,
- sectoral specificity of activity of small business,
- stage in the life cycle of a small business,
- structure and specifics of formation of fixed assets, the stability of production and sales, etc.

The legal form of the enterprise is characterized by the size of the authorized capital, the possibility of using the funds of the founders and the method of distribution of profits. For example, small businesses established as a limited liability company often have the authorized capital formed in the minimum amount established by the Federal Law «On limited liability companies» [1] or don't have it as an individual entrepreneur.

Sectoral specificity of activity of small business includes many aspects, but, in our opinion, one of the keys is to determine the final product (service), which is the result of small business. Depending on this, the company requires different material and technical equipment and financial support and, accordingly, a different set of fixed assets. If a small enterprise is engaged in production, a very important aspect is the duration of the production cycle, as well as the influence of seasonal factors on the organization of its activities. The longer the production cycle, the smaller the capital turnover, which in turn can affect the borrowing.

Exploring the financial resources of small business, it is worth noting the importance of the factor «stage in the life cycle of a small business». The newly registered company doesn't have a fund of depreciation, profit, access to leasing and credit resources. Thus, as practice shows, starting a small business can only rely on their own funds, or on the means of state support. However, both sources are not unlimited, and the means of state support are not a guaranteed source of financial resources of this enterprise. The initial formation of financial resources occurs at the time of establishment of the enterprise, when the authorized capital is formed. The sources of the authorized fund, depending on the

organizational and legal forms of management are: share capital (own savings, funds of family members), mutual contributions, long-term credit, state support. At the stage of formation and development will be relevant credit funds. Thus, at different stages of the life cycle, the structure of the financial sources of the enterprise will differ.

The structure of fixed assets determines the costs of its formation, maintenance and modernization. The more diverse and complex the composition of fixed assets, the more financial resources required for their acquisition and maintenance. Thus, business in the service sector involves small investments in equipment and training. Depreciation charges for such small enterprises are also absent or minimal. They don't have sufficient fixed assets that could be amortized to cover new innovation costs. Therefore, depreciation is applicable only to those small businesses that have a large range of fixed assets. These, for example, will include industrial and agricultural enterprises.

The stability of production and sales as a factor affecting the structure of sources of financial resources occurs in long-standing small enterprises that are already in the stage of growth or even maturity. The stability of production can depend on two main aspects: seasonality of demand for products and crisis phenomena in the enterprise. Seasonality of demand for products or services affect the stability of financial flows within a small enterprise, and in particular the stability of profit, which will be important when planning the use of own funds (profits) and borrowing. Such an enterprise will need to raise funds for a short period of time and with the possibility of a single cancellation. Crisis phenomena at the enterprise and stability of volume of production and realization of production – two interconnected factors as one phenomenon generates another. In this phenomenon, it is desirable for the enterprise to optimize its internal reserves as much as possible and look for options for raising funds with special return conditions.

The main external factors affecting the structure of the sources of financial resources of small business include:

- state economy,
- state policy on entrepreneurship development,
- investment activity,
- conjuncture of commodity and financial markets,
- industry-specific business, etc.

State economy and the economic environment in which a small business operates, in our opinion, is the most important external factor in the development of the enterprise as a whole and the formation of its structure of financial resources in particular. The more developed the economy and the more favorable the economic environment, the more developed the entrepreneurship. Stable economic situation is the basis of business sustainability. In times of crisis, in turn, the shortcomings of the existing production are exacerbated. That contribute to the liquidation of inefficient enterprises, reduce the cost of renting production facilities and equipment. This contributes to the modernization of existing enterprises and stimulates the emergence of new small enterprises. In a stable economic situation, a small enterprise will have access to various sources of financial resources. During the crisis, the availability of debt sources is sharply reduced, due to the high risks of non-return of funds, in addition, there is a low investment activity of enterprises.

The second important factor influencing the formation of financial resources of small businesses, in our opinion, the state policy on entrepreneurship development. This factor is closely interrelated with the first, because the development of the state economy, the more attention is paid to the development of entrepreneurship as one of the foundations of a modern competitive economy. In the implementation of government policy on entrepreneurship development, businesses are easier to operate in the economic environment, using the established preferences, tax incentives, direct government support measures. Also, subjects of small and average business potentially will have the ability to use means of state financial support as a source of financial resources. Measures of state support can be aimed at the development of entrepreneurship in general or at the development of a specific industry. Examples of successful government support measures of different countries in tourism industry researched Tleuberdinova A.T., Shayekina Zh.M., Salauatova D.M., Pratt S. [9].

Investment activity is important not for all businesses, but mainly for those who are in need of raising funds to implement their business project or investment in the activities of another business entity. The more investment activity, the greater the opportunity to attract and allocate financial resources.

The conjuncture of commodity and financial markets determines the stability of the demand for manufactured products, as well as the cost of capital, and involve small business from external sources. By increasing the level of loan interest increase and the requirements of investors to the rate of return on invested capital.

The industry-specific business determines the different duration of the operating cycle. After a long period of the operating cycle, to use borrowed funds small business is not always profitable and some borrowed sources and is not possible. Long production cycle makes use of the borrowed funds is expensive, the payback period of the investment increases in proportion to increase and the risk of bankruptcy. There are sectors with a high risk of business. For example, profit from entrepreneurial activities in the field of agriculture is quite difficult to predict, because there are many objective factors affecting results of operations that don't depend on the efforts of the entrepreneur (weather conditions, epidemic diseases of animals and plants, etc.).

The research of the sources of financing small businesses is one of the hot topics of modern research. The research revealed that the formation and structure of financial resources of small businesses affect more than ten internal and external factors. Each factor has its own characteristics and different impact on the financial policy of a business entity. Of course, to talk about the prevailing influence of one factor on the financial resources of a small business it is wrong. A particular factor may have more than others affect the finances of small businesses, but for a more accurate understanding of the need to explore all possible aspects together.

В. А. Наумкин

Н. Ф. Катанов атындағы Хакас мемлекеттік университеті, Абакан, Ресей

**ШАҒЫН КӘСІПОРЫНДАРДЫҢ ҚАРЖЫ РЕСУРСТАРЫ:
ОЛАРДЫ ҚАЛЫПТАСТЫРУ КӨЗДЕРІНЕ ӘСЕР ЕТЕТІН ІШКІ
ЖӘНЕ СЫРТҚЫ ФАКТОРЛАР**

В. А. Наумкин

Хакасский государственный университет им. Н. Ф. Катанова, Абакан, Россия

**ФИНАНСОВЫЕ РЕСУРСЫ МАЛЫХ ПРЕДПРИЯТИЙ: ВНУТРЕННИЕ И
ВНЕШНИЕ ФАКТОРЫ, ВЛИЯЮЩИЕ НА ИСТОЧНИКИ ИХ ФОРМИРОВАНИЯ**

Аннотация. Развитие малых предприятий имеет большое значение для стабильного развития экономики любой страны. Экономически развитый малый бизнес является основой экономики развитого государства, поэтому изучению проблем малого бизнеса посвящено много исследовательских работ.

Малый бизнес в силу масштабов своей деятельности более гибко реагирует на все изменения, происходящие в экономике, и обладает большим потенциалом для развития. В последнее время, согласно статистическим данным, наблюдается снижение инвестиционной активности у малых предприятий. Другими словами, малые предприятия стали меньше инвестировать в основной капитал. Наблюдаемые кризисные явления в экономике обостряют проблему финансирования инвестиций и подтверждают актуальность исследований данной темы.

По мнению руководителей малых предприятий, главной сдерживающей причиной слабого инвестирования в основной капитал является недостаток финансовых ресурсов. Существует большое разнообразие источников финансовых ресурсов. Каждый источник финансовых ресурсов малых предприятий имеет свои особенности. Но при этом малые предприятия ограничены при выборе источников финансовых ресурсов, поскольку не все существующие источники финансовых ресурсов доступны и могут быть реально использованы субъектами малого бизнеса. Выделяется достаточно большое количество факторов, определяющих в конечном варианте структуру источников финансовых ресурсов малого предприятия.

В статье выделяются основные внешние и внутренние факторы, определяющие структуру источников финансовых ресурсов субъектов малого предпринимательства. Внутренние факторы характеризуют особенности самого предприятия (организационно-правовую форму предприятия, отраслевая специфика деятельности малого предприятия, стадия жизненного цикла малого предприятия, экономические характеристики предприятия), внешние – специфику внешней экономической среды и отрасли производства, состояние рынка труда и уровня безработицы, финансово-кредитная политика, инвестиционная сфера.

Автор статьи приходит к выводу о том, что стадия жизненного цикла является одним из наиболее важных факторов, определяющих структуру источников финансовых ресурсов малых предприятий, поскольку на различных стадиях жизненного цикла структура финансовых источников предприятия различается. Среди внешних факторов на первое место автор относит экономические условия, в которых действует малое предприятие. В условиях стабильной экономической ситуации малому предприятию будет доступен широкий перечень источников финансовых ресурсов. При экономическом спаде доступность заемных источников резко сокращается, из-за высоких рисков невозврата средств, кроме того, наблюдается низкая инвестиционная активность предприятий. В статье дана характеристика влияния каждого фактора.

Ключевые слова: источники финансовых ресурсов, малые предприятия, структура финансовых ресурсов.

Information about author:

Naumkin V.A., Postgraduate student, Katanov Khakass State University, Abakan, Russia; vladimir-naumkin@mail.ru; [https:// orcid 0000-0001-8068-0947](https://orcid.org/0000-0001-8068-0947)

REFERENCES

- [1] Federal'nyj zakon «Ob obshchestvah s ogranichennoj otvetstvennost'yu» ot 08.02.1998 № 14-FZ (in Russ.).
- [2] Rasporyazhenie Pravitel'stva Rossijskoj Federacii ot 02.06.2016 № 1083-r «Ob utverzhdenii Strategii razvitiya malogo i srednego predprinimatel'stva v Rossijskoj Federacii na period do 2030 goda» (in Russ.).
- [3] Vardanyan I.S. (2014) Razvitie malogo i srednego biznesa v Rossii // Menedzhment v Rossii i za rubezhom. 1: 28-35 (in Russ.).
- [4] Gladkova A.V. (2016) Vliyanie negativnyh makroekonomicheskikh faktorov na razvitie otechestvennogo malogo biznesa // Elektronnyj nauchnyj zhurnal. 3(6): 370-375 (in Kaz.).
- [5] Dyussembekova G.S., Beisembayeva G.M., Bayandina G.B., Burgumbayeva S.K. (2018) Analysis of the interdependence of entrepreneurship development and the growth of population employment within the realization of state programs // Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. ISSN 1991-3494. Vol. 4, N 374. P. 111-120 (in Russ.).
- [6] Kenzhekulov I. (2015) CHakan zhana orto biznesti Onyktyrqynyn faktorloru. // Nauka, novye tekhnologii i novacii Kyrgystana. 6: 82-83 (in Russ.).
- [7] Naumkin V.A. (2017) Faktory, okazyvayushchie vliyanie na finansovuyu strukturu finansovyh resursov malyh predpriyatij // Ekonomika i predprinimatel'stvo. 4 (ch.1): 1077-1079 (in Russ.).
- [8] Nurmuhametov A.V. (2014) Teoriya i praktika gosudarstvennogo regulirovaniya i podderzhki razvitiya sub"ektov malogo i srednego predprinimatel'stva // Aktual'nye problemy ekonomiki i prava. 3: 83-89 (in Russ.).
- [9] Mezhidova, D.V., Kudusov, L. (2014) Razvitiya malogo i srednego biznesa kak osnovnoj faktor ekonomicheskogo rosta Rossii / D. V Mezhidova, L. Kudusov // Evrazijskij Soyuz uchenyh (KSU). 1-3 (18): 74-77 (in Russ.).
- [10] Tleuberdinova A.T., Shayekina Zh.M., Salauatova D.M., Pratt S. (2019) Organizational activities to stimulate the entrepreneurial activity in tourism // Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. ISSN 1991-3494. Vol. 2, N 378. P. 226-236. DOI: 10.32014/2018.25181467.60
- [11] Usenko A.M. (2010) Finansovoe obespechenie innovacionno aktivnyh malyh predpriyatij. Dis... kand. ekonom. nauk: 08.00.10 / Rostovskij gosudarstvennyj ekonomicheskij universitet. Rostov-na-Donu, 174 p. (in Russ.).
- [12] Fomicheva I.V. (2014) Problemy finansirovaniya malyh predpriyatij: monografiya / I.V. Fomicheva, A.V. Gulyaeva, O.A. Gulyaeva. Tula: Tul'skij poligrafist, 175 p. (in Russ.).
- [13] Hajretidinov N.R. (2010) Formirovanie effektivnoj sistemy finansovogo obespecheniya malyh organizacij. Dis... kand.ekonom. nauk: 08.00.10 / Vserossiyskaya gosudarstvennaya nalogovaya akademiya. M. 132 p. (in Russ.).
- [14] Oficial'nyj resurs: Edinyj reestr sub"ektov malogo i srednego predprinimatel'stva [Elektronnyj resurs]. Rezhim dostupa: <https://ofd.nalog.ru> (Date of access: 02.12.2019) (in Russ.).

Y. E. Putihin, Y. N. Akimova, N. V. Ostrovskaya, I. A. Manvelova, E. V. Negashev

Financial University under the Government of the Russian Federation, Moscow, Russia.

E-mail: YEPutihin@fa.ru, akimovaiun@gmail.ru, NVOstrovskaya@fa.ru,

IAManvelova@fa.ru, enegashev@fa.ru

CONCEPTUAL APPROACHES TO CLASSIFICATION OF NATIONAL ACCOUNTING SYSTEMS

Abstract. International Accounting Practice Accounting is multifaceted and heterogeneous. First distinguish between international standards and national standards. National accounting standards for each country is being developed independently. The leading countries in the field of national accounting standards are the United Kingdom and the United States, which is determined by the role of these countries in international financial markets. In different countries, national accounting standards are called differently; in addition, various bodies are involved in their development: in some these are state bodies, in other countries professional organizations.

International accounting standards are implemented and developed at 2 levels: international, global and regional. In the regional aspect, the main role belongs to the EU Accounting Commission, which regulates these matters in the EU countries. World standards are developed by several organizations: International Federation of Accountants, Committee on International Accounting Standards, Intergovernmental Group of Experts on International Standards Reporting and Accounting Center for Transnational United Nations Corporation, Economic development and cooperation.

There is a great variety of accounting systems around the world. The differences between them are explained mainly by the different business environments in which they operate. Among many classifications, which are based on various principles, two main classifications can be distinguished.

The first one is based on the “geographical” principle, i.e.: the UK-US system, the Continental system, the Latin American system. In the second classification, systems are clustered based on their typical properties and hierarchy. The upper level defines the objectives that the accounting system focuses on. Next, systems are rated based on whether the state insists on applying the theoretical approach or the actual legislative requirements and business needs.

It might be difficult to classify a system as belonging to a specific group if the country’s accounting system is unstable. Thus, in the 60s of the 20th century, New Zealand started to separate from the UK, although many provisions of its accounting system were taken directly from the standards developed by the English Institute of Financial Accountants.

In view of the existing challenges and various approaches to the classification of national accounting systems, the importance of such classification can hardly be overestimated. The proximity of national accounting systems in countries that belong to the same model suggests the possibility of harmonization of accounting principles at the international level.

Based on the above:

- the possibility of grouping national accounting systems into clusters makes it possible to level out the differences between them during standardization;
- the convergence of economies of different countries due to the globalization of the world economy contributes to the unification of accounting principles at the global level.

Key words: accounting, reporting, statistics, national accounting model.

Introduction. International accounting practices are complex and heterogeneous. First of all, the difference should be drawn between international standards and national standards.

National accounting standards are developed by each country independently. The leading countries in national accounting standards are the United Kingdom and the United States, as determined by the role these countries play in the international financial markets. In different countries, national accounting standards are called differently and developed by different bodies, including state agencies in some countries or professional organizations in others.

Methods and materials.

A. General description. International accounting standards are developed and implemented at 2 levels: global and regional. At the regional level, the main role belongs to the EU Accounting Regulatory Committee that regulates these issues in the EU countries. Several organizations are involved in the development of global standards: the International Federation of Accountants, the Committee on International Accounting Standards, the Intergovernmental Working Group of Experts on International Standards of Reporting and Accounting at the UN Centre for Transnational Corporations, the Organisation for Economic Co-operation and Development [1,2,8].

B. Algorithm. The first classification of accounting systems appeared in the early 20th century. In 1911, a report was submitted to the Association of Chartered Accountants in the US by Henry Rand Hatfield, who highlighted the impact exerted by France on several national accounting systems. Classifications proposed by different scholars were based on different approaches [9,10,15,19,21].

There is a classification based on the “sphere of influence” principle. According to this theory, in conventional alliances, a “mother country” influences accounting practices in other countries. Based on this theory, L. Seidler identified three groups:

- the UK model that influences the Indian and Australian accounting systems;
- the US model that influences Mexico and most of the South American countries, as well as Japan and Israel;
- the French model that has spread its influence over the Mediterranean countries, Southern Europe, and some of the South American countries whose commercial codes are based on the Napoleonic Code.

Having examined L. Seidler’s approach, G. Previts does not agree that the United States have any influence on the South American countries and says that the list of countries that are influenced by the UK should be extended to include New Zealand, Canada, Nigeria, South Africa, the British West Indies, Greece, Thailand and some countries of South America.

There is another classification, which is based on a subjective approach and was first proposed by G. Muller. He says that 4 models of accounting systems can be distinguished based on common patterns of their development:

- in the microeconomic approach, accounting is viewed as a service function for business (the Netherlands);
- in the macroeconomic approach, accounting is viewed as a tool of the national economic policy (Sweden);
- in the uniform accounting approach, accounting is based on standard definitions and rules for presentation and valuation of data, and applied by the government to control and monitor the economy (France);
- in the independent discipline approach, accounting is viewed as an independent system that develops based on the current needs of the business, where the impact of the current accounting practices is most important in establishing the accounting principles (the UK and the US).

G. Muller also proposed an alternative classification, which is based on ten groupings to different business environments.

The ten groups are as follows:

- British Commonwealth;
- The Netherlands, Canada, the United States;
- Continental Europe, excluding Scandinavia, the Netherlands, and Germany;
- Japan and Germany;
- Mexico and Israel;
- Scandinavia;
- Developing nations of the Middle East and the Far East;
- South America;

- Poland, Russia, Belarus, Ukraine;
- Africa (excluding South Africa).

The American Accounting Association suggested five zones of influence on accounting systems:

- French-Spanish-Portuguese;
- British;
- German-Dutch;
- Communist;
- The USA.

There is another classification, which is based on the systematization of group differences (i.e., statistical classification).

Many scholars classify accounting systems by grouping them on the basis of a cluster analysis of the elements that are identified in the practical application of such systems in research activities [3,4,11,12,18]. Price Waterhouse & Co. surveys are considered most valuable and were used by R. Nair, W. Frank, and Da Costa to develop their own classification theories.

Da Costa identified 2 clusters, one of which is based on the accounting systems used in the UK and its former colonies, and the second one – on all other accounting systems. The systems of the Netherlands and Canada do not fall into any of these groups.

R. Nair analyzed the differences between the methods of presenting and evaluating data and identified 7 groups based on the methods of assessment and 10 groups based on the manner of presentation of information.

By analyzing the same information, W. Frank identified 4 models: Continental Europe, British Commonwealth, USA, Latin America.

Russian scholars also worked on the classification of national accounting systems. Their classification is based on the homogeneity of the economic aspects that determine the national accounting system. Russian experts distinguish 3 models of accounting systems: Latin America, (Continental) Europe, the UK and the US [5,6,13,17].

The aspects based on which national systems are classified by Russian experts are summarized in table.

Classification of accounting systems

The UK and the US	Continental Europe	Latin America
It unites the national accounting systems of the United Kingdom, Australia, Israel, Hong Kong, Canada, India, the Netherlands, Cyprus, Singapore, Pakistan, South Africa, the United States, and some other English-speaking countries.	It unites the national accounting systems of Belgium, Austria, Greece, Germany, Spain, Denmark, Norway, Italy, France, Portugal, Sweden, Switzerland, and some other European countries. The national accounting systems of Japan and Russia are close to this model.	It unites the national accounting systems of South American countries due to common language and history.
In all countries that belong to this model, the influence of the UK and the US is great. The leading countries are characterized by developed securities markets, a high level of expertise of accountants and users of accounting information. Company reporting is focused on the needs of its creditors and investors. It is especially important to accurately calculate the entity's financial performance.	Accounting practices in one country differ from those in other countries. Business has close ties with banks. Focusing on the needs of creditors and investors is not the primary concern of reporting. Accounting is regulated by law. It is characterized by conservatism and a high degree of government intervention in the accounting practices (i.e. the mandatory use of the chart of accounts)	A distinctive feature of financial reporting in these countries is the adjustment for inflation. Accounting is generally focused on the needs of the planning agencies and on ensuring tax compliance. Accounting techniques and methods are characterized by a high degree of unification.
The task of satisfying the information needs of the government (which is represented by tax authorities) is removed from the scope of the financial accounting and reporting system	Financial reporting is focused on satisfying the information needs of tax authorities and other government bodies.	

The above classification is the most appropriate for analyzing the unification of accounting principles at regional levels. Such unification is evidenced by the fact that most countries of the Continental Europe model apply the EU Directives, and most countries of the UK – US model apply the UK GAAP and US GAAP. The countries of the Latin America model also show the common trend of unification of accounting principles at a regional level.

The challenges that arise in the classification of accounting systems should also be mentioned [7, 14, 20]. Thus, when grouping different accounting systems, it is necessary to decide whether to rely on practical reality or the established regulatory standards. For example, there is a set of regulatory requirements in Sweden, however, in practice, Sweden companies prepare statements, focusing on the investors' interests only.

It might be difficult to classify a system as belonging to a specific group if the country's accounting system is unstable. Thus, in the 60s of the 20th century, New Zealand started to separate from the UK, although many provisions of its accounting system were taken directly from the standards developed by the English Institute of Financial Accountants.

In view of the existing challenges and various approaches to the classification of national accounting systems, the importance of such classification can hardly be overestimated. The proximity of national accounting systems in countries that belong to the same model suggests the possibility of harmonization of accounting principles at the international level.

Based on the above:

- the possibility of grouping national accounting systems into clusters makes it possible to level out the differences between them during standardization;
- the convergence of economies of different countries due to the globalization of the world economy contributes to the unification of accounting principles at the global level.

Results and discussion. The differences between national accounting systems are due to the following objective reasons [16,20].

1. Accounting framework in the country. The regulatory framework is based on scientifically defined concepts. Different countries may apply different concepts, which, in turn, require different approaches to the development of standards. For example, accounting in the United States is based on the positive theory that denies value judgments and pays great attention to the financial flows of a company.

In the Netherlands, a different approach is very popular. Called "business economics", this approach was developed by Theodore Limperg, who put forward the theory of replacement cost accounting. This theory wasn't aimed to mitigate the effects of inflation, but to develop the Economic theory.

During the socialist period in Russia, the national accounting system was under the domination of the theories of the political economy. Today, the concept of accounting in the Russian market economy, which focuses on obtaining reliable information about the entity's business activities, has a great influence on the formation of the Russian accounting system.

2. The political situation in the country. The process of unification of accounting principles is affected by various political events. Moreover, the adoption of an accounting system can have economic consequences that may be favorable or unfavorable to certain influential groups in society. Therefore, decisions on the unification of accounting principles may be affected by the dominance of various political forces.

For example, a high degree of harmonization of accounting principles is typical for those countries where the government may impact the economy. In Russia, the transition to market economy required a different accounting system than that used in the planned economy.

3. The economic situation in the country. Accounting regulation may be used as a method to solve economic problems. The government can support those accounting standards that encourage or, contrarily, prevent companies from using any methods of accounting for liabilities, depreciation, production costs, etc. This is especially true in countries where the tax system does not stimulate the economic efficiency of tax payments and taxpayers are not informed or misinformed about the use of tax payments.

Another aspect is the inflation rate in the country. High inflation results in inflation accounting, i.e. frequent revaluations of accounts, as can be observed in a number of Latin American countries.

4. Users of financial information and the goals that they set to themselves. The information and accounts are reported in financial statements to satisfy the information needs of the intended users thereof.

The specific accounts that are disclosed in financial statements depend on whose interests are of top priority for the state.

For example, in the UK and the US, investors' interests are considered of top priority, while in many European countries, it is the creditors, whose interests are considered most important. In some countries, however, the focus is made on the interests of the state, especially tax authorities. The priority of certain users of financial information over others in determining reporting items depends largely on the sources of funding.

For example, UK and US companies are more focused on investors' funds, therefore investors have priority over other users of financial information. This is in contrast to European companies, who rely on bank loans.

5. Historical national traditions. In each country, national accounting systems have been developing in different patterns over a long period of time. The general tendency in their development is continuous improvement and modification; however, society tends to follow customary ways of doing things. For example, European countries, which have long-standing traditions, apply different national standards. At the same time, many of the countries that are closely associated with the United States often apply the US GAAP.

Conclusion. To summarize the above, there are objective reasons that cause differences in national accounting systems and hinder their unification at the international level. Nevertheless, the reality is that differences in national standards can be circumvented by grouping countries with similar economic and cultural traditions and approaches to the accounting system. This is the key to success in the harmonization of national accounting systems, primarily through their classification based on definite parameters.

Ю. Е. Путихин, Ю. Н. Акимова, Н. В. Островская, И. А. Манвелова, Е. В. Негашев

Ресей Федерациясы Үкіметінің жанындағы Қаржы университеті, Мәскеу, Ресей

БУХГАЛТЕРЛІК ЕСЕПТИҢ ҰЛТТЫҚ ЖҮЙЕЛЕРІН ЖІКТЕУГЕ ТҰЖЫРЫМДАМАЛЫҚ ТӘСІЛДЕР

Аннотация. Халықаралық бухгалтерлік есеп тәжірибесі – бухгалтерлік есеп көп қырлы және біртекті емес. Бірінші, халықаралық стандарттар мен ұлттық стандарттарды ажырата білу. Әр ел үшін ұлттық бухгалтерлік есеп стандарттары дербес жасалады. Ұлттық бухгалтерлік есеп стандарттары саласындағы жетекші елдер – бұл елдердің халықаралық қаржы нарықтарындағы рөлімен анықталатын Ұлыбритания және АҚШ. Әр түрлі елдерде ұлттық бухгалтерлік есеп стандарттары басқаша аталады; Сонымен қатар, олардың дамуына әртүрлі органдар қатысады: олардың кейбіреулерінде мемлекеттік органдар, басқа елдерде кәсіби ұйымдар бар.

Бухгалтерлік есептің халықаралық стандарттары екі деңгейде жүзеге асырылады және дамиды: халықаралық, жаһандық және аймақтық. Аймақтық аспектіде басты рөлге жатады

ЕО елдерінде осы мәселелерді реттейтін ЕО Есеп Комиссиясы. Әлемдік стандарттарды бірнеше ұйым дамытады: Халықаралық бухгалтерлер федерациясы, Халықаралық бухгалтерлік есеп стандарттары жөніндегі комитет, Біріккен Ұлттар Ұйымының Трансұлттық корпорациясының Халықаралық стандарттар бойынша есеп беру және есеп орталығы бойынша үкіметаралық сарапшылар тобы, экономикалық даму және ынтымақтастық.

Бүкіл әлемде бухгалтерлік есеп жүйелерінің сан алуан түрлері бар. Олардың арасындағы айырмашылық негізінен олар жұмыс істейтін әртүрлі бизнес-орталармен түсіндіріледі. Әртүрлі принциптерге негізделген көптеген жіктеулердің ішінен екі негізгі жіктеуді ажыратуға болады.

Біріншісі «географиялық» принципке негізделген, яғни: Ұлыбритания-АҚШ жүйесі, континентальдық жүйе, Латын Америкасы жүйесі. Екінші жіктеуде жүйелер олардың типтік қасиеттері мен иерархиясына байланысты кластерленген. Жоғарғы деңгей бухгалтерлік есеп жүйесіне бағытталған мақсаттарды анықтайды. Әрі қарай, жүйелер мемлекет теориялық көзқарасты немесе заңнаманың нақты талаптары мен бизнестің қажеттіліктерін қолдануды талап ететіндігіне байланысты бағаланады.

Егер елдің есепке алу жүйесі тұрақсыз болса, жүйені белгілі бір топқа жататын деп жіктеу қиын болуы мүмкін. Осылайша, 20 ғасырдың 60-жылдарында Жаңа Зеландия Ұлыбританиядан бөліне бастады, дегенмен

оның бухгалтерлік жүйесінің көптеген ережелері Англияның Қаржы Бухгалтерлер Институты әзірлеген стандарттардан тікелей алынды.

Ұлттық есепке алу жүйелерін жіктеуге қатысты туындаған қиындықтар мен әртүрлі тәсілдерді ескере отырып, мұндай жіктеудің маңыздылығын асыра бағалау мүмкін емес. Бірыңғай модельге жататын елдердегі ұлттық есеп жүйесінің жақындығы халықаралық деңгейде бухгалтерлік есеп қағидаттарын үйлестіру мүмкіндігін ұсынады.

Жоғарыда айтылғандарға сүйене отырып:

– ұлттық есепке алу жүйелерін кластерлерге топтастыру мүмкіндігі стандарттау кезінде олардың арасындағы айырмашылықтарды анықтауға мүмкіндік береді;
– әлемдік экономиканың жаһандануы салдарынан әр түрлі елдердің экономикаларының жақындасуы бухгалтерлік есеп қағидаларын жаһандық деңгейде біріктіруге ықпал етеді.

Түйін сөздер: бухгалтерлік есеп, есеп беру, статистика, ұлттық есеп үлгісі.

Ю. Е. Путихин, Ю. Н. Акимова, Н. В. Островская, И. А. Манвелова, Е. В. Негашев

Финансовый университет при Правительстве Российской Федерации, Москва, Россия

КОНЦЕПТУАЛЬНЫЕ ПОДХОДЫ К КЛАССИФИКАЦИИ НАЦИОНАЛЬНЫХ СИСТЕМ БУХГАЛТЕРСКОГО УЧЕТА

Аннотация. Международная бухгалтерская практика «Бухгалтерский учет» многогранен и неоднороден.

Различают международные стандарты и национальные стандарты. Национальные стандарты бухгалтерского учета для каждой страны разрабатываются самостоятельно. Ведущими странами в области национальных стандартов бухгалтерского учета являются Великобритания и США, что определяется ролью этих стран на международных финансовых рынках. В разных странах национальные стандарты бухгалтерского учета называются по-разному; кроме того, в их развитии участвуют различные органы: в некоторых это государственные органы, в других странах профессиональные организации.

Международные стандарты бухгалтерского учета внедряются и разрабатываются на 2 уровнях: международном, глобальном и региональном. В региональном аспекте основная роль принадлежит

Бухгалтерская комиссия ЕС, которая регулирует эти вопросы в странах ЕС. Разрабатывает мировые стандарты несколько организаций: Международная федерация бухгалтеров, Комитет по международным стандартам бухгалтерского учета, Межправительственная группа экспертов по международным стандартам, Центр отчетности и учета для Транснациональной корпорации ООН, Экономическое развитие и сотрудничество.

В мире существует множество систем бухгалтерского учета. Различия между ними объясняются главным образом различными бизнес-средами, в которых они работают. Среди множества классификаций, основанных на различных принципах, можно выделить две основные классификации.

Первый основан на «географическом» принципе, то есть: британо-американская система, континентальная система, латиноамериканская система. Во второй классификации системы кластеризованы на основе их типичных свойств и иерархии. Верхний уровень определяет цели, на которые ориентирована система бухгалтерского учета. Далее, системы оцениваются на основе того, настаивает ли государство на применении теоретического подхода или фактических требований законодательства и потребностей бизнеса.

Трудно классифицировать систему как принадлежащую к определенной группе, если система учета в стране нестабильна. Таким образом, в 60-х годах XX века Новая Зеландия начала отделяться от Великобритании, хотя многие положения ее системы бухгалтерского учета были взяты непосредственно из стандартов, разработанных Английским институтом финансовых бухгалтеров.

Ввиду существующих проблем и различных подходов к классификации национальных систем бухгалтерского учета важность такой классификации трудно переоценить. Близость национальных систем бухгалтерского учета в странах, принадлежащих к одной модели, предполагает возможность гармонизации принципов бухгалтерского учета на международном уровне.

На основании вышеизложенного:

- возможность группировки национальных систем бухгалтерского учета в кластеры позволяет выровнять различия между ними в процессе стандартизации;
- сближение экономик разных стран за счет глобализации мировой экономики способствует унификации принципов бухгалтерского учета на глобальном уровне.

Ключевые слова: бухгалтерский учет, отчетность, статистика, национальная модель учета.

Information about authors:

Putihin Y.E., PhD, associate professor, Head of the Department of Economics and Finance, Director of the St. Petersburg Branch, Financial University under the Government of the Russian Federation, Moscow, Russia; YEPutihin@fa.ru; <https://orcid.org/0000-0002-4918-5005>

Akimova Y.N., Doctor of Psychological Sciences, Head of the Department of International Cooperation and Supplementary Education of the St. Petersburg Branch, Associate Professor in Economics and Management, Financial University under the Government of the Russian Federation, Moscow, Russia; akimovaiun@gmail.ru; <https://orcid.org/0000-0003-3800-0690>

Ostrovskaya N.V., PhD in Political Science, Associate Professor of the Department of Management, St. Petersburg branch of Financial University under the Government of the Russian Federation, Moscow, Russia; NVOstrovskaya@fa.ru; <https://orcid.org/0000-0003-0665-9722>

Manvelova I.A., Associate Professor of the Department of Foreign Languages, Financial University under the Government of the Russian Federation, Moscow, Russia; IAManvelova@fa.ru; <https://orcid.org/0000-0003-4304-6626>

Negashev E.V., Ph.D. (Economics), Associate Professor, Department of Accounting, Analysis, and Audit, Financial University under the Government of the Russian Federation, Moscow, Russia; enegashev@fa.ru; <https://orcid.org/0000-0003-3536-5125>

REFERENCES

[1] Akhmetshina A., Vagizova V., Koczar J., Terenteva K.: Infrastructure Investments as a Tool for Implementing the Strategy of Sustainable Development of Regional Economic Systems, w: Information Systems Architecture and Technology: Proceedings of 38th International Conference on Information Systems Architecture and Technology – ISAT 2017 / Wilimowska Zofia, Borzemski Leszek, Świątek Jerzy (red.), Advances in Intelligent Systems and Computing, vol. 657, 2018, ISBN 978-3-319-67222-9, ss. 38-46, DOI:10.1007/978-3-319-67223-6_4

[2] Kevorkova, Z.A., Petrov, A.M., Savina N.V. Towards liabilities of corporate systems. International Journal of Civil Engineering and Technology. Vol. 10, Issue 2, February 2019. P. 1582-1593.

[3] Lyamar, M.P., Kevorkova, Z.A., Petrov, A.M. The convergence of national and international accounting standards: Chinese experience. International Journal of Civil Engineering and Technology. Vol. 9, Issue 13, December 2018. P. 82-94.

[4] Karpova T.P., Petrov A.M., Antonova O.V., Directions of Accounting Development in the Conditions of Digitalization. Jour of Adv Research in Dynamical & Control Systems, Vol. 10, 07 Special Issue, 2018. P. 117-125.

[5] Chernysheva Natalia A., Perskaya Victoria V., Petrov Alexander M., Bakulina Anna A. Green Energy for Belt and Road Initiative: Economic Aspects Today and in the Future / International Journal of Energy Economics and Policy. 2019, 9 (5), 178-185.

[6] Petrov A.M., Nikiforova E.V., Kiseleva N.P., Grishkina S.N., Lihtarova O.V., Creation of the reporting on sustainable development of companies based on socioeconomic measurement statistics / International Journal of Recent Technology and Engineering. Vol. 8. Issue 2, July 2019, P. 4005-4012.

[7] Alexander M. Petrov, Marina V. Kosolapova, Igor G. Yshanov, Nataliya K. Muravitskaya, Hursheda Nurmuhamedova The Economic Significance of Statistical Research Activities of Representative Offices of Companies Abroad / International Journal of Innovative Technology and Exploring Engineering (TM). Vol. 8. Issue 10, August 2019. P. 2713-2722.

[8] Lyudmila V. Sotnikova, Svetlana N. Polenova, Nataliya A. Mislavskaya, Alexander M. Petrov, Mariya M. Basova. Sustainable development, macro and micro level: Russian and foreign model / International Journal of Recent Technology and Engineering. Vol. 8. Issue 2, July 2019. P. 4524-4532.

[9] Nikiforova E.V. Paradigm of public reporting of economic entities // World Applied Sciences Journal. 2014. T. 29. N 5. P. 667-670.

[10] Akhmadeev R.G., Bykanova O.A., Turishcheva T.B. (2018) Brics' foreign debt burden and its impact on core institutional basis. Journal of Reviews on Global Economics, 7. P. 345-359.

[11] Akhmadeev R.G., Kosov M.E., Bykanova O.A., Turishcheva T.B. (2018) Development of venture financing to ensure economic security of a country. Proceedings of the 32nd International Business Information Management Association Conference, IBIMA 2018 - Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth, P. 51-56.

[12] Akhmadeev R.G., Bykanova O.A., Philippova N.V., Vashchekina I.V., Turishcheva T.B. (2018) Macroeconomic indicators and their impact on the foreign debt burden: The case of BRICS countries. *International Journal of Economics and Business Administration*, 6 (2), P. 68-82.

[13] Akhmadeev R.G., Bykanova O.A., Morozova T.V., Safonova E.G., Turishcheva T.B., Lehoux L. (2018) Evaluation of financial and analytical activities of the biggest car makers of the Russian federation. *Jurnal Pengurusan*, 54, P. 131–142.

[14] Akhmadeev R.G., Kosov M.E., Bykanova O.A., Korotkova E.M., Mamrukova O.I. (2016) Assessment of the tax base of the consolidated group of taxpayers in Russia using the method of polynomial interpolation. *Indian Journal of Science and Technology*, 9 (12), 89533 p.

[15] Suleymanov M.M., Magomedov R.M., Savina S.V., Fomicheva T.L. Basic models of tax federalism in global practice: Specific characteristics and structural and functional organization. *Academy of Accounting and financial studies journal*. - 2018. Vol. 22. Issue 3. P. 1-9.

[16] Marina V. Kosolapova, Nataliya K. Muravitskaya, Mihail N. Tolmachev, Lyubov A. Melnikova, Alexander M. Petrov Technology for solving the problems related to the implementation of the concept of preserving capital in accounting and statistics / *International Journal of Recent Technology and Engineering*. Vol. 8. Issue-3, July 2019, P. 789-792.

[17] Petrov A.M., Kiseleva N.P., Kevorkova Z.A., Melnikova L.A., Yshanov I.G. Present development practices for tax, financial and statistical reporting in the Russian Federation / *International Journal of Innovative Technology and Exploring Engineering (TM)*. Vol. 8. Issue 12, October 2019.

[18] Petrov A.M., Putihin Y.E., Poluleh M.V., Yurasova I.O., Erohina V.N. Accountant Modeling Technology and Statistics in the Context of the New Educational Concept / *International Journal of Innovative Technology and Exploring Engineering (TM)*. Vol. 8. Issue 12, October 2019.

[19] Koczar J., Selivanova K., Akhmetshina A., Vagizova V.: Modeling Investment Decisions in the System of Sustainable Financing, w: *Information Systems Architecture and Technology: Proceedings of 39th International Conference on Information Systems Architecture and Technology – ISAT 2018. Part 3 / Wilimowska Zofia, Borzemski Leszek, Świątek Jerzy (red.)*, *Advances in Intelligent Systems and Computing*, vol. 854, 2019, ISBN 978-3-319-99992-0, P. 16-23, DOI:10.1007/978-3-319-99993-7_2

[20] Bodnarenko V., Vagizova V., Koczar J.: Comparative analysis of impact of crises of 2008 and 2014 on Banking Capital in Russia, w: *Journal of Economics and Economic Education Research, Allied Academies*, vol. 17, nr Special Issue, 2016, P. 64-72.

[21] Koczar J., Vagizova V.: Services for business in the Polish economic practice, w: *Journal of Economics and Economic Education Research, Allied Academies*, vol. 17, nr Special Issue 1, 2016, P. 93-96.

A. M. Petrov¹, L. M. Sembiyeva²¹Financial University under the Government of the Russian Federation, Moscow, Russia;²L. N. Gumilyov Eurasian National University, Nur-Sultan, Kazakhstan.

E-mail: AMPetrov@fa.ru, sembiyeva@mail.ru

**ORGANIZATIONAL AND METHODOLOGICAL MECHANISM
OF INTERNAL AUDIT OF SETTLEMENTS
IN CORPORATE SYSTEMS**

Abstract. Internal audit is an important management function that covers accounting, financial analysis, and control, compares and evaluates the entity's actual result achieved and its goals and objectives. Internal audit regularly monitors activities of all control targets, identifies the reasons for deviations from standards, fluctuations from the objectives set for a particular target, to promptly remedy any identified violations. Most of the standards on external audits can be applied to internal audits, for example, those relating to audit planning, the concept of audit risk, assessing the impact of internal control on the reliability of financial statements and others. A distinctive feature of an internal audit standard is that it contributes to the effective management of a company or a group of companies. This paper describes the methods for the internal audit of settlements in the corporate system.

The above method will allow verifying the compatibility of analytical and synthetic accounting data, as well as the correlation between indicators reported in different financial reporting forms, at the initial stage and in accordance with the objectives set for any control item of internal audit. Their incompatibility can be indicative of inaccuracies in the reported data. Therefore, if necessary, a 100% check of statements should be conducted by breaking down summary indicators into individual ones. Moreover, the proposed model, made in the form of a chess table, allows to accelerate internal audit, determine the main methods and procedures for its implementation, establish a group of people directly or indirectly related to the identified inconsistencies, and determine the amount of material damage inflicted on entities or individuals.

The materiality of errors should be quantitatively and qualitatively assessed. For the quantitative assessment, the auditor should compare the errors found and the degree of materiality established at the planning stage. For the qualitative assessment, the auditor should rely on his/her own practical experience and knowledge.

When analyzing the errors discovered by the audit, it is necessary to determine the degree of their influence on the reliability of the accounting (financial) statements.

The list of audited documents, identified errors, and violations, as well as the auditor's opinion based on the findings made during the audit, should be recorded in the working documents.

Based on the goals, the work done to collect evidence, the matrixes filled out in the table and their analysis, the internal auditor can make a preliminary summary of the results of the internal audit and determine the matters that should be reported in his/her opinion. By applying this method for internal audit of settlements in corporate systems, the degree of compliance with the accounting standards and reporting rules can be determined. The advantage of this technique is that the number of control items is not limited.

Key words: internal audit, group of companies, settlements, internal control.

Introduction. An internal audit of settlements in the corporate system aims to form a reasonable opinion regarding the reliability and completeness of information on the status of settlements as reported in the accounting (consolidated and individual) statements and notes thereto [1,9].

We believe, it would be expedient to break down the process of an internal audit into several stages:

- General review of the settlement procedure
- Audit of settlements with suppliers and contractors

- Audit of settlements with buyers and customers
- Audit of bad debt provisions
- Audit of settlements in respect of loans and borrowings
- Audit of settlements in respect of taxes and levies
- Audit of settlements with founding members
- Audit of settlements with sundry debtors and creditors
- Audit of intra-company settlements

Methods and materials.

A. General description. At the pre-audit stage, the internal auditor may establish a group of concerned people. After examining the materials provided, the auditor may ask such people certain questions to verify the completeness and sufficiency of the information to issue the auditor’s opinion (table 1).

Table 1 – List of Questions to be Asked by the Internal Auditor
at the Pre-Audit Stage of Audit of Service Company Settlements in the Corporate System

No.	Control question	Comment
1	Does the procedure for accounting and taxation of advances received (paid) for future deliveries of goods (performance of work, provision of services) comply with the applicable regulatory requirements?	
2	Does the accounting and taxation of offsetting transactions comply with the applicable regulatory requirements?	
3	Does the accounting and taxation of settlement operations with bills of exchange comply with the applicable regulatory requirements?	
4	Does the procedure for writing off unclaimed accounts payable comply with the applicable regulatory requirements?	
5	Does the procedure for writing off receivables comply with the applicable regulatory requirements?	
6	Are the proceeds in the form of fines, late fees or other breach of contract penalties and indemnifications reported in accordance with the terms of the contract?	
7	Are the costs in the form of fines, other breach of contract penalties and indemnifications reported in accordance with the applicable regulatory requirements?	
8	Does the accounting of legal costs and penalties comply with the applicable regulatory requirements?	
9	Are mutual settlements reconciled and reported in accordance with the applicable regulatory requirements?	

Having examined the accounting documents and additional information submitted upon request, the internal auditor will be able to choose the best procedures and scientific-methodological approach for the purposes of internal audit of settlements. In addition, the scope, responsible employees and the timing of the internal audit will be determined.

B. Algorithm. The internal auditor’s findings at the pre-audit stage should be put down in paper as a plan of internal audit of settlements (table 2), describing the methods used for such audit.

Table 2 – Methods for Internal Audit of Settlements in the Corporate System

No.	Sequence of procedures to be carried out by an accountant	Information source	Techniques and methods to be applied
1	Overview of financial statements	Financial statements	Correlation, comparison, selection
2	Comprehensive itemized review of financial statements and the turnover balance sheet	Financial statements, turnover balance sheet, explanatory note	Analysis, synthesis
3	Disaggregation of financial statements into accounts	Financial statements	Induction, deduction
4	Determination of the cycles of financial and business activities that are subject to internal audit	Documents submitted to the internal auditor	Analytical methods
5	Verification of the completeness and reliability of reporting of financial and business activities in the reported period	Documents submitted to the internal auditor	Mutual control, cross check, other methods
6	Reconciliation of analytical accounting data and synthetic accounting data	Documents submitted to the internal auditor	Tracing

<i>Table 2 continuation</i>			
7	Checking the promptness of registration of financial and business activities	Documents submitted to the internal auditor	Tracing
8	Verification of the legality of primary accounting records	Documents submitted to the internal auditor	Analysis, regulatory control
9	Verification of the realness of liabilities	Documents submitted to the internal auditor	Analysis, correlation, cross check
10	Checking the correctness of reconciliation of settlements and results reported	Settlement reconciliation statement, turnover balance sheet	Analysis, correlation
11	Audit of the reliability of the formation of key figures in financial statements	Financial statements	Substantiation, interfacing of balance sheet items

Results and discussion. An internal audit of settlements begins with an audit of *settlements with suppliers and contractors* as covering the largest number of transactions.

Settlements with suppliers and contractors is the section of accounts, where the assessment of the primary accounting system is just as important as the verification of the transactions reported in it [2,7,14,17]. This is mainly due to the fact that almost all documents evidencing such transactions are received from the outside.

Having verified the completeness and accuracy of the documents registered in the accounting registers, the auditor receives a sufficient amount of evidence that, when accepting documents for accounting, the following six basic principles were observed:

- there were sufficient grounds for registering each document;
- all documents evidencing the audited transactions are fully registered;
- all documents are reported in accordance with the economic nature of the transaction and all documents are accurately transferred into the accounting system in terms of their quality and quantity;
- all documents are registered in a timely manner;
- all documents are registered in appropriate accounting registers;
- all documents are registered on a one-time basis.

The choice of documents to be audited at this stage should be based on the results of previous procedures. Particular attention should be paid to documents, for which no workflow schedules have been drawn up, and transactions, for which primary documents are missing or certain details are missing [3,20].

The purpose of verifying the realness of receivables and payables is to ensure that the values of debts owed by and to counterparties as recorded in the accounts are real. This procedure is one of the most important in the audit of settlements with suppliers and contractors, as transactions with accounts payable and repayment in cash provide an opportunity for fraud, misappropriation, and distortion of financial statements. The auditor should also ensure that during the review period no accounts receivable owed by one counterparty were set off against accounts payable owed to another counterparty. In addition, the amounts of accounts payable with an expired limitation period should be timely debited to other income of the company [13,15].

When auditing *settlements with buyers and customers*, the auditor must answer the following questions:

- Are *settlements with buyers and customers* accounted for in accordance with the Chart of Accounts Guidelines?
- Are the accounts for *settlements with buyers and customers* correlated in accordance with the applicable regulations?
- Do the analytical and synthetic accounting data for account 62 “Settlements with Buyers and Customers” correspond to the data recorded in the general ledger and the balance sheet?

The purpose of the audit of *doubtful debt provisions* is to form a reasonable opinion regarding the reliability and completeness of information on the status of doubtful debt provisions as reported in the entity’s accounting (financial) statements and notes thereto.

When auditing *doubtful debt provisions*, the auditor must answer the following questions:

- Does the accounting and taxation of operations for the creation and writing off of doubtful debt provisions comply with the applicable regulations?
- Are the accounts for *doubtful debt provisions* correlated in accordance with the applicable regulations?

It should be noted that in accounting, provisions are not created for all bad debts, but only for bad debts owed by entities and individuals for products, goods, work, and services. Debts arising due to any advances paid to suppliers may not be used as a basis to create a provision.

The purpose of the audit of *settlements in respect of loans and borrowings* is to obtain sufficient evidence of the reliability of reporting of business transactions in respect of borrowed funds in the financial statements.

When auditing settlements in respect of loans and borrowings, it is necessary to check the availability of the documentary grounds for the operations performed, to verify the authenticity of such documents and the correctness of their execution [4,5,16,18].

Material information about loans and borrowings must be disclosed in the accounting policies and financial statements. Auditors need to verify the completeness of such disclosure.

The purpose of the audit of *settlements with founding members* is to form a reasonable opinion regarding the reliability and completeness of information on the status of settlements with founding members, as reported in the entity's accounting (financial) statements and notes thereto.

A contribution to the authorized capital may be in the form of cash, securities, other things or property or other rights having a monetary value. If a contribution is made in the form of non-monetary means, it is necessary to check the availability of an independent assessment report.

Documentary evidence of contributions to the authorized capital is verified as follows:

- availability of documents evidencing the contribution to the authorized capital;
- the correctness of the execution of the documents;
- check that the contribution to the authorized capital is made in full and in time.

It is necessary to check the availability of invoices, certificates, cash receipts, bank statements, documents of title, etc.

When conducting the audit, it is necessary to check whether the applicable regulations on the organization and accounting of settlements with founding members for the payment of income (dividends) are being complied with.

When checking the correctness of accrual of income from participation in the authorized capital, decisions of the board of directors, minutes of the general meeting of founders (members), and shareholders should be reviewed.

When auditing settlements with founding members for the payment of income, the taxation of such income should be checked.

Based on the results of the audit, the auditor's opinion should be issued concerning the correctness of the organization and accounting of settlements with founding members [6,11,19].

The purpose of the audit of *settlements with sundry debtors and creditors* is to obtain sufficient evidence of the reliability of reporting of business transactions in respect of sundry debtors and creditors in the financial statements.

Settlements with sundry debtors and creditors shall include the following:

- 1) settlements with transport organizations for services paid by checks;
- 2) settlements in respect of deposited salary amounts;
- 3) settlements in respect of amounts withheld from the wages of the company employees in favor of various entities and individuals based on writs of execution or court judgments, etc.

The purpose of the audit of *intra-company settlements* is to obtain sufficient evidence of the reliability of reporting of economic business transactions in respect of intra-company settlements in the financial statements.

At the final stage of the audit of business transactions, a summary of the audit findings should be made, and any errors found during the audit should be analyzed. [8,10,12].

In view of the above, we believe that our method can be successfully applied by service companies for the internal audit of settlements in corporate systems. We've developed a table, where the control items of internal audit, as determined in this paper, are allocated horizontally, and the methods for the audit of settlements are allocated vertically, including the purpose (tasks) of the internal audit, the information base of the audited entity, the audit procedure, the interrelation between the items in reporting forms and accounting registers, possible violations that may be identified by internal audit of settlements in corporate systems (table 3).

Table 3 – Methodology for Internal Audit of Settlements in Corporate System

Internal control component	Control field								
	1 Settlements with suppliers and contractors	2 Settlements with buyers and customers	3 Settlements in respect of doubtful debts	4 Settlements in respect of loans and borrowings	5 Settlements in respect of taxes and levies	6 Settlements with founding members	7 Settlements with sundry debtors and creditors	8 Intra-company settlements	9 Intra-group settlements
A Purpose of internal audit	General purpose: form a reasonable opinion regarding the reliability and completeness of information on the status of settlements (internal and external) as reported in the accounting statements and reports								
	Verification of the reliability (completeness and accuracy) of recognition of goods and materials, works and services, payments therefor, including advance payments and settlement of claims	Verification of the reliability of reporting of goods and materials, works, services, payments therefor, including advance payments and related taxes	Verification of the completeness and accuracy of the information on the status of bad debt provisions	Obtaining sufficient evidence of the reliability of reporting of transactions in respect of loans received and issued, their timely conversion into short-term debts	Verification of the reliability (completeness and accuracy) of reporting of taxes and levies in books and their timely payment	Verification of completeness and accuracy of the information on the status of settlements with founding members	Verification of completeness and accuracy of the information on the status of settlements with sundry debtors and creditors	Verification of completeness and accuracy of the information on the status of intra-company settlements	Verification of completeness and accuracy of the information on the status of intra-group settlements
Information base	Information on accounts, acts of acceptance of raw materials, receipt vouchers, CMR notes, entry permits, inventory reports, inventory cards, business contracts, bank statements, payment orders, reconciliation statements	Information on accounts, issue orders for finished goods, CMR notes, entry permits, inventory reports, inventory cards, business contracts, bank statements, payment orders, reconciliation statements	Information on accounts, business contracts, bank statements, payment orders, reconciliation statements, reports on accounts receivable	Information on accounts, loan agreements, credit contracts, commercial loan supply agreements, commodity loan agreements, bank statements, payment orders, receivables reports	Memo on accounting policies, information on accounts, tax returns, advance calculations, purchase and sale ledgers, bank statements, payment orders	Incorporation documents, minutes of meetings of members (shareholder), information on accounts, loan agreements, cash documents, bank statements, payment orders, receivables reports	Information on accounts, business contracts, interest-free loan agreements, bank statements, payment orders, reports on accounts receivable and payable	Incorporation documents, memos on accounting policies, on the establishment of stand-alone subdivisions, information on accounts, business contracts, fiduciary management agreement, property tax and profit tax statements, bank statements, payment orders	Information on accounts, business contracts, loan agreements, cash documents, bank statements, payment orders, reports on accounts receivable and payable

Table 3 continued

A	1	2	3	4	5	6	7	8	9
Procedures	Comparison, regulatory comparison, documentary research, calculations								
Possible violations	Lack of contracts, untimely receipt of primary documents, goods and materials are not fully recognized, lack of control over primary documents, errors in reporting settlements by non-cash means and bills	Lack of contracts, untimely receipt and reporting of primary, lack of control over primary documents, failure to pay VAT on advances, analytical accounting does not allow for highlighting planned payments	The procedure for creating bad debt provision fails to comply with the applicable regulatory requirements, inappropriate use of provisions, analytical accounting does not allow for tracking bad debts	Inappropriate use of borrowed funds, untimely payment and accrual of interest and repayment of the principal debt, overstatement of expenses by interest amount, failure to pay personal income tax on material benefits on loans granted to individuals	Absence of separate accounting for VAT and income tax, incorrect computation of VAT payments on advances and payments of income tax, technical errors in tax statements, remittance of taxes to a wrong account, incorrect distribution of taxes	Application of the wrong rate for taxation of dividends; discrepancy between accrued dividends and the shares owned by founding members, untimely contributions to the authorized capital	Incorrect inclusion of personal insurance expenses in the income tax base, failure to report profit received as a result of joint activities, failure to write off unclaimed deposits expiry of the period of limitation	Failure to pay taxes to municipal treasuries by branches	Violations listed in columns 1 to 8, understatement of the tax base with regard to profits in settlements at intra-group prices, lack of contracts and primary accounting documents for intra-group settlements, failure to report intra-group settlements in books
Material consequences	Material								
Tax risks	Significant								
Conclusion	To be reported in the internal auditor's report								

Conclusion. The above method will allow verifying the compatibility of analytical and synthetic accounting data, as well as the correlation between indicators reported in different financial reporting forms, at the initial stage and in accordance with the objectives set for any control item of internal audit. Their incompatibility can be indicative of inaccuracies in the reported data. Therefore, if necessary, a 100% check of statements should be conducted by breaking down summary indicators into individual ones. Moreover, the proposed model, made in the form of a chess table, allows to accelerate internal audit, determine the main methods and procedures for its implementation, establish a group of people directly or indirectly related to the identified inconsistencies, and determine the amount of material damage inflicted on entities or individuals.

The materiality of errors should be quantitatively and qualitatively assessed. For the quantitative assessment, the auditor should compare the errors found and the degree of materiality established at the planning stage. For the qualitative assessment, the auditor should rely on his/her own practical experience and knowledge.

When analyzing the errors discovered by the audit, it is necessary to determine the degree of their influence on the reliability of the accounting (financial) statements.

The list of audited documents, identified errors, and violations, as well as the auditor's opinion based on the findings made during the audit, should be recorded in the working documents.

Based on the goals, the work done to collect evidence, the matrixes filled out in the table and their analysis, the internal auditor can make a preliminary summary of the results of the internal audit and determine the matters that should be reported in his/her opinion.

By applying this method for internal audit of settlements in corporate systems, the degree of compliance with the accounting standards and reporting rules can be determined. The advantage of this technique is that the number of control items is not limited.

А. М. Петров¹, Л. М. Сембиева²

¹РФ Үкіметі қарамағындағы Қаржы университеті, Мәскеу, Ресей;

²Л. Н. Гумилев атындағы Еуразия ұлттық университеті, Нұр-Сұлтан, Қазақстан

КОРПОРАТИВТІК ЖҮЙЕЛЕРДЕГІ ЕСЕП АЙЫРЫСУЛАРДЫҢ ІШКІ АУДИТІНІҢ ҰЙЫМДАСТЫРУ-ӘДІСТЕМЕЛІК МЕХАНИЗМІ

Аннотация. Ішкі аудит – бухгалтерлік есепті, қаржылық талдауды және бақылауды қамтитын, субъектінің қол жеткізген нақты нәтижесін және оның мақсаттары мен міндеттерін салыстыратын және бағалайтын маңызды басқару функциясы. Ішкі аудит барлық бақылау нысандарының қызметін үнемі қадағалап отырады, анықталған бұзушылықтарды жедел жою үшін стандарттардан ауытқу себептерін, нақты мақсатқа қойылған мақсаттардың ауытқу себептерін анықтайды. Сыртқы аудит стандарттарының көпшілігін ішкі аудиттерге қолдануға болады, мысалы, аудиторлық жоспарлау, аудиторлық тәуекел ұғымы, ішкі бақылаудың қаржылық есептіліктің сенімділігіне әсерін бағалау және басқалары. Ішкі аудит стандартының ерекшелігі оның компанияны немесе компаниялар тобын тиімді басқаруға ықпал етуі болып табылады. Бұл жұмыста корпоративтік жүйеде есеп айырысуларды ішкі аудиттің әдістері сипатталған.

Жоғарыда аталған әдіс аналитикалық және синтетикалық есепке алу деректерінің сәйкестігін, бастапқы кезеңдегі және ішкі аудиттің кез келген бақылау пункті үшін қойылған мақсаттарға сәйкес әр түрлі қаржылық есептілік нысандарында көрсетілген көрсеткіштер арасындағы байланысты тексеруге мүмкіндік береді. Олардың сәйкес еместігі хабарланған мәліметтердің дәл еместігін көрсетеді. Сондықтан, қажет болған жағдайда жиынтық көрсеткіштерді жеке көрсеткіштерге бөлу арқылы 100 % тексерулер жүргізілуі керек. Сонымен қатар, ұсынылған модель шахмат кестесі түрінде жасалған, ішкі аудитті жеделдетуге, оны өткізудің негізгі әдістері мен процедураларын анықтауға, анықталған сәйкессіздіктерге тікелей немесе жанама түрде байланысты адамдар тобын құруға және олардың мөлшерін анықтауға мүмкіндік береді. заңды немесе жеке тұлғаларға келтірілген материалдық залал.

Қателердің маңыздылығы сандық және сапалық бағалануы керек. Сандық бағалау үшін аудитор табылған қателер мен жоспарлау кезеңінде анықталған маңыздылық деңгейімен салыстыруы керек. Сапалық бағалау үшін аудитор өзінің практикалық тәжірибесі мен біліміне сенуі керек.

Тексеру барысында анықталған қателіктерді талдау кезінде олардың бухгалтерлік (қаржылық) есептіліктің дұрыстығына әсер ету дәрежесін анықтау қажет.

Тексерілген құжаттардың тізімі, анықталған қателіктер мен бұзушылықтар, сондай-ақ тексеру барысында жасалған қорытындылар бойынша аудитордың пікірі жұмыс құжаттарында жазылуы керек.

Мақсаттарға, дәлелдемелер жинау бойынша жүргізілген жұмыстарға, кестеде толтырылған матрицаларға және оларды талдауға сүйене отырып, ішкі аудитор ішкі аудит нәтижелерін алдын ала қорытындылай алады және өзінде есеп беруі керек мәселелерді анықтай алады. пікір. Корпоративтік жүйелердегі есеп айырысулардың ішкі аудитіне осы әдісті қолдану арқылы бухгалтерлік есеп стандарттары мен есеп беру ережелерінің сақталу дәрежесін анықтауға болады. Бұл техниканың артықшылығы – басқару элементтерінің саны шектеусіз.

Түйін сөздер: ішкі аудит, компаниялар тобы, есеп айырысулар, ішкі бақылау.

А. М. Петров¹, Л. М. Сембиева²

Финансовый университет при Правительстве РФ, Москва, Россия;
Евразийский национальный университет им. Л. Н. Гумилева, Нур-Султан, Казахстан

ОРГАНИЗАЦИОННО-МЕТОДИЧЕСКИЙ МЕХАНИЗМ ВНУТРЕННЕГО АУДИТА РАСЧЕТОВ В КОРПОРАТИВНЫХ СИСТЕМАХ

Аннотация. Внутренний аудит является важной управленческой функцией, которая охватывает бухгалтерский учет, финансовый анализ и контроль, сравнивает и оценивает фактический результат, достигнутый предприятием, и его цели и задачи. Внутренний аудит регулярно отслеживает деятельность всех контрольных целей, выявляет причины отклонений от стандартов, отклонения от целей, поставленных для конкретной цели, для своевременного устранения любых выявленных нарушений. Большинство стандартов внешнего аудита могут применяться к внутренним аудитам, например те, которые относятся к планированию аудита, концепции аудиторского риска, оценке влияния внутреннего контроля на достоверность финансовой отчетности и другие. Отличительной особенностью стандарта внутреннего аудита является то, что он способствует эффективному управлению компанией или группой компаний. В статье описаны методы внутреннего аудита расчетов в корпоративной системе.

Вышеуказанный метод позволит проверить совместимость аналитических и синтетических данных бухгалтерского учета, а также корреляцию между показателями, представленными в различных формах финансовой отчетности, на начальном этапе и в соответствии с целями, установленными для любого элемента контроля внутреннего аудита. Их несовместимость может свидетельствовать о неточностях в сообщаемых данных. Поэтому при необходимости следует проводить 100%-ю проверку отчетности, разбивая сводные показатели на отдельные. Более того, предложенная модель, выполненная в виде шахматного стола, позволяет ускорить внутренний аудит, определить основные методы и процедуры его реализации, создать группу людей, прямо или косвенно связанных с выявленными несоответствиями, и определить количество материальный ущерб, нанесенный юридическим или физическим лицам.

Существенность ошибок должна быть количественно и качественно оценена. Для количественной оценки аудитор должен сравнить обнаруженные ошибки и степень существенности, установленную на этапе планирования. Для качественной оценки аудитор должен опираться на собственный практический опыт и знания.

При анализе ошибок, обнаруженных в ходе аудита, необходимо определить степень их влияния на достоверность бухгалтерской (финансовой) отчетности.

Список проверенных документов, выявленных ошибок и нарушений, а также мнение аудитора, основанное на выводах, сделанных в ходе проверки, должны быть отражены в рабочих документах.

Основываясь на целях, проделанной работе по сбору доказательств, заполненных в таблице матрицах, и их анализе, внутренний аудитор может подготовить предварительное резюме результатов внутреннего аудита и определить вопросы, которые следует сообщить в его/ее мнение. Применяя этот метод для внутреннего аудита расчетов в корпоративных системах, можно определить степень соответствия стандартам бухгалтерского учета и правилам отчетности. Преимущество этого метода заключается в том, что количество элементов управления не ограничено.

Ключевые слова: внутренний аудит, группа компаний, расчеты, внутренний контроль.

Information about authors:

Petrov A.M., Doctor of Economic Sciences (Advanced Doctor), Professor of the Accounting, Analysis and Audit Department of the Financial University under the Government of the Russian Federation, Moscow, Russia, AMPetrov@fa.ru; <https://orcid.org/0000-0001-9648-3278>

Sembiyeva L.M., Doctor of Economics, professor, professor of the department “State Audit” of the Eurasian National University named after L.N. Gumilyov, Nur-Sultan, Kazakhstan; sembiyeva@mail.ru; <https://orcid.org/0000-0001-7926-0443>

REFERENCES

- [1] Kevorkova, Z.A., Petrov, A.M., Savina N.V. Towards liabilities of corporate systems. *International Journal of Civil Engineering and Technology*. Vol. 10. Issue 2, February 2019, P. 1582-1593.
- [2] Akhmetshina A., Vagizova V., Koczar J., Terenteva K.: Infrastructure Investments as a Tool for Implementing the Strategy of Sustainable Development of Regional Economic Systems, w: *Information Systems Architecture and Technology: Proceedings of 38th International Conference on Information Systems Architecture and Technology – ISAT 2017 / Wilimowska Zofia, Borzemski Leszek, Świątek Jerzy (red.), Advances in Intelligent Systems and Computing*, vol. 657, 2018.
- [3] Karpova T.P., Petrov A.M., Antonova O.V., Directions of Accounting Development in the Conditions of Digitalization. *Journal of Adv Research in Dynamical & Control Systems*, Vol. 10, 07 Special Issue, 2018. P. 117-125.
- [4] Chernysheva Natalia A., Perskaya Victoria V., Petrov Alexander M., Bakulina Anna A. Green Energy for Belt and Road Initiative: Economic Aspects Today and in the Future / *International Journal of Energy Economics and Policy*. 2019, 9 (5), 178-185.
- [5] Petrov A.M., Nikiforova E.V., Kiseleva N.P., Grishkina S.N., Lihtarova O.V., Creation of the reporting on sustainable development of companies based on socioeconomic measurement statistics / *International Journal of Recent Technology and Engineering*. Vol. 8. Issue 2, July 2019. P. 4005-4012.
- [6] Alexander M. Petrov, Marina V. Kosolapova, Igor G. Yshanov, Nataliya K. Muravitskaya, Hursheda Nurmuhammedova The Economic Significance of Statistical Research Activities of Representative Offices of Companies Abroad / *International Journal of Innovative Technology and Exploring Engineering (TM)*. Vol. 8. Issue 10, August 2019, P. 2713-2722,
- [7] Lyudmila V. Sotnikova, Svetlana N. Polenova, Nataliya A. Mislavskaya, Alexander M. Petrov, Mariya M. Basova. Sustainable development, macro and micro level: Russian and foreign model / *International Journal of Recent Technology and Engineering*. Vol. 8, Issue 2, July 2019. P. 4524-4532.
- [8] Nikiforova E.V. Paradigm of public reporting of economic entities // *World Applied Sciences Journal*. 2014. T. 29. N 5. P. 667-670.
- [9] Akhmadeev R.G., Bykanova O.A., Turishcheva T.B. (2018) Brics' foreign debt burden and its impact on core institutional basis. *Journal of Reviews on Global Economics*, 7, P. 345-359.
- [10] Akhmadeev R.G., Kosov M.E., Bykanova O.A., Turishcheva T.B. (2018) Development of venture financing to ensure economic security of a country. *Proceedings of the 32nd International Business Information Management Association Conference, IBIMA 2018 - Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth*, P. 51-56.
- [11] Akhmadeev R.G., Bykanova O.A., Philippova N.V., Vashchekina I.V., Turishcheva, T.B. (2018) Macroeconomic indicators and their impact on the foreign debt burden: The case of BRICS countries. *International Journal of Economics and Business Administration*, 6 (2), P. 68-82.
- [12] Akhmadeev R.G., Bykanova O.A., Morozova T.V., Safonova E.G., Turishcheva T.B., Lehoux L. (2018) Evaluation of financial and analytical activities of the biggest car makers of the Russian federation. *Jurnal Pengurusan*, 54, P. 131-142.
- [13] Akhmadeev R.G., Kosov M.E., Bykanova O.A., Korotkova E.M., Mamrukova O.I. (2016) Assessment of the tax base of the consolidated group of taxpayers in Russia using the method of polynomial interpolation. *Indian Journal of Science and Technology*, 9 (12), p. 89533
- [14] Suleymanov M.M., Magomedov R.M., Savina S.V., Fomicheva T.L. Basic models of tax federalism in global practice: Specific characteristics and structural and functional organization. *Academy of Accounting and financial studies journal*. 2018. Vol. 22. Issue 3. P. 1-9.
- [15] Marina V. Kosolapova, Nataliya K. Muravitskaya, Mihail N. Tolmachev, Lyubov A. Melnikova, Alexander M. Petrov Technology for solving the problems related to the implementation of the concept of preserving capital in accounting and statistics / *International Journal of Recent Technology and Engineering*. Vol. 8. Issue 3, July 2019, P. 789-792
- [16] Petrov A.M., Kiseleva N.P., Kevorkova Z.A., Melnikova L.A., Yshanov I.G. Present development practices for tax, financial and statistical reporting in the Russian Federation / *International Journal of Innovative Technology and Exploring Engineering (TM)*. Vol. 8. Issue 12, October 2019.
- [17] Petrov A.M., Putihin Y.E., Poluleh M.V., Yurasova I.O., Erohina V.N. Accountant Modeling Technology and Statistics in the Context of the New Educational Concept / *International Journal of Innovative Technology and Exploring Engineering (TM)*. Vol. 8. Issue 12, October 2019.
- [18] Koczar J., Selivanova K., Akhmetshina A., Vagizova V.: Modeling Investment Decisions in the System of Sustainable Financing, w: *Information Systems Architecture and Technology: Proceedings of 39th International Conference on Information Systems Architecture and Technology – ISAT 2018. Part 3 / Wilimowska Zofia, Borzemski Leszek, Świątek Jerzy (red.), Advances in Intelligent Systems and Computing*, vol. 854, 2019.
- [19] Bodnarenko V., Vagizova V., Koczar J. Comparative analysis of impact of crises of 2008 and 2014 on Banking Capital in Russia, w: *Journal of Economics and Economic Education Research, Allied Academies*, vol. 17, nr Special Issue, 2016, P. 64-72
- [20] Koczar J., Vagizova V. Services for business in the Polish economic practice, w: *Journal of Economics and Economic Education Research, Allied Academies*, vol. 17, nr Special Issue 1, 2016, P. 93-96.

Z. A. Kevorkova, G. S. Zhukova, O. Antonova, T. A. Dolbik-Vorobey, A. M. Petrov

Financial University under the Government of the Russian Federation Moscow, Russia.

E-mail: zhanna.kevorkova@mail.ru, GSZHukova@fa.ru,

olgavit@mail.ru, tadolbikvorobey@fa.ru, AMPetrov@fa.ru

ORGANIZATIONAL PREREQUISITES FOR TRANSITION TO IFRS IN THE ARTIFICIAL INTELLIGENCE CONTEXT

Abstract. In this paper, the author's position is explained on how an entity should prepare its IFRS financial statements and what challenges entities in Russia face due to the transition to IFRS. It focuses on the theoretical, methodological, practical issues of IFRS reporting. Its objective is to theoretically substantiate the IFRS regulations on the preparation of financial statements and the inclusion of analytical financial information in the IFRS reporting process. This objective is met by solving the following tasks: justify the benefits of IFRS reporting for an entity; define the reasons why Russian companies should prepare their financial statements in accordance with IFRS. By summarizing the opinions of various authors, an integrated organizational and methodological approach for the transition to IFRS has been developed to enhance the company's efficiency and reduce its costs. The quality of reporting is the same in both systems of standards (RAS and IFRS). However, there are differences in the purpose of reporting and the basic principles enshrined in the normative. Thus, IFRS reporting is more focused on investors and their interests, it objectively reflects information on the financial condition of the company and plays a significant role in making economic decisions, while RAS reporting is more focused on regulatory authorities and plays a supporting role in making decisions by owners and investors. This leads to further differences in the reporting structure, content and format of accounting standards.

In addition to the above, it is necessary to identify any problems that may impede the project, any dysfunctions and inconsistencies, the reasons for the insufficiently fast transfer of information, and all previous information should be used to identify priority processes [6,18].

Any revealed contradictions and inconsistencies form the basis for finding the ways for their effective resolution on a company-wide basis. It is necessary to determine the efficient time frame for the implementation of the transition plan, which should be spread over the relevant stages of work.

At the next stage, i.e. the organizational design stage, the technology, standards, procedures, systems, and types of control to be used in the transition process should be defined. The purpose of this stage is to determine the technical characteristics of the transition process.

In parallel to the social design stage, models for the interaction of social and technical elements are developed, preliminary plans for development systems and procedures, software and services are drawn up.

Character references for the company's employees should be compiled in order to assess their qualifications, the degree of interest in the changes and their role in the new company structure.

Professional knowledge and skills of employees should be assessed and verified for compliance with the basic requirements set for each position and level. Information on any retraining necessary to meet such requirements can be used to develop a training program and topic-specific advanced training in special courses.

Most managers are well aware that artificial intelligence (AI) can change almost all aspects of doing business. Thanks to this technology, by 2030 the world economy can grow by 15.7 trillion US dollars. However, many company executives do not know how to implement AI, and not just as part of individual pilot projects, but throughout the organization, where this can give the maximum effect.

The question of "how?" Causes difficulties in introducing any new technology, and artificial intelligence is no exception. How do you develop an AI strategy? How do you find specialists in this field or train your current employees? What do you do with data so that it can be used for AI tasks? How do you ensure the reliability and security of AI?

The matter is complicated by the fact that different companies often answer these questions in different ways, and the surrounding conditions are constantly changing. But you can't wait until everything settles down. The introduction of artificial intelligence, which so far has been jerky, will accelerate in 2019.

Key words: accounting, financial reporting, financial condition, financial result, IFRS, consolidated statements, transition to IFRS.

Introduction. Due to the current changes in the accounting and reporting methods, companies face the need to transit to IFRS reporting.

Organizational prerequisites are understood as a set of ready-to-use measures to be applied by a company to prepare for its transition to accounting and reporting in accordance with IFRS [1,5,12,16].

Methods.

A. GENERAL DESCRIPTION

The transformation of the internal organizational structure should consist of a number of stages covering the preparation, collection of information, determination of the scope of work, organizational and technical support, development of a financial plan, practical implementation of the prepared changes and control over the implementation of the project. Stages are divided into tasks that are implemented in a different sequence depending on the priorities.

The search for employees, their organization and motivation at the initial stage are crucial for the proper implementation of the program of the company's transition to IFRS accounting and to ensure its effectiveness in practice.

It must be borne in mind that the transition process affects the interests of diverse groups of people: owners, managers, and employees at different levels.

B. ALGORITHM

Figure 1 shows the main stages of the company's transition to IFRS accounting and reporting.

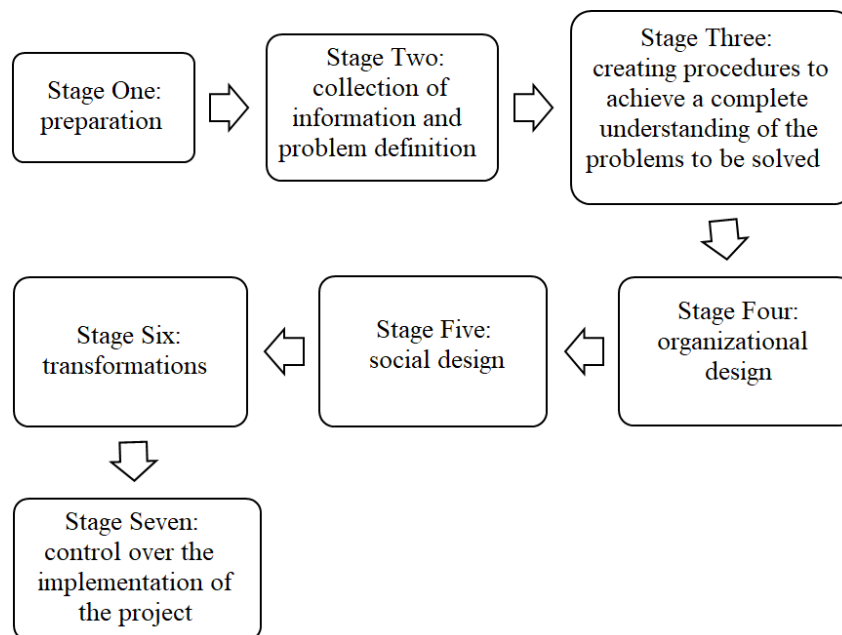


Figure 1 – Main stages of the company's transition to IFRS accounting and reporting.

At the outcome of Stage One, the company's management should understand which of its employees have adequate knowledge of IFRS and necessary skills, whether auditors should be involved, and the objectives and the timing of the project at various stages.

Results. The main questions to be answered by the managers responsible for the implementation of the transition project at this stage are summarized in table 1.

Therefore, at the pre-transition stage, a working group should be formed and a regulation on it should be adopted. This group should be provided with all the necessary information to complete the tasks.

After the objectives set by the top management are brought to its attention, the group should determine the project structure, review the practice of implementing such projects, distribute the powers and responsibilities for the implementation of the project.

Table 1 – List of questions to be answered by top managers at the pre-transition stage

Question	Requirement
1. What is the level of responsibility, tasks, and results expected from the company's management with regard to the transition to IFRS?	1. Managers of the company are responsible for arranging for and maintaining the company's accounting process.
2. What are the objectives of the transition project in general?	2. Obtaining reliable information about the property, liabilities and financial results of the company.
3. Who is included in the working group?	3.1. CFO, Chief Accountant; 3.2. IFRS Accounting Team Lead and IFRS Specialist Accountants.
4. What are the professional knowledge, skills, and experience required from the members of the working group?	4. Related degree (higher vocational education), knowledge of English, special training in the transition to international standards, programming skills or experience with accounting software.
5. What necessary qualities do the members of the working group lack and how can they be developed?	5. Knowledge of English, special training in the transition to international standards. Employee development should be carried through additional training, partly by engaging independent experts.

At the stage of collection of information and problem definition, the main task is to draw up the company's current and future organizational charts. Besides defining the company's internal structure, another important issue to be resolved at this stage is to provide effective communication and interaction channels.

When examining the company's internal structure, a versatile approach should be applied to take into account the time, costs, difficulties and risks associated with the transformations [2,13,15]. Next, the accounting structure diagrams should be compiled using the following methods: process modeling, production process analysis, organizational charting. For an example of the company's accounting organization, see figure 2. It is an approximate view on the functions since the company's turnovers and the amount of work per function should be taken into account. Thus, in small companies, the inventory accounting function can be performed by the same clerk who is responsible for fixed asset accounting. In very large companies, however, several employees can be assigned to a particularly complex and important accounting function [7,8].

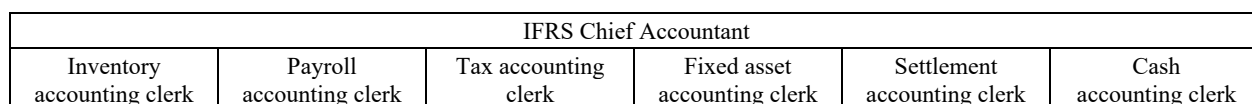


Figure 2 – Structural diagram of IFRS accounting functions in a company

For Stage Three, the task is to achieve a complete understanding of the main problem and to break such a problem into a number of successive tasks. This stage helps to identify the organizational problems of the project and analyze the information flows when the project activities are planned, the possibilities for the project improvement are evaluated, and the planned changes are agreed upon.

At this stage, the top management should answer the following key questions (table 2).

Table 2 – List of questions to be answered by managers at the pre-transition stage

Question	Requirement
1. What are the main and supporting activities included in the transition process?	1. The transition process covers all of the company's authorized activities in the previous reporting period.
2. How is the information flow generated during the transition process?	2. The information flow is generated by the IFRS department, where all the data necessary for reporting is collected from various departments.
3. How do other/peer companies carry out the transition processes?	3. Common programs for transition to IFRS, general managerial approaches, standard organizational structure and size of the IFRS department, distribution of functions should be defined.
4. In what cases can changes be introduced into the approaches applied?	4. In case of significant changes in IFRS or RAS.

Based on this information, proposals on the organizational forms and management technologies are made, processes within the company and the level of their management in peer companies are compared. The key questions that the management should obtain answers to are listed in table 3.

Table 3 – List of questions to be answered by managers at the organizational design stage

Question	Requirement
1. What are the company's accounting arrangements?	1. The company's record-keeping processes may be entrusted to a specialized entity under a service contract subject to observance of the company's accounting policies, or to inhouse accounting clerks.
2. What are the basic requirements for accounting?	2.1. To keep proper records of the company's assets, liabilities and reflect the company's business operations, the following should be developed: 2.1.1. memorandum on accounting policies; 2.1.2. current chart of accounts; 2.1.3. code of unified forms of accounting documents for which there are no standard forms; 2.1.4. document workflow diagram; 2.1.5. procedure for the monetary valuation of property, liabilities and business operations; 2.1.6. procedure for the inventory of assets and liabilities.
3. What technical resources and technologies will be needed during the transition?	3. The company's accounting is carried out using accounting software that generates synthetic and analytical ledgers.
4. What is the best way to acquire these resources and technologies?	4. Market research should be conducted.

It is also necessary to determine the main requirements for accounting and the information used to measure and manage the transition process, as well as places for its storage.

Duplicate information flows and operations for their coordination should be eliminated. In general, at this stage, the possibility of reducing the number of ineffective operations and increasing the effectiveness of the actions of controlling structures is examined, and then the control functions for the most efficient operations are merged.

The actions that are carried out at the social design stage are aimed at identifying the social aspects of the transition process, including providing a proper description of the company, its personnel, activities, incentives to be used during the transition process, and development of a plan for the interaction between the social and technical elements.

Along with this, preliminary plans should be made for hiring new employees, their training and education [3,4,9].

Social design is carried out simultaneously with organizational design. The key questions that the management should obtain answers to at this stage are listed in table 4.

Table 4 – List of questions to be answered by managers at the social design stage

Question	Requirement
1. What technical and labor resources will be required during the reorganization process?	1. Specialists experienced in reporting, both under the national standards and under IFRS. At the same time, the necessary set of qualities, skills, knowledge, and orientations of employees should be determined. A matrix of the current and updated activities should be compiled according to the employees' qualifications, experience and a set of orientations.
2. What goals should be set and what activities should be carried out in the social sphere?	1. Identification of new activities and new executive teams. 2. Drawing up a document to verify that the qualifications required for each new activity are available, a scheme of interaction between executive teams, determining the number of employees required for carrying out the current and planned work. 3. Determining the scope of responsibilities for production management and staff development, identification of managers and required qualifications.
3. How will responsibilities change? What training programs will be needed?	Drawing up a preliminary plan for the implementation of social measures, including staffing, training and personnel changes.
4. Is there a possibility of immediate implementation of the entire project? What can be done during a quarter, year?	Technical, software and informational support of the transition process; replacement of occupational increments with bonuses for professional knowledge and qualifications.

At the transformations stage, a beta version is developed and a model for the transition to IFRS is finalized.

In addition to that, the information should be verified, and unified forms and company standards for accounting and financial reporting should be developed in accordance with the international standards.

The final stage i.e. control over the implementation of the project is also used as a feedback mechanism [10,14,17]. The purpose of this stage is to build a system to efficiently control the company's transition to IFRS.

Control is carried out by the inhouse audit functions, the audit team, and an independent auditor, as shown in figure 3.

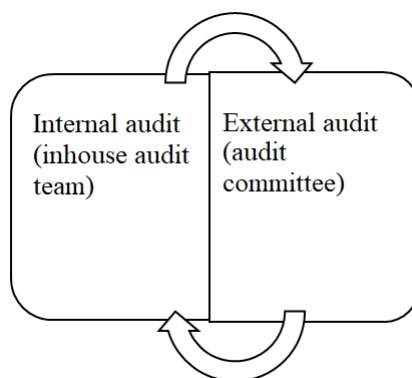


Figure 3 – Diagram of control over the company's transition to accounting and reporting under IFRS

At this stage, it is recommended to establish the company's audit committee. According to Price Waterhouse Coopers's "Audit Committee Effectiveness: What Works Best", effective control over the financial reporting process requires close cooperation between the audit committee and the company management, which can be achieved by providing the audit committee with regular submissions on the following issues:

- the management's assessment of business risks and measures planned to reduce these risks;
- financial activities for the management of cash, foreign currency transactions, use of new or unconventional financial instruments;
- company operations carried out outside the state;
- current problems in the industry, company actions, including statutory regulation and information on the competitive environment;
- legal environment, including tax investigation or litigation, quality, and environmental compliance;
- company's personnel policy, including remuneration and compensation plans, especially with regard to senior executives.

The feedback is ensured by the audit committee providing the board of directors with the results of the analysis of the information received and recommendations for making managerial decisions, to be used by the company's management after they are approved by the supreme corporate body.

The process of interaction between members of the audit committee and the company's internal control department is reduced to exercising control over the internal control system by receiving reports from internal auditors and discussing them together.

The interaction between the audit committee and external auditors comes down to selecting, determining the amount of remuneration, and paying for the services of an external auditor [11,19,20, 21,22].

To support the interaction between the audit committee and the company's financial departments, it is necessary to establish and observe the frequency of the committee meetings, where the number of meetings depends on the scale and nature of the company's activities.

Discussions. In our opinion, this three-step control over the company's transition to accounting and reporting in accordance with international standards will ensure the accuracy of the information prepared by the company.

Ж. А. Кеворкова, Г. С. Жукова, О. Антонова, Т. А. Долбик-Воробей, А. М. Петров

Ресей Федерациясы Үкіметі жанындағы Қаржы университеті, Мәскеу, Ресей

ЖАСАНДЫ ИНТЕЛЛЕКТ КОНТЕКСТІНДЕГІ ХҚЕС-КЕ КӨШУДІҢ ҰЙЫМДАСТЫРУШЫЛЫҚ ШАРТТАРЫ

Аннотация. Бұл мақалада автордың ұстанымы ұйымның ҚЕХС қаржылық есебін қалай дайындауы керек және ХҚЕС-ке көшуіне байланысты Ресейдегі кәсіпорындар қандай қиындықтарға тап болатыны түсіндіріледі. Ол ҚЕХС есеп берудің теориялық, әдістемелік, практикалық мәселелеріне назар аударады. Оның мақсаты – қаржылық есептілікті дайындау және ХҚЕС бойынша есеп беру процесіне аналитикалық қаржылық ақпаратты қосу туралы ҚЕХС ережелерін теориялық негіздеу. Бұл мақсат келесі міндеттерді шешу арқылы шешіледі: ҚЕХС есептемесінің ұйым үшін пайдасын негіздеу; ресейлік компаниялардың қаржылық есептерін ҚЕХС-қа сәйкес дайындаудың себептерін анықтаңыз. Әртүрлі авторлардың пікірлерін жинақтай отырып, компанияның тиімділігін арттыру және оның шығындарын азайту мақсатында ХҚЕС-ке көшудің кешенді ұйымдастырушылық-әдістемелік тәсілі жасалды. Есеп берудің сапасы екі стандартта да бірдей (RAS және IFRS). Дегенмен, есептіліктің мақсаты мен нормативте бекітілген негізгі принциптерде айырмашылықтар бар. Осылайша, ҚЕХС бойынша есептілік инвесторларға және олардың мүдделеріне көбірек бағытталған, ол компанияның қаржылық жағдайы туралы ақпаратты объективті түрде көрсетеді және экономикалық шешімдер қабылдауда маңызды рөл атқарады, ал RAS есептілігі реттеуші органдарға көбірек назар аударады және қабылдауда қолдау рөлін атқарады меншік иелері мен инвесторлардың шешімдері. Бұл есептілік құрылымындағы, бухгалтерлік есеп стандарттарының мазмұны мен форматындағы одан әрі айырмашылықтарға әкеледі.

Жоғарыда айтылғандардан басқа, жобаға кедергі келтіруі мүмкін кез келген проблемаларды, кез келген дисфункциялар мен сәйкессіздіктерді, ақпаратты жедел жеткізудің жеткіліксіз себептерін анықтау қажет, ал барлық алдыңғы ақпарат басымдықты процестерді анықтау үшін қолданылуы керек [6,18].

Кез келген анықталған қайшылықтар мен сәйкессіздіктер оларды компания бойынша тиімді шешудің жолын іздеуге негіз болады. Өткізу жоспарын іске асырудың тиімді мерзімдерін анықтау қажет, оны жұмыстың тиісті кезеңдеріне тарату керек.

Келесі кезеңде, яғни ұйымдық жобалау кезеңінде, өтпелі процесте қолданылатын технология, стандарттар, рәсімдер, жүйелер және бақылау түрлері анықталуы керек. Бұл кезеңнің мақсаты – өтпелі процестің техникалық сипаттамаларын анықтау.

Әлеуметтік жобалау кезеңімен қатар әлеуметтік және техникалық элементтердің өзара әрекеттесу модельдері жасалады, жүйелер мен процедуралар, бағдарламалық қамтамасыз ету мен қызмет көрсетудің алдын-ала жоспарлары жасалады.

Компания қызметкерлерінің сипаттамаларын олардың біліктілігін, өзгерістерге қызығушылық деңгейін және компанияның жаңа құрылымындағы рөлін бағалау үшін жасау керек.

Қызметкерлердің кәсіби білімі мен дағдылары әр лауазым мен деңгейге қойылатын негізгі талаптарға сәйкестігі бағаланып, тексерілуі керек. Осындай талаптарға сай келетін кез-келген қайта даярлау туралы ақпаратты оқу бағдарламасын және арнайы курстардағы тақырыптық біліктілікті арттыру үшін пайдалануға болады.

Көптеген менеджерлер жасанды интеллект (AI) бизнесті жүргізудің барлық жақтарын өзгерте алатындығын жақсы біледі. Осы технологияның арқасында 2030 жылға қарай әлемдік экономика 15,7 трлн. Долларға өсуі мүмкін. Алайда көптеген компания басшылары және жеке пилоттық жобалардың бір бөлігі ретінде ғана емес, сонымен қатар бүкіл ұйымда – бұл максималды нәтиже бере алатын жерде AI-ны қалай жүзеге асыруды білмейді.

«Қалай?» деген сұрақ кез-келген жаңа технологияны енгізудегі қиындықтарды тудырады, ал жасанды интеллект ерекшелік емес. Сіз AI стратегиясын қалай жасайсыз? Сіз осы саладағы мамандарды қалай табысыз немесе қазіргі жұмысшыларды қалай оқытасыз? Деректерді AI тапсырмаларында пайдалануға болатындай етіп не істейсіз? Сіз AI сенімділігі мен қауіпсіздігін қалай қамтамасыз етесіз?

Мәселе әртүрлі компаниялардың көбінесе бұл сұрақтарға әр түрлі жолдармен жауап беретіндігі және қоршаған ортаның жағдайлары үнемі өзгеріп отыратындығымен байланысты. Бірақ бәрі шешілгенше күте алмайсыз. Осы уақытқа дейін жасанды интеллектті енгізу 2019 жылы жеделдейді.

Түйін сөздер: бухгалтерлік есеп, қаржылық есеп, қаржылық жағдай, қаржылық нәтиже, ҚЕХС, шоғырландырылған есеп, ҚЕХС-қа көшу.

Ж. А. Кеворкова, Г. С. Жукова, О. Антонова, Т. А. Долбик-Воробей, А. М. Петров

Финансовый университет при Правительстве Российской Федерации, Москва, Россия

ОРГАНИЗАЦИОННЫЕ УСЛОВИЯ ПЕРЕХОДА НА МСФО В КОНТЕКСТЕ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА

Аннотация. В статье раскрывается позиция автора относительно того, как предприятие должно готовить свою финансовую отчетность по МСФО и с какими проблемами сталкиваются предприятия в России в связи с переходом на МСФО. Основное внимание уделяется теоретическим, методологическим, практическим вопросам отчетности по МСФО. Его цель заключается в теоретическом обосновании положений МСФО о подготовке финансовой отчетности и включении аналитической финансовой информации в процесс отчетности по МСФО. Эта цель достигается путем решения следующих задач: обоснование преимуществ отчетности по МСФО для предприятия; определить причины, по которым российские компании должны готовить свою финансовую отчетность в соответствии с МСФО. Обобщая мнения различных авторов, был разработан комплексный организационный и методологический подход к переходу на МСФО для повышения эффективности компании и снижения ее затрат. Качество отчетности одинаково в обеих системах стандартов (РСБУ и МСФО). Однако существуют различия в целях отчетности и основных принципах, закрепленных в нормативе. Таким образом, отчетность по МСФО в большей степени ориентирована на инвесторов и их интересы, она объективно отражает информацию о финансовом состоянии компании и играет важную роль в принятии экономических решений, тогда как отчетность по РСБУ в большей степени ориентирована на регулирующие органы и играет вспомогательную роль в принятии решений. Это приводит к дальнейшим различиям в структуре отчетности, содержании и формате стандартов бухгалтерского учета.

В дополнение к вышесказанному необходимо выявить любые проблемы, которые могут помешать проекту, любые дисфункции и несоответствия, причины недостаточно быстрой передачи информации и всю предыдущую информацию следует использовать для определения приоритетных процессов [6,18].

Любые выявленные противоречия и несоответствия образуют основу для поиска путей их эффективного разрешения в масштабах всей компании. Необходимо определить эффективные временные рамки для реализации плана перехода, который должен быть распределен по соответствующим этапам работы.

На следующем этапе, то есть на этапе организационного проектирования, должны быть определены технология, стандарты, процедуры, системы и типы контроля, которые будут использоваться в процессе перехода. Целью данного этапа является определение технических характеристик переходного процесса.

Параллельно с этапом социального проектирования разрабатываются модели взаимодействия социальных и технических элементов, составляются предварительные планы разработки систем и процедур, программного обеспечения и услуг.

Ссылки на персонажей для сотрудников компании должны составляться для оценки их квалификации, степени заинтересованности в изменениях и их роли в новой структуре компании.

Профессиональные знания и навыки сотрудников должны оцениваться и проверяться на соответствие основным требованиям, установленным для каждой должности и уровня. Информация о любой переподготовке, необходимой для удовлетворения таких требований, может быть использована для разработки программы обучения и повышения квалификации по конкретным темам на специальных курсах.

Большинство руководителей прекрасно понимают, что искусственному интеллекту (ИИ) под силу изменить почти все аспекты ведения бизнеса. Благодаря этой технологии к 2030 году мировая экономика может вырасти на 15,7 трлн долларов США. Однако многие руководители компаний не знают, как внедрить ИИ, причем не просто в рамках отдельных пилотных проектов, а в масштабах всей организации – там, где это может дать максимальный эффект.

Вопрос «Как?» вызывает затруднения при внедрении любой новой технологии, и искусственный интеллект – не исключение. Как вы разрабатываете стратегию использования ИИ? Как вы находите специалистов в этой области или обучаете своих нынешних работников? Что вы делаете с данными, чтобы их можно было использовать для задач ИИ? Как обеспечиваете надежность и безопасность ИИ?

Дело осложняется еще и тем, что разные компании зачастую отвечают на эти вопросы по-разному, а окружающие условия постоянно меняются. Но ждать, пока все утрясется, нельзя. Внедрение искусственного интеллекта, которое до сих пор происходило рывками, в 2019 году ускорится.

Ключевые слова: бухгалтерский учет, финансовая отчетность, финансовое состояние, финансовый результат, МСФО, консолидированная отчетность, переход на МСФО.

Information about authors:

Kevorkova Z.A., Doctor of Economic Sciences (Advanced Doctor), Professor of Department of the Accounting, Analysis and Audit, Financial University under the Government of the Russian Federation, Moscow, Russia; zhanna.kevorkova@mail.ru; <https://orcid.org/0000-0002-8674-4216>

Zhukova G.S., Doctor of Physics and Mathematics (Advanced Doctor), professor of the Department of Data Analysis, Decision-making and Financial Technology, Financial University under the Government of the Russian Federation, Moscow, Russia; GSZHukova@fa.ru; <https://orcid.org/0000-0003-1889-6223>

Antonova O., PhD, associate professor of Department of the Accounting, Analysis and Audit, Financial University under the Government of the Russian Federation, Moscow, Russia; olgavit@mail.ru; <https://orcid.org/0000-0002-7595-2423>

Dolbik-Vorobey T.A., PhD, associate professor of Department of the Accounting, Analysis and Audit, Financial University under the Government of the Russian Federation, Moscow, Russia; tadolbikvorobey@fa.ru; <https://orcid.org/0000-0002-5357-8549>

Petrov A.M., Doctor of Economic Sciences (Advanced Doctor), Professor of the Accounting, Analysis and Audit Department of the Financial University under the Government of the Russian Federation, Moscow, Russia; AMPetrov@fa.ru; <https://orcid.org/0000-0001-9648-3278>

REFERENCES

[1] Kevorkova, Z.A., Petrov, A.M., Savina N.V. Towards liabilities of corporate systems. *International Journal of Civil Engineering and Technology*. Vol. 10, Issue 2, February 2019, P. 1582-1593.

[2] Lymar, M.P., Kevorkova, Z.A., Petrov, A.M. The convergence of national and international accounting standards: Chinese experience. *International Journal of Civil Engineering and Technology*. Vol. 9, Issue 13, December 2018, P. 82-94.

[3] Karpova T.P., Petrov A.M., Antonova O.V., Directions of Accounting Development in the Conditions of Digitalization. *Journal of Adv Research in Dynamical & Control Systems*, Vol. 10, 07-Special Issue, 2018, P. 117-125.

[4] Chernysheva Natalia A., Perskaya Victoria V., Petrov Alexander M., Bakulina Anna A. Green Energy for Belt and Road Initiative: Economic Aspects Today and in the Future / *International Journal of Energy Economics and Policy*. 2019, 9(5), 178-185.

[5] Petrov A.M., Nikiforova E.V., Kiseleva N.P., Grishkina S.N., Lihtarova O.V., Creation of the reporting on sustainable development of companies based on socioeconomic measurement statistics / *International Journal of Recent Technology and Engineering*. Vol. 8 Issue 2, July 2019, P. 4005-4012.

[6] Alexander M. Petrov, Marina V. Kosolapova, Igor G. Yshanov, Nataliya K. Muravitskaya, Hursheda Nurmuamedova The Economic Significance of Statistical Research Activities of Representative Offices of Companies Abroad / *International Journal of Innovative Technology and Exploring Engineering (TM)*. Vol. 8 Issue 10, August 2019. P. 2713-2722.

[7] Lyudmila V. Sotnikova, Svetlana N. Polenova, Nataliya A. Mislavskaya, Alexander M. Petrov, Mariya M. Basova. Sustainable development, macro and micro level: Russian and foreign model / *International Journal of Recent Technology and Engineering*. Vol. 8 Issue 2, July 2019, P. 4524-4532.

[8] Nikiforova E.V. Paradigm of public reporting of economic entities // *World Applied Sciences Journal*. 2014. T. 29. N 5. P. 667-670.

[9] Akhmadeev, R.G., Bykanova, O.A., Turishcheva, T.B. (2018) Brics' foreign debt burden and its impact on core institutional basis. *Journal of Reviews on Global Economics*, 7, P. 345-359.

[10] Akhmadeev, R.G., Kosov, M.E., Bykanova, O.A., Turishcheva, T.B. (2018) Development of venture financing to ensure economic security of a country. *Proceedings of the 32nd International Business Information Management Association Conference, IBIMA 2018 - Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth*, P. 51-56.

[11] Akhmadeev, R.G., Bykanova, O.A., Philippova, N.V., Vashchekina, I.V., Turishcheva, T.B. (2018) Macroeconomic indicators and their impact on the foreign debt burden: The case of BRICS countries. *International Journal of Economics and Business Administration*, 6 (2), P. 68-82.

[12] Akhmadeev, R.G., Bykanova, O.A., Morozova, T.V., Safonova, E.G., Turishcheva, T.B., Lehoux, L. (2018) Evaluation of financial and analytical activities of the biggest car makers of the Russian federation. *Jurnal Pengurusan*, 54, P. 131-142.

[13] Akhmadeev, R.G., Kosov, M.E., Bykanova, O.A., Korotkova, E.M., Mamrukova, O.I. (2016) Assessment of the tax base of the consolidated group of taxpayers in Russia using the method of polynomial interpolation. *Indian Journal of Science and Technology*, 9 (12), p. 89533.

[14] Petrov, A. *Modern Accounting Concepts: Textbook*. M.: Vuzovsky Uchebnik: INFRA-M, 2018.

[15] Suleymanov M.M., Magomedov R.M., Savina S.V., Fomicheva T.L. Basic models of tax federalism in global practice: Specific characteristics and structural and functional organization. *Academy of Accounting and financial studies journal*. 2018. Vol. 22. Issue 3. P. 1-9.

[16] Petrov A.M., Problems of Preparing Consolidated Statements at the Automation Stage. *International Accounting*, 2011. N 33, P. 2-10.

[17] Petrov A.M., "Theoretical and Methodological Background to Organization of Accounting and Tax Planning in the Enterprise Systems of the Services Sector. Monograph", A. M. Petrov, Saint-Petersburg, 2008, Ser. Library of the Eurasian International Scientific and Analytic Journal Problems of Modern Economy.

[18] Marina V. Kosolapova, Nataliya K. Muravitskaya, Mihail N. Tolmachev, Lyubov A. Melnikova, Alexander M. Petrov Technology for solving the problems related to the implementation of the concept of preserving capital in accounting and statistics / *International Journal of Recent Technology and Engineering*. Vol. 8 Issue 3, July 2019, P. 789-792.

[19] Petrov A.M., Kiseleva N.P., Kevorkova Z.A., Melnikova L.A., Yshanov I.G. Present development practices for tax, financial and statistical reporting in the Russian Federation / *International Journal of Innovative Technology and Exploring Engineering (TM)*. Vol. 8, Issue 12, October 2019.

[20] Petrov A.M., Putihin Y.E., Poluleh M.V., Yurasova I.O., Erohina V.N. Accountant Modeling Technology and Statistics in the Context of the New Educational Concept / *International Journal of Innovative Technology and Exploring Engineering (TM)*. Vol. 8, Issue 12, October 2019.

[21] Senrbiyeva L.M., Beisenova L.Z. Details of performance audit organization in the Republic of Kazakhstan. *Proceedings of the National Academy of Sciences of the Republic of Kazakhstan*. 2019, 2. P. 246-252. ISSN 2224-5294

[22] Beisenova L.Z., Alibekova B.A., Shakharova A.E. Consolidated financial audit practice reporting in European Union countries. *Proceedings of the National Academy of Sciences of the Republic of Kazakhstan*, N 3 (325) 2019, P. 105-111. ISSN 2224-5294.

UDC 338.45.01.001.859.

Zh. Abylkassimova¹, G. Orynbeikova², M. Alibayeva¹, O. Osadchaya³¹Shakarim State University of Semey, Semey, Kazakhstan;²«Turan-Astana» University, Astana, Kazakhstan;³Rubtsovsk industrial Institute (branch) FSBEI HPE "Altai STU named after I. I. Polzunov", Russia.

E-mail: zhibekmm@mail.ru

**ANALYSIS OF INNOVATION ACTIVITIES
OF ENTERPRISES OF KAZAKHSTAN**

Abstract. The article noted that the development of the innovation potential of enterprises in the regions of Kazakhstan contributes to the transition of the innovation economy, where goods with high added value will be produced. The article examines the factors affecting the innovation activity of the regions, considers the dynamics of innovation activity and identifies problems and tools for the development of innovative entrepreneurship.

Key words: innovation, innovation activity, region, industrialization, human potential, infrastructure

In modern conditions of economic development, technological and social changes are possible only with effective innovation potential, which determines the success of the activities of economic entities. The innovation should correspond to the trends in the chosen area and be economically demanded. Each year, WIPO assesses the innovative activity of 126 countries by 80 parameters according to such criteria and pits as the political situation, education, infrastructure development, business, finance research sector. Kazakhstan occupies the third place among the countries of South and Central Asia in this ranking, 74th position [1]. According to experts, despite the improvement of individual components of the index, the development of the national support system and the introduction of innovations in Kazakhstan are at the formative stage, thereby explaining the gap between the leading countries of the world. Issues of innovative development are reflected in many strategic documents. The State Program of Industrial Innovative Development of the Republic of Kazakhstan for 2015-2019 noted that the country needs to create an effective industry base, new points of industrial growth, conditions for the emergence of highly efficient export-oriented industrial entrepreneurship, and prerequisites for the emergence of a critical mass of innovative - active business. A key theme of the program is an innovative development of priority sectors of the economy, by improving technology development centres on the basis of scientific research institute, whose role will be in the implementation of STP results in the real economy. The program also indicates that the educational and scientific community will be involved in the development of detailed Road Development Cards, and the demand for innovations will be provided through the development of a mechanism for purchasing high-tech products by state-owned companies. And the issue of transferring technology parks to the competitive environment is being worked out [2].

Research of innovative activity of regions of Kazakhstan showed a positive trend in increasing the resources involved in innovation (table 1). Table 1 presents the main indicators of innovation activities in the East Kazakhstan region over the past 5 years.

The analysis of the dynamics of innovation in enterprises showed that the share of innovatively active enterprises increased from 4.0% (2009) to 10,6% in 2018. The volume of sold innovative products (goods, services) amounted to 1 179 200 million tenge, which is more than 6 times higher than the analogous indicator of 2010. The analysis showed that the largest number of enterprises with innovations are located in Astana (19%), Almaty (18%) and the third place is in East Kazakhstan region (10%), the least is in Mangistau region and West Kazakhstan (1.0%).

Table 1 – Dynamics of key indicators of innovative activity*

Indicators	2013	2014	2015	2016	2017	2018
GDP, billion, tenge	35 999,0	39675,8	40 884,1	46 971,2	53 101,3	59613,7
Domestic expenses on R & D, million tenge	61 672,7	66347,6	69 302,9	66 600,1	68 884,2	72200,0
The part of domestic R & D, costs from GDP, %	0,17	0,17	0,17	0,14	0,13	0,12
The amount of organizations engaged in R & D, units	341	392	390	383	386	384
The amount of employees performing R & D, people	23 712	25 793	24 735	22 985	22081	22400
Volume of innovative products (goods, services), million tenge	578263,1	580 386	377 197	445 776	844 735	1179200
The level of activity in the field of innovation, %	8,0	8,1	8,1	9,3	9,6	10,6
* http://stat.gov.kz/ [3].						

The main factor of innovative development is enterprises introducing innovations into their production (table 2).

Table 2 – The level of activity in the field of innovation, %

	Amount of enterprises – total, units	Of them	The level of activity in the field of innovation, %
		Having innovations	
The Republic of Kazakhstan	30501	3230	10,6
Akmola	1 207	93	7,7
Aktobe	1 174	125	10,6
Almaty region	1 830	151	8,3
Atyrau	1 161	96	8,3
West Kazakhstan	952	50	5,3
Jambyl	841	96	11,4
Karaganda	2 289	336	14,7
Kostanay	1342	163	12,1
Kyzylorda	756	92	12,2
Mangystau	1 128	45	4,0
South Kazakhstan	2 499	119	11,7
Pavlodar	1 272	116	9,1
Turkestan	927	60	6,5
East Kazakhstan	2 050	317	15,5
Nur-Sultan city	3975	583	14,7
Almaty city	6997	670	9,6
Shymkent city	1587	118	7,4
* http://stat.gov.kz/			

The condition for the innovative development of enterprises in the region is primarily the availability of the resources necessary for its implementation. Regional enterprises have paid attention to achieving the effectiveness of their innovation by adopting new products or technologies in production, as well as modernizing products or services, borrowing them from more advanced enterprises. The increase in costs for these goals in 2018 brought up to 72224,6 million tenge, which is 2 times higher than the similar costs in 2010, indicating a number of successful investments in innovative projects. However, despite the growth in R & D costs, this indicator lags significantly behind GDP growth. The share of Kazakhstan's GDP spent on research and development is currently 0.13% (in other countries, similar expenses are higher: from 2.08% in China and 2.73% in the United States to 4.15% in South Korea and 4.21% in Israel). In the long run, developed countries with a powerful raw materials sector can serve as a guide for this: Canada, where R & D expenditures amount to 1.62% of GDP, and Australia (2.13%). Comprehensive development of the national innovation system and increasing the country's competitiveness are ensured by the growth of innovative activity. and higher spending on R & D

In the context of the regions of Kazakhstan, the largest share of the volume of innovative products (works, services) of all innovative products produced in the country is observed in Pavlodar (21%), Astana (17%), Shymkent (13%), Kostanay (10%) and in East Kazakhstan region (9.0%), in other regions the figure ranges from 1% to 6% (figure 1)

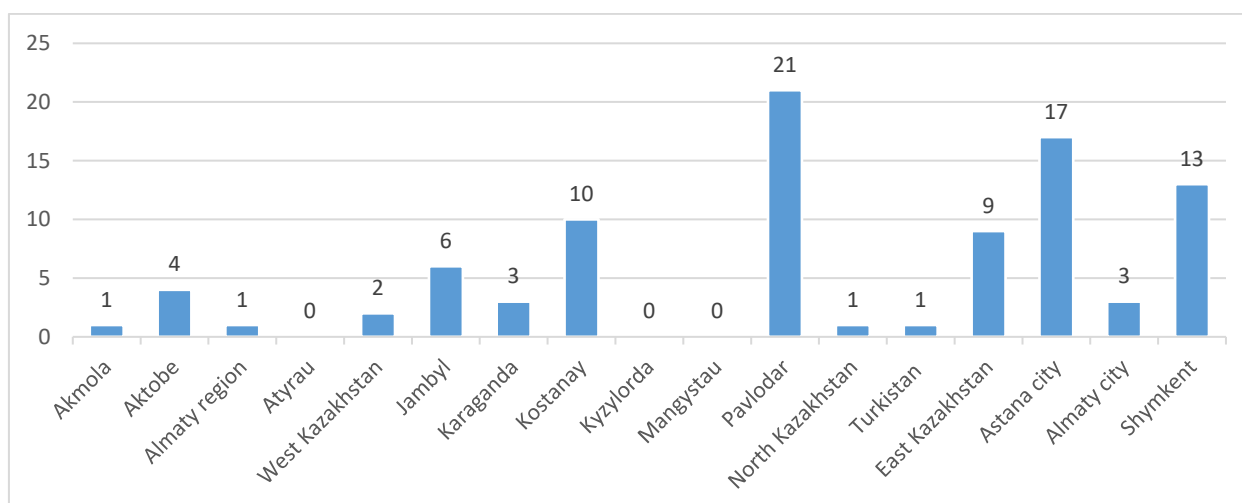


Figure 1 – Dynamics of volume of innovative production in the Republic of Kazakhstan

However, the problem of Kazakhstan's innovation policy is the weak domestic demand for innovation. The low level of competition and specialization at low rates of technical progress explains the lack of interest of companies to innovate. In addition, most of the innovations in the country occur in the machinery market, and the share of innovations in the production of consumer goods is insignificant due to inexperienced consumer demand, the limited size of the market, and dependence on imports. Such low demand is also aggravated by inadequate production capacity in the country, emerging industries satisfy their technological needs abroad, since the underdeveloped research sector in Kazakhstan is not yet able to meet their needs. The creation of fundamentally new products in modern conditions is possible only on the basis of the development of fundamental research, and, first of all, at the intersection of scientific disciplines [4].

In Kazakhstan, of the four main types of innovations (organizational, marketing, product and process), process and product innovations prevail. As for organizational and marketing innovations, there are no serious innovations in this area in Kazakhstan. Therefore, it is still not easy for our country to offer organizational and marketing innovations to the world market.

Product Innovation - is the introduction of a product or service with new or significantly improved properties or method of use. Improved product specifications, software, or user-friendliness can be the essence of product innovation. Process innovation – is a significant improvement in the method of production or delivery of the product.

Figure 2 presents data on the costs of product and process innovations by source of funding.

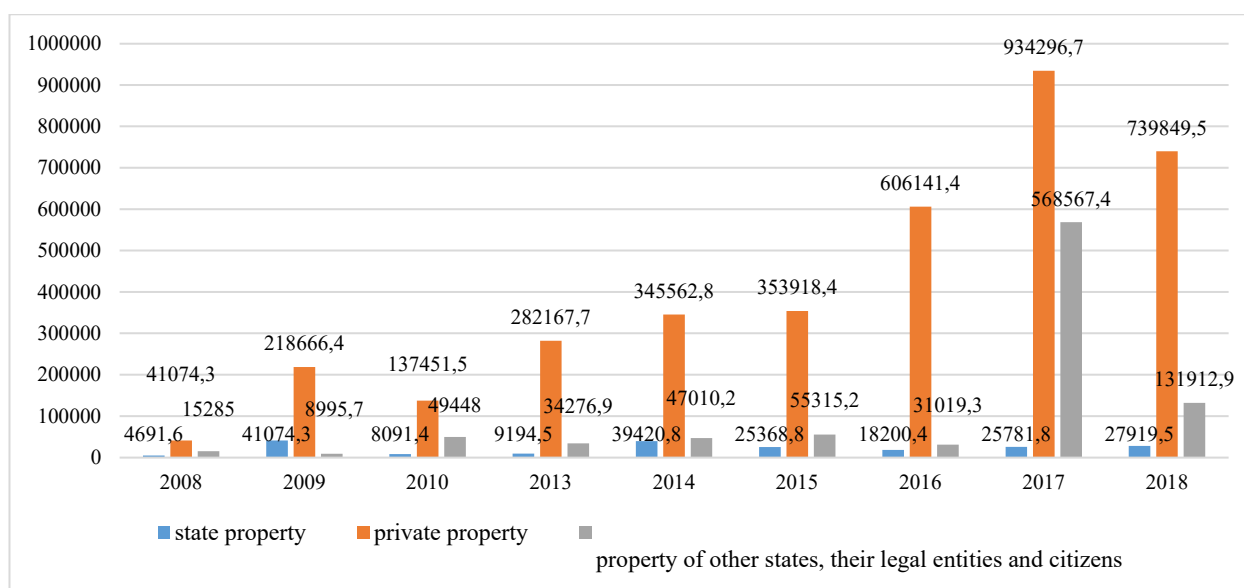


Figure 2 – The cost of product and process innovations by source of funding

An analysis of the cost of product and process innovations by source of financing has shown that the cost of innovation is carried out mainly at the expense of own sources of enterprises. This is a positive trend. The highest indicator of total costs was observed in 2017 (1528645.9) in 2018 there was a decrease (899681.8). The decline occurred in terms of the property of other states, if in 2017 their share was 37.0%, then in 2018 the indicator dropped to 14.0%. The most significant contribution in all types of innovations was made by large enterprises [5].

National expenses on R&D include fundamental, applied research, development and technological developments and are considered one of key indicators of scientific and technological development of the country.

Table 3 – Internal R & D costs by type of work

	2013	2014	2015	2016	2017	2018
Total	61672,7	66347,6	69302,9	66600,1	68884,2	72224,6
Including:						
Scientific researches and workers:						
Fundamental researches	18197,0	15260,7	15838,8	13809,2	10785,9	10629,0
Applied researches	33369,4	38394,8	36959,0	35841,1	40909,6	43278,3
Experimental-constructive designs:						
Design and technological works	7447,3	9 488,1	12658,2	12341,7	14817,7	16387,9
Manufacture of prototypes, batches of products	1365,5	1 830,4	1 478,4	2 478,1	885,3	1518,6
Project works for construction	1293,5	1 373,7	2 368,5	2 130,0	1 485,7	410,8
* http://stat.gov.kz/						

AT last five years the amount of domestic costs of R&D in Kazakhstan hesitated in the limits from 61.7 billion tenge to 69.3 billion tenge. The largest volume was recorded in 2016 – 66.6 billion tenge vs. 68,9 billion at 2017 and 72.2 billion at 2018 (at the same time, fluctuations in the national currency exchange rate should also be taken into account).

Table 4 – Domestic R & D costs by branches of science

	2013	2014	2015	2016	2017	2018
Total	61 672.7	66 347.6	69,302.9	66 600.1	68,884.2	72224,6
including:						
natural sciences	22361.4	23556.8	25334.2	23496.2	22428.3	21083,9
engineering and technology	23937.9	26864.3	29618.3	30,193.4	31459.4	35596,8
medical sciences	3 450.4	2 795.1	2 735.4	2,277.9	3 278.3	2207,7
agricultural sciences	5,628.1	7 331.7	7602.4	6884.6	6528.0	7953,5
social sciences	2857.1	1486.2	850,5	1072.2	1 650,8	1586,9
humanitarian sciences	3437.6	4313.5	3 162.1	2 675.8	3539.4	3795,8

In 2018 costs on R&D compared to previous year increased on 3.4% . At the same time, the share of costs for applied research in total amount was 59.4%, on experimental-constructive designs – 24.9%, on basic research – 15.7%.

The priority direction of R&D financing in 2018 was research in engineering and technologies whose share in total internal costs of R&D compiled 45.6%. Costs research in field of natural sciences accounted for 32.6% , in field of agricultural sciences – 9.5%, humanities – 5.1%, health care – 4.8%, social – 2.4%.

One of the most important indicators, the value of which characterizes the region's involvement in innovation processes, is the share of enterprises that carried out innovation activity in their total number.

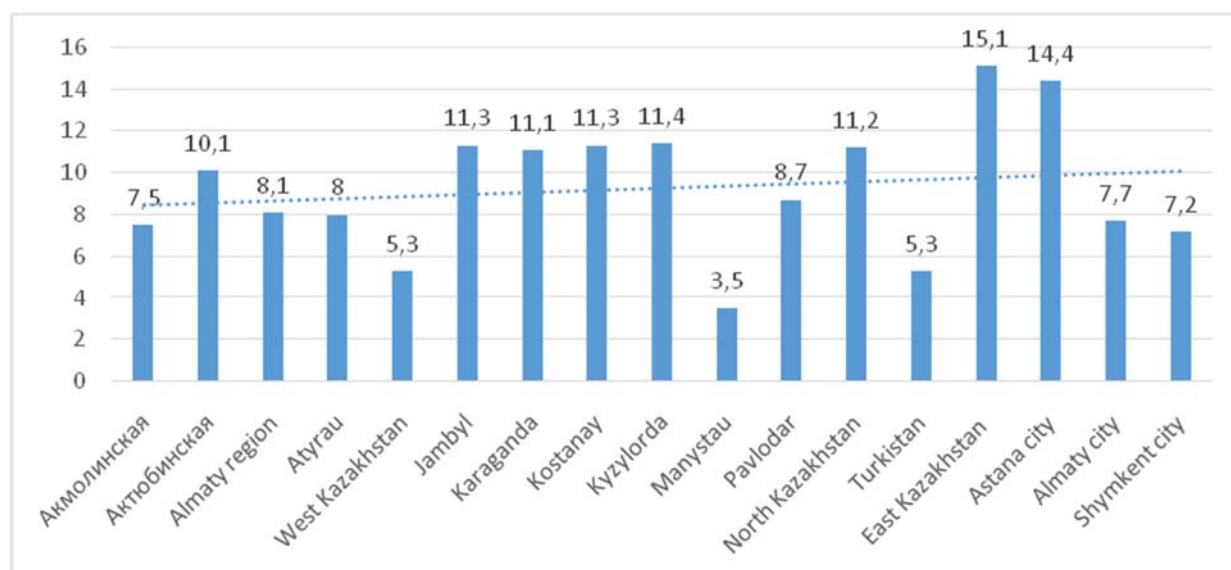


Figure 3 – The level of innovative activity of enterprises for all types of innovations

A comparative analysis by region showed that 8 of them exceeding the average national level of innovation activity (EKR - 2017 - 15.1%, 2016 - 11.5%) the region came in first place ahead of Astana (14.4%), followed by Kyzylorda and Kostanay regions. The smallest share of innovative - active enterprises is occupied by Mangystau (3.5%), West-Kazakhstan and Turkestan regions (5.3%). The reason for this situation is the raw material orientation of individual regions.

The study showed that the concentration of the bulk of the investment projects in several major cities has led to regional imbalances. In order to eliminate these disparities state creates conditions for increasing the investment attractiveness and economic development of the newly region where level of innovative activity is low. In the regions, regional programs have been developed taking into account the competitive advantages of the regions.

The regions are faced with the task of concentrating state support measures on priority sectors of the economy and key diversification projects, creating their own special economic zones (SEZ) and industrial zones (IZ), developing an investment policy concept, forming an investment portfolio and doing specific work with specific partners. One of the reserves for production growth is the resuscitation of idle facilities, their modernization, and assistance in obtaining various government support measures.

Despite the positive dynamics of individual indicators, the level of innovative development of Kazakhstan still lags behind the countries of Europe: Switzerland, Sweden, the Netherlands, which are leaders in their region. European countries are strong in terms of human capital, research, infrastructure and business development on the share of highly qualified specialists in total employment, cooperation of university and industry research structures, the number of patent applications and scientific and technical articles and the quality of scientific publications.

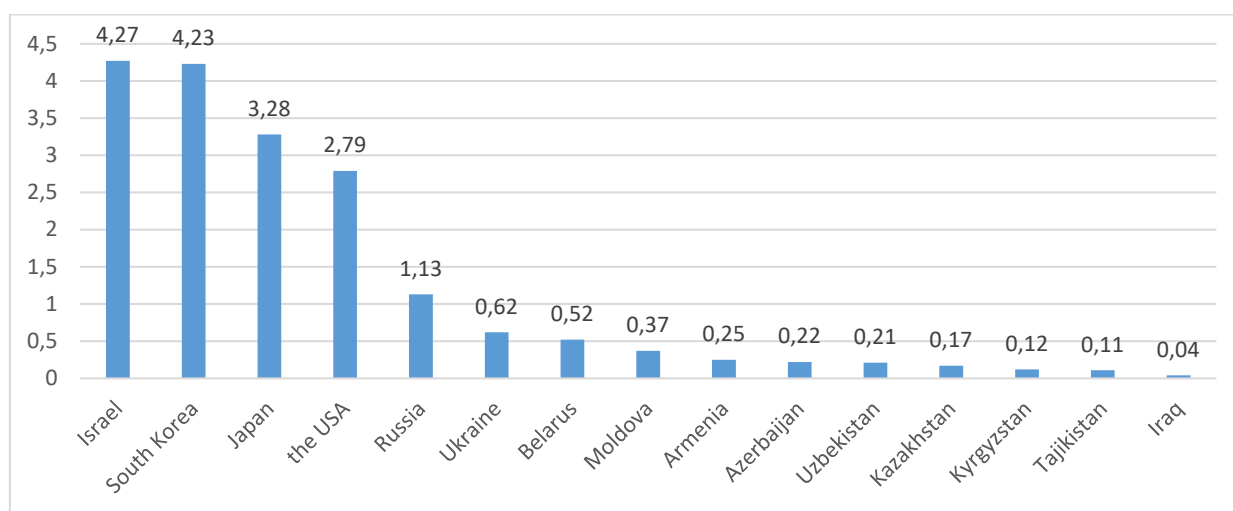


Figure 4 – Expenditures of the world on R&D, % of GDP

According to the latest UNESCO ranking for 2015, among 74 countries of the world, Israel spends the largest share of its GDP on R & D – 4.27%, which is a leader in this indicator in last years. South Korea is next – 4.23%, and then goes Japan – 3.28%, Sweden – 3.26% and Austria – 3.07%.

Kazakhstan is located in bottom of the list – on 63rd place with 0.17% (in 2017 – 0.14%). Uzbekistan is above us with an indicator 0.21%, slightly lower Kyrgyzstan – 0.12% gdp [6].

Based on foreign experience, it is clear that in no country in the world has the innovation system been formed by the market, by the private sector on its own. In all countries, to enhance the competitiveness of the national economy, the state plays a leading role on the basis of a systematic approach in creating an innovative economy with a social bias. From 2020, the implementation of the 3rd program of industrial-innovative development will begin, which will follow the following principles: continuity of industrial-innovative policy; support for efficient manufacturers; the development of the "economy of simple things"; conjunction of industrial-innovative and spatial development; Synergy of industrial-innovative development and digital technologies [7].

World experience indicates the need to decentralize financial support for the business sector. In the context of the implementation of the program, it is important to enable regions to participate in the formation of regional innovation policy and the financing of small and medium-sized business projects. In this regard, the share of funding from the regional budget to support the activities of the innovation infrastructure and promising innovative projects by 2020 should increase significantly. A special place among the sources of financial support for innovative projects in the entrepreneurial sector is taken by venture financing [8].

The study of the innovation economic space showed that most of the domestic patents and inventions are unknown for the manufacturing sector, and their own research organizations, as a rule, are not conducted due to the lack of venture capital funds and specialists of the required level of qualification,

which certainly does not contribute to timely materialization of opportunities for the formation of innovative management technologies and a new culture of production and processing of products .

This is especially true for domestic agriculture, which is characterized by the presence of a large number of scattered small farms less able to perceive innovation. Therefore, the innovative direction of entrepreneurship development in the agrosphere can be the consolidation of enterprises by their merger or merger. But in the context of globalization and integration in the agricultural production of the regions of our country, it is necessary that innovative activities be based on the ideal tax system, state and market participation in innovative processes, ensuring openness and transparency of development institutions, as well as taking into account the peculiarities of social and economic development, natural conditions, seasonality of production and traditions of the regions. [9].

Thus, on the basis of the analysis performed, it can be concluded that the potential of enterprises in the innovation sphere has not yet been fully realized. Its implementation is hampered by numerous institutional factors peculiar to Kazakhstan, which create a significant number of barriers to the development of innovative business, most of which are serious and cannot be significantly weakened in the short term. At the same time, most of the identified constraining factors lie outside the sphere of influence of innovative enterprises, which makes the question of their support from the state paramount. However, it should be noted the emergence of the state favourable environment for the development of innovative business.

Ж. А. Абылкасимова¹, Г. А. Орынбекова², М. М. Алибаева¹, О. П. Осадчая³

¹Государственный университет им. Шакарима, Семей, Қазақстан;

²Университет «Туран-Астана», Астана, Қазақстан;

³Рубцовск индустриалдық институты (филиал) «И. И. Ползунов атындағы АлтМТУ» ФМБЖББМ, Ресей

ҚАЗАҚСТАН КӘСІПОРЫНДАРЫНЫҢ ИННОВАЦИЯЛЫҚ ҚЫЗМЕТІН ТАЛДАУ

Мақалада Қазақстан өңірлері кәсіпорындарының инновациялық әлеуетін дамыту қосылған құны жоғары тауарлар өндіретін инновациялық экономиканың өтуіне ықпал ететіні атап өтілді. Алайда технологиялық және әлеуметтік өзгерістердің орын алуы шаруашылық жүргізуші субъектілер қызметінің табыстылығын анықтайтын тиімді инновациялық әлеует болған жағдайда ғана мүмкін болады. Бұл ретте инновация таңдалған саладағы үрдістерге сәйкес келуі және экономикалық сұранысқа ие болуы тиіс. Қазақстан өңірлерінің инновациялық белсенділігін зерттеу инновацияға тартылған ресурстардың артуының оң үрдісін көрсетті.

Мақалада өңірлердің инновациялық белсенділігіне әсер ететін факторлар зерттелді, инновациялық қызметтің серпіні қарастырылды және инновациялық кәсіпкерлікті дамытудың проблемалары мен құралдары анықталды. Қабылданып жатқан шараларға қарамастан, Қазақстан өңірлеріндегі инновациялық қызмет қалыптасу сатысында тұр, бұл әлемнің жетекші елдері арасындағы алшақтықпен түсіндіріледі. Жүргізілген талдау негізінде авторлар инновациялық саладағы кәсіпорындардың әлеуеті әлі толық іске асырылмаған деген қорытынды жасайды. Мұндай жағдайдың себебі жекелеген өңірлердің шикізаттық бағдарлануымен байланысты болып келеді. Бірнеше ірі қалаларда инвестициялық жобалардың басым бөлігін шоғырландыру өңірлік теңгерімсіздіктерге алып келді. Осы айырмашылықтарды жою үшін мемлекет инновациялық белсенділік деңгейі төмен болып келетін жаңа өңірдің инвестициялық тартымдылығын және экономикалық дамуын арттыру үшін жағдай жасайды. Өңірлерде өңірлік бағдарламалар өңірлердің бәсекелестік артықшылықтарын ескере отырып әзірленеді. Оны іске асыруға инновациялық бизнесті дамыту үшін кедергілердің едәуір санын құрайтын Қазақстанға тән көптеген институционалдық факторлар кедергі келтіреді, олардың көпшілігі елеулі болып табылады және қысқа мерзімді перспективада айтарлықтай әлсіремейді. Сонымен қатар анықталған тежеуші факторлардың көпшілігі инновациялық кәсіпорындардың ықпал ету саласынан тыс жатыр, бұл мемлекет тарапынан оларды қолдау туралы мәселені бірінші кезекке қояды. Әлемдік тәжірибе бизнес-секторды қаржылық қолдауды орталықсыздандыру қажеттігін куәландырады. Бағдарламаны

іске асыру аясында өңірлерге өңірлік инновациялық саясатты қалыптастыруға және шағын және орта бизнес жобаларын қаржыландыруға қатысуға мүмкіндік беру маңызды.

Түйін сөздер: инновациялар, инновациялық белсенділік, өңір, индустрияландыру, адами әлеует, инфрақұрылым.

Ж. А. Абылкасимова¹, Г. А. Орынбекова², М. М. Алибаева¹, О. П. Осадчая³

¹Государственный университет им. Шакарима, Семей, Казахстан;

²Университет «Туран-Астана», Астана, Казахстан;

³Рубцовский индустриальный институт (филиал) ФГБОУ ВО «АлтГТУ им. И. И. Ползунова», Россия

АНАЛИЗ ИННОВАЦИОННОЙ ДЕЯТЕЛЬНОСТИ ПРЕДПРИЯТИЙ КАЗАХСТАНА

Аннотация. В статье отмечено, что развитие инновационного потенциала предприятий регионов Казахстана способствует к переходу инновационной экономики, где будут производиться товары с высокой добавленной стоимостью. Однако технологические и социальные изменения возможны только при наличии эффективного инновационного потенциала, который определяет успешность деятельности субъектов хозяйствования. При этом инновация должна соответствовать тенденциям в выбранной области и быть экономически востребованной. Исследования инновационной активности регионов Казахстана показали положительную тенденцию увеличения ресурсов, вовлеченных в инновации.

В статье исследованы факторы, влияющие на инновационную активность регионов, рассмотрена динамика инновационной деятельности и выявлены проблемы и инструменты развития инновационного предпринимательства. Несмотря на принимаемые меры, инновационная деятельность в регионах Казахстана, находятся на стадии становления, чем объясняется разрыв между ведущими странами мира. На основании проведенного анализа авторы делают вывод, что потенциал предприятий в инновационной сфере еще не полностью реализован. Причиной такой ситуации является сырьевая ориентация отдельных регионов. Концентрация большей части инвестиционных проектов в нескольких крупных городах привела к региональным дисбалансам. Для устранения этих различий государство создает условия для повышения инвестиционной привлекательности и экономического развития нового региона, где уровень инновационной активности является низким. В регионах региональные программы разрабатываются с учетом конкурентных преимуществ регионов. Его реализации препятствуют многочисленные институциональные факторы, свойственные Казахстану, которые создают значительное количество барьеров для развития инновационного бизнеса, большинство из которых являются серьезными и не могут быть значительно ослаблены в краткосрочной перспективе. В то же время большинство выявленных сдерживающих факторов лежат вне сферы влияния инновационных предприятий, что делает вопрос об их поддержке со стороны государства первостепенным. Мировой опыт свидетельствует о необходимости децентрализации финансовой поддержки бизнес-сектора. В контексте реализации программы важно дать возможность регионам участвовать в формировании региональной инновационной политики и финансировании проектов малого и среднего бизнеса.

Ключевые слова: инновации, инновационная активность, регион, индустриализация, человеческий потенциал, инфраструктура.

Information about authors:

Zhibek Abylkassimova, Ph.D, Head of the Department of Economics and Management, Shakarim State University of Semey, Kazakhstan; zhibekmm@mail.ru; <https://orcid.org/0000-0001-6803-6075>

Gulnar Orynbekova, Ph.D, associate professor of the department "Economics and Innovative Business", «Turan-Astana» University, Astana, Kazakhstan; gulnar_1669@mail.ru; <https://orcid.org/0000-0003-4327-1954>

Meirash Alibayeva, Ph.D, associate professor of the department "Economics and Management", Shakarim State University of Semey, Kazakhstan; meirasha@mail.ru; <https://orcid.org/0000-0003-2584-6216>

Olga Osadchaya, professor, Rubtsovsk industrial Institute (branch) Federal state budgetary educational institution of higher professional education "Altai state technical University named after I. I. Polzunov", Rubtsovsk , Russia; olga22766@yandex.ru; <https://orcid.org/0000-0001-7086-091X>

REFERENCES

- [1] Kazahstan zanyal 74-e mesto v Global'nom innovacionnom indekse [Elektronnyj resurs] Rezhim dostupa <https://informburo.kz> (11.06.2018 g.) (in Russ.).
- [2] Industrial'no-innovacionnoe razvitie Kazahstana. <https://e-history.kz/ru>. (Data obrashcheniya 14.11.2016) (in Russ.).
- [3] Baza dannyh komiteta po statistike MNEH RK [EHlektronnyj resurs] Rezhim dostupa: <http://stat.gov.kz/> (in Russ.).
- [4] Sanalieva L.K., Kengzhegalieva G. B, Idelbayeva A.S., Niazbekova Sh.U. Investigation of modern economic mechanisms for construction of the intellectual potential of the country as a moving factor of innovative economic development. Bulletin of NAS RK. Vol. 5, N 375, 2018. P. 144-148. <https://doi.org/10.32014/2018.2518-1467.49> ISSN 1991-3494
- [5] Global'nyj trend na innovacii. Kazahstan – regional'nyj lider, sposobnyj na bol'shee. [EHlektronnyj resurs] Rezhim dostupa: <https://informburo.kz>, (Data obrashcheniya 31.06.2018g.) (in Russ.).
- [6] Raskhody RK na nauchno-issledovatel'skie raboty sostavlyayut vsego 0,14 % ot VVP. [EHlektronnyj resurs] Rezhim dostupa: <https://forbes.kz> (Data obrashcheniya 03. 06.2018 god).
- [7] GII 2018 g.: lokalizaciya innovacionnoj deyatel'nosti [EHlektronnyj resurs] Rezhim dostupa: <https://informburo.kz>.
- [8] Kalieva G.T. Finansirovanie innovacionnogo razvitiya predpriyatiya: teoreticheskij aspekt. Bulletin of NAS RK. N 6 (316), 2017. P. 157-163. ISSN 1991-3494
- [9] Gridneva E.E., Kaliakparova G.S., Alpysbayev K.S., Sevindik T. The innovative possibilities in the agro-industrial complex in terms of economic security. Bulletin of NAS RK. Vol. 2, N 378 (2019), 115–119. <https://doi.org/10.32014/2019.2518-1467.49> ISSN 1991-3494

A. Bimuratova¹, E. Tokareva², A. Makhatova³, A. Cherep⁴

¹Caspian University, Almaty, Kazakhstan;

²Narxoz University, Almaty, Kazakhstan;

³Akademik A. Qyatbekov atyndagy Halyqtar dostygy yuniversiteti, Shymkent, Kazakhstan;

⁴Zaporizhzhia National University, Ukraine.

E-mail: b_aika01@mail.ru, elgentokareva@mail.ru, m_adelina@mail.ru, cherry.av.znu@gmail.com

WORLD EXPERIENCE OF SOCIAL RESPONSIBILITY OF BANKS

Abstract. The commercial activities of banks directly affect the society in which they operate, and future business successes are closely linked to key social values. Considering the specifics of the activities of commercial banks, trust is becoming one of the most important conditions for a normally functioning banking services market, and the level of profits is increasingly determined not by the technology of the provision of services, but by the correct positioning of banks in the social environment based on social responsibility and reputation. The level of socially responsible behavior of banks has a direct impact not only on the sustainable development of society, but also on the stability of the banks themselves.

The problem of corporate social responsibility is increasingly reflected in the media and scientific works of prominent scientists. It must be understood that the social responsibility of business is much wider than is commonly believed.

Key words: social responsibility, commercial banks, globalization, socially responsible business.

Introduction. The relevance of developing the concept of socially responsible business increases sharply in the context of the global economic crisis, when one of the dominant trends in the development of production is the trend of mass restructuring of enterprises, which is fully manifested in the Kazakhstan economy. Globalization has deprived domestic producers of the hope to defend themselves against global competition by national borders. In order to survive in modern conditions, they were forced to either transform into world-class companies or curtail production facilities and withdraw financial assets.

These processes are accompanied by serious social risks: in a crisis accompanied by a widespread decline in production volumes, reduction of production capacities, closure of enterprises, the task of reducing emerging social risks becomes particularly relevant. The solution to this problem is possible only in a socially responsible business. That is why today more than ever before, both the experience of socially responsible modernization accumulated over the previous years and the conceptual and theoretical apparatus of socially responsible business underlying this experience are found to be in demand [1].

The problem of corporate social responsibility is increasingly reflected in the media and scientific works of prominent scientists. It must be understood that the social responsibility of business is much wider than is commonly believed [2].

According to T. Foran, corporate social responsibility (CSR) is a set of behavioral actions of the enterprise in relation to its employees, government, the environment and society [3]. Companies should not be guided solely by a sense of their own benefit while making decisions, but must take into account the possible consequences of their actions on the welfare of all interested parties. It is common knowledge that socially anchored competences facilitate the implementation of companies in their markets. This includes an expanded understanding of responsibility in the field of economic, legal, environmental, philanthropic, and ethical activities of any company.

American scientist Archie Carroll considers, according to the already classic position, corporate social responsibility is multilevel, it can be represented in the form of a pyramid (figure) [4].



Carroll's CSR Pyramid

Economic responsibility in the «pyramid» is basic and includes the company's ability to earn sufficient profits, create new jobs and produce goods and services that are in demand by society. It must be remembered that profits must be achieved legally in accordance with the requirements established by the state, which, in turn, is the legal responsibility of business. Ethical responsibility implies the moral behavior of the organization in relation to all interested parties and to society.

Although ethical behavior is not established by the law, many companies independently develop «codes of ethics» based on the standards of justice and equality so that their employees can distinguish between ethical and immoral behavior. Philanthropic obligations are exclusively voluntary activities of organizations that contribute to improving the quality of life of society, for example, such as charity, donations, sponsorship, gratuitous financing of social projects [5].

Results and discussion. The bank considers social responsibility as one of the key principles of its activities. In carrying out activities in the field of CSR, the Bank is guided by the Strategy. The purpose of the Strategy is to establish the fundamental principles and priorities that the bank adheres to in the management of projects in the field of CSR. The strategy is aimed at improving the efficiency of the banks in the field of CSR using international norms of behavior and principles enshrined in international standards in the field of CSR and sustainable development.

During evaluating the effectiveness of activities in the field of CSR, the bank is guided by economic indicators and personnel performance indicators. In its activities, the bank seeks to provide social assistance to society through increasing the financial literacy of the population and implementing special measures aimed at increasing public awareness of the bank's products and services, developing skills for their use and explaining the practical benefits of their use [6].

Having studied the content of the official websites of Kazakhstani banks, analytical reviews of the Kazakhstan Union of Industrialists and Entrepreneurs and Kazakhstani economists, it can be distinguished the number of main trends in the development of CSR in the banking system of Kazakhstan, many of which correspond to the trends in international practice of developing social responsibility.

The norms and standards of corporate social responsibility for Western business have long become mandatory. In Kazakhstan the banking sector is especially active in terms of compliance with CSR. «Corporate social responsibility is a moral component of business. This is a relationship that a business builds long-term in the world, and not a tribute that needs to be paid to someone under the word «society» said Larisa Pak, managing director of JSC «KaspiBank» [7].

Kazakhstan banks were the first in Kazakhstan to introduce international experience, starting from the introduction of international standards for the preparation of financial statements, IT, etc. For example, the first of Kazakhstani companies that signed the UN Global Compact on Corporate Social Responsibility (CSR) in 2005 was JSC «Halyk Bank».

At JSC «Halyk Bank», CSR means managing a business with responsibility and emphasis on the long-term success of the business. «Our goal is not profit at all costs, because we know that tomorrow's success depends on the trust that we gain today. We take care to meet the expectations of our customers, shareholders, employees and other interested parties», explain their CSR concept at «Halyk Bank».

«For ourselves, we have identified several CSR parameters: responsibility to the state and the local community in which we live and conduct our business; responsibility to those who work in the bank - our employees; responsibility to those for whom we work - our customers», said the managing director of the bank and the president of the «Kus Zholy» fund introducing the report on social activities of JSC «Halyk Bank» in 2018 [8,9]. So, in the field of implementing the principles of CSR, JSC «Halyk Bank», as an employer, in 2018 sent over 101 million tenge to employees for medical insurance. The bank spent about 13 million tenge on the development of human resources through training and continuing education programs [10].

«Halyk Bank» attaches great importance to investments in education. A joint project was developed with the Kazakh-British Technical University (KBTU) for 3-year support of the KBTU master's program. «In addition to financial support, the bank offers students the opportunity to undergo internships and employment. Cultural support was expressed in the cultural exchange program developed by HSBC in collaboration with organization «Poet in the City» [11]. As part of this program, a poet from Kazakhstan will be sent to the city of Vancouver, Canada, to promote the image of Kazakhstan and exchange experience.

It is known that the principles of CSR in different banks are implemented in different ways. This applies to both internal social responsibility to employees and external projects. So, in JSC «KaspiBank» during the crisis, the bank avoided massive staff cuts, while creating new jobs. «Over the past year, JSC «KaspiBank» recruited more than 1.2 thousand people, thereby increasing the number of its staff to 5.5 thousand people», marks Larisa Pak, noting that when recruiting employees there are often rely on university graduates with no work experience [12].

Among the long-term charitable projects of JSC «KaspiBank», it is possible to single out cooperation with the fund «Ayala» on a program for saving newborns, as a result of which over the past 5 years the bank has sponsored the purchase of medical equipment worth about \$ 500 thousand. It has also become traditional to provide financial assistance to veteran clients of the bank In 2019, more than \$ 250 thousand was allocated for these purposes by May 9 [13].

«There are also projects that require an emergency response. They happen unexpectedly, and we try to promptly and adequately help people. A few years ago, when a tragedy occurred in the Karaganda region - miners died in the mine blockage, bank employees decided to transfer daily earnings in favor of relatives and friends of the victims», says Larisa Pak. Last year, about 10 million tenge JSC «KaspiBank» allocated to flood victims in Uralsk. Necessary help was also provided to the «ZhasDauren» orphanage - 114 children of this house were provided with seasonal clothes [14].

Table 1 – Current status of the State program(SP) on July 1, 2019 (Retail business (RB) + Post credit (PC):

Events since the start of the program	SP (old)		SP (currency)		Total	
	quantity	amount	quantity	amount	quantity	amount
Accepted applications for consideration	2323	36030	782	24654	3105	60684
Approved and implemented in the system	1690	16971	698	9906	2388	26877
Approved, in progress	235	2920	69	1159	304	4079
Under consideration	38	552	8	438	46	990
Denied	360	7121	7	744	367	7865

Table 2 – Current status of the State program(SP) on July 1, 2019 (Retail business (RB) + Including PC):

Events since the start of the program	SP (old)		SP (currency)		Total	
	quantity	amount	quantity	amount	quantity	amount
Accepted applications for consideration	2083	34406	657	23095	2740	57501
Approved and implemented in the system	1480	15433	578	9271	2058	24704
Approved, in progress	233	2908	66	1150	299	4057
Under consideration	37	551	8	438	45	989
Denied	333	6882	5	500	338	7382

Forte Bank is one of the largest participants in the Housing Mortgage Refinancing Program:

– On the June 1, 2019, as part of the State Refinancing Program, 2,388 loans were refinanced in the amount of 26,877 million tenge [15].

– Extensive work is carried out to attract customers for refinancing under the State Program, which takes up the majority of the operational time (calling customers, leaving the place of pledge, consulting clients, analyzing the situation, collecting documents, preparing questionnaires, raising the issue of refinancing, issuing process).

– The reasons for delaying the process of issuing refinancing within the framework of the State program are arrests on the accounts of state agencies (Tax Offices, private enforcement agent etc.), amendments to title documents (acceptance of inheritance, change of district, change of characteristics of the pledge, legalization), as well as imposed restrictions of state agencies and private enforcement agent on obtaining notarized consent for pledge and extrajudicial sale [16,17].

Domestic banks, especially with state participation, need to adopt the best foreign experience and work more actively in the regions. Older age groups will leave financial markets after a certain time, and middle-aged people in big cities will be oriented towards cooperation with American and European banks that trained them in financial literacy.

Conclusion. So far, not many organizations are aware that attracting employees to volunteer activities is fundamental to their corporate culture and reputation. The crisis has aggravated the sense of responsibility in people, and nothing better unites than a joint activity on a socially significant project. The development of volunteering is not only a manifestation of the social responsibility of the company, but also an important element of its personnel work [18].

It should be noted that the human resource in a commercial bank is one of the most important. There are cases when the team of employees working with clients has changed, and the bank has lost most of its customers, as customers followed employees to other banks [19]. Therefore, during the crisis, it is necessary to be very careful about staff reduction issues, work on a system for evaluating the effectiveness of its work and create loyal and favorable conditions for employees to work. Moreover, it should be noted that the most successful will be companies that are actively introducing corporate social responsibility in their work, as professional employees strive to work in the most favorable conditions.

As a conclusion, another important global trend in the development of corporate social responsibility, it consists in understanding at the present stage by an increasing number of companies the need for a strategic approach to social responsibility. The image aspect of CSR is being replaced by the strategic nature of social responsibility. Its undoubted advantages – the clarity of obligations to interested parties and their relationship with the long-term strategy of the bank – are gradually gaining greater understanding and distribution in the practical activities of Kazakhstani banks [20].

Embedding social responsibility in the bank's development strategy suggests that social spending in the context of social responsibility programs should not be considered by the bank as costs, but as investments that have a significant social effect, since the return on them is expressed in the form of building trust, creating a positive image in the public eye and stimulating positive changes in society, which is a prerequisite for increasing the economic efficiency of the bank. Bringing the bank's strategy in line with the concept of corporate social responsibility, determining the directions of social investment and developing programs for each of them are a factor in improving the quality of corporate governance and ensuring the sustainable development of the banking business.

А. Бимұратова¹, Е. Токарева², А. Махатова³, А. Череп⁴

¹Каспий қоғамдық университеті, Алматы, Қазақстан;

²Нархоз университеті, Алматы, Қазақстан;

³Академик А. Қуатбеков атындағы Халықтар достығы университеті, Шымкент, Қазақстан;

⁴Запорожье ұлттық университеті, Украина

БАНКТЕРДІҢ ӘЛЕУМЕТТІК ЖАУАПКЕРШІЛІГІНІҢ ӘЛЕМДІК ТӘЖІРИБЕСІ

Аннотация. Банктердің коммерциялық қызметі олар жұмыс істейтін қоғамға тікелей әсер етеді, ал бизнестің болашақ табыстары негізгі әлеуметтік құндылықтармен тығыз байланысты. Коммерциялық банктер қызметінің ерекшелігін ескере отырып, сенім банктік қызмет көрсету нарығының қалыптасуы жасауының маңызды шарттарының бірі бола отырып, пайда деңгейі қызмет көрсету технологиясымен емес, әлеуметтік жауапкершілік пен беделге негізделген банктердің әлеуметтік ортада дұрыс орналасуымен анықталады. Банктердің әлеуметтік жауапкершілігі деңгейі қоғамның тұрақты дамуына ғана емес, сонымен қатар банктердің тұрақтылығына да тікелей әсер етеді.

Әлеуметтік-экономикалық қатынастардың жаһандануы ғылыми-техникалық прогрестің динамикасын қалыптастырады, оқу процесіне жаңа қиындықтар туғызады және еңбек көші-қоны ағынын күшейтеді. Жаһандану процесі сауда, білім және технологиялар алмасу саласындағы мүмкіндіктерді арттырып қана қоймай, сонымен бірге ұлттық экономикалардың жалпы экономикалық жағдайға өзара әсер етуімен және экономикалық қатынастарға қатысушылардың мінез-құлқымен байланысты тәуекелдерді арттырды. Халықаралық сауда мен ынтымақтастық жүйесіне тек қана экономикалық дамудың әртүрлі деңгейіндегі елдер мен аймақтардың өкілдері ғана емес, сонымен бірге әртүрлі саяси жүйелер мен мәдениеттердің өкілдері де қатысады. Кейбіреулер үшін қалыптасу болып көрінетін нәрсе – шарт жасасу үшін ауызша келісім жеткілікті, ал басқалары үшін бұл – бизнесті жүргізудің қолайсыз түрі. Әлемдік институт құру жағдайында бірыңғай іскери мәдениетті қалыптастыру қажеттілігі туралы айтуға болады.

Корпоративтік әлеуметтік жауапкершілік мәселесі бұқаралық ақпарат құралдарында және көрнекті ғалымдардың ғылыми еңбектерінде көбірек көрініс тауып келеді. Бизнестің әлеуметтік жауапкершілігі кең екенін түсіну керек.

Қазақстандағы күрделі экономикалық жағдайға байланысты банк секторындағы ресурстық және клиенттік база үшін бәсекелестік күшейіп келеді. Көптеген қиындықтарға қарамастан, қазақстандық банктік қызмет көрсету нарығы жаңа экономикалық және әлеуметтік жағдайларға бейімделіп, баяу дамып келеді. Бір жағынан, отандық коммерциялық банктер бәсекеге қабілеттілікті арттырудың жаңа құралдарын іздейді. Екінші жағынан, банктік қызметтерді тұтынушылар арасында құндылық жүйесінде шамалы өзгеріс бар: клиенттер талап етілетін, қаржылық сауатты және таңдаулы бола бастайды, олардың басымдықтарында өнімнің бағасы ғана емес, сонымен қатар қызмет көрсету сапасы – қызмет көрсету ыңғайлылығы мен жылдамдығы, қызметкерлердің біліктілік деңгейі артады. Бұл фактор банк пен клиенттің өзара әрекеттесу технологиясын дамыту мен жетілдірудің маңыздылығын арттырады.

Бүгінгі таңда бүкіл әлемдегі ұйымдар өз қызметінде әлеуметтік жауапкершілік принциптерін ұстанудың маңыздылығы мен артықшылықтары туралы мәселені көтеріп келеді. Қазіргі әлемдегі әлеуметтік жауапкершілік – бұл сән үрдісі емес, компанияның тиімді жұмыс істеуі және қоғамның тұрақты дамуы үшін қажетті шарт.

Коммерциялық банктердің әлеуметтік жауапкершілігі – бұл тұрақты дамуға ықпал ететін, мүдделі тараптардың үміттерін ескеретін, қолданыстағы заңдарға сәйкес келетін және халықаралық стандарттар мен қаржылық есептілік стандарттарына сәйкес келетін, тұрақты дамуға ықпал ететін мөлдір және этикалық мінез-құлық арқылы банктің шешімдері мен қызметінің қоғамға және қоршаған ортаға әсері үшін жауапкершілік. Банктің қызметінде және оның қатынастарында үнемі қолданылады.

Түйін сөздер: әлеуметтік жауапкершілік, коммерциялық банктер, жаһандану, әлеуметтік жауапты бизнес, тренд, корпоративтік әлеуметтік жауапкершілік.

А. Бимуратова¹, Е. Токарева², А. Махатова³, А. Череп⁴

¹Каспийский Общественный Университет, Алматы, Казахстан;

²Университет Нархоз, Алматы, Казахстан;

³Университет дружбы народов им. академика А. Куатбекова, Шымкент, Казахстан;

⁴Запорожский национальный университет, Украина

МИРОВОЙ ОПЫТ СОЦИАЛЬНОЙ ОТВЕТСТВЕННОСТИ БАНКОВ

Аннотация. Коммерческая деятельность банков напрямую влияет на общество, в котором они функционируют, а будущие успехи в бизнесе тесно связаны с ключевыми общественными ценностями. Учитывая специфику деятельности коммерческих банков, доверие становится одним из важнейших условий нормально функционирующего рынка банковских услуг, а уровень получаемой прибыли все больше обуславливает не технология оказания услуг, а правильное позиционирование банков в социальной среде, основанное на социальной ответственности и репутации. Уровень социально ответственного поведения банков оказывает непосредственное влияние не только на устойчивое развитие общества, но и на устойчивость самих банков.

Глобализация социально-экономических отношений формирует динамику научно-технического прогресса, ставит новые вызовы процессу образования, усиливает потоки миграции трудовых ресурсов. Процесс глобализации привнес не только расширение возможности в сферах торговли, обмена знаниями и технологиями, но и одновременно повысил риски, обусловленные как взаимным влиянием национальных экономик на общую экономическую конъюнктуру, так и поведением участников экономических отношений. В систему международной торговли и кооперации вовлечены представители, представляющие не только различные по степени экономического развития страны и регионы, но и представители различных политических систем и культур. То, что для одних кажется нормой – для заключения контракта достаточно бывает устной договоренности, для других является неприемлемой формой ведения бизнеса. И здесь скорее можно говорить о необходимости формирования единой деловой культуры на фоне глобального институционального строительства.

Проблема корпоративной социальной ответственности все больше отражается в средствах массовой информации и научных трудах выдающихся ученых. Следует понимать, что социальная ответственность бизнеса гораздо шире, чем принято считать.

В связи с непростой экономической ситуацией в Казахстане происходит обострение конкурентной борьбы за ресурсную и клиентскую базу в банковской сфере. Несмотря на многие проблемы, казахстанский рынок банковских услуг развивается медленно, постепенно адаптируясь к новым экономическим и социальным реалиям. С одной стороны, отечественные коммерческие банки ищут новые инструменты повышения конкурентоспособности. С другой – прослеживается некоторое изменение ценностной системы у потребителей банковских услуг: клиенты становятся все более требовательны, финансово грамотны и избирательны, в их приоритетах не только цена продукта, но и качество сервиса – удобство и скорость обслуживания, уровень квалификации персонала. Данный фактор повышает важность разработки и совершенствования технологий взаимодействия банка с клиентом

Сегодня организации по всему миру поднимают вопрос о важности и преимуществах соблюдения принципов социальной ответственности в своей деятельности. Социальная ответственность в современном мире не модный тренд, а обязательное условие эффективного функционирования компании и устойчивого развития общества.

Социальная ответственность коммерческих банков – это ответственность за воздействие решений и деятельности банка на общество и окружающую среду через прозрачное и этическое поведение, которое содействует устойчивому развитию, учитывает ожидания заинтересованных сторон, соответствует применяемому законодательству и согласуется с международными нормами поведения и стандартами финансовой отчетности, всесторонне интегрировано в деятельность банка и постоянно применяется в его взаимоотношениях.

Ключевые слова: социальная ответственность, коммерческие банки, глобализация, социально ответственный бизнес, тренд, корпоративная социальная ответственность.

Information about authors:

Bimuratova Aigerim, third year doctoral student, Department of Finance, Caspian University, Almaty, Kazakhstan; b_aika01@mail.ru; <https://orcid.org/0000-0002-2700-8198>

Tokareva Elena, Senior Lecturer, Department of Management, Narxoz University. Almaty, Kazakhstan; elgentokareva@mail.ru; <https://orcid.org/0000-0002-8709-8199>

Makhatova Adelina, Associate Professor, PhD of the Department of Economics, Akademik A.Qyatbekov atyndagy Halyqtar dostygy yniversiteti, Shymkent, Kazakhstan; m_adelina@mail.ru; <https://orcid.org/0000-0001-9777-5782>

Cherep Alla, Academician professor Dr. oec, Zaporizhzhya National University, Ukraine; cherry.av.znu@gmail.com; <https://orcid.org/0000-0001-6390-3192>

REFERENCES

- [1] Zhantore U.N. Research on Corporate International Social Responsibility reporting of Chinese International enterprises' in Kazakhstan// *Bulletin of National Academy of sciences of the republic of Kazakhstan*// ISSN 1991-3494 Vol. 5, N 381 (2019), 36–42.
- [2] Freeman I., Hasnaoui A. The meaning of corporate social responsibility: The vision of four nations // *Journal of Business Ethics*. 2011. P. 419-443.
- [3] Azizul M., Deegan C. Motivations for an organization within a developing country to report social responsibility information: evidence from Bangladesh // *Accounting, Auditing & Accountability Journal*. 2008. P. 850-874.
- [4] Dyusembaeva L.K., Babazhanova Zh.A., Bulakbay Zh.M., Nurbayeva G.Y. Strategy of interaction of the state and small business as a factor of innovation // *Bulletin of National academy of science*. 2019. P. 117-121. DOI <https://doi.org/10.32014/2019.2224-5294.17>
- [5] Matten D., Moon J. Implicit and explicit CSR: a conceptual framework for a comparative understanding of corporate social responsibility. *Academy of management Review*. 2008. P. 404-424.
- [6] Cumming D., Hou W., Lee E. Business Ethics and Finance in Greater China: Synthesis and Future Directions in Sustainability, CSR // *Journal of Business Ethics*. 2016. P. 601-626.
- [7] Mazhitov D., Moldashbayeva L., Jrauova K. The impact of monetary policy on central bank assets: the case of the National bank of Kazakhstan// *News of the National Academy of Sciences of the Republic of Kazakhstan. s Series of social sciences and humanities* // ISSN 2224-5294 <https://doi.org/10.32014/2019.2224-5294.230> Vol. 6, N 328 (2019), 189–193.
- [8] Vovk V.Y., Zhezherun Yu.V., Kostohryz V.G. Bank lending to small and medium-sized enterprises: the experience of Ukraine and Poland// *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*// ISSN 1991-3494 Vol. 2, N 378 (2019), 70–78. <https://doi.org/10.32014/2019.2518-1467.42>
- [9] Nuryмова S., Yessentay A., Khalitova M., Jumabayev Y., Mohd-Pisal Zainal Kazakhstani financial sector performance features under current conditions// *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*// ISSN 1991-3494 Vol. 1, N 377 (2019), 130–144. <https://doi.org/10.32014/2019.2518-1467.16>
- [10] Kaliyev K.S., Nurmakanova M. So called “Private” ownership structure in Kazakhstani banking business model. Industry performance evaluation// *News of the National Academy of Sciences of the Republic of Kazakhstan. Series of social sciences and humanities* // ISSN 2224-5294 <https://doi.org/10.32014/2019.2224-5294.223> Vol. 6, N 328 (2019), 139–154.
- [11] Kendyukh Y.I., Kendyukh I.G., Tsapova O.A., Mikhailova N.Yu. Role of finance in the development of international economic relations// *News of the National Academy of Sciences of the Republic of Kazakhstan. Series of social sciences and humanities* // ISSN 2224-5294 <https://doi.org/10.32014/2019.2224-5294.228> Vol. 6, N 328 (2019), 178–183.
- [12] Wang H., Tong L., Takeuchi R. et al. Corporate Social Responsibility: An Overview and New Research Directions Thematic Issue on Corporate Social Responsibility // *Academy of Management Journal*. 2016. P. 534-544.
- [13] Belal A.R., Momin M. Corporate social reporting in emerging economies: a review and future direction. *Research in accounting in emerging economies*. 2009. P. 119-143.
- [14] Gumar N.A., Seisenbayeva A.M., Kurmangaliyeva L.A., Aubakirova Zh.B. Crediting in the Republic of Kazakhstan enterprises of small businesses as special subjects of market economy// *News of the National Academy of Sciences of the Republic of Kazakhstan. Series of social sciences and humanities* //ISSN 2224-5294 <https://doi.org/10.32014/2019.2224-5294.51> Vol. 2, N 324 (2019), 74–83.
- [15] Scott W.R. Institutional theory: Contributing to a theoretical research program. *Great minds in management. The process of theory development*, 2005. P. 460-485.
- [16] Martínez-Ferrero J., Garcia-Sanchez I.M., Cuadrado-Ballesteros B. Effect of financial reporting quality on sustainability information disclosure // *Corporate Social Responsibility and Environmental Management*. 2015. P. 45-64.
- [17] Bagnoli M., Watts S.G. Voluntary assurance of voluntary CSR disclosure // *Journal of Economics & Management Strategy*. 2016.
- [18] Shamuratova N.B., Amirova G.K., Baitilenova E.S. Analysis of realized measurements of financial literacy// *News of the National Academy of Sciences of the Republic of Kazakhstan. Series of social sciences and humanities* // ISSN 2224-5294 <https://doi.org/10.32014/2019.2224-5294.232> Vol. 6, N 328 (2019), 200–208.
- [19] Rao K., Tilt C. Board composition and corporate social responsibility: The role of diversity, gender, strategy and decision making // *Journal of Business Ethics*. 2015. P. 1-21.
- [20] Abenova M.H. Foreign experience of development of innovative potential of small and medium entrepreneurship// *News of the National Academy of Sciences of the Republic of Kazakhstan. Series of social sciences and humanities* // ISSN 2224-5294 <https://doi.org/10.32014/2019.2224-5294.63> Vol. 2, N 324 (2019), 165–169.

G. R. Absattarov

Kazakh Ablai khan University of International Relations and World Languages, Almaty, Kazakhstan

SYSTEM-POLITICAL CHARACTERISTICS OF LEGAL CULTURE

Abstract. The article based on the materials of Kazakhstan examines the system and political characteristics of legal culture that have not been studied in political science yet. The paper also regards in more detail the politological aspects of the essence, concept, and definition of Kazakhstani legal culture.

Based on the studies, it was concluded that the legal culture of Kazakhstan as a complex systemic formation is a combination of material and spiritual achievements in the legal, political life of Kazakhstani society. Thus, the level of legal culture of Kazakhstan reflects the degree of maturity of the Kazakh citizen's civilization, his way of thinking and behavior standards. At the same time, it acts as a meaning-bearing and meaning-determining aspect of Kazakhstani human practice and its results in the legal, political life of society. Legal culture is a political phenomenon, a certain nature and level of activity of an individual, during which he/she gains or develops his/her legal, moral and political knowledge, skills. At the same time, the article focuses on issue discussion.

Key words: system, politics, law, culture, society, state, characteristic, essence, notion, definition, justice, humanism, personality, consciousness, law and order.

As a scientific review of socio-political literature shows, the system - political characteristic of legal culture has not yet been the subject of research in political science. Therefore, based on concrete materials of Kazakhstan, a political science study of the concept and definition of legal culture has both theoretical and practical significance.

The politological analysis of Kazakhstan's legal culture is based on a philosophical methodology, which includes general scientific methods, specific scientific methods, general methodological principles of sociology, political science, law, etc.

Proceeding from the objectives facing our study, in Kazakhstani legal culture, its concept, its deep foundation, and hence its socio-economic, political content, etc. should be revealed.

Changes in the socio-political, legal life of Kazakhstan cannot leave indifferent citizens, their consciousness, thoughts, feelings, emotions. From a psychological point of view, an adaptation of a Kazakhstani to new conditions is often a painful and complicated process.

The socio-political and legal life of Kazakhstan is impossible without the institutionalization of the relationship between people. In any sphere of activity of Kazakhstani society, a clear organization of relations between individuals is objectively necessary, which is achieved by developing appropriate regulations of behavior and means to secure order.

The study of the socio-political system of Kazakhstan, the norms, rules of conduct, requirements, ideals in it allows us to determine the essence of regulatory prescriptions, to identify their unity or inconsistency depending on the tasks solved by Kazakhstani society, their focus under the urgent needs and interests of the nation. The system for regulating the behavior of Kazakhstanis includes public consciousness in all its forms - political, legal, moral, aesthetic, philosophical, religious, relevant norms and certain ways of regulating them.

In the entire Kazakhstan system of socio - political regulation, a special place is occupied by legal regulation [1]. Being one of the forms of socio-political regulation, it is of particular importance in the process of regulation, organizing the behavior of Kazakhstani people. In this regard, it should be noted that the legal regulation in Kazakhstan is organically linked with other forms of regulation of public relations - political, moral, aesthetic, etc. The interconnection of these forms is based on their interaction, mutual complementation, acting as part of a unified holistic system of socio-political regulation of

behavior of Kazakhstanis. This interaction is one of the essential conditions for increasing the efficiency of the entire Kazakhstan system.

Legal regulation in Kazakhstan includes all types of impact of legal norms, first of all, on the consciousness and, ultimately, on the behavior of citizens as a prerequisite for securing coordinated interests in Kazakhstani society [2].

It should be mentioned that clear, effective functioning of the entire Kazakhstan system of legal regulation is directly dependent on the level, status of the legal culture of the Kazakhstani individual, the social layers of the whole Kazakhstan society. Each of the elements of the legal culture in Kazakhstan acts as a subsystem of the general Kazakhstan system. So, the general dynamic Kazakhstani system of legal culture functions, all the elements of which act in a functional unity.

In this regard, we will determine the boundaries of the legal culture of Kazakhstan based on the understanding of Kazakhstan culture in general.

In the social and humanitarian literature of Kazakhstan, there are a large number of interpretations of the notion "Kazakhstan culture", which has been used in scientific everyday life since the end of the 20th century. During this time, various approaches to understanding the essence of Kazakhstan culture (multinational culture) have accumulated in the social and humanitarian scientific literature.

Among the various definitions of Kazakhstan culture, noteworthy are, first of all, those that reflect the connection between the transformation of the world by people, the formation and development of Kazakhstani people themselves, and the more complete realization of their generic nature, i.e. humanistic accent. In this conceptual connection, not a Kazakhstani person is a means of Kazakhstani culture, but the Kazakhstan culture itself, containing and creating the meaning-forming bases of its life, initially finds in Kazakhstani human, his formation and development, his progressive "humanization, enculturation" his goal. At the same time, it "stores and transfers from generation to generation and generates programs of activity, behavior, and communication of people" [3].

Kazakhstani culture is a kind of synthesis of the diverse processes, forms and results of life-sustaining activity of Kazakhstani people and Kazakhstani society, which provide themselves with multinational, multiconfessional cultural phenomena only in a strictly defined specific and diverse sense. Therefore, the essence of this relationship is recorded in the impact that is exerted by the "processes", "forms" and "results" on the improvement of the essence of Kazakhstani people. At the same time, it is no coincidence that the idea of Kazakhstan's cultural progress is associated with the preservation and cultivation of everything that helps Kazakhstani people to freely and independently put their life forces in improving the conditions and processes of their life in those ways that, changing the environment, make it more "humane, humanistic, civilized", more adapted and secure for the Kazakhstan community life. Therefore, since the activity of a Kazakhstani person is impossible without the establishment of standards, norms, stereotypes of behavior that organize his activities, these norms, standards, stereotypes are organically included in the content of multinational Kazakhstani culture. This approach allows us to more fully reveal the sociocultural and political meaning of norms and values, their role in the development of cultural and political processes, the inconsistency of norms related to the various stages of cultural development of a multiethnic, multiconfessional Kazakhstani society, the continuity of norms, values, and traditions as ways of the historical and political process of formation and the development of multinational Kazakhstani culture. Moreover, the culture of modern Kazakhstan is "a culture of moderation, a culture of prosperity, not a luxury, it is a culture of rationality" [4].

Kazakhstani culture is generated and developed within regulatory boundaries in the socio-political space. At new stages of development, new standards arise that meet the achieved level of needs and interests of Kazakhstani society. It should be noted that the normative characteristic is one of the important political aspects of Kazakhstani culture. The values and norms in the political process give the most complete picture of the essence of the multinational culture of Kazakhstani society, the position of the Kazakhstani person in it, the boundaries and forms of its activity, a qualitative assessment of the freedom of the Kazakhstani personality, his/her capacities of cultural creativity, etc.

It should be emphasized that the socio-cultural and economic-political progress of Kazakhstani society is at the same time progress of its regulatory norms. The development of the regulatory structures of a particular Kazakhstani society well-defined characterizes the development of such an integral part of the Kazakhstani culture as the legal culture of Kazakhstani people and finds itself in Kazakhstani law. It

concentrates all the most important socio-political principles and norms, which at different times gave this institution a peculiar coloring following the economic system, political order, and culture of Kazakhstani society.

In such a way, legal relations in Kazakhstan are a certain expression of Kazakhstani culture at a particular historical and political stage of development. The level of legal culture of Kazakhstani people is determined, first of all, by the achieved level of material and spiritual culture of Kazakhstan. In the process of the positive realization of freedom by a Kazakhstani person, each of his actions, including in the legal sphere, acquires significance only in a specific axiological aspect, only concerning the existing historical and political givenness. The legal culture of the population of Kazakhstan as an important component not only of the culture of Kazakhstan, but also of humanity actualizes those layers of the accumulated valuable, moral and political experience that are most consonant with its initial axiological attitudes, emerging based on relevant socio-economic and socio-political factors.

We note that the place of Kazakhstani law in the system of socio-political values is due to how it is considered as a value - means or value - a goal. From this point of view, as practice shows, it can be a derivative value and can have its value. Moreover, Kazakhstani law, the legal civilization of Kazakhstan is an integral component of Kazakhstani human culture, its important achievement. Therefore, it has its value. So, the change of formations, changes in the socio-political structure of Kazakhstani society, its ideology and psychology, political struggle - all this objectively determines the qualitative changes in the content of Kazakhstani law, its institutions and norms. As Asian and world experience shows, reactionary state power through legislation and other legal measures may try to slow down the course of social and political development. However, historically the framework for law action, which impedes the evolution of a given society and the political process, or, conversely, tries to step through the necessary stages, phases of development, as a rule, are of short duration and short-sighted.

We emphasize that acting as an important and necessary means of public administration, as a form of implementation of public policy, Kazakhstani law is at the same time an important indicator of a person's position in Kazakhstani society, the guarantee of his rights, freedoms, a means, a tool for their protection and implementation. The rights, freedoms, and responsibilities of a Kazakhstan citizen, which constitute the legal status of a person, are an important component of Kazakhstani law, which is very significant for assessing the development and democracy of a given legal system and for determining a legal person [5]. Kazakhstani law in its true sense considers a human, his good as a goal, and not as a means of functioning of Kazakhstani society.

In this regard, the question arises, what is the essence of the legal culture of Kazakhstan? The legal culture of the population of Kazakhstan along with the norms and values of Kazakhstani law is an element of the socio-regulatory culture of Kazakhstani society as a whole. This is a system of real and ideal elements related to the scope of Kazakhstani law and their reflection in the consciousness and behavior of Kazakhstani people. The legal culture of Kazakhstan is the collection of all the positive components of the legal, moral and political reality of Kazakhstani society in its actual functioning. The legal culture of Kazakhstani society embodies the achievements of legal, moral and political thought, legal policy and the level of legal, political awareness.

Here it should be noted that the legal culture of Kazakhstan acts as a political phenomenon that has a clearly defined target orientation, encompassing the totality of the most important value components of legal, socio-political reality in its functioning, genesis. It refers to the system of pan-Kazakhstan, universal values. This is an integral component of the Kazakhstani democratic society, the subordination of the rule-of-law state to civil society, guaranteeing the rights and freedoms of every Kazakhstani person. Finally, the legal culture of Kazakhstan is a combination of all the components of the country's legal system in their actual functioning in favour of the progressive development of the country's socio-political reality.

It should be pointed out that the legal culture of Kazakhstan as a socio-political phenomenon in the collection of its structural elements is more ambitious than Kazakhstani law. It is determined by the whole variety of socio-political, cultural and economic life of Kazakhstan people. The legal culture of Kazakhstan reflects not only socio-economic relations and material conditions of public life, but also the historical, cultural, religious, moral principles of socio-political activity and behavior of Kazakhstani people in a particular society at a certain stage of its development. The abstract legal culture in Kazakhstan does not exist, just as there are no abstract Kazakhstani law, no abstract Kazakhstan legal consciousness

and no abstract Kazakhstan legal activity of subjects of legal, moral and political relations in the country. We are talking here about the legal culture of a specific Kazakhstani society, a certain Kazakhstani society of specific historical, political layers of its development. Along with this, the lessons of the passed stages of Kazakhstan, as E.K. Aliyarov and Z.K. Ayupova correctly note, “can have a great impact on the correct understanding of the future path of our state” [6].

In this regard, it should be noted that at present in the scientific literature of Kazakhstan and the CIS, there are about 260 definitions of legal culture, considering it as a historical, legal, social and philosophical phenomenon. At the same time, it should be considered, in our opinion, also as a political phenomenon.

Indeed, understanding the numerous, sometimes contradictory definitions of legal culture in the socio-political space is also very difficult due to the lack of a common understanding of culture as a more general category in social and humanitarian science.

The scientific and political science study of the legal culture in Kazakhstan in its constant dynamics, change, and development in specific historical, political conditions and circumstances, through the prism of historical continuity, should be carried out by the principle of historicism. At the same time, as is known, the historical is closely connected with the logic. Being socio - philosophical categories, the historical and the logical reveal important features of the development process, as well as the relationship between the logical development of thought and the real history of the subject, e.g., the legal culture of Kazakhstan. The historical expresses the structural and functional processes of the emergence and formation of the legal culture of Kazakhstan in the socio-political space. The logical expresses those correlations, laws, relationships, and interactions of its constituent elements that exist in the developed state of the object, etc. in the political process.

Therefore, to determine which of the contexts in the understanding of the legal culture of Kazakhstan is preferred, in our opinion, it is necessary to determine how the Kazakhstani legal culture relates to the legal system of Kazakhstan society.

First of all, in the scientific literature of Eurasia, there are a variety of opinions about the place of legal culture in the legal system of society [7]. Sometimes it is considered as an element of one of the subsystems of the legal system. For example, in particular, some researchers identify legal culture with legal consciousness, offering to understand it as a complex of representations of one or another community of people about law, its implementation, about the activities of government bodies, officials, and other researchers include it in the content of legal ideology. Recently, in the scientific literature of Eurasia, legal culture is increasingly being defined extremely broadly, including law, legal relations, legal awareness, legality, etc. and identifying it, thereby, with the entire legal system.

Sometimes the legal system is separated from the legal culture on the basis that the concepts denoting these phenomena belong supposedly to two different theoretical levels - philosophical and concrete sociological, respectively. It is thought that such concepts as the legal system, legal culture, the state, the law, etc., can be studied at both the first and second levels; the transition from the first to the second level of scientific analysis and vice versa does not at all require the replacement of one concept with another if one and the same phenomenon is investigated.

We emphasize that the legal culture of Kazakhstan, given the foregoing, cannot be recognized as an element of one of the subsystems, e.g., an element of legal consciousness, part of legal education, etc. Herewith, the identification of the Kazakhstani legal culture with the legal system is also unacceptable.

In this regard, the following issue arises that needs to be resolved - is it possible to consider Kazakhstani legal culture as an independent element of the legal system of Kazakhstan, since such an approach to solving the question of their relationship also takes place in the scientific literature. For example, many scholars have called legal culture as an element of the legal system.

Kazakhstani legal culture is not just a part or area of the legal system of Kazakhstan, but how its qualitative characteristics is inherent in all areas of the legal, moral and political life of Kazakhstani society, permeates these spheres and is a well-known atmosphere (for example, of legality, legal, political freedom, socio-political justice, respect for the law, for the right) of the life of this society. Therefore, a different understanding of Kazakhstani legal culture as a phenomenon entails the origination of different approaches to understanding its structural components, etc.

Despite the different approaches, various researchers most often call: knowledge of law; attitude to law; legal skills as the mandatory components of the legal culture of Kazakhstan. In this regard, it is necessary to note the following two main points: the first - the legal culture of Kazakhstan cannot be identified with either the legal system of Kazakhstani society or its individual element (an element of one of the subsystems of the legal system of Kazakhstan). It is a concept that allows you to describe the quality state of the legal system and its components. However, the legal culture of Kazakhstan cannot be considered as a level characteristics that reflects the degree of development of one legal system in comparison with others, it allows us to compare legal systems precisely in terms of generality and differences in their properties. The second point, structurally, the legal culture of Kazakhstan is represented by spiritual and material components, while the fundamental component is the spiritual component [8], which largely determines the quality state of written Kazakhstan law, law-making and law-enforcement activities of citizens, law and order in the country. The material legal culture of Kazakhstan should be regarded as the material expression of the Kazakhstani spiritual legal culture.

It should be emphasized that the legal culture of Kazakhstan is an extremely capacious concept, its social significance in many ways exceeds the boundaries of the normative impact of Kazakhstani law on socio-political relations, since, being an integral part of the general Kazakhstani universal human culture, Kazakhstani legal culture directly or indirectly affects the formation of consciousness and the activities of the personality of a Kazakhstani human in various spheres of life of Kazakhstani society. Therefore, it is no coincidence that the overwhelming majority of Kazakhstan's problems of creating run-of-law state and civil society are directly related to the formation and development of Kazakhstan's legal culture.

The legal culture of Kazakhstan can be fully disclosed only in the context of socio-political progress since it is inconceivable without its progressive orientation. In this context, the legal culture of Kazakhstan is interpreted through the prism of the formation of the personality of the Kazakhstani human, who begins to realize and then demand and create legal, political means of protection of his nascent, developing freedom, rights, and autonomy. Understanding of the legal culture of Kazakhstan as a socio-political phenomenon, reflecting the level and nature of the progressive achievements of Kazakhstani society in the legal, political sphere relating to the subjects of political and legal regulation, allows us to single out the concept of the legal culture concerning the personality of the Kazakhstani.

Consequently, the legal culture of Kazakhstan is characterized not only by the current level, but also by its internal potential [9]. From this point of view, the legal culture of a Kazakhstani person is a certain character and level of creative activity. Thus, the level of legal culture of Kazakhstan reflects the degree of maturity, a civilization of the Kazakhstani person, his way of thinking and norms of behavior.

The legal culture of Kazakhstan as a complex systemic formation is a combination of material and spiritual achievements in the legal, political life of Kazakhstani society. It acts as a meaning-bearing and meaning-transmitting aspect of Kazakhstani, human practice and its results in the legal, political life of society. Therefore, in turn, the legal culture of the Kazakhstani person is expressed in the ideas of citizens as subjects of law, politics about legal, political phenomena, which are put into practice as a style of their activity. Moreover, the legal culture of Kazakhstan both determines the forms of life of a citizen and is a way of realizing his creative capacities.

Herewith it should be said that the formation process of the legal culture of Kazakhstani person is characterized by versatility, a large set of components, a variety of ratios of qualitative and quantitative, objective and subjective factors, a variety of forms and manifestations, and development dynamics. This inevitably entails certain differences in the legal culture of specific Kazakhstan people, which allows us to talk about the levels and types of legal culture of the Kazakhstani person.

The legal culture of Kazakhstan serves as a channel of "interaction, mutual respect of the individual, society and the state" [10]. Its main purpose is to carry out not the removal, but the accession of Kazakhstanis to society and social activities. It is associated with such essential features as purposefulness, the execution of power in the state and society, which regulates the impact on the entire spectrum of socio-political relations of the country. The legal culture of Kazakhstan is becoming a real tool for social, political and economic transformations, modernizations that have a significant impact on the functioning of the political and legal system of our state and civil society in general.

Based on the results of existing investigations of the legal policy and legal culture of Kazakhstan, it is possible to characterize the Kazakhstani legal culture as the degree of mastery of law, politics in action, in

particular, self-consciousness, responsibility in implementing the standards of law, politics, creative orientation towards common Kazakhstani universal values and norms, and also features of the national culture in conflicting political and legal situations, suggesting in its highest manifestation an intuitive political and legal behavior, participation in law-making activity and in the development of the country's public policy. So, Kazakhstani legal culture as a socio-political phenomenon is a complex phenomenon, a certain unity of the universal, the special and the single. The efficiency of each element in the general mechanism of influence on the Kazakhstani people varies depending on a whole complex of factors, including time, socio-political space, economic situation, political situation. Each component of this mechanism can be a determining element subject to the impact on the consciousness and legal consciousness of the personality of the Kazakhstani person and Kazakhstani society in general [11].

The legal culture of the population of Kazakhstan performs the basic functions of a common culture: it satisfies socio - political needs, affects social - political - legal reality, depending on creative activity, legal, political knowledge, and finally, the intelligence of each Kazakhstani individual. Moreover, even the most radical measures, laws, reforms, socio-political "modernizations" that do not take into account the human factor, the role of the Kazakhstani person in creating new socio-political reforms, which do not take into account the established traditions of the legal culture of multinational, multiconfessional Kazakhstan, its value orientations do not bring the desired results or cause socio - political disasters, etc.

Here we note that the socio-political function of the legal culture of Kazakhstan in many ways exceeds the boundaries of the regulatory impact of Kazakhstani law on public relations. It directly or indirectly affects the formation of consciousness and activity of various layers of Kazakhstani society, their socio-political relations, directions and rates of development of socio-political structures. Influencing the object of its application, the legal culture of Kazakhstan is in a dynamic state. The general direction of its development is progressive, however, this fact does not exclude stages of the possibility of a "backward" movement, a kind of regression. Then the legal culture of Kazakhstan becomes one of the levers of negative forces in society, holding progressive development. Thus, the legal culture in Kazakhstan, being the most dynamic component of the general culture of the society, is at the same time most affected by the changes generated by the main trends of modernization of Kazakhstani society. Herewith, the main priority factor in this process is the activity of the Kazakhstani people that concentrates the main trends of socio-political reality, and, therefore, the essential characteristics of the legal culture in Kazakhstani society, any institution of the political and legal system of Kazakhstan or a person of Kazakhstan. All this does not mean ignoring the spiritual aspects of the legal culture of the population of Kazakhstan. That is why thinking and activity create the fundamentals of the legal culture of Kazakhstani society and the personality of the Kazakhstani people. Moreover, the legal culture covers "all spheres of society" [12].

The legal culture of Kazakhstani society as a system is interconnected with external systems as well as with higher-order systems in which it is included. The functioning of the legal culture of Kazakhstani society is determined, ultimately, by a system of social and economic relations. This determination of the legal culture of Kazakhstani society brings to life such a function as legal support for the process of formation of the new Kazakhstani statehood. The meaning of this function changes as tasks change at one or another stage of the reform of Kazakhstani society. This function can be realized in various ways, including through the formation of the Kazakhstan population's legal knowledge, beliefs, habits, etc., ensuring their legally valid, socio-political - active behavior in the legal, socio-political sphere. It is important to acquire the skills of the legal system of Kazakhstan. In all likelihood, this is one of the main functions of the legal culture of Kazakhstani society today.

Recently, in the Eurasian scientific literature, a new concept is used of the opposite legal culture, the so-called "legal anti-culture", formulated by A.S. Bondarev, which "is a fusion in the legal consciousness and legal behavior of legal entities opposed to its legal culture of legal elements: ignorance of law, or superficial, fragmentary legal knowledge, legal prejudices, negative legal attitudes, legal passivity, or social illegal activity" [13].

Unfortunately, legal anti-culture as a new phenomenon in the socio-political space of society is undeservedly ignored by political science, including Kazakhstan.

The separation of the independent term "legal anti-culture", reflecting the opposite of legal culture, is proposed in the scientific literature as theoretically methodologically justified. Legal anti-culture is not

only a problem of legal, but also political sciences. This topic is for a separate independent political science study both in Kazakhstan and in the CIS countries.

The above-mentioned issues show that the legal culture of multinational, multiconfessional Kazakhstan is a complex political phenomenon that is studied from different perspectives, points of view. It is important to note that the different approaches of lawyers, sociologists, philosophers and political scientists, in general, do not contradict, do not oppose each other, but, on the contrary, mutually enrich each other and clearly illustrate the diversity, richness of the essence of legal culture, as in Kazakhstan, so in the modern world.

Because of this, it should be emphasized that the political science definition of the legal culture of Kazakhstan expresses essentially the socio-political connection and interaction of the person, state and society, and in this capacity, such an assessment acts as a systemic-political characteristic of the legal culture.

The legal culture of Kazakhstan is a political phenomenon, a certain nature and level of activity of the Kazakhstani person, in the process of which she/he gains or develops her/his legal, moral and political knowledge, skills. Besides, the legal culture of Kazakhstan can exist both as a result of the education of a legal person, and as a result of cultural activities in the field of law and politics [14].

Summing up, we can say that, firstly, the Kazakhstani legal culture is the installation that makes up the moral, social, political maturity bases of Kazakhstani society; secondly, the main requirement for the effectiveness of Kazakhstani legal culture is the improvement of the quality and level of socio-legal, political life of society and the country's personality. This can be expressed in ensuring guarantees of the status of citizens, in the coherence and predictability of the actions of the political power of Kazakhstan; thirdly, the Kazakhstan legal culture essentially acts as an expression, a reflection of both the essence of the content and functions of the rule-of-law state and the result of the implementation of the legal policy of the Republic of Kazakhstan.

Ғ. Р. Әбсағтаров

Абылайхан атындағы Қазақ халықаралық қатынастар және әлемдік тілдер университеті,
Алматы, Қазақстан

ҚҰҚЫҚТЫҚ МӘДЕНИЕТТІҢ ЖҮЙЕЛІК-САЯСИ СИПАТТАМАСЫ

Андатпа. Мақалада саяси ғылымда әлі зерттелмеген құқықтық мәдениеттің жүйелік – саяси сипаттама мәселелері Қазақстанның материалдарында қарастырылады. Мақалада қазақстандық құқықтық мәдениеттің мәнінің, түсінігінің және анықтамасының саяси аспектілері егжей-тегжейлі зерттеледі. Қазақстанның құқықтық мәдениетін ғылыми-саяси зерттеуді тарихи сабақтастық призмасы арқылы нақты тарихи, саяси шарттары мен мән-жайлары және оның тұрақты динамикасында, өзгеруінде және дамуында тарихи сабақтастық принциптары арқылы тарихи қағидатқа сәйкес жүзеге асыру қажет. Қазақстанның құқықтық мәдениеті – өте ауқымды ұғым, оның қоғамдық маңыздылығы көп жағдайда қазақстандық құқықтың әлеуметтік-саяси қатынастарға нормативтік ықпал ету шекарасынан асып түсетінін атап өткен жөн, өйткені жалпықазақстандық, жалпыадамзаттық мәдениеттің құрамдас бөлігі бола отырып, қазақстандық құқықтық мәдениет қазақстандық қоғам өмірінің түрлі салаларында қазақстандықтардың санасы мен жеке тұлғасының қалыптасуына тікелей немесе жанама әсер етеді. Демек, құқықтық мемлекет пен азаматтық қоғам құрудың қазақстандық проблемаларының басым көпшілігіне қазақстандық құқықтық мәдениетті қалыптастыру мен дамыту мәселесіне ең тікелей қатысы бар. Қазақстанның құқықтық мәдениеті тек қоғамдық-саяси прогресс контекстінде ғана толық көлемде ашылуы мүмкін екенін атап өту керек, өйткені ол өзінің прогрессивті бағыттылығынсыз мүмкін емес. Бұл контексте Қазақстанның құқықтық мәдениеті қазақстандық тұлғаның қалыптасу призмасы арқылы түсіндіріледі, ол өзінің пайда болған, дамып келе жатқан еркіндігін, құқықтары мен автономиясын қорғаудың құқықтық, саяси құралдарын түсініп, одан кейін талап ете бастайды. Мақалада қазақстандықтардың құқықтық мәдениеті қолма-қол деңгеймен ғана емес, сонымен қатар ішкі әлеуетпен де сипатталады. Осы тұрғыдан алғанда, қазақстандық тұлғаның құқықтық мәдениеті – шығармашылық

қызметтің белгілі бір сипаты мен деңгейі. Осылайша, Қазақстанның құқықтық мәдениетінің деңгейі қазақстандықтардың жетілу дәрежесін, өркениетін, оның ойлау салты мен мінез-құлық стандарттарын көрсетеді.

Жүргізілген зерттеулер негізінде Қазақстанның құқықтық мәдениеті күрделі жүйелі құрылу ретінде қазақстандық қоғамның құқықтық, саяси өміріндегі материалдық және рухани жетістіктер жиынтығы болып табылатындығы туралы қорытынды жасалды. Бұл ретте, ол қоғамның құқықтық, саяси өміріндегі қазақстандық, адамзат тәжірибесінің және оның нәтижелерінің мағыналы және мағыналы анықтаушы аспектісі ретінде әрекет етеді. Құқықтық мәдениет-бұл саяси құбылыс, белгілі бір сипат және жеке тұлғаның қызмет деңгейі, ол процесінде өзінің құқықтық, адамгершілік – саяси білімін, іскерлігін, дағдыларын игереді немесе дамытады. Сонымен қатар, мақалада пікірталас мәселелеріне де назар аударылды.

Түйін сөздер: жүйе, саясат, құқық, мәдениет, қоғам, мемлекет, мінездеме, мәні, түсінігі, анықтамасы, әділдік, гуманизм, тұлға, сана, құқық тәртібі.

Г. Р. Абсаттаров

Казахский университет международных отношений и мировых языков им. Абылай хана,
Алматы, Казахстан

СИСТЕМНО-ПОЛИТИЧЕСКАЯ ХАРАКТЕРИСТИКА ПРАВОВОЙ КУЛЬТУРЫ

Аннотация. В статье на материалах Казахстана рассматриваются вопросы системно – политической характеристики правовой культуры, которые еще не изучены в политической науке. В статье более подробно исследуются политологические аспекты сущности, понятия и определения казахстанской правовой культуры. Научно-политологическое исследование правовой культуры Казахстана в ее постоянной динамике, изменении и развитии в конкретных исторических, политических условиях и обстоятельствах, через призму исторической преемственности необходимо осуществлять в соответствии с принципом историзма. Следует подчеркнуть, что правовая культура Казахстана – чрезвычайно емкое понятие, ее общественная значимость во многом превосходит границы нормативного воздействия казахстанского права на социально-политические отношения, так как, являясь составной частью общекзахстанской, общечеловеческой культуры, казахстанская правовая культура прямо или косвенно влияет на формирование сознания и деятельности личности казахстанца в самых различных сферах жизни казахстанского общества. Следовательно, не случайно, к подавляющему большинству казахстанских проблем построения правового государства и гражданского общества вопроса формирования и развития казахстанской правовой культуры имеют самое прямое отношение. Надо отметить, что правовая культура Казахстана в полной мере может быть раскрыта лишь в контексте общественно-политического прогресса, так как она немыслима без своей прогрессивной направленности. В данном контексте правовая культура Казахстана трактуется через призму становления личности казахстанца, которая начинает осознавать, а затем требовать и создавать правовые, политические средства защиты своей зарождающейся, развивающейся свободы, прав и автономии. В статье отмечается, что правовая культура казахстанца характеризуется не только наличным уровнем, но и внутренним потенциалом. С этой точкой зрения правовая культура личности казахстанца – это определенный характер и уровень творческой деятельности. Таким образом, уровень правовой культуры Казахстана отражает степень зрелости, цивилизованности казахстанца, его образа мышления и стандартов поведения.

На основании проведенных исследований был сделан вывод о том, что правовая культура Казахстана как сложное системное образование представляет собой совокупность материальных и духовных достижений в правовой, политической жизни казахстанского общества. При этом, она выступает как смыслонесущий и смыслопередающий аспект казахстанской, человеческой практики и ее результатов в правовой, политической жизни общества. Правовая культура – это политическое явление, определенный характер и уровень деятельности личности, в процессе которой она приобретает или развивает свои правовые, нравственно – политические знания, умения, навыки. Вместе с тем, в статье уделено внимание и дискуссионным вопросам.

Ключевые слова: система, политика, право, культура, общество, государство, характеристика, сущность, понятие, определение, справедливость, гуманизм, личность, сознание, правопорядок.

Information about the author:

Absattarov Galymzhan Raushanbekovich, candidate of political sciences, Associate Professor, Kazakh Ablai Khan University of International relations and world languages, Almaty, Kazakhstan; absat41@mail.ru; <https://orcid.org/0000-0002-3148-1383>

REFERENCES

- [1] Syzdykova S. Some Issues equating the freedom and rights of citizens in Kazakhstan // Akikat. 2016. N 5. P.104-107 (in Kaz.).
- [2] Concept of the legal policy of the Republic of Kazakhstan for the period 2010 - 2020 // Kazakhstanskaya Pravda. August 27, 2009 (in Russ.).
- [3] Melnik V.A. A modern dictionary of political science. Minsk: Book House, 2019. 186 p. (in Russ.).
- [4] Nazarbayev N.A. Looking into the future: the modernization of public consciousness // Thought. 2017. N 5. 4 p. (in Russ.).
- [5] Absattarov G.R., Kim E.S. Legal person as new socio-political phenomenon // Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. 2018. N 5. P. 129–135.
- [6] Aliyarov E.K., Ayupova Z.K. Improving the legal system of the Republic of Kazakhstan and the contribution of academician S.S. Sartayev in the formation of the rule-of-law state. - Almaty: Economics, 2016. - P. 255. (in Russ.).
- [7] Balakmets I.I., Sokolov A.N. Legal culture: genesis, essence, condition, problems and development prospects. - Kaliningrad, 2012 (in Russ.).
- [8] Zhunistegi K. We Are Afraid Of It // Akikat. 2017, N 6. P. 60-61 (in Kaz.).
- [9] Ibraeva A.S. The Legal Culture of Kazakhstan: The Problem of Formation, the Factor of Development. Almaty: Kazakh University, 2004 (in Russ.).
- [10] Narbayev B. Features of the legal culture of the Kazakh nation: political science aspects // Bulletin of KazNPU. Series of sociological and political sciences. 2018. N 1. 10 p. (in Russ.).
- [11] Absattarov G.R. Legal policy and education of legal culture: Kazakhstani experience. Almaty: Ulagat, 2016. P. 98, 100 (in Russ.).
- [12] Akhmetov A.S. Legal culture and legal education in modern Kazakhstan. Pavlodar: PSPI, 2016. 10 p. (in Russ.).
- [13] Bondarev A.S. Legal anti-culture in the legal space of society. Perm, 2006. 29 p. (in Russ.).
- [14] Absattarov G.R. Political technologies of legal culture education // Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. 2019, T 4. P. 110–115.

T. N. Medvedeva, Y. K. Troyakova

Katanov Khakass State University, Abakan, Russia.

E-mail: Medvedeva-TN@mail.ru, troyakova.julia@yandex.ru

ETHNIC PUBLIC ORGANIZATIONS IN KHAKASSIA

Abstract. The purpose of the study of the legal basis for the activities of ethnic public organizations in Khakassia as exemplified by the Khakass regional public movement of the Khakass people. We study the characteristics of the organizational structure of ethnic public organizations. The author's position is proposed related to the amendment of existing legislation.

Significantly the importance of public associations is increased, since they are not only a means of spiritual unification of ethnic groups, but also help to mitigate national contradictions on the basis of cooperation between the relevant ethnic group and the authorities, with other ethnic groups, these most important factors contribute to the formation of a tolerant attitude to the socio-cultural identity of each nation.

To clarify more deeply the various wordings of the analyzed regulatory provisions the study uses the legal method. Also applied are the methods of historicism, sociocultural determinism, synchronization and diachronization. In addition, a comprehensive and systematic comparative-historical analysis, chronologization, classification and typology of public organizations are used. As a promising method, a retrospective analysis is implemented, which allows you to study life activity and functioning of social organizations of ethnic orientation in evolution.

The authors conclude in the subject of the Russian Federation practically established a regional regulatory – legal framework governing the activity of public organizations of ethnic orientation. It requires the publication of a comprehensive federal law regulating important issues of national, cultural, linguistic revival of the indigenous peoples of Southern Siberia.

Key words: legal foundations, public organizations, legal regulation, Khakass regional public movement of the Khakass people, Republican Council of Elders, charter.

Introduction. Events of the early 1990s were of great importance for the fate of the indigenous peoples of Russia. In December 1991, the Russian Federation was transformed into an independent state (Tolz, 1998, p. 267). During this period, the activity of ethnic public organizations was intensified, and the social and civic position of its members was strengthened. According to Kazakh researchers A.T. Kulsarieva, M.E. Sultanova, Zh.N. Shaigozova formation of national self-identification is a complex process, which takes place at the crossword of many factors (2008, p. 19). The main activity of the ethnic public organizations is to preserve and develop namely the historical and cultural heritage, national identity of the peoples living in the territory of the Republic of Khakassia. Ethnic public organizations are non-profit organizations and the latter continue to be a major focus of research for scholars from a variety of disciplines (Helmig et al., 2003, p. 101). Non-profit organizations contribute to society through their social value creation (Weerawardana et al., 2010, p. 346). The socio-economic and political development of the country, the moral and spiritual state of the people, largely depended on these organizations (Artamonova & Troyakova, 2018, p. 66). Among the local intelligentsia, public associations played a role in the process of growth of citizenship, in the unification of their specific interests. The activities of the latter to preserve the historical and cultural heritage, as well as to strengthen the adaptation and intra-ethnic consolidation of the Khakassians, intensified in the 1991–2000s.

Khakassia, like many other subjects of the Russian Federation is multinational. The region is home to over 100 ethnic groups, the largest of which are Russian and Khakassian, constituting a total of more than 93% of the population (including Russian - 81,7%, Khakassia - 12.1%). One of the main tasks of public

national organizations is to preserve and strengthen the historical traditions of their ethnic group, cultural and national heritage. Currently, there are nine public associations in Khakassia expressing the ethnocultural interests of the Khakass people, of which six are registered organizations.

Methods. The study uses the legal method to clarify more deeply the various wordings of the analyzed regulatory provisions. Also applied are the methods of historicism, sociocultural determinism, synchronization and diachronization. In addition, a comprehensive and systematic comparative-historical analysis, chronologization, classification and typology of public organizations were used. As a promising method, a retrospective analysis is implemented, which allows you to study the life activity and functioning of social organizations of an ethnic orientation in evolution.

Results. The Constitution of the Russian Federation provides the basis for the idea of the right of citizens to association (Clause 1, Article 30) and in accordance with Article 3 of the Federal Law of the Russian Federation of 05.19.1995 No. 82-FZ “On Public Associations”, the right of citizens to public associations includes the right to establish voluntary associations for the protection of common interests and the achievement of common goals; the right to join existing public associations or to refrain from joining them, as well as the right to freely leave public associations. This law guarantees "the constitutional right to association and provides legal conditions and guarantees for everyone to participate in the public and political life of the country". This legal norm is also reproduced in the Constitution of the Republic of Khakassia (Article 26).

In accordance with Russian law, citizens can independently choose the form of organization for the implementation of socially useful goals, and combine their efforts to carry out the corresponding tasks. The Constitution of the Russian Federation says that public associations are equal before the law (clause 4 of article 13).

Ethnic social organizations perform important functions that are associated not only with the fulfillment of socially significant tasks. In some cases, these organizations act as partners of the state, in fact replace it, solving problems that the state system cannot cope with and for which, for many reasons, funds are not allocated. The consequence of this is no accident today one of the trends observed in the analysis of the norms of the Russian legislation, is the actual "transfer" of non-profit organizations for the actions of private of public law in the region.

Decree of the President of the Russian Federation of December 19, 2012 No. 1666 “On Strategy of State National Policy of the Russian Federation for the period until 2025” establishes legal guarantees for the rights of indigenous peoples, measures have been taken to develop national and cultural autonomy, to ensure the rights of citizens and national (ethnic) communities in the sphere of education and development of national languages. In addition, in the sphere of interethnic relations, there are unresolved problems caused by both profound social transformations in the formation of free open society and market economy in modern Russia, and some miscalculations in the state national policy of the Russian Federation. The problems associated with exertions of xenophobia, interethnic intolerance, ethnic and religious extremism, and terrorism remain relevant.

Russian law incorporates the diverse public interests of citizens into the legal sphere and provides public organizations with the opportunity to realize their ethnocultural identity on the basis of the law. This means creation and activities of public organizations are governed by regulatory legal acts relating to various branches of law (Lapaeva, 2015, p. 966).

The activities of ethnic organizations are carried out in accordance with the provisions of the Civil Code of the Russian Federation, Federal Laws of the Russian Federation “On Public Associations”, “On Non-Profit Organizations”, “On State Registration of Legal Entities and Individual employers”, Decree of the Government of the Russian Federation “On Providing Support to Socially Oriented Non-Profit organizations”, Order of the Ministry of Economic Development of Russia “On maintaining registers of socially oriented non-profit organizations – recipients of support, Decision of Government of the Republic of Khakassia “On approval of Concept of Development of Interethnic Relations in the Republic of Khakassia (2012 - 2020)” and other acts.

In accordance with the Civil Code of the Russian Federation, a non-profit organization is a legal entity that does not have a profit as the main goal of its activity and does not distribute the profit between the participants. Non-profit organizations can be created to achieve social, charitable, cultural, educational, scientific and managerial goals, protect health of citizens, develop physical culture and sports,

satisfy the spiritual and other intangible needs of citizens, protect the rights and legitimate interests of citizens and organizations, as well as other goals aimed at achieving public goods (Clause 2, Article 2 of the Federal Law “On Non-Profit Organizations“).

It should be noted the Russian Civil Code enshrines a non-exhaustive list of legal forms of non-profit organizations. As established in paragraph 3 of Art. 50 of this act, legal entities that are non-profit organizations can be created in the form of consumer cooperatives, public or religious organizations (associations), institutions, charitable and other foundations, as well as in other forms prescribed by law. At the level of other federal laws, a variety of organizational and legal forms of non-profit organizations are fixed, sometimes duplicating or repeating each other. In the legal literature there are from 11 to 27 legal forms of non-profit organizations (Marsunova, 2016, p. 462). In our opinion, such situation inevitably entails the unsystematic nature of the system of legal entities. Therefore, an exhaustive list of non-profit organizations should be enshrined in the Civil Code of the Russian Federation.

Article 20 of the Federal Law “On Public Associations” gives a direct indication that the Charter of an association should contain information about the purpose, organizational and legal form, structure of a public association, its governing and control and audit bodies, as well as the procedure for forming the governing bodies of a public association, terms their authority, location of the permanent governing body.

According to the Charter of the Khakass Regional Public Movement of the Khakass People, the main areas of activity are the preparation of proposals and recommendations to public authorities and local self-government of the Republic of Khakassia on the most important issues of the national, cultural, linguistic revival of the Khakass people; educational functioning to protect the interests of the Khakass people (conferences, meetings); revival of traditional forms of management; promotion of healthy lifestyles; assistance in strengthening peace, friendship and harmony between the peoples living in the Republic of Khakassia.

In 1993 the Khakass Regional Public Movement of the Khakass People was created, operates on the basis of the adopted Charter, and is a socially oriented non-profit organization. The main goals of this movement are the struggle to increase the material and spiritual living standards of the Khakass people; work with public authorities and local governments on the problems of the state and development of the Khakass people; preservation and development of the Khakass language; education of the young generation in the spirit of traditions, customs and culture of the Khakass people.

The main tasks of the Khakass Regional Public Movement of the Khakass people are the development and promotion of national culture, the revival of the traditions and customs of the Khakass people; the formation in the public consciousness of the Khakass national identity, the coordination of the labor of the Khakass people, the promotion of a healthy lifestyle, as well as the support of youth and intellectual initiatives that contribute to this direction, the support of the traditional beliefs of the Khakass people. The supreme governing body of the movement is the Congress of the Khakass people, which is convened by the Republican Council of Elders at least once every five years. Unlike other public organizations, the Congress has the right of legislative initiative in Supreme Council of the Republic of Khakassia (the legislative body of the subject of the Russian Federation) regarding its conduct. Republican Council of Elders of Khakass people is a permanent collegiate governing body and a governing body of the movement.

It should be noted that the First Congress of the Khakass People took place in 1990, which became the main event that influenced the fate of Khakassia (Artamonova & Troyakova, 2018, p. 26). The practice of socio-political self-government among the Khakasses in the form of congresses arose in April, 1917. So, for example, E.A. Sagalakov supposes the socio-political development of South Siberia in the period under review is characterized by the intensification of the socio-political movement of the indigenous peoples of the region – Altais, Tuvans, Khakasses and Shors (Sagalakov E.A., 2018, p. 84).

The Council includes representatives of councils of district and town of elders, representatives of national organizations and institutions, national public associations, elders and representatives of all tribes of the Khakass people, members of the Presidium of 55 people. The Presidium of the Council of Elders is elected by members of the Republican Council of Elders from the Republican Council of Elders and is a permanent collegial executive body of the Movement. The Presidium includes members of the Council of Elders – respected, well-known people in the region.

As the Korean researcher S. Hong notes, social and historical aspirations of public organizations significantly influence their performance improvement (2019, p. 1). Since 2003, the Republican Council of Elders of the Khakass People has been working on compiling registers of clans of the Khakass people, sacred (clan) places of the Khakass clans; inventory of historical and cultural heritage on the territory of the Republic of Khakassia (kurgan, ancient settlements, etc.); the organization of the movement of Khakass births for admission to raising families of orphans from orphanages in Khakassia; revival and increase of significance of the Khakass national holidays; awards titles and orders of movement.

The relationship between the nonprofit and the public can be framed as the reciprocity of expectations (Bryce, 2007, p. 112). The Council of Elders is actively working with appeals from residents of the region. Basically, citizens' appeals are related to studying the Khakass language in schools, quality of language teaching, miss of literature in their native language, history textbooks, etc. With the participation of the Council of Elders, the issue of magazines in the Khakass language and textbooks on the Khakass language and Khakass literature for schools of the republic was restored. Traditionally, in the republic with the participation of the Council of Elders of the Khakass people, Khakass folk holidays are celebrated – Day of First Milk, New Year's Day on the Khakass calendar, Khakass Earth Day.

As the Norwegian researchers A. Waeraas and H. Byrkjeflot note, public organizations have trouble connecting with their stakeholders on an emotional level, standing out as unique and differentiated organizations, communicating as coherent bodies, and maintaining excellent reputations (2012, p. 186). However, this cannot be said for the Khakass Regional Public Movement of the Khakass people. Successfully the public organization cooperates with the authorities of the subject of the federation on improving the quality of life of the population of Khakassia, preserving the cultural heritage of the Khakass people. For example, the movement initiated the decision by the Government of the Republic of Khakassia to finish the construction of schools in rural areas of the republic.

Discussion. Theoretical, methodological and practical questions about public organizations in Russia have been developed to a sufficient degree. Researchers M.A. Astvatsaturova, Y.V. Harutyunyan, M.N. Guboglo, M.E. Kogan, L.V. Malinovsky, V. Maamyagi, G.V. Starovoitova, A.A. Susokolov, S.A. Pistryakov. In the 1990s, the study of non-political public organizations and movements was intensified. A. Abrahamyan proposes and proves the need for the development of national communities. L.M. Drobizheva, within the framework of a sociological approach, seriously analyzes the problems of interethnic relations in Russia during the reform of the socio-political system. The works of V.Y. Zorin, S.A. Krasilnikov, I.V. Nam, E.I. Chernyak contain the political and legal aspect of ethnopolitical and ethnocultural relations, the interaction and influence of public and power structures on the formation of the new national and cultural policy through the prism of historical experience of previous centuries. The following researchers cover the problems of national-cultural interaction in the modern ethnocultural situation: V.V. Mezentsev, N.A. Tomilov, V.S. Shmakov. Some individual aspects of the characteristics of the activities of the national public organizations in Siberia were considered in the works of M.V. Belozeroва, T.A. Zamiralova, D.V. Novikova, L.A. Adaskevich, L.P. Aikina and others. So, for example, in the opinion of M.V. Belozeroва, starting from the 1960–1970s. the problem of preserving the cultural, including national, heritage is given great attention at the interstate, state and regional levels. The latter is evidenced by significant work on the legal regulation of the protection of cultural heritage (at the international, federal and regional levels) (2013, p. 36).

In order to improve the effectiveness of force of legal norms in sphere of activities of non-profit organizations between the state and civil society, a stable dialogue should be established, and the information space in this area should be wider. Accessibility and openness to both sides should be the main principle of shared activity, aspiring to build a full-fledged civil society. Another important problem in the implementation of legal status of non-profit organizations is the low level of trust of citizens in their activities.

The main problem in the legal regulation of public organizations is low quality of the legislative framework. The development of this area as an integral component of the development of civil society is impossible without a clear regulation of this civil law activity. It is not uncommon that the rules governing these relations contain conflicting provisions, and also have a reference character, i.e. supplemented by a number of other regulatory acts.

Identified deficiencies are mainly a prerequisite for legal illiteracy of representatives of ethnic public organizations. In addition, there is an overly complex bureaucratic process associated with registration actions and other procedures related to the interaction of such organizations with government bodies.

It seems that in modern Russia, the collective goals and interests of the population are not fully structured and realized, mass justice has not been tested into legal reality. In this connection, there is a problem of legal registration and regulation of ethnic public organizations. In the framework of legal regulation of the status and activities of such legal entities, great attention should be paid to the group of interests pursued by them in order to correctly apply Russian legal norms.

Thus, public organizations, including ethnic ones, are an important factor in the participation of people in social and cultural development, play an important role in improving public administration and ensuring civic culture of the population. For example, the Khakass Regional Public Movement of the Khakass people defends the interests of the Khakass people. This organization has become an independent entity and works effectively in conjunction with the authorities in the republic, which gives its activity an equal character and brings the greatest usefulness not only to one of the indigenous peoples of Southern Siberia, but also to all peoples living in the corresponding territory.

The legal foundations of the activities of ethnic organizations in the Republic of Khakassia are characterized as intersectoral and multi-level. The authors come to the conclusion that in the subject of the Russian Federation there is practically no regional regulatory framework that regulates the activities of ethnic organizations. It also requires the publication of a comprehensive federal law regulating important issues of national, cultural, linguistic revival of the indigenous peoples of Southern Siberia.

Т. Н. Медведева, Ю. К. Троякова

Н. Ф. Катанов атындағы Хакас мемлекеттік университеті, Абакан, Россия

ХАКАСИЯДАҒЫ ЭТНИКАЛЫҚ ҚОҒАМДЫҚ ҰЙЫМДАР

Т. Н. Медведева, Ю. К. Троякова

Хакасский государственный университет им. Н. Ф. Катанова, Абакан, Россия

ЭТНИЧЕСКИЕ ОБЩЕСТВЕННЫЕ ОРГАНИЗАЦИИ В ХАКАСИИ

Аннотация. В статье рассматриваются правовые основы деятельности такой общественной организации, как Хакасское региональное общественное движение хакасского народа. Республика Хакасия, как и многие другие субъекты Российской Федерации, является многонациональной. В регионе проживают представители свыше ста различных этнических общностей. По состоянию на 31 декабря 2019 года в Республике Хакасия действовала 43 организация этнической направленности (в том числе 27 организаций, зарегистрированных в установленном порядке Управлением Министерства юстиции Российской Федерации по Республике Хакасия, 14 организаций – действующих без государственной регистрации). По этнической принадлежности указанные общественные организации распределяются следующим образом: хакасские – 9, шорские – 8, немецкие – 6, польские – 2, киргизские – 2, азербайджанские – 2. По одной организации имеют алтайцы, армяне, дагестанцы, евреи, корейцы, русские, таджики, татары, тувинцы, украинцы, чуваша. Еще 3 организации сформированы по межнациональному принципу (1 организация, объединяющая узбекский и таджикский народы; 1 организация, выражающая интересы коренных народов Хакасии; 1 организация, представляющая коренные народы Саяно-Алтайского нагорья, и одна хакасская ассоциация шорского народа). Одной из главных задач общественных национальных организаций является сохранение и укрепление исторических традиций своего этноса, культурного и национального наследия. В настоящее время в Республике Хакасия функционирует девять общественных объединений, выражающих этнокультурные интересы хакасского народа, из них шесть зарегистрированных организаций. Это Хакасское региональное общественное движение хакасского народа (Республиканский Совет старейшин), Хакасская региональная общественная организация «Лига хакасских женщин «Алтынай», Межрегиональная общественная организация «Культурный центр коренных народов Саяно-Алтайского нагорья», Хакасская региональная общественная организация «Информационный центр коренных народов Республики Хакасия

«Аран Чула», Фонд возрождения самобытности хакасского народа – Хан обаа «Ах хулун» и Республиканское движение за сохранение и развитие хакасского языка «Ине тілі».

Начало деятельности общественных организаций этнической направленности приходится на начало 1990-х годов в субъектах Российской Федерации. Основная деятельность последних заключается в сохранении и развитии историко-культурного наследия и национальной самобытности народов, проживающих на территории Республики Хакасия (РХ). Отмечается, что от них, во многом зависело социально-экономическое и политическое развитие страны, нравственное и духовное состояние народа. В среде местной интеллигенции, общественные объединения сыграли определенную роль в процессе роста самосознания граждан, в объединении их конкретных интересов. Деятельность последних по сохранению историко-культурного наследия, а также усилению адаптации и внутриэтнической консолидации хакасов активизировалась в 1991–2000-е гг., что можно проследить по их деятельности на региональном уровне, в частности на примере Республики Хакасия.

Значимость общественных объединений существенно повышается в современных условиях тем обстоятельством, что они являются не только средством духовного объединения этносов, но и способствуют смягчению национальных противоречий на основе сотрудничества между этносом и властью, с другими этносами, эти важнейшие факторы содействуют формированию толерантного отношения к социально-культурному своеобразию каждой нации.

Исследуются вопросы характеристики организационной структуры общественного объединения этнической направленности, основы правового регулирования их деятельности. Проведен анализ устава Хакасского регионального общественного движения хакасского народа. На основании анализа нормативного правового законодательства предлагается авторская позиция, связанная с внесением изменений в существующее законодательство. Авторами статьи поднимается проблема взаимодействия гражданского общества и государства. Для улучшения результативности работы правовых норм в сфере деятельности некоммерческих организаций между государством и гражданским обществом должен быть налажен устойчивый диалог, информационное пространство в этой сфере должно быть шире. Общественные организации этнической направленности выполняют важные функции, которые сегодня связаны не только с выполнением социально-значимых задач. Данные организации в ряде случаев выступают партнерами государства и фактически решают проблемы, с которыми государственная система не справляется и на которые в силу многих причин не выделяются средства. Вследствие этого не случайно сегодня одной из основных тенденций, наблюдаемых при анализе норм законодательства РФ, является фактический «перенос» некоммерческих организаций из сферы действия частноправового регулирования в область публичного права.

В исследовании широко применяется формально-юридический метод, позволяющий глубже прояснить разнообразные формулировки анализируемых нормативных положений. Рассмотрение деятельности общественных организаций этнической направленности предполагает применение разных принципов исследования: историзма, социокультурного детерминизма, синхронизации и диахронизации. В качестве методов используются комплексный и системный сравнительно-исторический анализ, хронологизация, классификация и типология общественных организаций. В качестве перспективных используется ретроспективный анализ, который позволяет изучить жизнедеятельность и функционирование общественных организаций этнической направленности в эволюции.

Авторы приходят к выводу о том, что в субъекте Российской Федерации (РФ) практически не создана региональная нормативно-правовая база, регулирующая деятельность общественных организаций этнической направленности. Требуется издание комплексного федерального закона, регулирующего важные вопросы национального, культурного, языкового возрождения коренных народов Южной Сибири.

Ключевые слова: правовые основы, общественные организации, нормативно-правовое регулирование, Хакасское региональное общественное движение хакасского народа, Республиканский совет старейшин, устав.

Information about authors:

Medvedeva T.N., Cand. Hist. Sci., Associate Professor, Department of Theory and History of State and Law, Institute of History and Law, N. F. Katanov Khakass State University, Russia; Medvedeva-TN@mail.ru; <https://orcid.org/0000-0002-8303-7452>

Troyakova Y.K., Cand. Hist. Sci., Associate Professor, Department of Theory and History of State and Law, Institute of History and Law, N. F. Katanov Khakass State University, Russia; troyakova.julia@yandex.ru; <https://orcid.org/0000-0003-4559-8109>

REFERENCES

- [1] Artamonova N.Y., Troyakova Y.K. (2018) Kul'turnaya missiya natsional'noy intelligentsii respublik Tyva i Khakasiya v sovremennom politnicheskom prostranstve [Cultural Mission of the National Intelligentsia of the Republics of Tuva and Khakassia in the Modern Multi-Ethnic Space]. Publishing House "Brigantine", Abakan (in Russ.).
- [2] Ayupova Z.K., Kussainov D.U., Winston N. (2019) On the State Mechanisms of Ensuring Social Policy in the Republic of Kazakhstan, Reports of the National Academy of Sciences of the Republic of Kazakhstan, 1 (323): 47-51. DOI: 10.32014/2019.2518-1483.6 (in Eng.).
- [3] Belozerova M.V. (2013) Deyatel'nost' natsional'nykh obshchestvennykh organizatsiy Kemerovskoy oblasti i problemy sokhraneniya kul'turnogo naslediya [Activities of national public organizations of the Kemerovo region and the problems of preservation of cultural heritage], Bulletin of Tomsk State University. History, 4: 36-40 (in Russ.).
- [4] Bryce H. (2007) The Public's Trust in Nonprofit Organizations: The Role of Relationship Marketing and Management, California Management Review, 49 (4): 112-131. DOI: 10.2307/41166408 (in Eng.).
- [5] Helmig B., Jegers M., Lapsley I. (2004). Challenges in Managing Nonprofit Organizations, A Research Overview, International Journal of Voluntary and Nonprofit Organizations, 15 (2): 101-116. DOI: 10.1023/B:VOLU.0000033176.34018.75 (in Eng.).
- [6] Hong S. (2019) A Behavioral Model of Public Organizations: Bounded Rationality, Performance Feedback, and Negativity Bias, Journal of Public Administration Research and Theory, 29 (1): 1-17. DOI: 10.1093/jopart/muy048 (in Eng.).
- [7] Karachakova O. Vse o deyatelnosti Soveta stareyshin khakasskogo naroda – iz pervykh ust [Everything About the Activities of the Council of Elders of the Khakass People by Firsthand]. Abakan today. 05/04/2017. (In Russian).
- [8] Kulsariev A.T., Sultanova M.E., Shaigozova Zh.N. (2018) Folklore and Identity: History, Memory and Myth-Making in the Modern Visual Culture of Kazakhstan, News of the National Academy of Sciences of the Republic of Kazakhstan. Series of Social and Human Sciences, 5 (321): 19-25. DOI: 10.32014/2018.2224-5294.3 (in Eng.).
- [9] Lapaeva V.V. (2015) Federal'noye i regional'noye zakonodatel'stvo ob obshchestvennykh ob'yedineniyakh [Federal and Regional Legislation on Public Associations], Journal of Foreign Legislation and Comparative Law, 6: 966-975 (in Russ.).
- [10] Marsunova E.V. (2016) Osobennosti zakonodatel'nogo regulirovaniya grazhdansko-pravovogo statusa nekommercheskikh organizatsiy kak yuridicheskikh lits [Features of the Legislative Regulation of the Civil Status of Non-Profit Organizations as Legal Entities], Bulletin of Science and Practice – Scientific Journal, 4: 461-469 (in Russ.).
- [11] Naumkina V.V. (2019) Public Opinion about the Personality as Criterion of Definition of Disciplinary Measures On Common Law of the Siberian Nomads, Bulletin of the National Academy of Sciences of the Republic of Kazakhstan, 2 (378): 216-219. DOI: 10.32014/2019.2518-1467.58 (in Eng.).
- [12] Naumkina V.V. (2019) The Function of Ritual in Traditional Society, Bulletin of the National Academy of Sciences of the Republic of Kazakhstan, 1 (377): 126-129. DOI: 10.32014/2019.2518-1467.15 (in Eng.).
- [13] Panzabekova A.Zh., Mussayeva D.M., Zhanbozova A.B. (2018) Formation and Development of Information Society in the Context of Its Impact on Quality of Population Life, Reports of the National Academy of Sciences of the Republic of Kazakhstan, 5 (375): 94-99. DOI: 10.32014/2018.2518-1483.14 (in Eng.).
- [14] Sagalakov E.A. (2018) Sotsial'no-politicheskoye razvitiye Yuzhnoy Sibiri v 1917 godu [Socio-political Development of South Siberia in 1917], Bulletin of Katanov Khakass State University, 23: 84-85 (in Russ.).
- [15] Sagalakov E.A. (2019) Socio-political Development of the Altai-Sayan Region in 1919–1924, Bulletin of the National Academy of Sciences of the Republic of Kazakhstan, 1 (377): 195-198. DOI: 10.32014/2019.2518-1467.22 (in Eng.).
- [16] Tolz V. (1998) Conflicting "Homeland Myths" and Nation-State Building in Postcommunist Russia, Slavic Review, 57 (2): 267-294. DOI: 10.2307/2501851 (in Eng.).
- [17] Waeraas A., Byrkjeflot H. (2012) Public Sector Organizations and Reputation Management: Five Problems, International Public Management Journal, 15 (2): 186-206. DOI: 10.1080/10967494.2012.702590 (in Eng.).
- [18] Weerawardena J., McDonald R., Mort G. (2010) Sustainability of Nonprofit Organizations: An Empirical Investigation, Journal of World Business, 45 (4): 346-356. DOI: 10.1016/j.jwb.2009.08.004 (in Eng.).
- [19] Yastrebova A.I. (2007) Konstitutsionno-pravovyye osnovy deyatelnosti obshchestvennykh organizatsiy v Rossiyskoy Federatsii [Constitutional and Legal Foundations of the Activities of Public Organizations in the Russian Federation], Modern Law, 9 (1): 33-34 (in Russ.).

L. Yu. Fomina

Russian State University of Justice, Moscow, Russia.

E-mail: fominalilja@mail.ru

**RIGHT TO RESPECT FOR PRIVATE AND FAMILY LIFE
AND PUBLIC SERVICE: PRACTICE OF THE EUROPEAN COURT
OF HUMAN RIGHTS**

Abstract. The article studies the application of Article 8 of the Convention for the Protection of Human Rights and Fundamental Freedoms, which guarantees the right to respect for private and family life, to the professional activities of civil servants. To summarize and analyze the practice of the European Court of Human Rights in this domain, a dialectical method of cognition was used, as well as such scientific methods as logical, formal legal and other methods, provided that in general the systematic approach was observed.

The two approaches to the analysis of interference with private and family life in connection with professional activities: one is based on reasons and the other one – on consequences, were studied. It was concluded that restricting this right in relation to civil servants is admissible if there is a relevant law, a legitimate goal, the need for a democratic society. The correlation of the right to respect for private and family life of civil servants and the right to freely express your opinion guaranteed to everyone was analyzed. It was concluded that it is necessary to search in each case for a fair balance of these rights, taking into account both the interests of society and individuals.

Key words: civil servant; private life; family life; right to respect for private and family life; European Court of Human Rights.

Introduction. Timely and efficient solution of problems in public administration is unthinkable without the creation of the necessary organizational and legal conditions for people who ensure its operations also predetermining the need for them to comply with certain behavioral requirements in professional and leisure-time activities, including those established under existing anti-corruption mechanisms. The prohibitions and restrictions established for civil servants are considered as important legal instruments to combat corruption [1, p.219].

The introduction of such prohibitions and restrictions may imply, for example, the publication of information related, in fact, to private and family life of a civil servant. In the meantime, the inviolability of private and family life is guaranteed to everyone by the most important international acts on human rights protection [2, Art.12; 3, p.69; 4, Art.17; 5, Art.8] in the interpretation of the relevant supervisory authorities (for example, the European Court of Human Rights), allowing interference only in cases provided for by them.

The requirements for civil servants involving interference with their private and family life are usually considered from this perspective. In other words, a civil servant, holding a certain office, must bear some burdens, which also suggest increased attention to their private and family life.

Considering the above, the study of existing approaches and the identification of criteria for the correlation of public and private interests in the sphere of ensuring the necessary standards of behavior for civil servants with respect for private and family life seems to be very relevant and practically significant. The rulings of the European Court of Human Rights (hereinafter – the ECtHR, the European Court, the Court), which should be applied within the existing international obligations of states, can render significant assistance in solving this problem.

It should be noted though that, taking into account the practice of the European Court of Human Rights, the term “civil servant” will be used in this research in the broad sense that does not always comply with national legislation. For example, according to the Russian law, there is a difference between the concepts of “a person doing public service”, “a person holding a public office”, “a person holding a municipal office”, “a person doing municipal service” [6, Art.1,10; 7, Art.1,10]. The European Court also uses the term “public service” in its rulings in cases related to judges [8;9;10;11;12], and municipal employees [13].

Methods. To summarize and analyze the practice of the European Court of Human Rights in this domain, a dialectical method of cognition was used, as well as such scientific methods as logical, formal legal and other methods, provided that in general the systematic approach was observed.

Results. In the documents of the Parliamentary Assembly of the Council of Europe, the right to privacy is defined as “the right to live one’s own life with a minimum of interference” [14, p.2], supplemented, taking into account the use of new communication technologies, by the right to protect personal data [15, p.5]. Private life in accordance with Article 8 of the ECHR in its interpretation by the ECtHR includes three key elements: physical, psychological or moral integrity, privacy, identity [16, §70]. Family life is protected as an independent category or as an element of private life, depending on the presence or absence of real “close personal ties” necessary to establish its existence [16, §247].

These positions regarding the understanding of private and family life in the practice of the ECtHR are not final, but, on the contrary, are constantly supplemented with new elements, making the concept in question more and more meaningful.

The first element of private life – physical, psychological, or moral integrity – involves, among other aspects, the attribution of professional or business activity to private life [16, § 130–134]. Since most of the people in the process of professional activity have significant opportunities to develop relations with the outside world [16, §130], the ECtHR has repeatedly drawn attention to the fact that attributing the concept of “private life” only to the “inner circle” and the complete exclusion of the outside world from this circle would be too restrictive [12, §96]. Moreover, professional life is often closely associated with private life, especially if factors related to private life in the strict sense of the word are considered as qualification criteria for a particular profession [17, §37].

Considering the above, in relation to the private and family life of civil servants, two approaches are used to assess the interference with the implementation of this right in the practice of the ECtHR: one is based on reasons and the other one is based on consequences with the possibility of combining them.

Within the first approach, focus is made on the qualifying criteria for the function in question, reasons encroaching upon the individual’s freedom of choice in the field of private life [12, §103], the need to assess “professional suitability” taking into account the real impact of private life circumstances on the implementation of professional activities [8, §77].

Thus, using this approach, interference with private life was ascertained in cases of transferring a civil servant to a lower position not because of qualifications, but because of his religious views and the appearance of his wife [17], early termination of powers not so much due to improper performance of professional duties, but in connection with personal contacts, clothing style, make-up, relationships with family members [8, §43].

The second approach does not imply a “classical” assessment of interference with private life in terms of a person’s behavior outside the office, his relations with relatives, friends, and other similar circumstances. It focuses solely on his professional activities, and measures taken against a person are evaluated in terms of negative effects: for the “inner circle” (for example, due to loss of earnings), for the opportunities to “establish and develop relationships with others”, for reputation [12, §107].

It was used, for example, when assessing the early termination of judicial powers due to a violation by a judge of the oath (mainly, it was a question of procedural violations) [9;11], “administrative powers” of the head or deputy head of the judicial body due to the reorganization of the judicial system [10], shortcomings allowed as the head of the court [12].

In general, the studied approach involves the comparison of a person’s life before and after the application of an appropriate measure (for example, dismissal from office) by an authorized state body, as well as the achievement of a certain minimum threshold or threshold of seriousness, taking into account the circumstances of the particular case and the justification presented by the applicant [12, §133–134].

The right to respect for private and family life in relation to civil servants may be limited in accordance with the General Rules 2 of Article 8 of the ECHR, that is, in accordance with the law, in order to achieve one or more legitimate goals (interests of national security and public order, the economic well-being of a country, the prevention of disorder or crime, the protection of health or morality, or the protection of the rights and freedoms of others), if necessary in a democratic society to achieve these legitimate goals.

In this regard, the introduction of certain restrictions for civil servants is interpreted by the ECtHR as a need to protect public order, protect the rights and freedoms of others [8, §56], since this may involve damage to the image or reputation of the authority body.

On the contrary, a violation of these conditions was found by the ECtHR, for example, in the judgment in the case of Oleksandr Volkov v. Ukraine. As a justification, it was pointed out that there were no guidelines or practice establishing a consistent and restrictive interpretation of the breach of oath notion, proper procedural safeguards (limitation periods, the scale of sanctions for disciplinary offenses, the possibility of appealing against a decision) [9, §180–185].

In modern society, considering the level of digital technologies development, the adoption of which transforms the content and forms of implementation of the most functions of the contemporary state [18, p.97], and in connection with the use of anti-corruption mechanisms, the problem of building certain boundaries of interference with the private and family life of a civil servant in case of the publication and public discussion of information about him is of particular importance. Attempts to determine such criteria have been undertaken in the scientific literature [19, p.169–173; 20, p.424–428], and are reflected in the practice of the ECtHR.

The right to freedom of expression guaranteed by Article 10 of the ECHR “shall include freedom to hold opinions and to receive and impart information and ideas without interference by public authority and regardless of frontiers.” (paragraph 1) [5].

All human rights are interrelated. «The improvement of one right facilitates advancement of the others. Likewise, the deprivation of one right adversely affects the others [3, p.72].

The rights guaranteed by Articles 8 and 10 of the ECHR have their absolute equivalence, and therefore focus should be made on finding a fair balance between them in relation to each specific case.

Here, the approach of the ECtHR may differ from the traditional approach to determining such a balance established in its practice. Depending on which article of the Convention is used by the applicant, the Court proceeds from the presumption in favor of the right to privacy or the right to freedom of expression, while the state must show that interference with this right is necessary in a democratic society to protect the rights and freedoms of others. If it did not succeed to do that, the Court considers that the Convention was violated [21, p.58].

States, while fulfilling their international obligations, are given wide discretion in establishing an equitable balance of these rights. However, the ECtHR also developed certain criteria to assess the ratio established by the state. They include: contribution to the discussion of issues of common interest; how famous the person in question is; content of materials; previous behavior of the person in question; methods of obtaining information and its reliability; content, form and consequences of published information; the severity of the punishment [22, §34]. Considering the specific circumstances of the case, the author’s reason to rely on official communications, the fact of publication of the information contained in the article and its confidentiality may also be taken into account [22, §34].

These criteria, serving as general principles, are applied by the ECtHR when seeking a fair balance of these rights. But, discussing the applicability of these criteria to situations when certain information regarding the private and family life of civil servants is published, we would like to focus on two key aspects: assessing the degree of person’s publicity and contribution to the discussion of the issue of common interest.

First of all, the degree of person’s publicity and his qualification as a public figure matters. This circumstance influences the protection provided, since in relation to public figures the ECtHR recognizes the need to tolerate a greater degree of public scrutiny [23, §47].

According to the PACE definition, “public figures are persons holding public office and/or using public resources and, more broadly speaking, all those who play a role in public life, whether in politics, the economy, the arts, the social sphere, sport or in any other domain” [15, p.7].

Given this definition, it can be said that civil servants should be considered public figures in this sense. And this approach is expressed in the practice of the ECtHR, which pays attention to the fact that “exercising a public function or aspiring to political office necessarily exposes an individual to the attention of his or her fellow citizens, including in areas that come within one’s private life” [24, §120]. Moreover, in decisions on cases involving the protection of civil servants’ reputation, it clearly indicates the need for a broader framework of acceptable criticism of civil servants, as well as of political figures acting in official function compared to private individuals [25, §47; 26, §80].

It should be borne in mind that the ECtHR has made certain reservations in this sense. In its ruling in the case of *Janowski v. Poland*, the ECtHR directly pointed out the need to distinguish between politicians and civil servants. Therefore, when it comes to criticizing the latter’s actions, “it cannot be treated on an equal footing” as in relation to politicians [13, §33].

This approach, which involves taking into account the specific functions that are performed by a civil servant as part of official duties, may well be applied in terms of finding a balance between respect for private and family life and freedom of expression. Based on this, he can be protected to a greater extent than other entities related to public figures. On the other hand, one should keep in mind that even public figures have the right to a reasonable or legitimate expectation of privacy [27, §97]. However, the need for a test of “reasonable expectation of privacy” is called into question due to the difficulties that arise in this case in practice [28, p.129–137].

In addition, we would like to draw attention to one more aspect, which also relates to the correlation of the studied rights. Interference with the right to freedom of expression, as in the case of the right to respect for private and family life, is possible only in cases provided for by the ECHR in their interpretation by the ECtHR. Such permissible objectives of the interference, in accordance with paragraph 2 Art. 10 ECHR include “maintaining the authority and impartiality of the judiciary”, included in the relevant ECHR rule “in order to develop the attitude of European citizens to court of rights as an appropriate and impartial body designed to resolve legal issues without pressure from the public opinions”[29].

It is important for the civil service that the concept of “court” in this case is actually autonomous, since the justice system can be interpreted in the broadest sense. For example, according to the Court, prosecutors are also part of the judicial machinery or the justice system, since they are called upon to facilitate the administration of justice [30, §60]. But this, of course, does not mean the absolutization of the prohibition of any statements regarding civil servants that can be attributed to the justice system, other criteria of admissibility of interference with the exercise of this right are evaluated, for example, “public interest may outweigh the task of maintaining the authority of justice ”[29].

Considering the above, another decisive factor in the establishment of a balance between the protection of privacy and freedom of expression should be the contribution that is made to the discussion of general interest.

As rightly noted in the scientific literature, it is necessary to distinguish between public interest and the interest of society, analyzing the contribution to the democratic debate, preventing the misrepresentation of society, disclosing crimes or serious misconduct [31, p.11].

We should not speak exclusively about the desire of society to receive information about the private life of others or sensational information, to show painful curiosity in other people’s affairs [32, §101,103].

Thus, when determining a fair balance of the right to respect for private and family life and freedom of expression, not any public interest in the private life of a person should be taken into account, but only the one that is legitimate and actually pursues the goal of protecting public interests.

For instance, if we are speaking about combining other gainful employment by a municipal servant with the performance of their official functions [33, §78], abuse of public funds [34, §59], the functioning of the judicial system [32, §43], this information will be of legitimate public interest. Moreover, certain aspects that are interesting for public discussion can be found even if the relevant information also relates to the intimate aspects of private life. For example, if the question arises whether a person was dishonest and lacking judgement in this respect [23, §49].

Conclusion. Being a civil servant, which is interpreted by the European Court of Human Rights in a much broader sense than in Russian legislation, involves the fulfillment of certain duties, following prohibitions and restrictions that have a certain impact on the inviolability of private and family life.

The private and family life of a civil servant in the practice of the European Court of Human Rights has received protection primarily as part of such an element as physical, psychological or moral integrity, based on the analysis of either the reasons connected with the conduct of a person or the consequences that have occurred for himself or his close circle, not excluding their interconnected assessment, considering the conditions for the admissibility of interference in compliance with paragraph 2 Article 8 of the Convention for the Protection of Human Rights and Fundamental Freedoms.

The protection of the private and family life of a civil servant also presupposes following the right to freedom of expression, which is why the need to establish a fair balance between them taking into account the interests of society and a particular person, and the wider range of acceptable criticism of a civil servant in comparison with private individuals, is of key importance.

The reported study was funded by RFBR according to the research project № 18-011-01080.

Л. Ю. Фомина

Ресей мемлекеттік сот төрелігі университеті, Мәскеу, Ресей

**ЖЕКЕ ЖӘНЕ ОТБАСЫЛЫҚ ӨМІРДІ ҚҰРМЕТТЕУ ҚҰҚЫҒЫ ЖӘНЕ МЕМЛЕКЕТТІК ҚЫЗМЕТ:
АДАМ ҚҰҚЫҚТАРЫ ЖӨНІНДЕГІ ЕУРОПАЛЫҚ СОТ ТӘЖІРИБЕСІ**

Л. Ю. Фомина

Российский государственный университет правосудия, Москва, Россия

**ПРАВО НА УВАЖЕНИЕ ЧАСТНОЙ И СЕМЕЙНОЙ ЖИЗНИ И ГОСУДАРСТВЕННАЯ СЛУЖБА:
ПРАКТИКА ЕВРОПЕЙСКОГО СУДА ПО ПРАВАМ ЧЕЛОВЕКА**

Аннотация. В статье исследована проблема применения статьи 8 Конвенции о защите прав человека и основных свобод, гарантирующей право на уважение частной и семейной жизни, к профессиональной деятельности государственных служащих.

В современном обществе с учетом уровня развития цифровых технологий и в рамках применения антикоррупционных механизмов особую значимость проблема защиты права на уважение частной и семейной жизни приобретает в отношении государственных служащих, обязанных в силу своего статуса соблюдать определенные запреты и ограничения, в том числе предполагающие и повышенное внимание к их личной жизни. В этой связи исследование существующих подходов и выявление критериев соотношения публичных и частных интересов в сфере обеспечения необходимых стандартов поведения государственных служащих при обеспечении им уважения частной и семейной жизни является весьма актуальным и практически значимым. Существенную помощь в выявлении таких подходов и критериев могут оказать правовые позиции Европейского суда по правам человека, подлежащие применению в рамках существующих международных обязательств государств. Для обобщения и анализа практики Европейского суда по правам человека были использованы диалектический метод познания, а также такие научные методы, как логический, формально-юридический и иные при соблюдении в целом системного подхода.

Автором оговорено, что в практике Европейского суда по правам человека термин «государственный служащий» применяется в широком смысле, не всегда соответствующем национальному законодательству, включая в свое содержание и судей, и муниципальных служащих.

Отмечено, что в соответствии со сложившейся к настоящему времени практикой Европейского суда по правам человека понятие частной жизни трактуется очень широко, включая самые разные аспекты обеспечения неприкосновенности лица, конфиденциальности сведений о нем и его жизни, выражения им своей идентичности, в том числе и в отношениях с другими людьми. В рамках обеспечения неприкосновенности лица к его частной жизни отнесена и профессиональная деятельность, предоставляющая большинству людей значительные возможности развивать отношения с внешним миром. Также факторы, связанные с личной жизнью, могут рассматриваться в качестве квалификационных критериев для конкретной профессии.

В статье рассмотрено использование двух подходов Европейского суда по правам человека к анализу вмешательства в частную и семейную жизнь в связи с осуществлением служебной деятельности: основанного на причинах и основанного на последствиях. Отмечена возможность их сочетания. В рамках первого

подхода внимание акцентируется на необходимости соответствия государственного служащего установленным квалификационным требованиям, предъявляемым к соответствующей должности, оценке его квалификации на основании обстоятельств, относящихся к личной жизни (внешнего вида, поведения лица во внеслужебное время, его отношений с родственниками, друзьями и иных подобных обстоятельств). Второй подход предполагает оценку исключительно профессиональной деятельности лица, а также предпринятых в отношении него дисциплинарных мер с точки зрения наличия неблагоприятных последствий для семьи, будущей профессиональной деятельности, репутации. Важное значение в связи с применением второго подхода отводится сравнению жизни лица до и после применения к нему уполномоченными органами государства соответствующих мер, а также достижению определенного минимального уровня или уровня серьезности с учетом обстоятельств конкретного дела и представленного лицом обоснования.

Сделаны выводы о допустимости ограничения права на уважение частной и семейной жизни применительно к государственным служащим в соответствии с частью 2 статьи 8 Конвенции о защите прав человека и основных свобод при наличии соответствующего закона, законной цели, необходимости в демократическом обществе. Выявлена возможность установления для должностных лиц определенных ограничений в рамках законных целей (необходимость охраны общественного порядка, защита прав и свобод других лиц) в связи с возможностью нанесения ущерба имиджу или репутации соответствующего органа власти.

Исследована проблема определения границ вмешательства в частную и семейную жизнь государственного служащего при обнародовании и публичном обсуждении соответствующих сведений о нем. В связи с этим были проанализированы вопросы соотношения права на уважение частной и семейной жизни государственных служащих и гарантируемого всем статьей 10 Конвенции о защите прав человека и основных свобод права свободно выражать свое мнение. Сделан вывод о наличии тесных взаимосвязей всех основных прав и свобод, гарантируемых Конвенцией о защите прав человека и основных свобод, равноценности права на уважение частной и семейной жизни и права свободно выражать свое мнение, в связи с чем ключевое внимание должно быть уделено поиску в каждом конкретном случае справедливого баланса между указанными правами с учетом как интересов общества, так и частных лиц.

Констатировано применение Европейским судом по правам человека презумпции в пользу права на неприкосновенность частной жизни или права на свободу выражения мнения в зависимости от статьи, в связи с нарушением которой подана жалоба, с последующей оценкой правомерности вмешательства государства в рамках предоставленной ему широкой свободы усмотрения при установлении справедливого баланса этих прав и соблюдения определенных критериев.

Акцентируется внимание на проблемах оценки степени известности соответствующего лица и вклада в обсуждение вопроса, представляющего общий интерес, в том числе с учетом признания более широких границ допустимой критики государственного служащего по сравнению с частными лицами, в рамках применения таких критериев.

Ключевые слова: государственный служащий; частная жизнь; семейная жизнь; право на уважение частной и семейной жизни; Европейский суд по правам человека.

Information about author:

Fomina L.Yu., Candidate of Legal Sciences, Associate Professor, The Russian State University of Justice, Moscow, Russia; fominalilja@mail.ru; <https://orcid.org/0000-0002-4273-2280>

REFERENCES

[1] Combating Corruption: New Challenges: monograph / S.B. Ivanov, T.Y. Khabrieva, Yu.A. Tchikhantchin [etc.]; managing editor T.Y. Khabrieva (2016). M.: The Institute of Legislation and Comparative Law under the Government of the Russian Federation: INFRA-M. ISBN: 978-5-16-012463-6 (in Rus.).

[2] Universal Declaration of Human Rights of December 10, 1948. Access from the reference and legal system "Consultant Plus" (in Russ.).

[3] Ayupova Z.K., Kussainov D.U., Bekbergenova A.K., Nagan Winston (2019) Major ideas and main values of the Universal UN Declaration on Human Rights: the 70-years experience. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. 1 (377): 68–74. <https://doi.org/10.32014/2019.2518-1467.8> (in Eng.).

[4] International Covenant on Civil and Political Rights of December 16, 1966. Access from the reference and legal system "Consultant Plus" (in Russ.).

[5] Convention for the Protection of Human Rights and Fundamental Freedoms of November 04, 1950. Access from the reference and legal system "Consultant Plus" (in Russ.).

[6] Federal Law on the Public Service System of the Russian Federation of May 27, 2003 No. 58-FZ (as amended on May 23, 2016). Access from the reference and legal system "Consultant Plus" (in Russ.).

[7] Federal Law on the Municipal Service in the Russian Federation of March 2, 2007 No. 25-FZ (as amended on December 16, 2019). Access from the reference and legal system "Consultant Plus" (in Russ.).

[8] Judgment of the ECHR in the case "Ozpinar v. Turkey" of October 19, 2010. Available at: <http://hudoc.echr.coe.int/eng?i=001-101212> (in Eng.).

[9] Judgment of the ECHR in the case "Oleksandr Volkov v. Ukraine" of January 9, 2013. Available at: <http://hudoc.echr.coe.int/eng?i=001-115871> (in Eng.).

[10] Judgment of the ECHR in the case "Ermenyi v. Hungary" of November 22, 2016. Available at: <http://hudoc.echr.coe.int/eng?i=001-168782/> (in Eng.).

[11] Judgment of the ECHR in the case "Kulikov and Others v. Ukraine" of January 19, 2017. Available at: <http://hudoc.echr.coe.int/eng?i=001-170362/> (in Eng.).

[12] Judgment of the ECHR in the case "Denisov (Denisov) v. Ukraine" of September 25, 2018. Access from the reference and legal system "Consultant Plus" (in Russ.).

[13] Judgment of the ECHR in the case "Janowski v. Poland", January 21, 1999. Access from the reference and legal system "Consultant Plus" (in Russ.).

[14] Resolution No. 428 (1970) of the Consultative Assembly of the Council of Europe on the Declaration on the Media and Human Rights of 23 January 1970. Access from the reference and legal system "Consultant Plus" (in Russ.).

[15] Resolution No. 1165 (1998) of the Parliamentary Assembly of the Council of Europe on the right to privacy of June 26, 1998. Available at: <http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=16641&lang=en> (in Eng.).

[16] Guide on Article 8 of the European Convention on Human Rights. Right to respect for private and family life, home and correspondence (Updated on 31 August 2019). Available at: https://www.echr.coe.int/Documents/Guide_Art_8_ENG.pdf (in Eng.).

[17] Judgment of the ECHR in the case "Sodan v. Turkey" of February 2, 2016. Available at: <http://hudoc.echr.coe.int/eng?i=001-160260> (in Eng.).

[18] Turgel I. D., Panzabekova A. Zh., Symaniuk N. V. (2019) Development of Regulatory Impact Institute under Digitization Process: Experience of Russia and Kazakhstan. Bulletin of National Academy of Sciences of the Republic of Kazakhstan. 5 (381): 97–104. DOI: 10.32014/2019.2518-1467.128 (in Eng.).

[19] Thompson D.F. (2011) Private Life and Public Office. Public Integrity. 3 (2): 163–175. DOI: 10.1080/15580989.2001.11770866 (in Eng.).

[20] Streiffer R., Rubel A., Fagan J. R. (2006) Medical Privacy and the Public's Right to Vote: What Presidential Candidates Should Disclose. Journal of Medicine and Philosophy. 31 (4): 417–439. DOI: 10.1080/03605310600860825 (in Eng.).

[21] Barendt E. (2009) Balancing Freedom of Expression and Privacy: the Jurisprudence of the Strasbourg Court. Journal of Media Law. 1 (1): 49–72. DOI: 10.1080/17577632.2009.11427333 (in Eng.).

[22] Judgment of the ECHR in the case "Verlagsgruppe News GmbH v. Austria" of October 25, 2016. Access from the reference and legal system "Consultant Plus" (in Russ.).

[23] Judgment of the ECHR in the case "Ruusunen v. Finland" of January 14, 2014. Access from the reference and legal system "Consultant Plus" (in Russ.).

[24] Judgment of the ECHR in the case "Couderc and Hachette Filipacchi Associates v. France" of November 10, 2015. Access from the reference and legal system "Consultant Plus" (in Russ.).

[25] Judgment of the ECHR in the case "Stangu and Scutelnicu v. Romania" of January 31, 2006. Access from the reference and legal system "Consultant Plus" (in Russ.).

[26] Judgment of the ECHR in the case "Pedersen and Baadsgaard v. Denmark" of December 17, 2004. Access from the reference and legal system "Consultant Plus" (in Russ.).

[27] Judgment of the ECHR in the case "Von Hannover v. Germany (No. 2)" of February 7, 2012. Available at: <http://hudoc.echr.coe.int/eng?i=001-109029> (in Eng.).

[28] Barendt E. (2016) Problems with the 'reasonable expectation of privacy' test. Journal of Media Law. 8 (2): 129–137. DOI: 10.1080/17577632.2016.1209326 (in Eng.).

[29] Soboleva A. K. (2016). «Авторитет и беспристрастность судебной власти» в толковании Европейского суда: СМИ и интересы правосудия ["The authority and impartiality of the judiciary" in the interpretation of the European court of justice: the media and the interests of justice]. Precedents of the European Court of Human Rights. 4: 3–17. Access from the reference and legal system "Consultant Plus" (in Russ.).

[30] Judgment of the ECHR in the case "Grebneva and Alisimchik v. Russia" of November 22, 2016. Access from the reference and legal system "Consultant Plus" (in Russ.).

[31] Moosavian R. (2015) Deconstructing 'Public Interest' in the Article 8 vs Article 10 Balancing Exercise. Journal of Media Law. 6 (2): 234–268. DOI: 10.5235/17577632.6.2.234 (in Eng.).

[32] Decision of the ECHR on the admissibility of complaint No. 50538/12 in the case of Damien Meslot v. France of January 9, 2018. Access from the reference and legal system "Consultant Plus" (in Russ.).

[33] Judgment of the ECHR in the case "Cheltsova v. Russia" of June 13, 2017. Access from the reference and legal system "Consultant Plus" (in Russ.).

[34] Judgment of the ECHR in the case "OOO Vesti and Ukhov v. Russia" of dated May 30, 2013. Access from the reference and legal system "Consultant Plus" (in Russ.).

UDC: 013

V. M. Kraievskiy¹, M. O. Skoryk¹, S. V. Bohdan¹, V. P. Hmyrya²

¹University of the State Fiscal Service of Ukraine, Irpin, Ukraine;

²Cherkassy State Business College, Ukraine.

E-mail: viktoryagmirya@ukr.net

COHERENCE OF ACCOUNTING SYSTEMS: TRANSCENDENCE OF CONTENT AND IMMUNITY OF PURPOSE

The relevance of the research topic. The article deals with the essence of the transcendental approach to determining the content of accounting systems, which the authors propose for praxological use not by philosophical interpretation (unknowable) but by linguistic understanding (what goes beyond) and subjective active perception (something no one used). It is proved that the definitive formogenesis of national wealth allows to determine the factors of legitimization of its use as a system-forming basis of existential-humanistic foundations of awareness of social relations and their quantitative reflection in accounting systems. Methodological approaches to the formation of national wealth by its system-forming elements have been improved through a combination of general theoretical and specifically historical approaches to understanding both the very essence of wealth and the broader sources and economic mechanisms of its accumulation and social distribution. It is substantiated that the methodological foundations of accounting and informational display of national wealth are structured by organizational provisions of accounting policy, which is detailed as an inter-level accounting and synthetic service of accentuated objectification of a research object.

Goal. To study the theoretical and methodological provisions for substantiating the coherence of accounting systems, taking into account the transcendence of their content and the immanence of purpose in the plane of instrumental support for service management. **Methods.** The methodological basis of the study is the philosophical and general scientific methods of cognition of the transcendence of their content and immanence of purpose in the plane of instrumental support of service management. **Results.** The scientific plane of the generalizations made has become a reliable support not only for the systematization of multi-vector calculus, but also for the improvement of methodological approaches to the formation of national wealth by its system-forming elements through the combination of general theoretical and concrete historical approaches to understanding as the most economical nature and the essence of the mechanism accumulation and social distribution. In particular, we propose to use a complex accounting methodology of epistemological dispersion of components of national wealth, which is based on the consideration of the sectoral specificity of different types of its potential, which is a dominant condition in the system of priorities of the respective stages of socio-economic growth. Conceptual approaches to the construction of accounting standard of social and environmental responsibility of business are systematized. The methodology for assessing national wealth, including its biological component in the context of nature-man dual communication, is presented. According to the results of accounting and information monitoring, the criterion apodicticity of the indicative verification of the growth of national wealth was factualized. In particular, multivariate indicator systems are dispersed in accordance with the level differentiation of the management itself.

Key words: accounting system, accounting and information process, information-syntactic service, management, national riches.

Introduction. Scientific and technological progress is accompanied by a negative impact on the environment. Anthropogenic activity changes the environment, which threatens human existence. Achieving a compromise between the economic, social and environmental needs of society is one of the factors in satisfying humanity's scarce natural resources, which together with other components form the nation's national wealth. Businesses evaluate the limits of their impact on natural resource potential through information that is based on micro-level accounting data and statistical information on the

national macro-level system of accounts. This necessitates an in-depth study of the theoretical and methodological foundations of the formation of such accounting systems that characterize the status, processes of accumulation, use and reproduction of national wealth at different levels of government.

The ambivalence of the economic categorical apparatus leads to a metonymic perception of information flows, which in turn intensifies obstructive processes in the coverage of the real state of national wealth. In this context, accounting systems at different levels of government solve their specific and relevant tasks, but in the process of their interaction new problems (each of them in relation to the other is an "external environment") are becoming more and more important. After reaching a certain quantitative and qualitative level, the next step of the accounting system arises, for which the tasks of the lower system become irrelevant. Therefore, demarcation processes in accounting systems make it impossible to obtain apodictic information, which leads to palliative evaluation in axiological multilevel studies. These problems lead to the coherence of accounting systems, their convergence, coordination and interaction in the accounting and information process, rethinking the place and role of accounting and statistics as components of the information-synthetic management service. The search for ways of harmonization of accounting systems in modern conditions should be aimed at studying the transcendence of their content and determining the immanence of purpose. The outlined trend leads to a rethinking of the place and role of accounting systems, in particular, in the plane of instrumental support for management support services.

Analysis of recent researches and publications. Problems of formation of national wealth, and its reflection in accounting systems, ways of studying patterns of use and, as a consequence, analysis and design optimization of structural relationships and proportions in social systems were changing simultaneously with the genesis of economic science itself. Therefore, the fundamental foundations of this issue are considered thematic achievements of such luminaries-classics as: F. Kene [1, p.19–36], D. Ricardo [7, p.45–73], J. M. Keynes [1, p.19–36], A. Smith [8, p.52–73], K. Marx [7, p.45–73], A. Marshall [1, p.19–36] and others.

As for the authors of contemporaries, it is worth noting the significant contribution to the complementarity of the additive factors of the evolution of the content of the studied concept of I. I. Agapova [1], O. D. Hudzinsky [9], V. K. Savchuk [5].

The accounting aspect of terminological scanning of the object of scientific search prevails in the works of S. V. Bartash [4], F. F. Butynets [3], T. G. Kaminsky [5], G. G. Kireytseva [9], N. M. Malyugi [2].

The primacy of social determinism and environmental moderation in views on national wealth is revealed in studies of problems of correlation of economy and ecology, implementation of accounting of its social function, questions of theory and methodology of the international system of corporate social reporting, and posteriori by the works of N. V. Gerasymchuk [3], Yu. Miskin [11], I. V. Okhrimenko [5], L. V. Chizhevskaya [3].

At the same time, on the periphery of the attention of the scientific community there is a controversy over the accounting and information methodology of the value reflection of the formation and use of structural elements of national wealth, which necessitates an in-depth study of static parameters in the means of its perception, as well as indicators of the dynamics in the mechanisms of practice. Not being the exclusive property of any one area of economic theory, at present, this concept is actively used in the theoretical and methodological apparatus of various branches of scientific knowledge. However, the perception of the sources and, most importantly, the results of the socio-economic progress of modern society is increasingly focused on global qualitative characteristics. Such an understanding of the philosophy of sustainable development management must inevitably be reflected in accounting systems research, in particular, the justification of their coherence, which relies on the transcendence of content and the immanence of purpose in knowing the essence and criteria of modern socio-economic progress, its prerequisites, general principles of human interaction and nature. This, in turn, determines the validity of the topic, the content of the declared purpose, the relevance of the tasks set and the structure of the content of the study.

The **purpose** of the article is to investigate the theoretical and methodological provisions for substantiating the coherence of accounting systems, taking into account the transcendence of their content and the immanence of assignment in the plane of instrumental support for management services.

Main results of the study. The practical realization of the purpose of the study involves the definitive legitimization of the semantic thesaurus used. Coherence (from the Latin "cohaerens" - which is in communication) means the coordinated course of time of the processes, which is manifested in their assembly. Coherence of accounting systems in accounting and information display of monographically defined object of scientific search, in particular, national wealth is manifested in the convergence and harmonization of the accounting system (microlevels) and the system of national accounts (macrolevels) as basic elements of management services for making quality management decisions [12].

The essence of the transcendental approach to determining the content of accounting systems, the authors propose to use praxeological not philosophically (what can not be known), and linguistic understanding (beyond the boundaries) and subject-object perception (that that nobody used).

It has been empirically confirmed that according to the transcendental approach, accounting systems overcome polemical barriers for greater versatility and publicly demonstrate their benefits as complex commutational units and phenomena, including factors of appropriate purpose in addition to information. Assignment identity is conditioned by a clear formalization of their role in managerial modality.

Taking into account the polyphony of scientists' views on the subject of research, the conceptual and terminological apparatus of the substantive content of the category "national wealth" summarizes the parametric inheritance of a continuously renewed process of reproduction of a social product and determines the prerequisites for the formation of accounting systems for their use in management [8, p. 43-96].

National wealth, as one of the basic macroeconomic categories, reflecting the interdependence of the dynamic and static-structural characteristics of social reproduction, allows us to analyze the necessary proportions between the value and value components of a social product, which only in synthesis ensure the continuity of its growth process. In support of this, we emphasize the unity of value (money) and value (environmental and social) approaches that help to evaluate the processes of formation and distribution of national wealth at the micro, meso and macro levels in the three-dimensional plane [7, p. 41-73].

The context of these positions of the authors is postulated by the considered definitive formogenesis of national wealth, which allows to determine the factors of legitimization of its use as a system-forming basis of existential-humanistic foundations of awareness of social relationships and their quantitative reflection in accounting systems.

We stand on the view that national wealth should be considered in accounting systems not as a category that reflects changes in economic assets, but as a quantity that characterizes the potential of the entire reproduction process. This makes it possible to explore the link between the two fundamental economic categories - capital and wealth. Capital, as part of an economic asset, carries not only the value created in the course of production, but also provides an opportunity to further increase the additional product, which is the basic factor for the growth of national wealth. Thus, its accumulation is manifested not so much in the accumulation of different forms of capital, but in the creation of preconditions for further social reproduction. This confirms the author's hypothesis that economic growth is determined by the dual nature of reproduction of national wealth - its tangible and intangible components: recovered material and natural capital and human resources.

The scientific plane of the generalizations made has become a reliable support not only for the systematization of multi-vector calculus, but also for the improvement of methodological approaches to the formation of national wealth by its system-forming elements through the combination of general theoretical and concrete historical approaches to understanding as the most economical nature and the essence of the mechanism accumulation and social distribution. In particular, we propose to use a complex accounting methodology of epistemological dispersion of components of national wealth, which is based on the consideration of the sectoral specificity of different types of its potential, which is a dominant condition in the system of priorities of the respective stages of socio-economic growth. Changes in the perception of national wealth as an ever-evolving economic category, constantly searching for the internal correspondence between the challenges of expansion and the complexity of information, could not but affect the design of accounting systems that characterize it.

An in-depth analysis of hierarchically agglomerative and non-hierarchical iterative clustering of national wealth based on accounting systems has identified that its main elements are non-financial and financial assets.

Non-financial assets include manufactured assets (fixed and current assets by types of assets, values) and non-produced intangible assets (contracts, leases, licenses), which together constitute property and non-produced tangible assets (land, subsoil, water, forests and others). reproducible and non-reproducible natural resources), which together constitute natural and human capital.

Based on the modern provisions of the theory of capitalization of enterprises, its main processes are defined as: the transformation of the capabilities of the business environment into enterprise resources, activation of resources, productive use of resources; conversion of value flows into capital flows.

Financial capital includes all financial assets of entities at different levels of government (monetary gold and special borrowing rights, cash and deposits, debt securities, insurance programs, pensions and standardized guarantees, derivatives and employee stock options, accounts receivable / payable). The intangible component can be characterized by spiritual and cultural values (accumulated production experience, educational potential of the nation, scientific and technological achievements, information resources, intellectual level, etc.).

Based on the modern provisions of the theory of capitalization of enterprises, its main processes are defined as: the transformation of the capabilities of the business environment into enterprise resources, activation of resources, productive use of resources; conversion of value flows into capital flows [13].

This classification approach makes it possible to generalize internal categorical structural relations to the degree of formal purity of schemes similar to mathematics and should be the basis for the development of accounting systems for the formation and use of national wealth at different levels of government. They help you figure out what display modes are in layered management; then - to generalize and organize these methods; further - to explain them, i.e. to give abstract schemes of their tendencies and regularities; finally, relying on these schemes to identify possible directions for the convergent development of accounting systems and to expand the possibilities of analytical tools for assessing the impact of factors on the final performance indicators of business entities [4, p. 49-63; 5, p. 37-46].

We are convinced that the methodological foundations of accounting for national wealth are structured by the organizational provisions of accounting policy, which is detailed as an inter-level accounting and synthetic service of accentuated objectification of the research object. Scientific knowledge of the content and form of accounting policy thus allows not only to structure the studied main components of national wealth and their elements according to the system of priorities of social socio-economic growth, but also provides an opportunity to assess the impact of economic entities on society and to analyze ways to implement paternalistic programs in the process of social investing.

Organizational and methodological aspects of accounting policy structuring underlie the conceptual approaches to the construction of the accounting standard proposed by the author (figure 1), which regulates the social responsibility of doing business, in the context of a systematic approach to the problem of adaptation of accounting in the general civilizational evolution of priorities in the modern economic community , through the definition and use of regulations, regulations and indicators of regulation of social responsibility awareness of doing business to personify responsibility for the formation and use of national wealth.

As a prerequisite for the development of this standard, a monographic study of the characteristics of socially responsible business by domestic entities was conducted, which diagnosed the degree of incorporation of the connotation of signs of interaction between society, economy and environment in accounting and information reflection of the use of national wealth. In particular, a trichotomous ordering of the polyphony of the scientific community's views on the lexematic vocabulary "society - economy - environment" in the investigated topics of interdisciplinary professional discussion, as well as their interaction in specialized reporting, was carried out.

By deepening the principles of reporting determinants in the processes of managing the formation and use of national wealth in terms of content transcendence and immanence of accounting systems multi-level hierarchy of management axiomatized that the capacity of reports is constantly increasing. However, as reporting progresses by separate, disparate standards, the important interdependence between strategic, managerial, operational, financial and non-financial components remains unclear. In order to meet the growing demand for a wide range of market, regulatory and civil society information, it is necessary to have holistic reporting that will ensure its future development [6, pp. 37-54; 10, 39-83]. We propose that such accounting units and the system of national accounts reflecting such state units are capable of

combining different types of reporting in a coherent, integrated whole, which determines the processes of its formation.

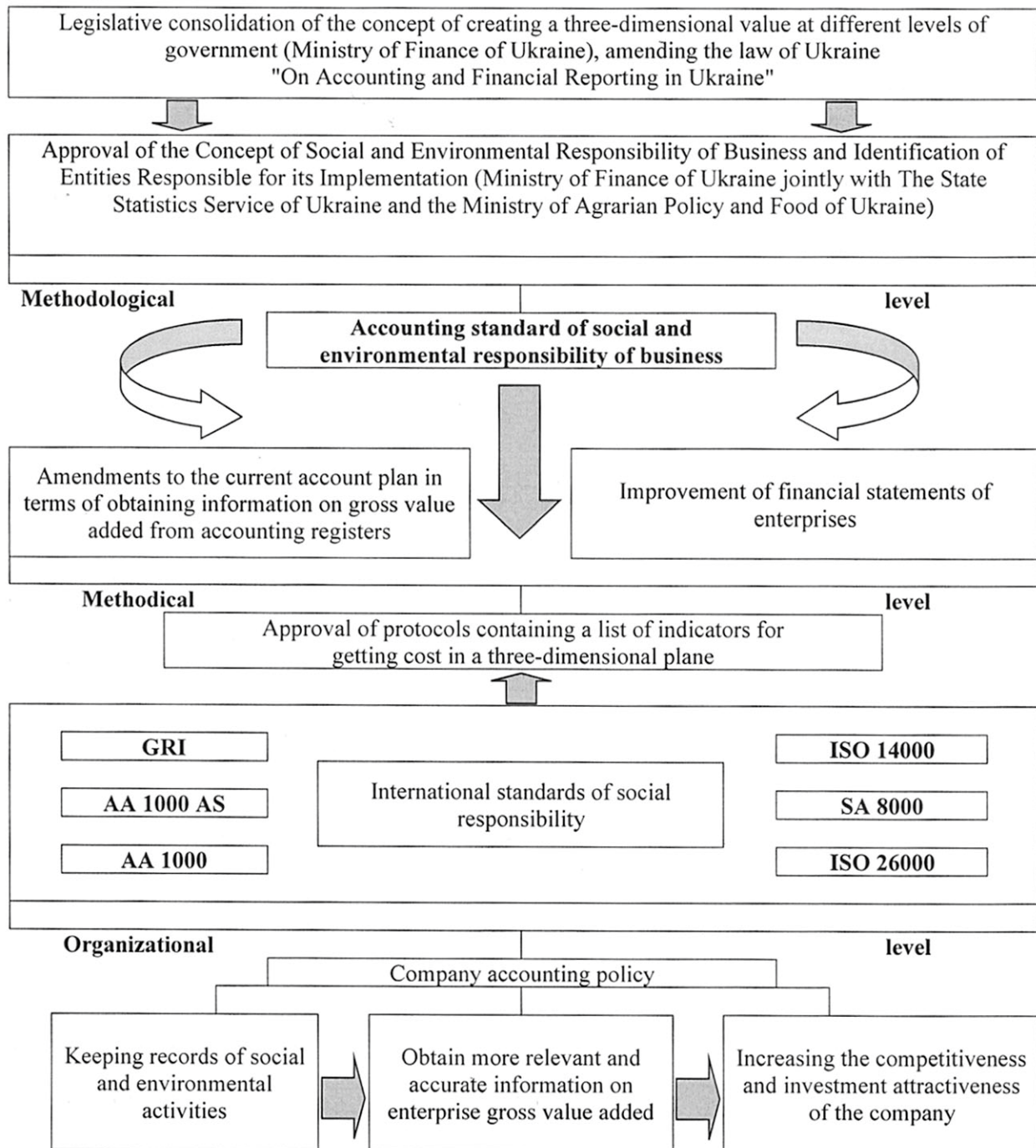


Figure 1 – Conceptual approaches to the construction of accounting standard of social and environmental responsibility of business

The evaluation block of cognition of the object of scientific search is initially characterized by the author's accounting and information monitoring of the state of national wealth through the application of a comprehensive approach to the study of the main system-forming biological component of it in the context of "nature-man" (figure 2), as well as the study of structure, mechanisms, proportions and stages of the process of its reproduction.

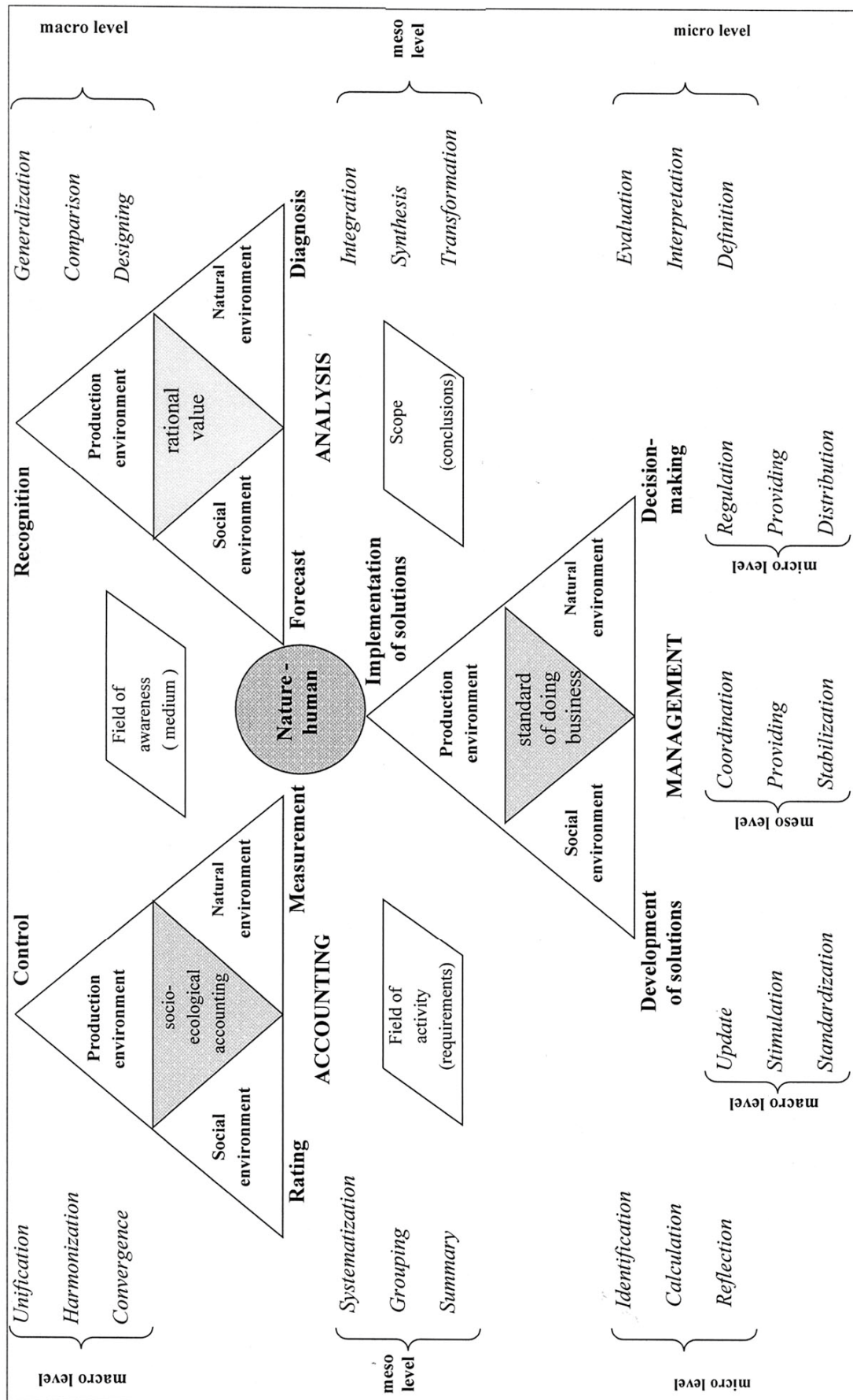


Figure 2 – Methodology for assessing national wealth, in particular its biological component in the context of nature-human dual communication

According to the results of accounting and information monitoring, the criterion apodicticity of the indicative verification of the growth of national wealth was factualized. In particular, multivariate indicator systems are dispersed in accordance with the level differentiation of the management itself. An updated methodology for indicative verification allows us to assess the degree of humanization and greening of economic growth on the basis of new ideas about the long-term preconditions and criteria for socio-economic progress of modern society.

Conclusions. Summarizing the above material, it should be noted that the theoretical, methodological and organizational and practical provisions of the coherent functioning of accounting and information systems of the formation of national wealth in the multilevel hierarchy of management of the sustainability features in the development of economic entities are determined by the transcendence of maintenance of content service management.

The conceptual terminological apparatus of the substantive content of the category "national wealth" summarizes the parametric inheritance of a continuously renewed process of reproduction of a social product. The definitive formogenesis of national wealth is determined by the factors of legitimizing its use as a systematic basis of existential-humanistic foundations of awareness of social relationships.

Improvement of methodological approaches to the formation of national wealth by its system-forming elements should be carried out through a combination of a theoretical and specifically historical approach to understanding both the essence of wealth, and more broadly the sources and economic mechanisms of its accumulation and social distribution.

Organizational provisions of accounting policy development as an inter-level accounting and information tool of accentuated objectification of national wealth are substantiated by its content and form in a way that allows to structure the studied basic components of national wealth and their elements according to the system of priorities of social socio-economic growth.

Conceptualized by the transcendence of the content and immanence of the accounting and national accounting systems, the accounting standard regulates the social responsibility of doing business in the context of personifying responsibility for the formation and use of national wealth.

The well-grounded principles of reporting determinants in the processes of managing national wealth by accounting systems of the multilevel hierarchy of management provide reflection of the state of national wealth and facilitate the integration of different types of content reporting into one coherent, integrated whole that determines it.

Conducted accounting and information monitoring of the state of national wealth establishes the trend tendency of dominant deviations, as well as factualizes the criterion apodictic of indicative verification of its growth, in particular, disperses multivariate groups of indicators of accounting systems in accordance with the transcendence of the content and their content.

В. Н. Краевский¹, М. О. Скорык¹, С. В. Богдан¹, В. П. Гмыря²

¹Украина мемлекеттік фискалдык қызметінің университеті, Ирпін, Украина;

²Черкассы мемлекеттік бизнес колледжі, Украина

**ЕСЕПТІК ЖҮЙЕЛЕРДІҢ КОГЕРЕНТТІЛІГІ:
МАЗМҰНЫНЫҢ ТРАНСЦЕНДЕНТТІЛІГІ ЖӘНЕ ТАҒАЙЫНДАУ ИММАНЕНТТІЛІГІ**

В. Н. Краевский¹, М. О. Скорык¹, С. В. Богдан¹, В. П. Гмыря²

¹Университет государственной фискальной службы Украины, Ирпень, Украина;

²Черкасский государственный бизнес-колледж, Украина

**КОГЕРЕНТНОСТЬ УЧЕТНЫХ СИСТЕМ:
ТРАНСЦЕНДЕНТНОСТЬ СОДЕРЖАНИЯ И ИММАНЕНТНОСТЬ НАЗНАЧЕНИЯ**

Аннотация. В статье рассмотрена сущность трансцендентного подхода к определению содержания учетных систем, которые предлагаются авторами для праксеологического использования не по философским толкованиям (то, что нельзя познать), а по лингвистическим пониманиям (то, что выходит за пределы) и

субъектно-объектным восприятием (то, что никто не использовал). Амбивалентность экономического категориального аппарата приводит к метонимическим восприятиям информационных потоков, в свою очередь, усиливает обструктивные процессы при освещении реального состояния национального богатства. В этом контексте учетные системы на различных уровнях управления решают свойственные и актуальные для них задачи, но в процессе их взаимодействия появляются новые проблемы (каждая из них по отношению к другой является «внешней средой»), которых становится все больше. После достижения определенного количественного и качественного уровня возникает следующая ступень учетной системы, для которой задачи низшей системы становятся несущественными.

Цель: исследовать теоретико-методические положения обоснования когерентности учетных систем с учетом трансцендентности их содержания и имманентности назначения в плоскости инструментальной поддержки сервисного обеспечения управления.

Методы. Методологической основой исследования являются философские и общенаучные методы познания трансцендентности их содержания и имманентности назначения в плоскости инструментальной поддержки сервисного обеспечения управления.

Результаты. Итак, демаркационные процессы в учетных системах делают невозможным получение аподиктических информаций, приводят к паллиативной оценке в аксиологических разноуровневых исследованиях. Указанные проблемы побуждают к когерентности учетных систем, их конвергенции, координации и взаимодействия в учетно-информационном процессе, переосмысление места и роли учета и статистики как составляющих информационно-синталитичного сервиса управления. Поиск путей гармонизации учетных систем в современных условиях должен быть направлен на изучение трансцендентности их содержания и определения имманентности назначения. Обозначенная тенденция обуславливает переосмысление места и роли учетных систем, в частности, в плоскости инструментальной поддержки сервисного обеспечения управления. Научно-технический прогресс сопровождается негативным воздействием на окружающую среду. Антропогенная деятельность меняет окружающую среду, ставит под угрозу существование человека. Достижение компромисса между экономическими, социальными и экологическими потребностями общества является одним из факторов удовольствия человечества ограниченными природными ресурсами, которые вместе с другими составляющими формируют национальное богатство страны. Субъекты хозяйствования оценивают пределы своего влияния на природно-ресурсный потенциал благодаря информированию, основой которого являются данные бухгалтерского учета на микроуровне и статистическая информация системы национальных счетов на макроуровне. Это обуславливает необходимость углубленного изучения теоретических и методологических основ формирования таких учетных систем, характеризующих состояние, процессы накопления, использования и воспроизводства национального богатства на разных уровнях управления. Доказано, что дефинитивный формогенез национального богатства позволяет определять факторы легитимизации его потребления как системообразующей основы экзистенциально-гуманистических основ осознания общественных взаимоотношений и их количественного отражения в учетных системах. Усовершенствованы методические подходы формирования национального богатства его системообразующих элементов через сочетание общетеоретического и конкретного подходов к пониманию как самой сущности богатства, так и в более широком плане источников и экономических механизмов его накопления и общественного распределения. Обосновано, что методологические основы учетно-информационного отображения национального богатства структурируются организационными положениями учетной политики, детализированы в качестве межуровневого учетно-синталитичного сервиса акцентированной объективизации объекта исследования. Систематизированы концептуальные подходы построения учетного стандарта социально-экологической ответственности бизнеса. Приведена методология оценки национального богатства, в частности его биологической составляющей в контексте дуальной связи «природа-человек». По результатам учетно-информационного мониторинга фактуализовано критериальная аподиктичность индикативной верификации роста национального богатства. В частности, дисперсовано поливариантные системы индикаторов в соответствии с уровневой дифференциацией самого управления.

Ключевые слова: учетная система, учетно-информационный процесс, информационно-синталитический сервис, управление, национальное богатство.

Information about authors:

Kraievskiy Volodymyr Mykolaiovych, ScD in Economic, Associate Professor, University of the State Fiscal Service of Ukraine, 08205, Ukraine, Irpin, Kyiv oblast; <https://orcid.org/0000-0003-3513-3666>

Skoryk Maryna Olehivna, PhD in Economic, Associate Professor, University of the State Fiscal Service of Ukraine, Ukraine, Irpin, Kyiv oblast; <https://orcid.org/0000-0003-3291-706X>

Bohdan Sviatoslav Volodymyrovych, University of the State Fiscal Service of Ukraine, Ukraine, Irpin, Kyiv oblast; <https://orcid.org/0000-0002-3249-7096>

Hmyrya Viktoriia Petrivna, Associate Professor, Candidate of Science (Economics), Cherkassy State Business College, Ukraine; viktoryagmirya@ukr.net; <https://orcid.org/0000-0003-3070-0158>

REFERENCES

- [1] Agapov I.I. (1998) History of economic thought. Lectures. M.: Association of authors and publishers "TANDEM". Publishing house EKMOS. 248 p. (in Rus.).
- [2] Balinese F.F. (2001) Accounting : the accounting policy and chart of accounts, reporting, TST. Exactly: PE "Ruta". 512 p. (in Ukr.).
- [3] Balinese F. F. (2000) Accounting management. Zhytomyr: ZHITI. 448 p. (in Ukr.).
- [4] Bardash V. S., Kostenko O. M., Krasicki V. M. (2017) Economic synthetics: philosophical discourse of formation and development. C.: CPU Komprint. 225 p. (in Ukr.).
- [5] Kaminska T.G., Krasky V.M., Kostenko O.M., Ohrimenko I.V., Savchuk V.K. (2016) Information system of agricultural enterprise management: analytical indicators of formation and efficiency. K.: publishing house "Vik Print". 270 p. (in Ukr.).
- [6] Savchuk V.K., Kostenko O.M., Krasicki V.M. (2013) Information-analytical process: a praxeological approach. K.: publishing house "Vik Print". 204 p. (in Ukr.).
- [7] Kraevsky V.M. (2015) Accounting of the agrarian potential of national wealth. K.: publishing house "Vik Print", 440 p. (in Ukr.).
- [8] Kraevsky V.M. (2012) Accounting system : evolution and development. K.: "Agrar Media Group". 192 p. (in Ukr.).
- [9] Guzinski A.D., Kireyitsev G.G., Pakhomova T.M., Savchuk V.K. (2009) Accounting and analytical mechanism of management of enterprises (theoretical-methodological aspect). K. : IPK SESU. 226 p. (in Ukr.).
- [10] Kostenko A. (2017) Accounting and information support of management of functioning of agricultural enterprises. K.: publishing house "Vik" print. 350 p. (in Ukr.).
- [11] Savchuk V.K., Kostenko A.M., Miskin Y.V., Kraevsky V.M. (2013) Management of efficiency of agricultural production : informational and analytical aspect. K.: publishing house "Vik" Print. 470 p. (in Ukr.).
- [12] Philosophical Encyclopedic Dictionary / [ed. L. F. Ilyicheva, P. N. Fedoseyev, S. M. Kovalev, V. G. Panov]. M.: Ows. Encyclopedia, 1983. 840 p. (in Russ.).
- [13] Shevchuk N.V., Terentieva O.V., Klymenko S.M., Hmyrya V.P. (2019) Management aspects of capitalization in modern conditions of enterprise activities 2019. Vol. 4, N 380. P. 132-141. ISSN 2518-1467 (Online), ISSN 1991-3494 (Print). <https://doi.org/10.32014/2019.2518-1467.101>

A. Raimkulova

The Ministry of Culture and Sport of the Republic of Kazakhstan, Nur-Sultan, Kazakhstan.

E-mail: aqtoty.raimkulova@gmail.com**KAZAKH MUSIC CULTURE
ON THE GLOBALIZATION CROSSROADS:
ETHNIC TRADITIONS VERSUS COMPOSER SCHOOL
IN INTERCULTURAL INTERACTION**

Abstract. At the present stage, Kazakh musical culture is heterogeneous. It represents traditions coexisting at the same time and interacting with each other: Kazakh ethnic and newly established composer school (tradition). Examining changes in cultural landscapes of the 20th century I reveal the peculiarities of interaction and dialogue between two kinds of culture: ethnic and global (endogenous and exogenous). The procedures include the complex study of the history of Kazakh culture in the 20th century, stylistic analysis of traditional and composer's music, semiotic approach to intercultural interaction, as far as a comparative analysis of oral and written music of 19th and 20th centuries.

On one hand, dramatic changes in the structure of music culture were caused by external objective reasons: new industrial and postindustrial civilization phases (urbanization and information technologies); intensification of interaction with western (mainly Russian) cultures, etc. On the other hand, some changes were inspired by inner factors: diverse development of local song and *kui* (dombyra piece) traditions; Soviet cultural policy. As a result new type (or layer) of national culture – Kazakh composers' music – appeared. It was connected with the formation of a national style based on transcriptions and borrowing. Traditional music was influenced by new social institutions (philharmonic halls, theatres, radio, conservatoire) that caused changes in the creative process (decrease of oral transmission, lack of traditional social context) as well as in the style (virtuoso performance, new genres of songs).

Key words: Kazakh music culture, Kazakh traditional music, Kazakh composer school, intercultural interaction.

Introduction. At the present stage, Kazakh musical culture is heterogeneous. It represents traditions coexisting at the same time and interacting with each other: canonical national and new European¹ [1] or endogenous and exogenous. The first existed for centuries in the Central Asian steppes, the second was formed on the basis of European academic musical art through borrowing the characteristics of traditional music.

The process of becoming a composer tradition is due to historical processes that have intensified in the last century. Changes in the fields of science, technology, politics, and culture are causing rapid and significant transformations in the life of society in all countries without exception. It is difficult to say

¹In Kazakhstan, all musical and creative forms proposed by V.J. Konen for describing modern musical reality are presented: professional composer creativity of the European tradition, folklore, "regional genres" of a professional nature, music of the "entertaining genres" and avant-garde [25]. Nevertheless, from a broad cultural perspective in the Kazakh musical culture, there are two fundamental layers, two significant systems (professionalism of the European tradition and Kazakh traditional music). The third layer ("entertaining genres") is represented by various directions, adjacent mainly to the introduced art of the European tradition, except for songs by amateur composers.

what influenced the change in the cultural landscape of Kazakhstan to a greater extent: the development of ethnography and ethnomusicology; development of transport and means of disseminating information (radio); intensification of intercultural communication or the cultural policy of the Soviet Union; accelerated industrialization and urbanization. All these factors in a complex influenced the emergence of an incipient Kazakh national composer school and further “transition from the traditional sphere of culture to the cultural industry” [2, p.132].

New forms of traditions within a holistic culture receive a theoretical justification in the philosophy of culture, primarily through the concept of dialogue proposed by M. M. Bakhtin [3, pp.472-489] and developed by V. S. Bibler [4, pp. 111-170]. It is curious that neither Bakhtin nor Bibler develops the problem of dialogue in relation to national cultures, but the main provisions of their theories are applicable to them as a particular manifestation of the broad concept of “culture”. About dialogue in the works of Dostoevsky, M. Bakhtin says: “There can be no talk of any synthesis; we can only talk about the victory of one or another voice or a combination of votes where they agree” [3, p.177]. However, in musicology and cultural studies, the idea of new national art (of the Western-type) as a synthesis of various cultures (see, for example, [5,6] and others) has been established. The history of the music of Kazakhstan, in which, on the basis of a dialogue between the traditions of West and East in the 20th century, a new tradition – composer’s music – appears, explains the apparent contradiction.

Research methods. An integrated approach to the object of study is realized through a systemic and historical method, since culture in general, as well as the composer school in particular, are understood as a system that develops over time. The identification of objective signs of the manifestation of ideas in the means of artistic expressiveness determines a structural approach to the subject of study. In addition, the subject of the study involves reliance on the specific musicological methods: musical-historical, source study, analytical, stylistic, comparative, cultural and sociological.

Results and discussion. In the Kazakh steppe, as in many regions with a developed traditional musical culture, at the turn of the 19th and 20th centuries, there was a meeting (namely a meeting, not a collision) of two significantly different musical worlds: Kazakh traditional and European academic art. Continuing almost parallel existence, interacting only in a limited space of musical experiment (for example, transcriptions of European composers for modernized national instruments), both of these *musics*² (term in plural by G. Orlov [7]) became the basis for the birth of a kind of third reality of the national musical culture – the national composer’s school. It is in it that processes take place that determines the face of the entire musical culture of Kazakhstan from the 1930s to the present.

The 20th century was the century of a change in the cultural paradigm for many countries and societies that have lived for thousands of years in a traditional way. This change is consistent with the typology of historical types of civilization proposed by Alvin Toffler, who distinguishes between three phases (“waves”): agricultural, industrial and post-industrial [8, p.4]. The transition from agricultural, artel and manufacture to standardization, factories, and industries coincided with changes in the field of art. Instead of “unhurried” reproduction of the subject of artistic activity in the context of traditional culture and the rule of the canon, musicians, writers, artists became more and more involved in market relations with the production for an anonymous consumer. E. Toffler describes the changes that have occurred in the world of art: “The very structure of art production has changed, and music clearly demonstrates this.

²The word “music” in most European languages refers to uncountable. However, ethnomusicology of the second half of the 20th century suggests introducing the plural form of this noun in the context of “world musics”, “oriental musics”, referring to various musical cultures based on significantly different systems. Among the first we encounter this form in the works of the British ethnomusicologist Lawrence Picken [30], who studied the music of the East from Turkey to Japan since 1944. The academic nature of plural use is enshrined in international conferences and collections devoted to the so-called non-Western (non-Western) or non-European music (for example, the International Music Symposium in Manila in 1966 [31]). There is a presentation of different layers of the musical culture of one people as several musics: in the music collection “Vietnam Musics” [32] compiled by composer Pham Duy, separate sections are devoted to folk songs, music for entertainment and theater music. In Soviet and post-Soviet musicology, the term “musics” in relation to world musical culture was first used by I. I. Zemtsovsky and G. Orlov.

When the Second Wave surged, concert halls began to appear in London, Paris, Vienna and in many other cities. Cash registers and an impresario came with them ... ” [8, p.31].

The change in the production phase entailed significant changes in political life, manifested, first of all, in a clear division of political forces according to the ideological principle into “right” and “left”. The confrontation, which began as a clash of carriers of various ideas within the industrializing countries, became global after the 1917 revolution. The leadership of the USSR was perhaps one of the first to recognize the importance of art in this struggle for the minds of ordinary people and took control of cultural transformations in national republics. However, it is hardly worth asserting that Soviet cultural policy became the reason for the formation of young national composer schools of the Soviet East [9]. Rather, it significantly accelerated the processes, the prerequisites of which were formed even in tsarist Russia.

The period of the “solo” existence of tradition cannot be called a period of isolation: at all times in the world of nomads, there have been and developed ties with neighboring peoples, which sometimes have significantly different musical cultures. In the creativity, this communication was reflected in the adaptation of originally foreign cultural forms and genres (for example, the Turkmen *kui* genre in the West Kazakhstan *domyra* tradition, Kazakh singers performing Tatar songs). That is, the system of traditional music was initially not completely leakproof, but had the mechanisms of absorption, adaptation of introduced (albeit related) musical forms and genres.

The period of the emergence and development of the composer school of the new European tradition and related institutions (philharmonic societies, theaters, institutional education) was preceded by more than a hundred years of the heyday of traditional songs and instrumental art. The types of carriers of the oral tradition that existed from antiquity³ and their art have significantly changed, incorporating new themes and motives of creativity into the repertoire. T. K. Jumalieva notes the expansion of the range of themes and images in the poetry of *akyns*⁴ which is close in many respects to European romantics [10]. S. A. Yelemanova connects this phenomenon (as well as the complication of the musical language) with musical and poetic specialization, the rise of artistic aspect in creative process: “The gradual socio-political changes associated with Kazakhstan’s accession to Russia, the opening of previously impenetrable society, the elimination of ancient ideological views freed up the artistic beginning in *akyn* art in, first of all, poetic and improvisational (the names of *akyns* became known from the end of the 18th century), and then the musical side. It was at this time that a recitative vocal-instrumental (close to ritual-everyday melodic) tradition took shape. ” [11, p.62]. A similar process takes place in instrumental music, which, according to A. I. Mukhambetova, reached the highest perfection in the work of ingenious *kuishy* composers of the 19th-20th centuries [12].

Advanced composers, songwriters, and *kuishy* are aware of the need to update art, expand the borders of a canon. The most profound reforms are associated with the names of *Kurmangazy* (1818-1896) who transformed the form of West Kazakhstan *domyra kui*, and Abay Kunanbaev (1845-1904), who introduced new techniques of versification and melodic. Almost every composer of the oral tradition of the 19th century renews technique and changes to the canons of traditional art. One can talk about the formation of not only a number of regional traditions but also about the addition of vivid individual

³One of the most justified versions of the emergence history of carriers types of the vernal poetic tradition is given by the folklorist and philologist E. D. Tursunov [26]. The *akyn* type (poet-representative of the genus) branched off from the *baksy* (shaman) around the beginning of 1 millennium BC. Types of *sal* and *seri* (wandering poets and musicians compared to medieval minstrels) arose at the junction of the II-I millennium BC. *Zhyrau* (storytellers of the epos) appear no later than the beginning of the ancient Turkic era (beginning of the 1st millennium AD). The genesis of the carriers of the *kuishi* instrumental tradition is partially disclosed in the articles by A. I. Mukhambetova and M. Gamarnik. *Kui* – the only, but many-sided, genre of instrumental music of the Kazakhs – is gradually being isolated from the syncretic art of *baksy*, *sal-seri* and *zhyrau* [28] [27]. It can be assumed that the *kuishi* stood out as an independent type no later than the 9th century AD, at least the life of the legendary creator of the *kobyz* (bowed chordophone) Korkyt-ata dates back to this time.

⁴*Akyn* is the bearer of the musical and poetic tradition of the Kazakh people, the author and performer of songs. To this day there are poetic competitions of *akyns* – *aitys*.

styles⁵ of their most talented representatives (for example, the differences between the styles of Kurmangazy and Dauletkerei (1820-1887) which belonged to the unified West Kazakhstan *dombyra* school *tokpe*, are clearly visible).

An important quality of the musical art of the Kazakhs in the 19th century was democracy. For centuries, the streamlined system of steppe communication, the special status of a musician –person chosen by higher powers and a favorite of the people, the prevalence of playing music and poetic improvisation (in the words of A.K. Zhubanov, which became a catchphrase, “*dombyra* hung in every yurt”) made it possible to quickly disseminate the works of traditional composers and preserve their rich heritage. The wide popularity of many songs and *kuis* has significantly influenced the formation of the composer tradition in the 20th century. On the one hand, they became a fund for borrowing quotation material and elements of the musical language for the entire period of the Kazakh national composer’s school. On the other hand, quotes from oral-professional sources attracted the attention of Kazakhs to the emerging new national art. This is a key feature of the culture of Kazakhstan.

The formation of national composer schools in the republics of the Soviet East where during the 20th century along with everyday and ceremonial folklore there was a developed system of professional traditions of the oral type (national classics in the form of instrumental, song and epic traditions, and in some countries – the traditions of *makomat*), is a characteristic feature of all countries of the Central Asian region and wider – all national cultures of the former USSR. The Central Asian composers were faced with the task of transferring the monody music of ethnic traditions into the conditions of European polyphony (symphony orchestra, ensembles, choir, etc.) [13].

The emergence of the national composer school in the 1930s was preceded by a rather short period of searching for ways to borrow quotes and elements of the musical language by composers of European descent (mainly representatives of the Russian school). Experiments on the transcription of songs and *kuis* in the chamber music genre and the inclusion of traditional music in theatrical performances held in the 1920s are now known to a narrow circle of specialists. However, they anticipated the emergence of a composer tradition, a national opera, and a performing means.

Thus, the emergence of a new type of national art based on the written tradition of European music, symphony and opera was prepared from two sides: from the side of a period of intensive transformation and development of traditional creativity and from the side with the development of cities, modern means of communication (radio) and pan-European culture.

In the relationship between traditional and European cultures, the active principle is European: it studies traditional culture, borrows its elements and partially masters them. Traditional culture allows borrowing, but at the same time retains its essential features. European, introducing itself into the field of existence of endogenous traditions, radically changes the entire cultural landscape. These processes lead certain spheres of traditional art to wither, the rest to the transformation of the transmission method (institutional education instead of the canonical teacher-student), living conditions. In turn, the introduced culture is changing under the influence of local traditions, gradually becoming an integral part of the spiritual life of the nation. Thus, a new type of tradition is emerging – the national composer [9, p.66].

The methods of forming the national style, used by the creators of the new national composer school, were mainly developed in the process of forming the Russian composer school in the 19th century. It was they who determined the nature of the interaction of two musics: traditional and composer. This process is directed in two directions, as V. Konen writes: “Professional music, divorced from folk art, will not become life art. But in turn, folklore without the participation of a composer and a developed professional culture will not grow into a national school.” [14, p.435].

I suggest taking a look at the processes already studied by Kazakhstani musicology that accompanied the emergence and development of the Kazakh national composer school from the perspective of the interaction of two cultures. Their role, in general, is evaluated positively, but one cannot fail to note the

⁵The concept of "style", however, should be used in relation to the professionalism of the oral tradition with the caveat, precisely in regard to the variability associated with the oral transmission of works. About this, the researcher of the *kuishi* Dauletkerei’s creativity P.V. Aravin writes: “... the concept of the style of Kazakh folk music of the pre-Soviet period was reduced not to an individual, but an individualized system of means of artistic expression and image, which are largely typical for a wide range of folk musicians” [29, p.13].

unequal “acquisitions” of European-style national music and traditional art. Among the most important are the collection and study of folklore, the borrowing of its samples and elements by composers (along with back borrowing), the creation of a new environment of musical culture (performers of new music, concert organizations, the educational system).

The collection and study of folklore systematically carried out since 1920 (the most complete collections of that time are the collections of A. V. Zataevich (1869-1936) [15,16]), ensured the preservation of the intangible cultural heritage of previous eras. It is thanks to musical folklore that we have an idea of the richness of the oral tradition of the Kazakhs. B. G. Erzakovich in the early 1990s argued that for decades of collecting activity of many Kazakh folklorists, at least ten thousand songs and kuys were collected [17].

The written fixation of the samples of traditional art has also led to an ambiguous tendency to canonize one variant out of many recorded as the most “correct”. It arises not as a result of a totalitarian planting of uniformity in folk art, but rather as a natural reaction of performers who strive to choose the most winning, abounding with bright intonations melody or tunes. So of the more than ten well-known recordings of Abay Kunanbayev’s song “Segiz Ayaq” (“Eight lines”), only the version of J. Elebekov recorded by L. Khamidi and corrected by G. Bisenova is currently widely known [18, pp.38-43]. Many *kuis* (pieces for traditional instruments) are performed in two or even three versions, however, the accuracy of their reproduction is verified by notes, and each of the variants is more likely perceived as a separate literary text. As a result, diverse options are not just lost, the probabilistic nature of folklore itself is being replaced [19].

In addition, musical notation and even audio fixation inevitably impoverish the text of a work of traditional art, which includes not only the intricacies of intonation, which are not sometimes amenable to fixation but also the conditions of performance and even the state and mood of the respondent. As I. I. Zemtsovsky says, “according to a successful comparison of one folklorist, the notes of the song are like a butterfly dried on a pin: the pollen of live performance disappears in them, in which the inimitable originality and charm of the national manner of intonation lurk” [20].

The borrowing of elements of another culture, as noted earlier, takes place in both oral and written traditions. However, if for the first it is only one of the ways to enrich their own environment, for the second it is the basis of existence, its essential feature. The national style of Kazakhstani music is gradually crystallized by selecting the elements of the musical language through the transcription of folklore samples, highlighting the most characteristic and most beneficial for organizing a harmonic vertical, forming a rhythmic structure, and symphonizing elements (see M. Kokishevas research on fourth-fifth-chords in transcriptions of dombyra texture [21, p.40-54]). Elements of theatricality in the folk art of the storytellers-*zhynrau*, wandering artists *sals*, plots of legends become part of the new national theater. Borrowing takes place at the genre level: by analogy with the Azerbaijani symphonic *mugam* created by F. Amirov in 1948, in 1961 E. Rakhmadiev creates a symphonic *kui* in which the symphonic potential of this traditional genre noted by B. V. Asafyev [22] is realized.

Traditional culture also borrows elements of the musical language and related endogenous genres from the European tradition. Thus the ethnomusicologist S. A. Elemenova repeatedly mentioned in lectures on the traditional musical culture of the Kazakhs and in public speeches the fact that before the beginning of the 20th century the folk song practically did not know the minor key, and the vast majority of the recorded samples sound in major modes. The minor, perceived from Russian music, was quickly absorbed, and by now prevails. Verification of this statement requires a separate statistical study that is beyond the scope of this work. In Kazakhstan, common for almost all non-European cultures tendency to replace old traditions with new ones can be observed: folk song culture is gradually replaced with a mass one (see, for example, research by A. T. Aituarova [23, p.9-10]). In this regard, the socio-cultural phenomenon of amateur composers who use elements of waltz and mass song in Kazakh songwriting is widely studied [24]. That is, we can talk about the creative nature of borrowing in the music of composers and the substitute borrowing in traditional culture.

Conclusion. The processes associated with the creation of a new environment for the existence of music significantly changed the image of the traditional artist and attitude to the work of oral culture. The main place for the performance of an oral-professional song or *kuis* was a *yurt* (traditional tent dwelling), the main condition – celebrations and feasts. In the 1920s and 1930s, numerous cultural houses, concert

halls of philharmonic societies, theaters were erected, which attracted leading professionals from the people – *akyns, sals, kuishis*. The system of traditional education (teacher-student – *ustaz-shakirt*) is replaced by the institutional system of Soviet education (school-college-conservatory)⁶. The song and *kui* transferred from the process of communication during the meeting (on occasion) to the concert program items lost a significant part of the context of the performance⁷, which caused the depth and multilayered meaning of the work of oral culture to be replaced by performing virtuosity and outward brilliance. Duplication of recordings of traditional songs, as well as their transcriptions for European instruments, has affected the decline in the role of improvisation in their performance.

Nevertheless, it is precisely thanks to the collection and study of folklore, the creation of the language of the national composer school based on it⁸, as well as the new environment for the life (performance, distribution) of music in the 20th century that Kazakh culture as a whole overcomes the closeness inherent in traditional art. In the words of ethnomusicologist Alma Kunanbaeva, “Kazakh music began to fit into the context of the all-Soviet musical reality” [21].

А. Раимкулова

Министерство культуры и спорта Республики Казахстан, Нур-Султан, Казахстан

**КАЗАХСКАЯ МУЗЫКАЛЬНАЯ КУЛЬТУРА НА ПЕРЕКРЁСТКАХ ГЛОБАЛИЗАЦИИ:
ЭТНИЧЕСКИЕ ТРАДИЦИИ И КОМПОЗИТОРСКАЯ ШКОЛА
В МЕЖКУЛЬТУРНОМ ВЗАИМОДЕЙСТВИИ**

Аннотация. На современном этапе казахская музыкальная культура неоднородна. Она включает традиции, сосуществующие одновременно и взаимодействующие друг с другом: казахскую этническую и вновь созданную композиторскую школу (традицию). Рассматривая изменения в культурных ландшафтах XX века, в статье раскрываются особенности взаимодействия и диалога между двумя видами культуры: этнической и глобальной (эндогенной и экзогенной). Методы исследования включают комплексное изучение истории казахской культуры XX века, стилистический анализ традиционной и композиторской музыки, семиотический подход к межкультурному взаимодействию, сравнительный анализ устной и письменной музыки XIX и XX веков.

Процесс становления композиторской традиции обусловлен историческими процессами, активизировавшимися в последнее столетие. Изменения в сферах науки, технологии, политики и культуры вызывают быстрые и значительные преобразования в жизни общества во всех без исключения странах. Трудно сказать, что в большей степени повлияло на изменение культурного ландшафта Казахстана: развитие этнографии и этномузыкознания; развитие транспорта и средств распространения информации (радио); интенсификация межкультурного общения или культурная политика Советского Союза; ускоренная индустриализация и урбанизация. Все эти факторы в комплексе повлияли на возникновение молодой казахской национальной композиторской школы.

XX век стал веком смены культурной парадигмы для многих стран и обществ, тысячелетиями живших традиционным укладом. Эта смена соотносится с типологией исторических типов цивилизации, предложенной Элвином Тоффлером, который различает три фазы («волны»): аграрную, индустриальную и постиндустриальную. Переход от сельскохозяйственного, артельного и мануфактурного производства к стандартизации, фабрикам и заводам совпал с изменениями в сфере искусства.

Периоду возникновения и развития композиторской школы новоевропейской традиции и связанных с ним институтов (филармонии, театры, образование) предшествовало более ста лет расцвета традиционного песенного и инструментального искусства. Существовавшие с древности типы носителей устной традиции и их искусство значительно преобразились, включив в репертуар новые темы и мотивы творчества. С. А. Елеманова связывает это явление (как и усложнение музыкального языка) с музыкально-поэтической

⁶Many traditional schools became involved in the institutionalization process (see further research by V. Nedlina [33, pp.52-60]).

⁷Such researchers of Kazakh folklore as A. I. Mukhambetova [35], A. B. Kunanbaeva [34] wrote about the role of context.

⁸This is still characteristic for current state of composers' creativity (see research by A. Tleubergenov and V. Karataeva [36]).

специализацией, высвобождением художественного начала. Формирование национальных композиторских школ в республиках Советского Востока, где к XX веку наряду с бытовым и обрядовым фольклором существовала развитая система профессиональных традиций устного типа (национальная классика в виде инструментальных, песенных и эпических традиций, а в ряде стран – традиции макомата), является характерной чертой всех стран центральноазиатского региона и шире – всех национальных культур бывшего СССР. Перед центральноазиатскими композиторами стояла задача переноса монодийной музыки этнических традиций в условия европейского многоголосия (симфонический оркестр, ансамбли, хор и пр.)

С одной стороны, кардинальные изменения в структуре музыкальной культуры были вызваны внешними объективными причинами: новые этапы индустриальной и постиндустриальной цивилизации (урбанизация и информационные технологии); интенсификация взаимодействия с западными (в основном русской) культурами и т. д. С другой стороны, некоторые изменения были вызваны внутренними факторами: разнообразным развитием местных традиций песни и кюя (пьеса для домбры); советской культурной политикой. В результате появился новый тип (или пласт) национальной культуры – музыка казахских композиторов. Это было связано с формированием национального стиля на основе транскрипций и заимствований. На традиционную музыку повлияли новые социальные институты (филармонии, театры, радио, консерватория), которые вызвали изменения в творческом процессе (уменьшение роли устной передачи, отсутствие традиционного социального контекста), а также в стиле (виртуозное исполнение, новые жанры песни).

Ключевые слова: казахская музыкальная культура, казахская традиционная музыка, казахская композиторская школа, межкультурное взаимодействие.

А. Райымқұлова

Қазақстан Республикасы Мәдениет және спорт министрлігі, Нұр-Сұлтан, Қазақстан

ҚАЗАҚ МУЗЫКАЛЫҚ МӘДЕНИЕТІ ХХ ҒАСЫРДАҒЫ ЖАҒАНДАНУ КЕЗЕҢІНДЕ: МӘДЕНИЕТАРАЛЫҚ ӨЗАРА ӘРЕКЕТТЕСТІКТЕГІ ЭТНИКАЛЫҚ ДӘСТҮРЛЕР МЕН КОМПОЗИТОРЛЫҚ МЕКТЕП

Аннотация. Қазіргі кезеңде қазақ музыкалық мәдениеті біркелкі емес. Ол бір мезгілде қатар өмір сүретін және бір-бірімен өзара әрекеттестік жасайтын дәстүрлерді – қазақтың этникалық және жаңадан құрылған композиторлық мектептерін (дәстүр) қамтиды. ХХ ғасырдың мәдени ландшафтарындағы өзгерістерді қарастыра отырып, мақалада мәдениеттің: этникалық және жаһандық (эндогенді және экзогенді) екі түрінің арасындағы өзара әрекеттесу мен диалогтың ерекшеліктері ашылады. Зерттеу әдістері ХХ ғасырдағы қазақ мәдениетінің тарихын кешенді зерттеуді, дәстүрлі және композиторлық музыканы стилистикалық талдауды, мәдениаралық өзара әрекеттестікке қатысты семиотикалық көзқарасты, ХІХ және ХХ ғасырлардағы ауызша және жазбаша музыканы салыстырмалы талдауды қамтиды.

Композиторлық дәстүрдің қалыптасу процесі соңғы жүзжылдықта жанданған тарихи процестерге негізделеді. Ғылым, технология, саясат және мәдениет салаларындағы өзгерістер барлық елдерде қоғам өміріндегі тез және елеулі өзгерістерді туындатады. Көп жағдайда этнография мен этномузыкатанымның дамуы; ақпарат тарату көлігі мен құралдарының (радио) дамуы; мәдениетаралық қарым-қатынасты қарқынды немесе Кеңес Одағының мәдени саясаты; жедел индустрияландыру және урбанизация Қазақстанның мәдени ландшафтының өзгеруіне ерекше әсер еткенін айту қиын. Осы факторлардың барлығы жас қазақ ұлттық композиторлық мектебінің пайда болуына кешенді түрде әсер етті.

ХХ ғасыр – мыңдаған жылдар бойы жинақталған дәстүрлі салт-ғұрыптарымен өмір сүрген елдер мен қоғамдар үшін мәдени парадигмалардың ауысу ғасырына айналды. Бұл кезең үш фазаны («толқындар») ажырататын Элвин Тоффлер ұсынған өркениеттің тарихи типтерінің типологиясымен байланысты: аграрлық, индустриялық және постиндустриялық. Ауыл шаруашылығы, артелдік және мануфактуралық өндірістен стандарттауға, фабрикалар мен зауыттарға көшу өнер саласындағы өзгерістермен сәйкес келді.

Жаңа еуропалық дәстүр мен институттарға (филармониялар, театрлар, білім беру) байланысты композиторлық мектебінің пайда болу және даму кезеңі дәстүрлі ән және аспаптық өнердің жүз жылдан астам уақыт бойы гүлденуіне әсер еткен еді. Ежелгі заманнан бері қалыптасқан ауызша дәстүрді тасымалдаушылардың түрлері және олардың өнері репертуарға жаңа тақырыптар мен шығармашылық мотивтерді енгізе отырып, айтарлықтай өзгерді. С. А. Елеманова бұл құбылысты (музыкалық тілдің күрделенуі сияқты) музыкалық-поэтикалық мамандандырумен, көркемдік бастауды босатумен байланыстырады. ХХ ғасырға қарай тұрмыстық және әдет-ғұрыптық фольклормен қатар, ауызша түрдегі кәсіби дәстүрлердің дамыған жүйесі (аспаптық, ән және эпикалық дәстүрлер түріндегі ұлттық классика, ал бірқатар елдерде – макомат

дәстүрі) болған кеңестік Шығыс республикаларында ұлттық композиторлық мектептердің қалыптасуы Орталық Азия өңірінің барлық елдеріне және жалпы алғанда, бұрынғы КСРО-ның барлық ұлттық мәдениетіне тән белгі болып табылады. Орталық Азия композиторларының алдында этникалық дәстүрлердің монодиялық музыкасын еуропалық көпдауыстылық жағдайына (симфониялық оркестр, ансамбльдер, хор және т.б.) көшіру міндеті тұрды.

Бір жағынан, музыкалық мәдениет құрылымындағы түбегейлі өзгерістер сыртқы объективті себептерден: индустриялық және постиндустриалды өркениеттің жаңа кезеңдері (урбанизация және ақпараттық технологиялар); Батыс (негізінен орыс) мәдениетімен өзара іс-қимылды қарқындалу және т.б. туындады. Екінші жағынан, кейбір өзгерістер ішкі факторлардан: әндер мен күйлердің (домбыра үшін пьеса) жергілікті дәстүрлерінің әртүрлі дамуынан; кеңестік мәдениет саясатынан туындады. Нәтижесінде ұлттық мәдениеттің жаңа түрі – қазақ композиторларының музыкасы пайда болды. Бұл транскрипция мен шеттен алып пайдалану негізінде ұлттық стильді қалыптастырумен байланысты болды. Дәстүрлі музыкаға жаңа әлеуметтік институттар (филармониялар, театрлар, радио, консерватория) әсер етті, олар шығармашылық процесте (ауызша тараудың азаюы, дәстүрлі әлеуметтік контекстің болмауы), сондай-ақ стильде (виртуоздық орындау, әннің жаңа жанрлары) өзгерістер туғызды.

Түйін сөздер: қазақ музыкалық мәдениеті, қазақтың дәстүрлі музыкасы, қазақ композиторларының мектебі, мәдениетаралық өзара әрекеттестік.

Information about author:

Raimkulova Aktoty, Doctor of Art History on musicology and musical art, DBA, Minister of Culture and Sports of the Republic of Kazakhstan; aqtoty.raimkulova@gmail.com; <https://orcid.org/0000-0002-0826-3652>

REFERENCES

- [1] Dulat-Aleyev V.R. *Tekst natsionalnoy kultury: novoyevropeyskaya traditsiya v tatarskoy muzyke*. Kazan: Kazanskaya gosudarstvennaya Konservatoriya, 1999. 243 p.
- [2] Tasbergenova G.K. The present state of cultural objects in the Republic of Kazakhstan // *News of the National Academy of sciences of the Republic of Kazakhstan. Series of social and human sciences*. Vol. 6. N 328, 2019. P. 126-133. ISSN 2224-5294 <https://doi.org/10.32014/2019.2224-5294.221>.
- [3] Bakhtin M.M. *Problemy tvorchestva Dostoyevskogo*. Kiyev: "Next", 1994. 511 p.
- [4] Bibler V.S. *Mikhail Mikhaylovich Bakhtin, ili Poetika i kultura*. M.: Progress, 1991. 176 p.
- [5] Chang P.M. *Chou Wen-chung and his music: a musical and biographical profile of cultural synthesis : dissertation* – University of Illinois at Urbana-Champaign. 1995.
- [6] Gudmundsson G. *Icelandic rock music as a synthesis of international trends and national cultural inheritance* // *Young*. Vol. 1, N 2, 1993. P. 48-63.
- [7] Orlov G. *Drevo muzyki*. Vashington – Sankt-Peterburg: N.A. Frager & So, «Sovetsky kompozitor», 1992. 410 p.
- [8] Toffler A. *The third wave*. Bantam edition. Bantam Books, 1981. 518 p.
- [9] Drozhzhina M.N. *Molodye natsionalnye kompozitorskiye shkoly Vostoka kak yavleniye muzykalnogo iskusstva XX veka [Tekst] : dis. ... dokt. isk. : 17.00.02 : utv. 16.12.2005 / Drozhzhina Marina Nikolayevna*. Novosibirsk. 2005. 346 p.
- [10] Dzhumaliyeva T.K. *Kazakhskaya muzyka v kontekste kultur // Tvorchestvo kazakhskikh akynov v kontekste edinogo kulturnogo prostranstva*. Almaty, 2002. P. 66-105.
- [11] Elemanova S.A. *Kazakhskoye traditsionnoye pesennoye iskusstvo*. Almaty: Dayk-press, 2000. 188 p.
- [12] Mukhambetova A.I. *Muzykalnye instrumenty v kazakhskoy kulture // Kazakhskaya traditsionnaya muzyka i XX vek / Red. Amanov B.Zh., Mukhambetova A.I*. Almaty: Dayk-Press, 2002. P. 106-118.
- [13] Galitskaya S. *Professionalnaya monodiya v svete sovremennoy kontseptsii muzykalnogo proizvedeniya // Muzykalnoye proizvedeniye: sushchnost, aspekty analiza: [sb. st./cost. I.A. Kotlyarevsky, D.G. Terentyev]*. Kiyev: Muzichna Ukraina, 1988. P. 43-52.
- [14] Konen V.D. *Puti amerikanskoy muzyki*. M.: Muzyka, 1965. 526 p.
- [15] Zatayevich A.V. *1000 pesen kirgizskogo naroda*. Orenburg: Kirgizskoye gosudarstvennoye izdatelstvo, 1925. 403 p.
- [16] Zatayevich A.V. *500 kazakhskikh pesen i kyuev*. Alma-Ata, 1931. 312 p.
- [17] Erzakovich B.G. *Mogushchestvo i ranimost ustnykh traditsiy kazakhskoy muzykalnoy kultury // Boris Girshevich Yerkovich (1908-1996): Izbrannye statyi*. Astana, 2008. 164 p.
- [18] Bisenova G.N. *Pesennoye tvorchestvo Abaya*. Almaty: TOO «Dayk-Press», 1995. 168 p.
- [19] Zemtsovsky I.I. *Vvedeniye v veroyatnostny mir folklor: (K probleme etnomuzykovedcheskoy metodologii) // Metody izucheniya folklor*. Sb. nauch. tr. Leningrad, 1983. P. 15-30.

- [20] Zemtsovsky I.I. Folklor i kompozitor // Muzyka i sovremennost. Sb.st. vyp.7. M. 1971. P. 211-220.
- [21] Kokisheva M.T. Simfonichesky kyuy v tvorchestve sovremennykh kompozitorov Kazakhstana: genezis zhanra, tipologiya i razvitiye : diss.. d-ra filosofii (PhD) : 6D040100 / Kokisheva Marlana Tastemirovna. Almaty, 2016. 183 p.
- [22] Asafyev B.V. O kazakhskoy narodnoy muzyke // Muzykalnaya kultura Kazakhstana. Alma-Ata: Kazgosizdat, 1955. P. 8-10.
- [23] Aytuarova A.T. Narodnye traditsii v massovoy muzyke Kazakhstana (na primere tvorchestva N. Tlندیeva): avtoreferat diss.. kand. iskusstvovedeniya. Tashkent, 1993. 28 p.
- [24] Abdirakhman G. Mass music in Kazakhstan: The phenomenon and its interpretation //Turkic Soundscapes. Routledge, 2018. P. 100-113.
- [25] Konen V. D. Muzykalno-tvorcheskiye vidy XX veka // Etyudy o zarubezhnoy muzyke. M. 1975. P. 427-468.
- [26] Tursunov Ye.D. Vozniknoveniye baksy, akynov, seri i zhyrau. Astana: IKF Foliant, 1999. 252 p.
- [27] Mukhambetova A.I., Gamarnik M. Genezis i funktsii salov i sere v kazakhskom obshchestve // Kazakhskaya traditsionnaya muzyka i XX vek / Red. Amanov B.Zh., Mukhambetova A.I. Almaty: Dayk-Press, 2002. P. 93-105.
- [28] Mukhambetova A.I. Genezis i evolyutsiya kazakhskogo kyuya (tipy programmnosti) // Kazakhskaya traditsionnaya muzyka i XX vek. Almaty: «Dayk-Press», 2002. P. 119-152.
- [29] Aravin P.V. Dauletkery i kazakhskaya muzyka XIX veka. M.: Sovetsky kompozitor, 1984. 152 p.
- [30] Picken L.E.R. Music and tradition: essays on Asian and other musics presented to Laurence Picken. Cambridge University Press, 1981. 244 p.
- [31] Maceda J. The musics of Asia: papers read at an International Music Symposium held in Manila, April 12-16, 1966. Manila, 1971. P. 198.
- [32] Duy P. Musics of Vietnam. Illinois: Southern Illinois University Press, 1975. 161 p.
- [33] Nedlina V.E. Puti razvitiya muzykalnoy kulture Kazakhstana na rubezhe XX-XXI stoletiy : dis.. kand. isk. 17.00.02 / Nedlina V.E. Moskva, 2017. 306 p.
- [34] Kunanbayeva A.B. Kazakhsky folklor: My i Drugiye // Folklor i my: Traditsionnaya kultura v zerkale eyo vospriyaty / sb. nauch. statey, posvyashchenny 70-letiyu I.I.Zemtsovskogo. Sankt-Peterburg: Rossysky institut istorii iskusstv MK RF, 2011. P. 115-126.
- [35] Mukhambetova A.I. Status muzykalnogo proizvedeniya i improvizatsiya v traditsionnoy kulture kazakhov // Kazakhskaya traditsionnaya muzyka i KhKh vek / Red. Amanov B.Zh., Mukhambetova A.I. Almaty: Dayk-Press, 2002. P. 168-171.
- [36] Tleubergenov A.A., Karataeva V.A. European avant-garde and contemporary musical culture of Kazakhstan // Qazaq memlekettik qyzdar pedagogikalyq universitetinin Khabarshysy. N 2 (78). 2019. P. 274-280.

**G. K. Kassymova¹, S. V. Lavrinenko², E. R. Kraynova³, R. R. Gasanova⁴,
E. N. Kamenskaya⁵, A. V. Kosov⁶, M. R. Arpentieva⁷, I. V. Gorelova⁸**

¹Abai University, Satbayev University, Almaty, Kazakhstan; Yogyakarta State University, Indonesia;

²National Research Tomsk Polytechnic University, Tomsk, Russia;

³M. M. Speranskiy Law Institute, Vladimir State University named after A. G. and N. G. Stoletovs, Vladimir, Russia;

⁴Faculty of Pedagogical Education, M.V. Lomonosov Moscow State University, Moscow, Russia;

⁵Institute of Management in Economic, Ecological and Social Systems, Southern Federal University, Taganrog, Rostov Region, Russia;

⁶Emergency Psychological Aid Department "Telephone Trust", Kaluga Complex Center for Social Services "Zabota", Kaluga, Russia;

⁷Tsiolkovskiy Kaluga state university, Kaluga, Russia;

⁸Volgograd Branch of the Russian Presidential Academy of National Economy and Public Administration, Russia.

E-mail: g.kassymova@satbayev.university, mariam_rav@mail.ru, tonechka0606@yandex.ru

MODERN CONCEPTS AND ARCHETYPES OF THE MANAGEMENT IN EDUCATION: PSYCHOLOGICAL, SOCIAL AND ECONOMICAL ASPECTS

Abstract. The purpose of this study is to study modern conceptual management in education. The conceptual management of education in general and of individual educational institutions, in contrast to contextual management, allows and requires to highlight its elements, functional capabilities and, most importantly, clearly define the subject and object. Existing management concepts are eclectically presented in the Russian discourse and practices of managing education and other areas of social activity. The system of professional standards developed in the country is designed to solve a number of managerial tasks. However, the non-conceptual use of professional standards brings more harm than good in the field of culture and education, as well as in other areas. Failure to comply with professional standards leads to de-professionalization and the destruction of education management and education itself. The latter is illustrated by the text of regional strategies: as a rule, they do not have clearly articulated ideas about the development of education, and there are no concrete ideas about the development of regions and the country as a whole. Thus, such pseudo-strategies act as a brake on the development of education, and can also serve its destruction. The presence of management strategies based on a conceptual approach in the management of education is an incentive for development. However, the lack of an algorithm for compiling and evaluating documents on the development strategy of a country, region, and education in a country and region makes it impossible to recognize the importance of this aspect in the functioning and development of the state, business, community, and violations in the field of culture and education. Such violations lead to deformations in the process of evaluating the activities of educational authorities and “authorities” in the region as a whole. This leads to the fact that this strategic management remains unclaimed in the system of territorial, local (self) management.

Key words: education, management, human capital, human capital development management, object of management, competence, professional standard, goal, results structure, SEO analysis.

Introduction. Archetypes and based on its concepts in education and in educational management are one is the most impotent factors and lines of the social and cultural stable development, one of the main principles of the effective and productive educational innovations and other reforms (Arpentieva et al., 2019; Arpentieva, 2015 ; Bykasova, Arpentieva, Gorelova, Bogomolova, 2019; Kassymova, Stepanova, Stepanova, Menshikov, Arpentieva, Merezhnikov, Kunakovskaya, 2018; Fauzi et al., 2020; Kassymova, Tokar, Tashcheva, Slepukhina, Gridneva, Bazhenova, Shpakovskaya, Arpentieva, 2019; Kassymova et al.,

2019; Kenzhaliyev et al., 2019; Kassymova, Valeeva, Stepanova, Goroshchenova, Gasanova, Kulakova, Menshikov, Arpentieva, Garbuzova, 2019).

One of the most important archetypes is the teacher-student archetype (healer and patient) (Angeles, 2003). The student seeks to get help (knowledge) from the "external" teacher, at the same time, the "internal" teacher is activated inside him. This psychological phenomenon is called the "learning factor". About students who passively perceive the educational process, as a rule, in the everyday language that "they do not want to learn," but it's better to say "his internal teacher is poorly developed". In a teacher in the context of psychology, this image implies the traits of a student (a person who is constantly striving to learn and learn new things). Figuratively speaking, the student contains the features of a teacher, and the teacher contains the features of a student. This external, obvious juxtaposition of children and adults corresponds to the internal tension between maturity and childhood. Each adult person has a childhood beginning, constantly pushing him to something new, but knowledge and experience that come with age impede change and do not encourage the new. Every person retains the irrational experimentation of a child, who knows the world, his naive openness, is necessary, to one degree or another: a healthy person has many childhood traits. Teachers who get along with their students often resemble children themselves. On the other hand, teachers who completely split the archetype and, as compensation, try to control "stupid" children with the help of the authorities, are unsuccessful. Similarly, in the management of education, disruption of harmony and the displacement of the archetype of governance (and power) to one of the poles (of the archetypal biner or triner) are destructive.

The archetypal «triner» of management considers management as a process or result 1) creating conditions that provide for this or that activity, 2) as management of activities directly at the time of its execution, 3) as final control. In addition, there is another, more important archetypal «triner» of governance. He considers it as a process and the result of 1) aid, support, 2) service, participation, or 3) dictatorship, repression. He also considers the management of 1) the volume of products) on the part of the quality of products, 3) on the part of targeting and the demand for products. Archetypal «triners» persist and play an important role in modern theories and management concepts. Each epoch and culture, every socio-political formation and every ethnos have their own "graphs" of movement and preferences in choosing one or another archetypal model of governance. More precisely, if we proceed from the essence of the archetype (archetypal processes and structures), it tends to choose whether it is the other side of management (ideal and real governance models). In this case, there is a greater or lesser discrepancy between the ideal models of control and their real embodiment. In general, despite the tremendous progress of the theory of management, elements and models of earlier socio-political formations still exist in modern theories and codes (as well as signs of mixed and undifferentiated aspects of the parties and management models). That is, we are dealing with the fact that management in reality is changing much more slowly than in theory. Local changes (management of groups and enterprises) are more or less successful and complete. But the governance of states and regions is often «delayed» both in terms of awareness, both in terms of differentiation, and in terms of «enlightenment» as an account for the interests of those who are governed. The example of Russia in this sense is very typical. Russia, its state, as a subject of governance, lags behind the states of Europe, for centuries. Europe has long understood the importance of management through the creation of conditions for activity, through the inclusion in the management of both actors of all stakeholders ("management objects"), through orientation to the quality and targeting of the product, and not just to its quantity. The point is not that Russia is initially inclined to repressive, controlling the result and striving for quantitative achievements forms of government. The fact is that the ruling structures of Russia ignore the achievements of management science and ignore their own society as an object of management. They do not understand and do not want to understand – by whom or what exactly they manage: "Solving the problems of modernization, the Russian (and then Soviet) empire struggled with the outside world only on the one hand. On the other hand, the imperial state struggled with its society. Every time in an extreme situation, the state raped society ... "- said E. Gaidar (Gaidar, 1994: 4). The rise to the top of world power comes to an end with a fall: the death and suffering of the people is a bad payment for power and wealth of the country. Reforms of the pre-Petrine era, the era of Peter I and Catherine II, the era of Alexander I (M.M. Speranskiy), as well as other reforms of the middle and the end of the XIX century (N.Yu. Bunge: A. Stolypin and S.Yu. Witte), the reform of

the Soviet era in the twentieth century, the reforms of the late twentieth century in the era of wild Russian capitalism, did not abolish the common desire of the elite of Russian society to govern the country, based on their own ideas, to ignore the views of science and the people. Archetypes of management contain traditional management models, which are manifested in his modern concepts. «productive» aspects of management «biners» (binary oppositions, implementation options) or «triners» (trinary oppositions, implementation options) dominate the European management models. In Russia, until now, those aspects of the archetype that are recognized as ineffective and unproductive in foreign models are leading. Contextual (type of strategic) management draws the attention of the manager to the process and results of management, its external and external conditions (factors), components and results. This is an attempt at system management integrating different sides of archetypal triners. Conceptual management in addition to contextual management, allows you to identify its elements, functionality, and, most importantly, to identify and balance the roles of the subject and the object.

Literature Review.

Theoretical background. The modern study of archetypes is multiple. Theoretical analysis and analysis of the archetypes of socio-political systems are devoted to the work of A. Bentley, T. Dai, R. Dal, H. Ziegler, A. Leiphart, K. Peytman, A. Przeworskaya, J. Sartori, D. Truman, J. Habermas, J. Schumpeter. Psychological and political archetypes from different angles of view are considered by Yu. Begunov, V. Gorbatenko, L. Zubritskaya, A. Kolodiy, V. Kolotilo, A. Kryukov, A. Lukashov, V. Martynenko, A. Melville, V. Nikitin, A. Radchenko. However, the peculiarities of the manifestation of archetypes in the activities of the state and the construction of the relations of aid, power and understanding have not been sufficiently studied and are not sufficiently taken into account in practice. The study of archetypes in the management of the scientific field is given considerable attention by E. Afonin, T. Vakulova, E. Donchenko, L. Kochubey, A. Kruty, O. Pelin, O. Romanenko, Yu. Shaygorodsky, V. Shedyako, S. Galich and many others (Arpentieva, 2016; Afonin, and Ryabtsev, 2013; Afonin, 2010; Bykasova, Arpentieva, Gorelova, Bogomolova, 2019; Galich, 2014). The study of national traditions in the management of the scientific field is given considerable attention by I. Boiko, D. Yavornytsky, I. Drobot, A. Rogozhin, M. Barmak (Arpentieva, 2016). A lot of attention to social ideas about governance and their role in government I. Kant, G. Hegel, A. Schopenhauer and F. Nietzsche, as well as the school of social representations S. Moskovisi, J. Flaman and others. General, including archetypal aspects of public administration, were considered by M. Weber, J. Blondel, R. Tucker and R. Linton. The study of archetypes initiated in the work of C. G. Jung, J. Hillman, V. and J. Grimms, V. Buslaev, A. Afanasiev, based on the ideas of F. Schelling, F. and A. Schlegels (Jung, 1991).

Jung, relying on the work of L. Levy-Bruhl, understood archetypes as unconsciously reproduced inherited and instinctive processes and structures that include a set of primary innate motifs that make up the content of the "collective unconscious" whose value nature "always carries a certain special" influence ". Due to this influence its action has a numinous character, i.e. archetype fascinates or motivates to action " (Norman, 2006: 97-128). S.B. Krimskiy wrote: «Archetypes associate a particular methodological vision when, through the transformation of the past into symbols, the latter outline the meanings of the future, and archetypes are highlighted as " a culture ahead of us "» (Krimskiy , 1998: 98; 26). E. Donchenko noted that "The goal of excavations in the archetypal paradigm is to show that not only an archetype can regulate a person's life and activities, but a person is also able to help an archetype become a friend, ... thereby finding their own wisdom (integrity)" (Donchenko, 2010: 35). The leading aspect of the current management models is the difference in management of participatory or intersubjective and manipulative or monosubjective. So, on the one hand, K. Polany wrote that "the closer together the members of a large community feel, the more they will be inclined to shift specific relationships on a reciprocal basis ..." (Polany, 2002: 70). On the other hand, J. Ortega-y-Gasset noted that a "mass" person is not able to think critically, his consciousness should be formed from outside and managed: «Most people do not have an opinion», «The mass crushes beneath it everything that is different, everything that is excellent, individual, qualified and select. Anybody who is not like everybody, who does not think like everybody, runs the risk of being eliminated. And it is clear, of course, that this "everybody" is not "everybody." "Everybody" was normally the complex unity of the mass and the divergent, specialized minorities. Nowadays, "everybody" is the mass alone. Here we have the formidable fact of our times, described without any concealment of

the brutality of its features... The Fascist and Syndicalist species were characterized by the first appearance of a type of man who “did not care to give reasons or even to be right”, but who was simply resolved to impose his opinions. That was the novelty: the right not to be right, not to be reasonable»: “to be different is to be indecent”, “the reason of unreason”. Manipulation is a form of ideological practice legitimized by the society (Ortega y Gasset, 1930/1950: 10, 50).

The «conceptual approach» in Russian management is one of the most sensitive issues that almost every day reflects in all the mass media in both within the country and abroad. A great number of research papers of such scientists as V.A. Vittikh, T.Yu. Bazarov, O. Anisimov, O.S. Vikhanskiy, M.R. Arpentieva, I.V. Gorelova, I.N. Gerchikova, R.A. Dubovitskiy, E.O. Kondratiev, E.A. Utkin, R.A. Fatahutdinov, J. Varajão and others (Arpentieva, and Gorelova, 2017; Arpentieva, , and Moiseeva, 2017; Gorelova, 2016; Gorelova, 2017; Demyanenko, 2016; Vittikh, 2015). Many other world scientists are concerned with the causes of such problems, such scientists as R.L. Ackoff, J. Baudrillard, A. Toynbee, B. Garrett, R. Farson, D. Welch: Weil, M. Wodkock, D. Francis, R. Jay, R. Templar: F. Drucker, D. Owen, U. Rice-Johnston, J. Toner, D. Norman etc. (Bykasova, Arpentieva, Gorelova, Bogomolova, 2019; Galich, 2014; Norman, 2006; Toner, 2015; Varajão, 2016). Contextual management suggests a new understanding of the strategic advantages. It is intended to provide answers to what are the factors, goals and objectives of modern governance. This approach can be found in the works of Armstrong M., Mintzberg G., Drucker P., March, G., Ogle M., Barney J., Wernefelt B., Grant, R., Pisano G., Prahalad C., Efremov V., Gurkov I., Katkalo V., Kleiner G., Milner, B., Popov E., Montgomery S., Nonaka A., Peteraf M., Ramella R., Takeuchi, D. Tisza, Hamel G., Shuen E. (Varajão, Trigo, and Soto-Acosta, 2016; Varajão, 2016; Vittikh, 2015).

The purpose of the article. The purpose of the article is a brief description of the experience of analyzing the conceptual foundations of governance in post-Soviet Russia in comparison with developed democracies; a description of typical approaches to the implementation (imitation) of strategic planning in management, as well as the consequences and specific traits of contextual, a-strategic management. The application of the SEO method for evaluating the management strategies of the state, regions and enterprises is substantiated, basic linguistic (conceptual) criteria of management strategies are shared.

The statement of basic materials. In the Russian system of management in the education and other spheres and in the management systems of several other countries of the former USSR, in the management of life as a whole, the question of following the chosen concept paradoxically is not relevant. Practically in any sphere, one can find the plurality and parallelism of meanings, practices, concepts. The winner in this case is far from the strongest. More often, we encounter situations where the very idea of development is completely leveled, the concept is distorted. Such is the «precession of simulacra» (Baudrillard, 2013: 17). Hence the difficulty in determining the fulcrum in any kind and level of conflict. The management system is dominated by the replacement of formal, unadapt concepts. We emphasize that the context does not change, it «juggles» the concept (s), justifies them and gives them sound, proceeding from the «pole» given to the concepts. Concepts are now not «things in themselves», they have a second bottom, depending on the embeddedness in the context. The proof of this theory is the windows of J. Overton.

An inquiry into legal systems regarding the management object in the system of labor relations does not give an unambiguous answer. Words that a priori can not co-exist in the framework of one concept, which are, in fact, mutually exclusive, paradoxically used in Russian legislation and the laws of a number of other «civilized» countries as synonyms. If throughout the world the word combinations «personnel management», «human capital management», «human resources management» imply the evolution of approaches to the labor person, then in Russia and some other countries of the former USSR these concepts turned into simulacra. If you judge by the papers circulating in the personnel departments, the first of the listed concepts prevails in labor relations. Judging by the job advertisements, the second concept is in priority. In scientific rhetoric, the concept of human resource management is popular. In the West, in the context of the implementation of the latter approach to employment, a labor contract is concluded for the acquisition, for a fee, of the competencies necessary for the organization to achieve its goals, but not all of its carrier-worker. Hence the development in the West of the provisions of compensation management. In the opinion of the Russian leaders, the person (people) is recognized as the object of control, in a system of any scale and purpose (Bykasova, Arpentieva, Gorelova, Bogomolova,

2019; Galich, 2014; Gorelova, 2007; Demyanenko, 2016;). All. Whole. Not competence, skills, abilities that can be assessed. At the enterprise level, such an understanding of the management object is manifested in the inability to competently build labor relations, assess the professionalism of the employee. However, with the indicated understanding of the control object, this is of no use: «Everything that is done by people who do not have hope for the best is done very badly. It is not surprising that we do not get those profits from the farms in which slaves work, which could be obtained if people were treated like free citizens. Indeed, the profits from the labor of free Roman citizens are much greater. The main problem is that the slave does not have the incentive to work well. He works for food, and no matter how much he produces, he will still receive only food (Toner, 2015: 31).

The conceptual management of education as a whole and individual educational institutions, in contrast to contextual management, allows and requires to highlight its elements, functional capabilities and, most importantly, clearly define the subject and object. Existing management concepts are eclectically presented in the Russian discourse and practices of managing education and other areas of social activity. The system of professional standards developed in the country is designed to solve a number of managerial tasks. However, the non-conceptual use of professional standards brings more harm than good in the field of culture and education, as well as in other areas. Failure to comply with professional standards leads to de-professionalization and the destruction of education management and education itself. The latter is illustrated by the text of regional strategies: as a rule, they do not have clearly articulated ideas about the development of education, and there are no concrete ideas about the development of regions and the country as a whole. Thus, such pseudo-strategies act as a brake on the development of education, and can also serve and serve its destruction. The presence of management strategies based on a conceptual approach in the management of education is an incentive for development. However, the lack of an algorithm for compiling and evaluating documents on the development strategy of a country, region, and education in a country and region makes it impossible to recognize the importance of this aspect in the functioning and development of the state, business, community, and violations in the field of culture and education. Such violations lead to deformations in the process of evaluating the activities of educational authorities and “authorities” in the region as a whole. This leads to the fact that this strategic management remains unclaimed in the system of territorial, local (self) management.

We can distinguish two leading aspects of the problem of territorial strategization: (1) substantiation of the reasons for poor-quality strategic developments; (2) the search for errors in the conceptual management methodology. The roots of the first problem should be found in the imbalances in the formation and development of the subject of management, starting with the problem of improper selection and de-professionalization of managerial personnel. To solve the second problem, the authors propose SEO analysis tools as a methodology for evaluating strategy texts. This tool solves the problem of audit of regional strategies in the context of administrative, socio-psychological and linguistic aspects of public servants in the field of education. The data obtained in this study can also be extended to non-governmental educational institutions: in particular, in additional or global education it is extremely important to know its subject, object, purpose and objectives, etc. Otherwise, as in the case of state educational institutions, imitations will arise that are more likely to harm education and society than support it.

Let's give an example of standardization. Among the basic qualification requirements, we will outline the requirements for general and managerial skills, which attest to the availability of the necessary professional and personal qualities. General skills (for all categories and groups of civil service positions): ability to think systematically (strategically); ability to plan, rational use of official time and achieve results; communicative skills; – ability to manage changes. Management skills: ability to manage subordinates, efficiently plan, organize work and monitor its implementation; – the ability to quickly make and implement management decisions. It is also worth mentioning the professional and functional qualification requirements (table).

Vocational and functional qualification requirements

Functional duties	Qualification requirements for functional knowledge	Qualification requirements for functional skills
Normative legal regulation and development of public policy	<ul style="list-style-type: none"> ✓ the concept of the rule of law, regulatory legal act, legal relations and their characteristics; ✓ the concept of a draft normative legal act, tools and stages of its development; ✓ The concept of official recall of draft normative legal acts: stages, key principles and technologies of development; ✓ classification of public policy models; – tasks, timelines, resources and instruments of public policy; ✓ concept, procedure for consideration of citizens' appeals 	<ul style="list-style-type: none"> ➤ development, consideration and coordination of drafts of normative legal acts and other documents; ➤ preparation of official reviews of draft normative legal acts; ➤ Preparation of methodical recommendations, explanations; ➤ preparation of analytical, information and other materials; ➤ the organization and implementation of monitoring the application of legislation

If we consider, for example, the ability to «think strategically», then its availability is not easy to prove. However, one can find a relevant psychological test, model a «typical» situation. At the same time, tests in the selection of leaders in Russia are practically not applied: leaders are recruited from among similar to their leaders, reproducing a-conceptual, anti-strategic models. Non-conceptual law-making at the level leads to one negative result, and regional lawmaking – to others. At the same time, a-strategic «lawmaking» in the sphere of territorial strategy increases the anti-effect in times. The main functional task in the process of developing a strategy is the formulation of a goal, tasks. The absence of changes in the texts of strategic planning documents reflects their irrelevance in time, which indicates the lack of demand for these documents and the most strategic planning (50% of the submitted strategies), which allows us to consider from a special angle. In the Russian plans for the country and regions and their education, almost all goals are a priori unattainable. Unfortunately, there are no sanctions in the management system for failure to achieve strategic goals and non-fulfillment of tasks, and there are no sanctions for posing fictitious goals.

Analysis of the texts of strategies of educational of organizations and education in regions and country in whole, as well as the texts of strategies for social and economic development of the regions is often found in scientific and journalistic literature. However, as a rule, it is not going further than the statistical delights of those who have access to relevant databases, accompanying strategic planning and management. In addition, sometimes it happens: people write and look for guilty outsiders. Other experts try to analyze the development goals, group them (Bykasova, Arpentieva, Gorelova, Bogomolova, 2019; Galich, 2014). On the one hand, in the situation of the absence of goals as such, it makes no sense. It is also pointless to search for actual texts of strategies on a number of subjects of Russia: there is no single database, there are no texts on a number of subjects either. On the other hand, judging by the pace of development in Moscow and some other areas of Russia, one can wonder whether these strategies are necessary for the development of the regions. On the third hand, the professional competitions of these documents are held and the winners are (some documents are available on the site URL: <https://strategyrf.ru>). There is a paradox of paradoxes. The contextual approach to management explains all these paradoxes and not joints.

In a situation where there is nothing to analyze from the point of view of managerial skills, we attempted to analyze the texts themselves. This desire arose after the discovery in the texts of strategies of excesses in the form of narratives, metaphors, hyperbolas, etc. Moreover, in the qualification requirements for the functional skills of civil servants there is the task of «developing, reviewing and harmonizing draft normative legal acts and other documents». The analysis of these documents reveals (1) the presence in them of metaphors and narratives facilitating the task of forming an understandable context, (2) leveling the possibility of using them as a tool for the purposes of territory development, as well as for attesting officials, (3) proving the imbalance of subject-object communication in national management model. Unfortunately, trying to understand what is read, few people pay attention to the fact that the word combinations «government bodies» and «authorities» in the Russian mentality are synonymous, practically inseparable, which has certain consequences (Arpentieva, Gorelova, 2017; Bykasova, Arpentieva, Gorelova, Bogomolova, 2019; Galich, 2014). «What I want is what I bring back»: the

strategy is superfluous. As a basis for the methods of analyzing the texts of strategies, the authors took SEO-analysis of texts (Search Engine Optimization). The use of this technique allows you to assess the quality of the site on a number of parameters, helps to further its advancement. In fact, SEO-analysis is the basis for the audit of sites and texts, since it solves the main task: evaluates the uniqueness of the site (text) in the world of modern information technologies. The parameters of the assessment and their characteristics in relation to the strategies for territorial development are: the length of the texts of the strategies, water content, «nausea» (aversion to the text because of the endless repetition of meaningless words), the number of words, the dictionary, the top 10 words, the core dictionary, the subject.

Analysis of the texts of the strategies of the culture and educational development of the regions of the center of Russia using the tools of SEO-analysis shows: (1) the vocabulary of strategies grows in direct proportion to the number of words in the document. (2) Water availability as an indicator of the resource used is normal. (3) The indicator of nausea in the text: at the rate of academic nausea used for analyzing sites up to 9 points, in strategies this indicator, reaching up to 60 points, indicates an excessive repetition of the most used words and phrases. This indicates the prevalence in the text of nominalizations. (4) So that we can conclude that the result frame is leveled (Donchenko, 2010: 65), which should be the basis of these documents. This once again confirms the implementation of the contextual management model and the orientation in management of the designer's mental model. In the terminology of D.A. Norman, contextual management – management, focused on the mental model of the designer as opposed to the mental model of the user. In the book «Design of habitual things», D.A. Norman defines types of mental models (Norman, 2006: 58). There is a conceptual model of the designer (his understanding of the result) and the user model is a model that is created as a result of interaction with the system, the embodied result. Here we see the main idea of management. If the designer, when making a decision, focuses on the mental model of the user (the control object), most likely the solution will be more effective. A bad design translated into the language of a modern manager is «erroneous mental models (orientation to the designer's model / concept) and insufficient feedback». The emphasis on power authority, interpreted as rights that are not backed by duties, allows managers (designers) to level the mental user model (subordinate) in the decisions made. The subordinate and his model of the world is an extra link in the national management model. All these features of management have become for Russia in many ways "archetypal": for centuries, directive-controlling and repressive management models that ignore interconnected and managed ones have exploited the traditions of governing the state and its regions in Russia. This is even more obvious if we analyze the legislative acts and documents, as well as legal documentation in the country as a whole. However, here we can note that in managerial, legal, medical and other spheres, Russia is far from the only country in which power-bureaucratic discourses and management archetypes are dominant. Unfortunately, their use leads to the complete emasculation of the meaning of professional activity, de-professionalization and imitations. This is one of the dangers of contextual and many other modern management models. Therefore, the search for solutions in the field of management is now being edited on the models of intersubjective management: the Evergetics of V.A. Vittikh, the "second democracy" of A. Adler, the "deep democracy" of A. Mindell, etc. (Arpentieva, 2018; Arpentieva, Gorelova, 2017; Bykasova, Arpentieva, Gorelova, Bogomolova, 2019; Galich, 2014; Mindell, 2013; Vittikh, 2015). In these works, attention is paid not only to the forms, but also to the very content of the management, including the concept of "management" itself, which is filled with one or another meaning in the specific interactions of specific people (in a certain place and time).

Conclusions. Thus, we have returned to the starting point: management in Russia continues to be a-strategic, does not take into account the opinions of those who are guided, and considers them as a homogeneous mass of slaves in need of strict control («power»). This is the «secret» of the economic, political and social unsuccessfulness of modern Russia, which is on the verge of total collapse of all its systems. Contextual approach to management assumes identification of external and internal factors of management. These factors should be significant from the point of view of the subject of the strategy, as well as its «object» (managed competencies, people, processes, organizations). Accounting for significant factors predetermines the ability of the management system to achieve the expected result. Accounting for significant factors creates a strategic understanding of the results of management.

Limitations and future study. When a contextual approach is implemented in Russia, its subjects and «objects» as actors can achieve even the most «unattainable» goals. At least, both the manager, and

the organization (state, region), and workers will know what they are working for and will strive to work qualitatively and effectively. Management, its strategy, should not be formal, fictitious, divorced from life. It must be meaningful, concrete, and realistic. As E.A. Afonin writes, "the historical destiny of each specific people depends on its ability to store, develop and renew its own social organism and the ability to adapt to changes ..." (Afonin, 2010: 255).

Of particular interest, in our opinion, is a comparison of the archetypes of education and the archetypes of education management. Obviously, the directive classical model of education is turned to a similar model of education management. On the contrary, modern models of education more often try in one way or another to attract the schoolchildren and student to the interaction and management, up to partial "self-management" and self-learning. However, educational activity per se requires a combination of methods, which are a natural manifestation of "binary", and even the "trinity" of the archetype as such. The archetype of education and the archetype of education management include both leadership on the part of the teacher and manager, as well as peer education in a group and self-study, self-guidance by pupils and students. In any case, dialogue is the common basis of any education and any management. Therefore, exaggerating only one part of the archetypal biner is destructive for them. Both directive and "non-directive", and traditional, and innovative components of education should be in harmony, balance with each other in relation to each specific situation of interaction between specific students/school-children and school teachers/university teachers.

**Г. К. Касымова¹, С. В. Лавриненко², Е. Р. Крайнова³, Р. Р. Гасанова⁴,
И. В. Горелова⁵, Е. Н. Каменская⁶, А. В. Косов⁷, М. Р. Арпентьева⁸**

¹Абай атындағы Қазақ Ұлттық педагогикалық университеті, Satbayev University, Алматы, Қазақстан;
Ягьякарта мемлекеттік университеті, Индонезия;

²Томск ұлттық политехникалық зерттеу университеті, Томск, Ресей;

³Заң институты және М.М. Сперанский, Владимир мемлекеттік университет және А. Г. мен Н. Г. Столетовтар, Владимир, Ресей;

⁴Педагогикалық білім беру факультеті, М. В. Ломоносов Мәскеу, Ресей;

⁵Волгоград менеджмент институты (РФ Президенттік халық шаруашылығы және мемлекеттік басқару академиясының Волгоград филиалы), Волгоград, Ресей;

⁶Экономикалық, экологиялық және әлеуметтік жүйелердегі менеджмент институты, Оңтүстік федералды университеті, Таганрог, Ростов облысы, Ресей;

⁷«Телефон трасты» жедел психологиялық көмек бөлімі, Калуга «Қамқорлық» халыққа әлеуметтік қызмет көрсету орталығы, Калуга, Ресей;

⁸Циолковский атындағы Калуга мемлекеттік университеті, Калуга, Ресей

ҚАЗІРГІ ЗАМАНҒЫ ТҰЖЫРЫМДАМАЛАР МЕН АРХЕТИПТЕР БІЛІМ БАСҚАРУДА: ПСИХОЛОГИЯЛЫҚ, ӘЛЕУМЕТТІК ЖӘНЕ ЭКОНОМИКАЛЫҚ ӘСЕРЛЕР

Аннотация. Бұл зерттеудің мақсаты - білім берудегі заманауи концептуалды менеджментті зерттеу. Тұжырымдамалық білім беруді тұтастай және жекелеген оқу орындары контекстік басқарудан айырмашылығы оның элементтерін, функционалды мүмкіндіктерін бөлуге мүмкіндік береді және талап етеді, ең бастысы пән мен объектіні нақты анықтайды. Басқарудың қолданыстағы тұжырымдамалары орыс дискурсында және білім беруді және басқа да әлеуметтік әрекеттерді басқару тәжірибесінде эклектикалық түрде ұсынылған. Елімізде әзірленген кәсіби стандарттар жүйесі бірқатар басқарушылық міндеттерді шешуге арналған. Алайда, кәсіби стандарттарды тұжырымдамалық емес қолдану мәдениет пен білім беру саласындағы, басқа салалардағыдан гөрі көп зиян келтіреді. Кәсіби стандарттарды сақтамау кәсіпқой-сыздандыруға және білім беруді басқарудың және білімнің өзін жоюға әкеледі. Соңғысы аймақтық стратегиялардың мәтінімен суреттелген: оларда білім беруді дамыту туралы нақты тұжырымдамалар жоқ, ал аймақтар мен тұтастай елдің дамуы туралы нақты идеялар жоқ. Осылайша, мұндай жалған стратегиялар білім беруді дамытуда тежегіш рөлін атқарады және сонымен бірге оны жоюға қызмет ете алады. Білім беруді басқарудағы концептуалды көзқарасқа негізделген басқару стратегиясының болуы дамуды ынталандырады.

Стратегияны іске асыру аймақ басшыларының қызметін бағалау өлшемдеріне кірмейді. Тиісінше, даму мен білім берудің құзыретті мақсаттарын қалыптастыруға ынталандыру жоқ. Ең парадоксальды мәселе -

білім беруді басқару саласындағы біліксіз жұмыс үшін аймақтық және ұйымдық даму деңгейіндегі шенеуніктердің жауапкершілігі мемлекеттегі ең төменгі мәртебеге ие білім беру және басқа мекемелердің қызметкерлеріне қарағанда әлдеқайда төмен. Білімі мен мәдениетіндегі қазіргі менеджменттің жалпы деструктивті бағыты менеджерлердің еріксіз (біліксіз) және қасақана (бүлдіру) әрекеттерінің нәтижесі болып табылады. Алайда, ел мен аймақтағы елді, аймақты және білім беруді дамыту стратегиясы туралы құжаттарды құрастыру және бағалау алгоритмінің жоқтығы бұл аспектінің мемлекеттің, бизнестің, қоғамдастықтың жұмыс істеуі мен дамуындағы маңыздылығын, мәдениет пен білім саласындағы құқық бұзушылықтарды мойындауға мүмкіндік бермейді. Мұндай бұзушылықтар білім беру органдарының және тұтастай алғанда аймақтың «билік органдарының» қызметін бағалау процесінде деформацияға әкеледі. Бұл стратегиялық басқарудың аумақтық, жергілікті (өзін-өзі басқару) жүйесінде талап етілмеген күйінде қалуына себеп болады.

Түйін сөздер: білім, менеджмент, адами капитал, адами капиталды дамыту менеджменті, басқару объектісі, құзыреттілік, кәсіби стандарт, стратегия, мақсат, нәтижелер құрылымы, SEO талдау.

**Г. К. Касымова¹, С. В. Лавриненко², Е. Р. Крайнова³, Р. Р. Гасанова⁴,
Е. Н. Каменская⁵, А. В. Косов⁶, М. Р. Арпентьева⁷, И. В. Горелова⁸**

¹Казахский Национальный педагогический университет им. Абая, Satbayev University, Алматы, Казахстан;
Джокьякартский государственный университет, Индонезия;

²Национальный исследовательский Томский политехнический университет, Томск, Россия;

³Юридический институт им. М.М. Сперанского Владимирского государственного университета
им. В. Г. и А. Г. Столетовых, Владимир, Россия;

⁴Факультет педагогического образования, Московский государственный университет
им. М.В. Ломоносова, Москва, Россия;

⁵Институт управления в экономических, экологических и социальных системах,
Южный федеральный университет, Таганрог, Ростовская область, Россия;

⁶Отделение экстренной психологической помощи "Телефон Доверия",
Калужский комплексный центр социального обслуживания населения "Забота", Калуга, Россия;

⁷Калужский государственный университет им. К. Э. Циолковского, Калуга, Россия;

⁸Волгоградский институт управления (Волгоградский филиал Российской академии народного хозяйства
и государственной службы при Президенте Российской Федерации), Россия

СОВРЕМЕННЫЕ КОНЦЕПТЫ И АРХЕТИПЫ В УПРАВЛЕНИИ ОБРАЗОВАНИЕМ: ПСИХОЛОГИЧЕСКИЕ, СОЦИАЛЬНЫЕ И ЭКОНОМИЧЕСКИЕ АСПЕКТЫ

Аннотация. Целью данного исследования является изучение современного концептуального управления в образовании. Концептуальное управление образованием в целом и отдельными образовательными учреждениями, в отличие от контекстного управления, позволяет и требует выделить его элементы, функциональные возможности и, самое главное, четко определить субъект и объект. Существующие концепции управления эклектично представлены в русском дискурсе и практиках управления образованием и иными сферами социальной активности. Система профессиональных стандартов, разработанная в стране, предназначена для решения целого ряда управленческих задач. Однако неконцептуальное использование профессиональных стандартов приносит в сфере культуры и образования, а также в иных сферах больше вреда, чем пользы. Несоблюдение требований профессиональных стандартов ведет к депрофессионализации и разрушению управления образованием и самого образования. Последнее иллюстрируется текстом региональных стратегий: в них нет, как правило, четко сформулированных представлений о развитии образования, а также нет и конкретных представлений о развитии регионов и страны в целом. Таким образом, такие псевдостратегии выступают тормозом развития образования, а также могут служить и служат его разрушению. Наличие стратегий управления, опирающихся на концептуальный подход в управлении образованием, является стимулом для развития.

Реализация стратегии не входит в перечень критериев оценки деятельности глав регионов. Соответственно, нет стимула формулировать компетентные цели для развития и образования. Наиболее парадоксальным моментом является то, что ответственность должностных лиц на уровне регионального и организационного развития за некомпетентную работу в сфере управления образованием значительно ниже, чем у работников образовательных и других учреждений с самым низким в штате статусом. Однако отсутствие алгоритма составления и оценки документов, посвященных стратегии развития страны, региона, образования в стране и регионе, делает невозможным осознание важности этого аспекта в функциони-

ровании и развитии государства, бизнеса, сообщества, нарушениям в сфере культуры и образования. Такие нарушения приводят к деформациям в процессе оценки деятельности органов управления образованием и «органов власти» в регионе в целом. Это приводит к тому, что это стратегическое управление остается невостребованным в системе территориального, местного (само-) управления в сфере культуры, образования и иных сферах.

Ключевые слова: образование, менеджмент, человеческий капитал, развитие человеческого капитала, управление, компетенция, профессиональный стандарт, стратегия, цель, структура результатов, SEO-анализ.

Information about authors:

Arpentieva M.R., grand doctor (Grand PhD) of psychological Sciences, associate professor, corresponding member of the Russian academy of Natural History (RANS), Academician of the International educational Academy, professor of the department at the development and education psychology, Tsiolkovskiy Kaluga state University, Kaluga, Russia; mariam_rav@mail.ru; <https://orcid.org/0000-0003-3249-4941>

Gasanova R.R., Candidate(PhD) of Psychology, Senior Lecturer, Department of History and Philosophy of Education, Deputy Dean of the Faculty of Pedagogical Education, M.V. Lomonosov Moscow State University, Moscow, Russia; renata_g@bk.ru; <https://orcid.org/0000-0002-4641-0019>

Gorelova I.V., PhD, Associate Professor, Associate Professor of the Department of Accounting, Analysis and Audit, Volgograd Branch of the Russian Presidential Academy of National Economy and Public Administration, Volgograd, Russia; tonechka0606@yandex.ru; <https://orcid.org/0000-0001-6465-0676>

Kamenskaya E.N., grand doctor (grand PhD) of pedagogical sciences, professor, professor Institute of Management in the Economic, Environmental and Social Systems of the Southern Federal University, Rostov Region, Taganrog, Russia; kamenskay-e@yandex.ru; <http://orcid.org/0000-0003-1793-9674>

Kassymova G.K., PhD, Yogyakarta State University, Indonesia; Senior lecturer at Abai University; Satbayev University, Almaty, Kazakhstan; g.kassymova@satbayev.university; <https://orcid.org/0000-0001-7004-3864>

Kosov A.V., Candidate (PhD) of Psychological Sciences, associate professor, social worker, Emergency Psychological Aid Department "Telephone Trust", Kaluga Complex Center for Social Services "Zabota", Kaluga, Russia; sanslav@kaluga.net; <https://orcid.org/0000-0002-1691-8487>

Kraynova E.R., Candidate (PhD) of Law, Associate Professor, Associate Professor of the Department of Civil Law and Procedure of the M.M. Speranskiy Law Institute, Vladimir State University named after A.G. and N. G. Stoletovs, Vladimir, Russia; ekaterina-kraynova@bk.ru; <https://orcid.org/0000-0001-9525-0413>

Lavrinenko S.V., Senior Lecturer, I.N. Butakov Scientific and Educational Center, School of Energy Engineering, National Research Tomsk Polytechnic University, Tomsk, Russia; serg86@tpu.ru; <https://orcid.org/0000-0002-1471-6152>

REFERENCES

- [1] Angeles E. (2003) The Way of the Four Roads. Kiev, Moscow: Sofia, 208 p.
- [2] Arpentieva M.R., Kassymova G., Kenzhaliyev O., Retnawati H., ... Kosherbayeva A. (2019). Intersubjective Management in Educational Economy. Challenges of Science. <https://doi.org/10.31643/2019.004>
- [3] Afonin E.A. (2010) Universal'noye i unikal'noye v protsessakh obshchestvennoy transformatsii [Universal and unique in the processes of social transformation] *Publichnoye upravleniye: teoriya i praktika: sbornik nauchnykh rabot assotsiatsii doktorov nauk gosudarstvennogo upravleniya* [Public Administration: Theory and Practice: A Compendium of Scientific Works of the Association of Doctors of Public Administration Sciences]. Harkov: Publishing House «DokNaukDerzhUpr. Vol. 3-4. P. 250-263.
- [4] Afonin E.A. and Ryabtsev G.L. (Ed.) (2013). *Archetypes and public administration: institutional forms, mechanisms and practices: a collection of scientific works by the winners and best authors of the First International Young Scientists Competition. Kiev, May 24, 2013.* Kiev: Psyche Publ. P. 1-120.
- [5] Arpentieva M.R., Kassymova G.K., Lavrinenko S.V., Tyumaseva Z.I., ... Valeeva G.V. (2019). Environmental education in the system of global and additional education. The bulletin, 3(379), 158–168. <https://doi.org/10.32014/2019.2518-1467.82>
- [6] Arpentieva M.R. (2015) Academic socio-psychological counseling and teaching of psychology. Kaluga: K.E. Tsiolkovskiy KSU publ.. 670 p. (In Russ.).
- [7] Arpentieva M.R. (2016). Arkhetypy y ynovatsyy hosudarstvennoho upravlenyya. [Archetypes and innovations of public administration]. *Publichne uradyvannyya* [Public urabana] . Vol. 2(3). P. 23-33.
- [8] Arpentieva M.R. (2018). Partisipation and culture of service. *Proceedings of XIV International scientific conference "Social Sciences in 2018". January 19, 2018, Vinnitsa.* Vinnitsya: Universum, LLC "Nilan". P. 25-29.
- [9] Arpentieva M.R., Gorelova I.V. (2017) Upravlencheskiy bullying: fenomenologiya, issledovaniye, profilaktika i korrektsiya [Managerial bullying: phenomenology, research, prevention and correction]. In: Grinev V.I. (Hg.) *Present innovative technologies in economics, science, education.* Berlin: West-Ost-Verlag Publ.. P. 274-286.
- [10] Arpentieva M.R., Moiseeva T.V. (2017) Peregovory kak intersub'yektivnaya tekhnologiya [Negotiations as intersubjective technology]. *Ontology of design.* Vol. 1. P. 102-114. DOI: 10.18287 / 2223-9537-2017-7-1-102-114.

- [11] Baudrillard J. (2013) *Simulyakry i simulyatsiya* [Simulacra and simulation]. Tula Polygraphist Publ. P. 1-204.
- [12] Bykasova L.V., Arpentieva M.R., Gorelova I.V., Bogomolova E.A. (2019). Fractal approach to the development strategies of educational enterprises. In: Solovov D. (eds) *Smart Technologies and Innovations in Design for Control of Technological Processes and Objects: Economy and Production. FarEastCon 2018. Smart Innovation, Systems and Technologies (book series) (SIST)*. Switzerland AG: Springer, Cham, 2019. Vol. 139. P. 212-219. https://doi.org/10.1007/978-3-030-18553-4_27.
- [13] Demyanenko V. (2016) *Osobennosti upravleniya izmeneniyami v Rossii* [Features of change management in Russia]. Moscow: Publishing Solutions. P. 1-138.
- [14] Donchenko O. (2010) *Fenomenolohiya arkhetypu i derzhavne upravlinnya* [Phenomenology of archetype and public administration]. *Publichne upravlinnya: teoriya ta praktyka*. [Public administration: theory and practice]. Kharkiv. Vol. 3-4. P. 33-37.
- [15] Fauzi C., Basikin1, Duisenbayeva Sh., Kassymova G. (2020) Exploring efl student teachers readiness and gender differences of learner autonomy. *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*. Vol. 1, (383). P. 288-299. <https://doi.org/10.32014/2020.2518-1467.34>
- [16] Gaidar E. (1994) *Novyy kurs* [New Deal]. *Izvestiya*,. 26, February 10, P. 1-12. URL: http://gaidar-arc.ru/file/bulletin-1/DEFAULT/org.stretto.plugins_bulletin.core.Article/file/3502/ / Accessed: 19, September, 2017)
- [17] Galich S. (2014). Arkhetip Ukrainского gosudarstva [Archetype of the Ukrainian state]. In: E.A. Afonin, and G.L. Ryabtsev (eds.). *Archetypics and state administration: rationalization and normative practices: a collection of scientific works of the winners and best authors of the Second International Young Scientists Competition*; Kiev, June 13, 2014 / Kiev. P. 1-128.
- [18] Gorelova I.V. (2007) *Metodika i instrumentariy diagnostiki strategii promyshlennogo predpriyatiya. Diss. ...PhD in economy*. [A technique and a toolkit of diagnostics of strategy of industrial enterprise. Dis kand. ... cand. eq. sciences]. Volgograd: Volgograd University Publ.. P. 1-197.
- [19] Gorelova I.V. (2016) *Institutsional'nyye lovushki v sisteme gosudarstvennogo strategicheskogo planirovaniya* [Institutional traps in the system of state strategic planning]. *Analiz, modelirovaniye, upravleniye, razvitiye sotsial'no-ekonomicheskikh sistem: Sbornik nauchnykh trudov X Mezhdunarodnoy shkoly-simpoziuma AMUR-2016* [Analysis, modeling, management, development of socio-economic systems. Collection of scientific papers of the X International School-Symposium AMUR-2016. Sevastopol-Sudak, September 12-21, 2016]. Simferopol: V.I. Vernadskiy Crimean federal university Publ.. P. 84-87.
- [20] Gorelova I. V., 2017 *Simulyakry i kvantory obshchnosti kak neot'yemlemiy element «russkoy modeli upravleniya»* [Simulacra and quantifiers of generality as an integral element of the «Russian management model»]. *Polzunovskiy al'manakh* [Polzunovsky almanac] . Vol. 3(2). P. 45-48.
- [21] Jung K. (1991) *Ob arkhetypakh kollektivnogo bessoznatel'nogo* [About archetypes of the collective unconscious]. *Arkhetip i simvol* [Archetype and the symbol]. – Moscow: Reneisse. P. 97-128.
- [22] Kassymova G.K., Stepanova G.A., Stepanova O.P., Menshikov P.V., Arpentieva M.R., Merezhnikov A.P., Kunakovskaya L.A. (2018) Self-development management in educational globalization. *International journal of education and information technologies*. Vol. 12(12). P. 171-176.
- [23] Kassymova G.K., Tokar O.V., Tashcheva A.I., Slepukhina G.V., Gridneva S.V., Bazhenova N. G., Shpakovskaya E.Yu., Arpentieva M. R. (2019) Impact of stress on creative human resources and psychological counseling in crises. *International journal of education and information technologies*. Vol.13(1). P. 26-32.
- [24] Kassymova K.G., Tyumaseva Z.I., Valeeva G.V., Lavrinenko S.V., ... Arpentieva M.R. (2019). Integrative model of student and teacher stress coping: the correction of relations in educational, professional and personal interaction. *The bulletin*, 3(379), 169–179. <https://doi.org/10.32014/2019.2518-1467.83>
- [25] Kassymova G.K., Valeeva G.V., Stepanova O.P., Goroshchenova O.A., ... Gasanova R.R. (2019). Stress of the innovation and innovations in education. *The bulletin*, 6(382), 288–300. <https://doi.org/10.32014/2019.2518-1467.173>
- [26] Kenzhaliyev B.K. (2019). Innovative technologies providing enhancement of non-ferrous, precious, rare and rare earth metals extraction. *Complex Use of Mineral Resources (Kompleksnoe Ispol'zovanie Mineral'nogo Syr'a)*. 3(310), 64–75. <https://doi.org/10.31643/2019/6445.30>
- [27] Kenzhaliyev B.K., Kul'deev E.I., Lukanov V.A., Bondarenko I.V., Motovilov I.Y., & Temirova S.S. (2019). Production of Very Fine, Spherical, Particles of Ferriferous Pigments from the Diatomaceous Raw Material of Kazakhstan. *Glass and Ceramics*, 76(5-6), 194–198. <https://doi.org/10.1007/s10717-019-00163-w>
- [28] Krimskiy S.B. (1998) *Arkhetypy ukrayins'koyi kul'tury*[rchetypes of Ukrainian Culture]. *Visnik NAN Ukrainy* [Bulletin of the National Academy of Sciences of Ukraine]. Vol. 7–8. P. 74–87.
- [29] Mindell A. (2013) *Dance of the Ancient One*. New York, Deep Democracy Exchange. P. 1-384.
- [30] Norman D. (2006) *Dizayn privychnykh veshchey* [Design of the usual things]. Moscow. P. 1-384.
- [31] Ortega y Gasset J. (1930/1950) *The Revolt of the Masses*. New York: New American Library Publ.. P. 1-138.
- [32] Polany K. (2002) *Ekonomyka kak ynstytutsional'no oformlennyy protsess* [Economics as an Institutionalized Process]. *Ekonomicheskaya sotsyologiya* [Economic Sociology] . Vol. 2(3). P. 62–73.
- [33] Toner J. (2015) *Kak upravlyat' rabami* [How to manage slaves]. Moscow. Publ. «Olympus-Business». P. 1-240.
- [34] Varajão J. (2016) Success Management as a PM Knowledge Area – Work-in-Progress. *Procedia Computer Science*, 100. P. 1095-1102. <https://doi.org/10.1016/j.procs.2016.09.256>
- [35] Varajão J., Trigo A., Soto-Acosta: (2016) An exploratory study on the influencers of the perceived relevance of CIO's activities. *International Journal of Enterprise Information Systems*. Vol. 12 (4). P. 1-15. <https://doi.org/10.4018/ijeis.2016100101>
- [36] Vittikh V.A. (2015) Introd. to the theory of intersubjective manag-t. *Group Decision and Negotiation*. Vol. 24(1). P. 67-95.

UDC 343.851.5

A. Y. Nesterov

Moscow State University of Technology and Management
named after K. G. Razumovsky, Russia.
E-mail: ne7terov.ay@gmail.com

INSTITUTE OF PROBATION SERVICE IN THE RUSSIAN FEDERATION

Abstract. In the article, based on the results of an empirical study, the development prospects of the probation service institute in the Russian Federation are presented.

The probation service in Russia will focus on the development of juvenile probation in the Russian Federation, which will become the basis for ensuring the successful social adaptation of juvenile offenders in the post-prison period and their subsequent reintegration into modern Russian society.

For the first time, the author of the article proposes the structure of the new Federal Law “On the Probation Service in the Russian Federation”. In the development and subsequent discussion in parliament of the Russian Federation of this bill, the author of the publication suggests paying attention to the section “The main activities of rehabilitation centers of the Federal Security Service of Russia”.

It is determined that the criminal-executive and criminal legislation in Russia as a whole establishes the principle of differentiating the appointment and execution of criminal punishment, especially for juvenile convicts serving criminal sentences in prisons.

The problem of legal regulation of the activities of the organizations considered here is extremely acute today. The problem of legal regulation is associated with the post-prison adaptation of persons released from prison. Taking into account the experience of some foreign sovereign states of Asia and Europe, it is necessary to complete the work that has already begun and to adopt the Federal Law on Post-Prison - Social Adaptation of Persons Exempted from Criminal Punishment.

The author also determined that penitentiary re-socialization of a convicted person is oriented towards full or partial restoration of social (life) skills, which allows a minor convicted person to reintegrate into society in the post-prison period, independently navigate the issues of obtaining a profession, employment, creating his own family, etc.

A juvenile convict, while in prison, partially or completely loses family ties, loses contact with the outside world, friends, acquaintances, and even close relatives turn away from the teenager. But they are necessary for the teenager throughout the entire period of stay in places of deprivation of liberty, and especially after release from the colony in the first post-prison period. The author also proved that a teenager receives in prisons the necessary primary professional, cultural and aesthetic educational, social skills that will guide him in the process of social adaptation in one or another sphere of life.

The material in this article does not contain information (information) relating to state secrets of the Russian Federation.

Key words: juvenile law, criminal law of Russia, juvenile probation in Russia, Federal Tariff Service of Russia, Federal Law "On Probation Service in the Russian Federation", socialization of the convict, reintegration of the convicted person into society, penitentiary re-socialization of the convict, post-prison adaptation of convicts.

The Concept for the Long-Term Socio-Economic Development of the Russian Federation for the Period Until 2020 stipulates the creation of a public probation service in the Russian Federation, providing social and psychological support for persons released from prison [4]. Ideally, the “Probation Service of the Russian Federation” (hereinafter referred to as the Federal Tariff Service of Russia) is called upon to solve tasks related to achieving the goals of criminal punishment. Therefore, it is advisable not to directly subordinate her to the criminal executive in the Russian system, but to preserve only her jurisdiction to the Ministry of Justice of the Russian Federation.

“At present, in pursuance of the Concept of the federal target program “Development of the penal system (2017–2025)”, approved by the order of the Government of the Russian Federation of December 23, 2016 No. 2808-r, a draft of the federal target program "Development of the penal system (2017–2025)" was developed, which is a logical continuation of the federal target program “Development of the penal system (2007–2016)”, “Project” was sent to the Government of the Russian Federation for approval” – Report of the Director of the Federal Penitentiary Service of Russia G.A. Kornienko [12, p.10].

Based on the Director of the Federal Penitentiary Service of Russia voiced at the Forum by G.A. Kornienko report, it can be determined that the probation service (FSP of Russia) as a new federal executive body of the Russian Federation has a high theoretical and practical potential for interaction with various interested bodies of municipal self-government, as well as non-profit (charitable) organizations, the Russian Orthodox Church, other religious organizations, as well as with the families of convicts and the public with the aim of involving them in the process of effective correction, rehabilitation and post-prison adaptation of convicts. This experience was gained in the course of 25 years of interaction between the penitentiary institutions of the Federal Penitentiary Service of Russia and the Federal Penitentiary Institution “UII” with NPOs and other organizations that orient the subject of penal law to successful social adaptation in the post-prison period [12].

Today, in modern Russian conditions, this is important to ensure more or less successful post-prison adaptation of juvenile offenders, the effective use of criminal penalties, alternative to imprisonment, and the prevention of recurrent juvenile delinquency. And also, taking into account international experience, the main areas of activity of the Federal Probation Service of Russia (FSP of Russia) may be the organization of work with juvenile offenders at the stages before the conviction and after the sentencing.

Firstly, punishment not related to isolation of a minor convict from society may be in the form of correctional labor for a term of up to one year. Also, compulsory work can be carried out for a period of forty to one hundred and sixty hours. The punishment may be in the form of a fine in the amount of one thousand to fifty thousand rubles, or in the amount of wages or other income of a minor convict for a period of two weeks to six months [3, paragraphs 2-4, Art. 88];

Secondly, punishment unrelated to isolation from society can be in the form of control and supervision of the behavior of a conditionally convicted person, restriction of liberty for a period of two months to two years [3, clause 5, art. 88];

Thirdly, parole may be effected;

Fourthly, rendering assistance in penitentiary re-socialization and social adaptation of persons released from places of deprivation of liberty. (For example, for persons who have committed crimes against human life and health, regulating 16, 18, 21 chapters of the Criminal Code of the Russian Federation) [3].

In fact, the competence of the probation service (FSP of Russia) covers all the functions of the existing PKU UII. We also draw attention to the fact that “mediation for the voluntary reconciliation of the parties” of the injured offender can also be attributed to the conduct of the probation service (FSP of Russia). With voluntary execution in the prescribed manner of the contract - reconciliation between the parties.

So, on June 1, 2012, the National Strategy of Action for Children for 2012–2017 was adopted. Section VI “Creating a System for the Protection and Ensuring of the Rights and Interests of Children and Child-Friendly Justice” defines restorative justice as a priority and for its implementation prescribes the establishment of conciliation services. This is an important event that opens up prospects for the further development of domestic restorative justice for minors who are in conflict with the law [Art. 87 of the Criminal Code], as well as minor victims [11, p.7].

Directions for the implementation of the National Strategy of Actions in the Interests of Children were also identified and the Interdepartmental Plan of Comprehensive Measures for the Implementation of the Concept for the Development of the Correctional System of Russia was adopted. The adoption of these documents led to a fundamental change in the situation. Let us dwell on this in more detail, since further steps in the development of mediation in criminal cases and in the field of work with juvenile delinquency are now directly determined by this new situation [11, p.7].

Great and invaluable assistance to the Federal Penitentiary Service of Russia in this process is provided by our foreign colleagues. In particular, in April 2016, when representatives of the National Penitentiary Service of the Kingdom of Norway visited the Federal Penitentiary Service of Russia in the Arkhangelsk Region, a decision was made to conduct an experiment on the application of mediation to juvenile convicts serving sentences in the PKU “Arkhangelsk EC” of the Federal Penitentiary Service of Russia in the Arkhangelsk Region. So, for example, the convict “L”, who is serving a sentence in the “Arkhangelsk educational colony”, went through the reconciliation procedure [12, p.15].

To conduct mediation, the pupil of the Arkhangelsk EC was sent to the «Nadezhda» Rehabilitation and Resocialization Center, accompanied by employees of the penitentiary institution of the Federal Penitentiary Service of Russia. Initially, the convict’s personal consent was obtained for reconciliation with the victim of his crime. The victim was an 18-year-old young man. Reconciliation was carried out in a confidentiality environment by specially trained “mediators” of the center by specialists [17].

The first stage of mediation began with a conversation with the inmate of the colony, which was supported by my mother. She participated in the restorative justice process, representing the interests of her son. Then a conversation took place with the injured party. After the mandatory stages of reconciliation, a meeting was held between the inmate of the “L” colony and the injured party “S.M.”, as a result of which a written and oral agreement was reached on the reconciliation of the parties. This information will be attached to the personal file of the inmate of the colony and will be considered in court when deciding on conditional release (parole) [17].

The development of the mediation institution in the Arkhangelsk region became possible within the framework of Russian-Norwegian cooperation. Implementation of measures aimed at resolving conflict situations will take place on the basis of the penitentiary inspection and the Arkhangelsk educational colony, which should help convicts overcome the negative consequences of a crime and avoid the commission of repeated offenses (during the penal and post-prison periods) [17].

So, at the present time, all the necessary scientific and pedagogical developments of the teams of the Academy of the Federal Penitentiary Service of Russia (Ryazan), the Research Institute of the Federal Penitentiary Service of Russia (Moscow) and other scientific and pedagogical organizations of the Federal Penitentiary Service of Russia on the re-socialization of juvenile convicts in penitentiary institutions of the Federal Penitentiary Service of Russia are being implemented. Comprehensive measures are also being developed to prepare convicts for the release from the EC of the Federal Penitentiary Service of Russia, including by creating special adaptation centers in prisons on the territory and outside the educational colony. In all Rehabilitation Centers at educational colonies, the conditions of the convict’s stay are freer (minimum external control, the ability to cook their own food, independently purchase food and personal hygiene products in the store outside the colony, free use of authorized Internet services for distance learning at a university or secondary school) region and more). All this in the near future will give an opportunity to adolescents who have been freed from the EC of the Federal Penitentiary Service of Russia to minimize the severity of problems in social adaptation in the post-prison period.

So, in the process of sociological research (2014–2018), we revealed that prisoners convicted for 6 months are preparing for release, are building positive plans for the near future. The basic plans of the convicts include, first of all, establishing relations with family and close relatives - 78% of respondents. Already established relationships with their parents and relatives and have rather positive prospects for development and maintaining relations with them 20%. And, only 2% of the convicts did not comment on their relationship with their parents and relatives in the current period.

Convicts also plan to continue vocational training in colleges, institutes, find work and financially help their elderly parents. Also, in the process of serving a criminal sentence in an educational colony, convicts positively resolve issues of making amends to the injured party. This, of course, occurs through mandatory financial payments of material and moral damage determined by the court, as well as through “apologizing” letters, in many cases, conciliation agreements between the parties in the criminal proceedings.

Today, in all the educational institutions of the “Educational Colonies” of the Federal Penitentiary Service of Russia for the convicts preparing for release, “Schools for the preparation for release” are organized, which deal with examples of life problems that the convicts will have to face in the near future in reality. This is primarily the employment and refusal to employ a teenager with an outstanding criminal

record. Open lectures on social and political changes in society and legal culture are also organized [16, p.8–9]. Lectures are organized by representatives of the prosecutor's office of the municipality, the bar, inspectors of children's rooms of the police, as well as various NGOs, guiding juvenile prisoners to a successful post-prison adaptation in society [14,15].

In order to prevent future reoffending, convicts in the process of promoting positive penitentiary re-socialization of juvenile convicts in the Federal Penitentiary Institution “EC” of the Federal Penitentiary Service of Russia, targeted assistance is provided by the social educators and psychologists of the colony in preparing the convicts for release from prison. As a rule, convicts who are positively characterized are transferred to facilitated and preferential conditions of stay at the Federal Penitentiary Institution “EC” of the Federal Penitentiary Service of Russia 6 months before release. In these conditions, the convict receives the opportunity to learn. Also, with the help of the colony staff, he learns to solve everyday problems - cooking, calculating the family budget, calculating the time, drawing up personal documents (passports of a citizen of the Russian Federation and other certificates). Also during this period, the person preparing for release receives the opportunity to pass the exam (GIA) for admission to college / institute. Various educational and psychological trainings aimed at the successful social adaptation of juvenile prisoners in society are also being held with those preparing for release. These trainings are held with the participation of representatives of civil and non-profit organizations [12, p.15-16].

In the process of the dissertation research, we came to such fundamental conclusions that in the criminal-executive policy of Russia at this time it is necessary to improve the legal regulation of the process of post-prison adaptation of convicts released from penitentiary institutions of the Federal Penitentiary Service of Russia. The regulatory standards currently contained in the Criminal Executive Code of the Russian Federation (1997) and other regulatory legal acts of Russia do not fully solve the problem of successful post-prison adaptation of convicts.

The main goal of the criminal-executive policy of Russia is to correct the identity of the convict, which can be achieved voluntarily by force. According to the Penal Code of the Russian Federation, “... this is the formation of a respectful attitude towards a person, society, work, norms, rules and traditions of human society and the promotion of law-abiding behavior (social correction)” [2].

To consolidate the results achieved in the process of penitentiary re-socialization of juvenile convicts released from places of deprivation of liberty, it is necessary to provide assistance in social adaptation in the post-prison period. Help will be as follows:

firstly, timely provision of qualified socio-psychological, legal and medical assistance to convicts released from penitentiary institutions of the Federal Penitentiary Service of Russia within the framework of stationary facilities of the Federal Penitentiary Service of Russia and in rehabilitation centers - social hotels;

secondly, assistance in finding a job, as well as in admission to a vocational educational institution to continue training under the Federal State Educational Standards of NGOs / SPO / VO;

thirdly, post-prison individual support of a teenager released from prison (6 months) in order to provide him with basic legal, social, cultural and cognitive skills. Which consists in assisting in the preparation of basic documents (birth certificates, TIN, SNILS, passports of a citizen of the Russian Federation); the establishment of a disability group for a convicted person in the executive bodies of the FBMSE, if there are signs of disability; assistance in establishing contacts with the family and close relatives of the convicted person;

fourthly, ensuring, as far as possible, the minimum housing standards and hot meals for a minor who has been released from prison [13,14,15].

Thus, we determine that the “Juvenile Probation” in Russia in relation to juvenile convicts released from places of deprivation of liberty should primarily be carried out in order to ensure the legitimate interests and rights of the minor. It should also help prevent recidivism, as well as ensure effective psychological and pedagogical impact in the process of resocialization in the post-prison period, and contribute to successful integration into society [14].

The issues of successful (successful) post-prison adaptation of convicts released from the EC of the Federal Penitentiary Service of Russia are highlighted as an independent direction in the Concept for the Development of the Criminal Executive System of the Russian Federation until 2020 years (Article 5. “Execution of non-custodial sentences and post-prison adaptation”) [4].

So, the Concept-2020 involves the development and implementation of a system of measures to prepare for the release of prisoners from prison, as well as the creation of conditions for persons released from penitentiary institutions of the Federal Penitentiary Service of Russia through the activities of the probation service (FSP of Russia). The creation of this service in the Russian Federation is provided for by the Concept of Long-Term Socio-Economic Development of the Russian Federation for the Period Until 2020, approved by Decree of the Government of the Russian Federation of November 17, 2008 No. 1662-p [5].

In our opinion, the state of work of the probation services (FSP of Russia) in the post-prison adaptation of juvenile convicts at the present stage of development of the criminal policy of Russia will be not only a qualitative indicator of the general nature of recidivism, but a clear demonstration of the effectiveness of law enforcement agencies in general. From the analytical report of the Ministry of Internal Affairs of Russia. More than half - 61.8% of the investigated crimes were committed by persons previously convicted of criminal offenses; every third - 34.5% in a state of intoxication; and every twenty-seven, - 3.7% by minors or with their complicity [as of 11/01/2019]*. Moreover, strengthening the position of recidivism in adolescence draws inexperienced criminals into the orbit of criminal influence, thus reproducing crime in new generations [10, p.1-2].

Thus, it is proposed, under the auspices of the probation service (Federal Security Service of Russia), on the basis of all PKU "EC" of the Federal Penitentiary Service of Russia, to create social rehabilitation centers for post-penitentiary adaptation of juvenile convicts and convicts of minor age, but not reached the age of 23, released from EC» Federal Penitentiary Service of Russia. All Centers will be oriented towards socio-psychological, medical and socio-rehabilitation assistance, post-prison socialization of teenage convicts and the prevention of recidivism. It is also proposed, if possible, to establish Centers of the Federal Security Service of Russia for juvenile convicts in all subjects of the Russian Federation. The activities of the Centers - Federal Tariff Service of Russia should be regulated by the Federal Law "On the Probation Service in the Russian Federation", other legal acts and by-laws governing activities in the interests of minors (including the Decrees of the President of the Russian Federation (No. 761 of June 01, 2012; No. 240 dated May 29, 2017) [14,15].

We draw attention to the fact that, from the point of view of preventing recidivism and increasing the efficiency of the functioning of the penal system of Russia, it is imperative that all without exception the PKU "EC" of the Federal Penitentiary Service of Russia with the assistance of the probation service (Federal Security Service of Russia), and internal affairs bodies (MIA) at the place of residence of the convicted person, they monitored the level of post-prison relapse among released convicts within 2-4 years after being released from prison. This activity should also be regulated - Federal Law "On the Probation Service in the Russian Federation".

At the end of the author's study, recommendations are offered on improving the criminal-executive legal base of Russia, which provides the probation service in the Russian Federation (hereinafter referred to as the Federal Tariff Service of Russia).

At present, this service, as a federal executive body in the Russian Federation, is absent, namely, its adoption and subsequent implementation into the national legal system of the Federal Law "On Probation Service in the Russian Federation". It will be one of the key legal instruments to ensure the internal and external security of Russian society. The main objective of the Federal Law "On the Probation Service in the Russian Federation" will be: 1) the creation of conditions for the correction and penitentiary re-socialization of prisoners (in accordance with international norms and rules ratified in the Russian Federation); 2) the prevention of recidivism of convicts released from prison in the post-prison period [13].

When developing the bill of the Federal Law "On the Probation Service in the Russian Federation", it is proposed to establish a full-fledged probation cycle in Russia, based on four components:

*See: Ministry of Internal Affairs of the Russian Federation Statistics and Analytics. Crime rate for January - December 2017. [Electronic resource] / access mode: <https://мвд.рф/folder/101762/item/11341800/> (accessed: October 13, 2019).

1) "**Pre-trial probation**", which consists in: *a*) providing psychosocial assistance to the "suspect", correcting his behavior and preventing him from recidivism; *b*) identification of the suspect; *c*) the identification of his socio-psychological state at the time the crime was committed; *e*) providing qualified legal assistance to all subjects of criminal law ("suspect" and "victim") in order to ensure impartial and fair pre-trial proceedings, which will take into account all the rights and freedoms of the parties.

This type of "probation" will primarily be targeted at juvenile offenders; disabled people of I, II, III groups; women aged 55 years and older; men 65 years and older; pregnant women and women with a child under the age of 3 years. The main goal of "pre-trial probation" is the preservation of socially useful relationships of people who find themselves in the orbit of criminal justice [13];

2) "**Judicial probation**" consists of: establishing the identity of the defendant; the identification in the trial of his socio-psychological state; identifying the causes and motives of the crime; providing qualified legal assistance to all subjects of criminal law ("the defendant" and "the victim") in order to ensure an impartial and fair trial, which will take into account all the rights and freedoms of the parties;

3) "**Penitentiary probation**", is: *a*) in the implementation of the penitentiary re-socialization of a convicted person from the moment he arrives at the institution of the Federal Penitentiary Service of Russia in accordance with the requirements of: chapter 14, Art. 103-108; chapters 15 of art. 109, 110, 112-115, 117 of the Penal Code of the Russian Federation; *b*) in rendering social, legal, medical and psychological assistance to a convict in a penitentiary institution of the Federal Penitentiary Service of Russia; *c*) in the implementation of the complex of measures of penitentiary re-socialization in respect of all convicts preparing for release, for 6 months – a complex involving the development and implementation of an individual program to prepare the convicted person for release with the aim of subsequent "unhindered" social adaptation to society in the post-prison period.

This type of "probation" is actively used at the present time in all penitentiary institutions of the Federal Penitentiary Service of Russia;

4) "Post-probationary probation" consists in the social rehabilitation of a convicted person who has been released from prison in specialized institutions of the Federal Security Service of Russia - rehabilitation centers that are focused **on**:

- 1) the provision of social, legal and medical assistance to the convict;
- 2) restoration of socially useful relations with relatives and relatives;
- 3) the possibilities of the labor and domestic device of the convicted person;
- 4) obtaining professional education under the programs of NGOs / STRs;
- 5) execution of personal documents and restoration of property (housing) rights, if any were violated;
- 6) assistance in registering a disability group in the FBMSE in the presence of signs of disability in the convict;
- 7) registration of pensions and social benefits of old age (disability) of the convicted person.

These provisions can be defined in section II - "Types of probation in the Russian Federation and the peculiarities of its implementation" Federal Law "On the probation service in the Russian Federation" [14].

In the "General Provisions" of the Federal Law "On Probation Service in the Russian Federation", in our opinion, should be defined on:

- 1) "Goals and objectives of the probation service in the Russian Federation";
- 2) "The legal framework governing the probation service in the Russian Federation";
- 3) "Basic terms and concepts used in the Federal Law" On the Probation Service in the Russian Federation";
- 4) "Basic principles of probation service in the Russian Federation";
- 5) "Organizations and executive authorities performing probation in the Russian Federation";
- 6) "Persons to whom probation applies";
- 7) "Rights and obligations of persons registered with the probation service in the Russian Federation".

It is also necessary to pay special attention to the final section, referred to as the "Final and transitional provisions". It will reflect the further development and transitional provisions in cases of the loss of legal force of the Federal Law "On Probation Service in the Russian Federation", as well as the new one on the definition of the institution of probation service in the Russian Federation [14].

It is proposed that special attention be paid to sections, chapters and articles of the Federal Law “On the Probation Service in the Russian Federation” - “Features of Probation in Relation to a Juvenile Offender (convicted)” and “Implementation of Probation Control in Relation to a Juvenile Offender (convicted)”. These sections can be defined by the main term - “*juvenile probation*”, in which first of all the interests of minors, defined in the legislative norms and principles of national and international law, would be taken into account. Norms and principles, such as:

- 1) Recommendations of the Committee of Ministers of the Council of Europe on child-friendly justice of 17 November 2010;
- 2) The United Nations Standard Minimum Rules for the Administration of Juvenile Justice (“Beijing Rules”) of November 29, 1985;
- 3) UN Rules for the Protection of Juveniles Deprived of their Liberty (Havana Rules) No. 45/113 of December 14, 1990;
- 4) UN Guidelines for the Prevention of Juvenile Delinquency (the Riyadh Guidelines) No. 45/112 of December 14, 1990;
- 5) The Criminal Code of the Russian Federation of June 13, 1996 No. 63-FL (as amended on February 19, 2018);
- 6) The Code of Criminal Procedure of the Russian Federation dated December 18, 2001 No. 174-FL (as amended on February 19, 2018);
- 7) The Criminal Executive Code of the Russian Federation of 01/08/1997 No. 1-FL (as amended on 12/20/2017);
- 8) Decree of the President of the Russian Federation of 01.06.2012 No. 761 "On the National Strategy of Actions for Children for 2012–2017";
- 9) Decree of the President of the Russian Federation dated May 29, 2017 No. 240 “On the Announcement of the Decade of a Childhood in the Russian Federation”, and other sources of international and national law.

For example, “Probation in respect of a juvenile offender under investigation; a convicted juvenile in prison”, is carried out: firstly, taking into account its individual and age characteristics; secondly, with the involvement of his parents or legal representatives; thirdly, regarding the provision of socio-psychological, medical and legal assistance to a juvenile delinquent in custody, such support is provided in collaboration with representatives of civil society (NGOs) and other legal entities and individuals) [14,15].

The probation service of the Federal Security Service of Russia, when registering a minor offender or a convict released from prison, establishes “probation control” in relation to him. These are the terms and standards of control and determination of the amount of social, psychological, medical and legal assistance necessary for a teenager, the package of measures that is being implemented according to the individual program of a minor developed by the probation service of the Federal Security Service of Russia in accordance with the norms of the Code of Criminal Procedure and the Criminal Code of the Russian Federation. (These examples are given from the existing legal acts of the Republic of Kazakhstan and the Kyrgyz Republic) [6,7,8,9].

In the development and subsequent discussion in the Parliament of the draft law of the Federal Law “On the Probation Service in the Russian Federation” it is proposed to pay attention to such a section as “The main activities of the rehabilitation centers of the Federal Security Service of Russia”. They, in turn, must carry out “juvenile probation” for minors released from prison. They focus on the following aspects:

- 1) Post-prison resocialization and the formation of the personality of the convict;
- 2) The inculcation of basic social, labor, life skills, a law-abiding, healthy lifestyle, generally accepted values and rules of behavior in Russian society;
- 3) Development of independence, self-confidence;
- 4) Careful attitude to people around, to nature. Acquisition of cultural and sociocultural skills. Respect for the weak, for the elderly. Friendly attitude to animals, etc.;
- 5) Mandatory assistance in finding employment and obtaining a vocational education;
- 6) The provision of socio-psychological assistance to the convict;
- 7) Providing, if possible, assistance in determining with a permanent place of residence with the participation of guardianship and trusteeship bodies and bodies of municipal self-government of the Russian Federation;

8) Provision of minor orphans who have been released from the PKU “EC” of the Federal Penitentiary Service of Russia with social housing. This is provided for in Article 8 of the Federal Law “On Additional Guarantees for the Social Support of Orphans and Children Left Without Parental Care” dated December 21, 1996 No. 159 - Federal Law.

Also, in the structure of the Federal Law “On the Probation Service in the Russian Federation”, the section “On the Activities of the Federal Tariff Service of Russia” is proposed, which will mainly focus on the final probation cycle for “Post-Penitentiary Probation”. The activities of the FSP of Russia, in our opinion, should fulfill the following functions:

1) Mandatory determination of a convicted person released from prison in a rehabilitation center at the place of residence for 4-6 months;

2) Providing the rehabilitated convicted person with adequate comprehensive assistance, which consists in: *a)* facilitating admission to work or study at a vocational educational institution; *b)* providing qualified legal assistance; *c)* the provision of social, psychological and medical assistance in health facilities in the community.

For example, all medical care under the compulsory medical insurance is free of charge. As well as assisting the convict in restoring lost property rights, assisting in the execution and receipt of basic documents; restoration and formation of socially useful ties.

By-laws of the Russian Federation, for example, the Decree of the President of the Russian Federation Federal Law “On the Federal Probation Service in the Russian Federation” *define*:

1) the procedure for the appointment of the head and his deputies of the Federal Security Service of Russia, as well as the procedure for the appointment of heads of territorial departments of the Federal Security Service of Russia;

2) territorial (regional) probation services in all constituent entities of the Russian Federation, as well as the main and auxiliary activities of territorial (regional) probation services in the Russian Federation - the Federal Security Service of Russia;

3) the name of the probation services of Russia on a territorial (regional) basis, for example, "Office of the Federal Security Service of Russia for Moscow".

The FSP of Russia is subordinate to the Ministry of Justice of the Russian Federation, the leadership of the FSP of Russia is directly subordinate to the Minister of Justice of the Russian Federation (these relations are defined in the Decrees of the President of the Russian Federation). It is also proposed to amend the entry “of the Federal Probation Service of Russia and its territorial bodies”, after the words “the Federal penitentiary system and its territorial bodies” in paragraph 1 of Article 24 of the Law of the Russian Federation of July 21, 1993 No. 5473-I “On institutions and bodies that carry out criminal sentences of imprisonment”. In connection with these changes, the NLA also proposes to adopt the relevant Regulation “On the Federal Probation Service of Russia (FSP of Russia)”, which regulates the details of the service, as well as to make appropriate amendments to the Criminal Code of the Russian Federation (1996), the Criminal Procedure Code of the Russian Federation (2001) and The Criminal Executive Code of the Russian Federation (1997) [14,15].

Thus, based on the results of an empirical study, we come to the conclusion that a clear forecast of the number of people in need of social assistance and support from the state (executive authorities - the Federal Security Service of Russia) is required at the stage of preparation for the release of juvenile convicts from the FCU “EC” of the Federal Penitentiary Service of Russia. It also requires analysis and accounting of social skills and other personal characteristics of the convict. They are provided by the administration of the penitentiary institution of the Federal Penitentiary Service of Russia.

The presence of this 100% analysis and accounting released from the educational colonies of the Federal Penitentiary Service of Russia (for the last 15 to 20 years this information is classified), which would allow us to:

1) to calculate the necessary funding from the Federal budget of the Russian Federation for the provision of social assistance and support from the state to convicts during their stay in rehabilitation centers under the territorial administration of the Federal Security Service of Russia;

2) to determine, if possible, by attracting funds from other state-public organizations (various NGOs, BFs, religious organizations, private commercial organizations, legal entities / individuals) to support the activities of the Rehabilitation Centers newly formed in Russia - FSP of Russia;

3) to reserve jobs at enterprises of various types of property for convicts who are in rehabilitation centers of the UVSP of Russia;

4) provide socio-psychological and medical support (in a hospital or on an outpatient basis) of the convicted person if he needs it;

5) provide qualified legal and psychological assistance, social-pedagogical and psychological support of the convicted person at all stages of post-prison adaptation in the "RC" of the Federal Penitentiary Service of Russia in all constituent entities of the Russian Federation [14].

А. Ю. Нестеров

К. Г. Разумовский атындағы Мәскеу мемлекеттік технологиялар және басқару университеті, Ресей

РЕСЕЙ ФЕДЕРАЦИЯСЫНДАҒЫ ПРОБАЦИЯ ҚЫЗМЕТІНІҢ ИНСТИТУТЫ

Аннотация. Мақалада нәтижелері бойынша эмпирикалық зерттеулер ұсынылған даму болашағы институт probation қызметінің Ресей Федерациясы. Ресей probation қызметі РФ-дағы ювеналды probation қызметінің дамуына бағдарланатын болады, бұл кәмелетке толмаған сотталғандардың постпенитенциарлық кезеңде табысты әлеуметтік бейімделуін қамтамасыз ету және оларды қазіргі ресейлік қоғамға қайта ықпалдастыру үшін негіз болады.

Мақаланың авторы алғаш рет "Ресей Федерациясындағы probation қызметі туралы" жаңа федералды Заңның құрылымын ұсынады. Осы заң жобасын РФ Парламентінде әзірлеу және одан әрі талқылау кезінде жарияланымның авторы "Ресей ФСП Оңалту орталықтары қызметінің негізгі бағыттары" бөліміне назар аударуды ұсынады.

Ресейдің қылмыстық-атқару және қылмыстық заңнамасы тұтастай алғанда, әсіресе түрмелерде қылмыстық жазасын өтеп жатқан кәмелетке толмаған сотталғандар үшін қылмыстық жазаларды тағайындау мен орындауды саралау қағидатын белгілейтіні анықталды.

Мұнда қарастырылған ұйымдардың қызметін құқықтық реттеу мәселесі бүгінде өте өзекті. Құқықтық реттеу мәселесі түрмеден шыққан адамдардың бейімделуіне байланысты. Азия мен Еуропаның кейбір тәуелсіз егемен мемлекеттерінің тәжірибесін ескере отырып, басталған және аяқталғаннан кейінгі Федералдық заң қабылданған жұмысты аяқтау қажет – қылмыстық жазадан босатылған адамдарды әлеуметтік бейімдеу.

Сондай-ақ, автор сотталған адамның пенитенциарлық қайта әлеуметтенуі әлеуметтік (өмірлік) дағдыларды толық немесе ішінара қалпына келтіруге бағытталғандығын анықтады, бұл кәмелетке толмаған сотталғанға сотталғаннан кейінгі кезеңде қоғамға қайта кіруге, кәсіп алу, жұмысқа орналасу, өз отбасын құру мәселелерін өз бетінше шешуге мүмкіндік береді.

Кәмелетке толмаған сотталған адам түрмеде отырғанда ішінара немесе толықтай байланысын жоғалтады, сыртқы әлеммен, достарымен, таныстарымен, тіпті жақын туыстарымен жасөспірімнен бас тартады. Бірақ олар жасөспірімге бас бостандығынан айыру орындарында болуының барлық кезеңінде, әсіресе колониядан шыққаннан кейін алғашқы түрмеде болғаннан кейін қажет. Сондай-ақ, автор жасөспірім түрмелерде өмірдің кез-келген саласына әлеуметтік бейімделу процесінде басшылыққа алатын қажетті бастапқы кәсіби, мәдени және эстетикалық білім беру, әлеуметтік дағдыларды алатындығын дәлелдеді.

Мақала материалында Ресей Федерациясының мемлекеттік құпиясына қатысты ақпарат (мәліметтер) жоқ.

Түйін сөздер: ювеналдық құқық, Ресейдің қылмыстық-атқару құқығы, Ресей ФСП, Ресей Федерациясындағы probation қызметі туралы " Федералдық заң», сотталғанды әлеуметтендіру, сотталғанның қоғамға реинтеграциясы, сотталғанның пенитенциарлық ресоциализациясы, сотталғандарды оқудан кейінгі бейімдеу.

А. Ю. Нестеров

Московский государственный университет технологий и управления
им. К. Г. Разумовского, Россия

ИНСТИТУТ СЛУЖБЫ ПРОБАЦИИ В РОССИЙСКОЙ ФЕДЕРАЦИИ

Аннотация. В статье по результатам эмпирического исследования представлены перспективы развития института службы пробации в Российской Федерации. Служба пробации в России будет ориентирован на развитие ювенальной пробации в РФ, что станет основой для обеспечения успешной социальной адаптации несовершеннолетних осужденных в постпенитенциарный период и их последующей реинтеграции в современное российское общество.

Впервые автором статьи предлагается структура нового Федерального закона «О службе пробации в Российской Федерации». При разработке и последующем обсуждении в Парламенте РФ данного законопроекта автор публикации предлагает уделить внимание разделу «Основные направления деятельности центров реабилитации ФСП России».

Определено, что уголовно-исполнительное и уголовное законодательство в России в целом устанавливают принцип дифференциации назначения и исполнения уголовного наказания, особенно в отношении несовершеннолетних осужденных, отбывающих уголовное наказание в местах лишения свободы.

Исключительно острой является сегодня проблема правового регулирования деятельности рассматриваемых здесь организаций. Проблема правового регулирования связана с постпенитенциарной адаптацией лиц, освобожденных из мест лишения свободы. С учётом опыта некоторых зарубежных суверенных государств Азии и Европы необходимо завершить уже начавшую работу и принять Федеральный закон о постпенитенциарной – социальной адаптации лиц, освобожденных от уголовного наказания.

Также в статье автором определено то, что пенитенциарная ресоциализация осужденного ориентирована на полное или частичное восстановление социальных (жизненных) навыков, позволяющих несовершеннолетнему осужденному в постпенитенциарный период реинтегрироваться в социум, самостоятельно ориентироваться в вопросах получения профессии, трудоустройства, создания собственной семьи и т.п.

Несовершеннолетний осужденный, находясь в местах лишения свободы, частично или полностью утрачивает семейные связи, утрачивает связь с внешним миром, от подростка отворачиваются друзья, знакомые и даже близкие родственники. Но они необходимы для подростка на протяжении всего периода пребывания в местах лишения свободы и особенно после освобождения из колонии в первый постпенитенциарный период. Также автором доказано, что подросток получает в местах лишения свободы необходимые первичные профессиональные, культурно-эстетические образовательные, социальные навыки, которые ориентируют его в процессе социальной адаптации в той или иной сфере жизнедеятельности.

Материал статьи не содержит информации (сведений), относящейся к государственной тайне Российской Федерации.

Ключевые слова: ювенальное право, уголовно-исполнительное право России, ювенальная пробация в России, ФСП России, Федеральный закон «О службе пробации в Российской Федерации», социализация осужденного, реинтеграция осужденного в общество, пенитенциарная ресоциализация осужденного, постпенитенциарная адаптация осужденных.

Information about author:

Nesterov A.Y., Honorary Member of the National Academy of Sciences Republic of Kazakhstan (NAS RK), Master of Law, Moscow State Pedagogical University, Russia, Lecturer in Humanities, College of Management and Law, Moscow State University of Technology and Management named after K. G. Razumovsky, Moscow, Russia; ne7terov.ay@gmail.com; <https://orcid.org/0000-0001-8244-9546>

REFERENCES

- [1] UN Convention on the Rights of the Child (ratified in the USSR 1990) / Adopted by General Assembly resolution 44/55 of November 20, 1989. Entered into force on September 2, 1990. [Text] // Institute " Open Society ". M., 2001 . 44 p.
- [2] The Criminal Executive Code of the Russian Federation of January 8, 1997. N 1 – FL. M., Omega-L, 2017. 96 p.
- [3] The Criminal Code of the Russian Federation, 1996 // Federal Law of the Russian Federation of June 13, 1996. N 63 – FL. M.: Prospect, 2016 . 272 p.

[4] Order of the Government of the Russian Federation of October 14, 2010. N 1772-r. The concept of development of the penal system of the Russian Federation until 2020.

[5] Decree of the Government of the Russian Federation of November 17, 2008. N 1662-r (as amended on February 10, 2017) "On the Concept of Long-Term Social and Economic Development of the Russian Federation for the Period Until 2020" (together with the "Concept for Long-Term Social and Economic Development of the Russian Federation on period until 2020").

[6] Law of the Kyrgyz Republic "On Probation" dated February 24, 2017. N 34 on January 12, 2017.

[7] Decree of the President of the Republic of Kazakhstan dated December 8, 2016. N 387. "On approval of the Comprehensive Strategy for the social rehabilitation of citizens released from places of deprivation of liberty and registered with the probation service in the Republic of Kazakhstan for 2017-2019".

[8] Decree of the President of the Russian Federation dated May 29, 2017. N 240. "On the announcement in the Russian Federation of the Decade of Childhood (2018–2027)".

[9] Decree of the President of the Russian Federation of 01.06.2012. N 761. "On the National Strategy of Action for Children for 2012-2017".

[10] Agayan V. (2014) Aspects of post-prison adaptation of persons after serving sentences in correctional facilities. [Text] / VI International Student Electronic Scientific Conference "Student Scientific Forum" (RAE, February 15 – March 31, 2014). P.1-3 (in Russ.).

[11] Karnozova L.M. (2016) Issues of legalization and practical organization of the use of conciliation procedures in the domestic criminal justice and in dealing with juvenile delinquency. // Bulletin of restorative justice. N 13, 2016. P. 4–18 (in Russ.).

[12] Kornienko G.A. (2017) Current status and development prospects of the penal system. // III International Penitentiary Forum "Crime, Punishment, Correction" (Ryazan, November 21-23, 2017). Ryazan: Academy of the Federal Penitentiary Service of Russia, 2017. Vol. 1. P. 9–19 (in Russ.).

[13] Nesterov A.Y. (2019) Social adaptation of juvenile prisoners in the penal system of Russia: correctional and post-prison practice: dissertation ... Doctors of Sociology: 22.00.04: RSL OD 71 19-22/5 [Electronic resource] / access mode: <https://search.rsl.ru/ru/record/01008584904> // M., 2019. 551 p.

[14] Nesterov A.Y. (2018) Prospects for the development of the probation institution in the Russian Federation. // National scientific and political journal "Power". 2018. N 4 (t. 26)'2018. P. 40–47 (in Russ.).

[15] Nesterov A.Y. (2019) Social adaptation of juvenile prisoners in the post-prison period: theory and practice. // «The Bulletin of the National Academy of Sciences of the Republic of Kazakhstan». Almaty, 2019. N 6'2019. P. 136–140 (in Eng.).

[16] Musaelyan M. (2010) On the provision of post-prison adaptation of convicts and the prevention of recidivism. // The penal system: law, economics, management. M.: Lawyer, 2010, N 6. P. 8-10 (in Russ.).

[17] PKU "Arzamas EC" GU FSIN of Russia in the Nizhny Novgorod region. [Electronic resource] / access mode: <http://arzamas-vk.ru/> (accessed: 04.10.2019).

A. K. Omarova¹, A. Zh. Kaztuganova¹, D. F. Karomat²

¹Institute of Literature and Art named after M. Auezov, Almaty, Kazakhstan;

²Institute of Art Sciences, Academy of Sciences of Uzbekistan, Tashkent, Uzbekistan.

E-mail: aklima_omarova@mail.ru, zhasaganbergen@mail.ru, dilkaramat@gmail.com

GLOBALIZATION AND ETHNOMUSICOLOGY

Abstract. The interpretation of the category “genre” which is presented based on the classification of makom, due to its internal nature, causes disagreement among the scholars, and difficulties due to its designation of a specific type of work and/or national art form.

In particular, the emphasis on circumstances related to the centuries-old, extended, regional, situational development in line with the oral tradition and in the frame of improvisational art, and the definition of the national type of musical art as a “genre” lead to disproportionate indicators in theoretical issues.

In this regard, the reasons for the incorrect use of the category “genre” in the studies of the Kazakh kuy art were commented: in one case, it is correlated as a whole with the “kuy” phenomenon, in the other, it is used in relation to certain phenomena arising from the study of its internal distinctive nature.

The “Triad of factors” – multivariance, cyclicity and locality – which formed the basis for conceptual generalizations of the famous musicologist T.B. Gafurbekov in the works revealing its system-forming nature in monodic culture is shown in conjunction with principles that reflect the genre specificity of instrumental music of the Kazakhs.

The groups of macrovolume can include “Akzhelen”, “Kosbasar”, “Nauayi”, the microvolume barnch by Kurmangazy “Kisen ashkan”, “Kobik shashkan”, “Turmeden kashkan” etc.

The regional kuys with the same name by Kurmangazy, Dauletkey, Dina “Zhiger” can be cited as an example. The situational kuys include “Kenes”, “16-zhyl” etc.

As a final conclusion, the importance of considering the art of the Kazakh kuy in the system of monodic cultures and a new “clarification” of its inner nature is emphasized. From this point of view, the theoretical concept of T.B. Gafurbekov is updated as capable of forming a common scientific platform for studying the traditions of the Turkic-speaking peoples based on improvisation.

Key words: kuy, makom, monody, multivariance, cyclicity, locality, music, tradition, musicologist, scientist.

Introduction. In the global era, the emergence and development of new trends and areas, new style types and genres require theoretical coverage. In recent years, we see that in the studies, a comprehensive study of musical heritage of the Turkic peoples is the priority, however, the issues of their understanding in terms of monodic cultures remains “in the background”. In this regard, updating the process of studying the nature of traditional Kazakh music in its gradation into genres (by the name, and depending on the options, type, branches, region, situation) in the context of monodic cultures, it is necessary to undertake it from new positions – on the basis of scientific researches which currently exist.

Methods. A musical study of monodic cultures begins with treatises by great thinkers of the Middle Ages - Abu Nasr al-Farabi, Abu Ali Ibn Sina, Abu Abdullah Khorezmi, Ahmadi, Abdurahman Jami, Darwish Al-Bukhari and others. The scientist, the founder of musical science of the eastern states, Abu Nasr al-Farabi was the first who theoretically interpreted the concept of the instrumental musical genre in connection with the sound pitch, sound range, its types, rhythm and its structure [1].

The monodic existence of the dombra tradition should be comprehended in terms of the studies devoted to the art of the peoples of Central Asia as well as the Kazakh kuy in particular. At the same time, the achievement of the qualitatively new level of understanding of its nature is possible through the

attraction of logical principles and conclusions from the fundamental works of domestic and foreign scientists and researchers, namely, through the analysis of key points of methodologically significant scientific works in kuy studies of such authors as A. Zhubanov, P. Aravin, B. Erzakovich, N. Tiftikidi, B. Amanov, A. Mukhambetova, S. Utegaliev, P. Shegebaev, G. Omarova, S. Raiymbergenova, S. Kaliev, R. Nesipbay, and through the involvement of theoretical issues developed in connection with monody music by Gafurbekov, S. P. Galitskaya, P. N. Plakhov, B. I. Karakulov, Sh. G. Gulliev, K. Sh. Dyushaliev, J. K. Rasultaev, A. N. Azimova, R. Yu. Yunusov, T. M. Jani-zade et al.

Results. The practice of studying the art of song, kuy, zhyr, which form the basis of Kazakh traditional music, in connection with monodic cultures was reflected in the works of domestic researchers. So, A.I. Mukhambetova, emphasizing the issues related to the nature of the Kazakh kuy, analyzes the specifics of the correlation between subdivisions (vocal, instrumental) in the structure of shashmakom and kuy, fixes the common rhythmic units, and compares specific terms [2], L. Ya. Kopbayeva, noting the compliance of the concept “makam” with the mode and genre spheres, shows the dependence of genre designation in kuy on modal structure [3], R. T. Nesipbay, based on the works of scientists who have studied the theoretical foundations of monody (Yu. Plakhov, S. Galitskaya, T. Jani-Zade, T. Osina, L. Khaltava and others), studies the structure and composition of the kuy in the context of bourdon polyphony and eastern monody [4].

The designation of the category “genre” based on the classification of the makom by its internal nature presented in the studies of monodic culture, causing disagreement among scholars, is difficult due to its use in relation to a specific type of works and /or national type of art. In particular, the centuries-old, extensive, regional, situational reasons which develop in oral traditions within the frame of improvisational art and the definition as a “genre” of the national type of musical art result in a disproportional index in theoretical issues. Therefore, the negative use of the category “genre” is also observed in the studies of Kazakh-kuy art. Moreover, in one case, the kuy itself is considered as a genre, in the other, factors arising in connection with the study of its internal nature are characterized as a genre. In this regard, during the study of this issue, it was noted: “In the process of studying Kazakh instrumental music, the category “genre” is often applied to various phenomena: in relation to the art of kuy in particular, to performing traditions – tokpe and shertpe, to the thematic features of specific kuy (historical, philosophical genre), their functional aspect (ritual, magical), certain kuy of the same name are also defined as separate genres” [5, 245 p.].

Differentiation of the internal (i.e. extensive, variable, regional, situational) factors in Kazakh instrumental music contributed to the awareness of the appearance of the kuy with the same name. T. B. Gafurbekov, who focused on the research aspects in understanding of the role of such factors in monodic culture, clearly outlined their theoretical concept. Presenting a systematization of internal factors in the study of makom as the main genre of monodic culture, T. B. Gafurbekov essentially opens up new possibilities for solving complex issues which result in discussions, problems, in particular, in defining the essence of the “genre”. The scientist, determined the “triple factor” which characterizes the oral tradition in the immanent aspect, in its multivariant features, cycle features and locality, clarified these positions in the understanding of specific genres for kuy studies.

According to the researcher: “Uzbek folklore and oral-professional creativity in the process of its centuries-old development has developed specific factors of vitality in the context of oral tradition. Among them, we consider the following factors as fundamental: cycle formation in macro – and micro-aspects; multivariant features leading to a new figurative-semantic sphere; localization as an enduring condition for the existence of the stylistically diverse musical heritage of the Uzbek people ...” [6, 58 p.] – this is a phenomenon which is characteristic of monodic culture and other countries.

It is important that particularly the “triad of factors” determine the tendency of national musical and creative manifestations to traditions, ensuring their continuous updating. The desire to achieve artistic heights in monodic music is perceived as a catalyst of the processes associated with the manifestation of individual personality traits in the dynamics of their increased importance. The scientist writes about this: “This triad of factors ensures, on the one hand, the commitment of national musical and creative thought to traditions, and on the other hand, directs it to the continuous updating of these traditions. The constant pursuit of artistic excellence is the driving force of the monody, creating that favorable atmosphere that

awakens the fantasy, arouses the desire for creative expression, individual manifestation of personality” [6, 58].

T.B. Gafurbekov, who considered makom as a genre in the system of national music in monodic culture, on the basis of studying the genesis of a centuries-old, extensive and regionally differentiated system of folklore and oral-professional creativity, including varieties of Bukhara makom, especially focusing on the versatility and regional characteristics of Shashmakom performing art, formulated the important thesis in the following lines: “The abundance of such examples not only in makoms, but also in other genres – dastans, as kattaashula, ashula (see the cycle based on the verses by Mukimi "Kalandar I-V») and the coherence of this process with the immanent resources, i.e. multivariant features, cycle formation and localization of the works, indicates the diffuse manifestation of the considered triad of potential factors of the national monody” [6, 70c.].

If we try to connect this concept with traditional Kazakh musical culture, in particular, with kuy, song, terme, dastan, epic and other genre varieties, then it is necessary to perceive their multivariant feature, cyclic features and local features precisely as factors inherent in the national monody. Besides this, the immanent resources of these and other genres should be identified and studied in the context of the changes brought by globalization.

In determining the extensive properties of makoms, their macro- and microvolume properties are shown: “The cycle-forming factor is manifested equally, but in different processions in macro- (cycles of dastans, makoms – “Duvozhakhmakom”, “Shashmakom”, Khorezm makoms, Fergana-Tashkent makom cycles) and microvolumes (cycles of specific melodies and songs: “Munodjot” – “Savti Munodjot” – “Ufari Munodjot”; “Tanovar” – “Tanovar-II” – “Tanovar-III” – “Tanovar-IV”)” [6, 59 p.].

If we consider “extensive” Kazakh kuy in accordance with these theoretical categories, then they should be distinguished as macro-and micro-voluminous. The groups of macrovolume can include “Akzhelen”, “Kosbasar”, “Nauayi”, “Togyz tarau”, etc. Since, in the nature of these kuy there is a composition of 62 “branches” they should be considered as macrovolumes in terms of duration, scale, and content.

The microvolume kuy barnch includes “Alyp kara kus” – “Anshynyn estirtui”, “Kempirdin zary”, “Anshynyn zhylauy men zhubatuyi”, 3 kuy by Kurmangazy “Kisen ashkan”, “Kobik shashkan”, “Turmeden kashkan” “Estirtu”, “Arnau”, “Zarlau”, “Zhoktau”, kyu by Sybankul Kolbasuly “Akku” – “Akkudin atamekenenine kaiytkanı”, “Akkudy bidaiyk kustin kugani”, “Akkudin balaylandarin aimalauı” etc.

If we consider the regional traditions of the Kazakh kuy or song art, then, in accordance with T.G. Gafurbekov’s opinion, precisely in the context of the compare created by different authors, the eponymous, single-mode, single-genre works were created. The scientist states: “The share of one’s own beginning was and remains the determining criterion in assessing the artistic and professional merits of the works of monodic creativity. In this regard, the tradition of measurement, comparison of the works of one author with the works of another deserves special attention. The abundance of such examples both in the past (many pages of “Baburname”, treatises on music by Darwish Ali Changi and other authors are devoted to them), and at present lies in the fact that the eponymous, monadic, single-mode, single-genre works inspired some of the authors and rose creative talents of the others. Because of such creativity, their own similar works emerged. The degree of individuality of a certain author determined the further fate of the work both during its creation and in subsequent periods” [6, P.58-59].

In this connection, the regional kuy with same name by Kurmangazy, Dauletkerey, Dina (“Bulbul” or “Zhiger”), by Bapyshev and Sugur (“Yngaytokpe” and others) can be cited as an example.

Regarding the musical culture of Central Asia and Kazakhstan, one can state the compliance with those three categories, which, according to T. Gafurbekov, were differentially perceived in the context of monodic music play. The scientist emphasizes: “In the past, the performers of monodic works were divided into three categories: 1) reminding the listeners of a certain melody (i.e., the performers observers); 2) imitating the manner of performance of famous singers and musicians (i.e. imitators); 3) possessing their own manner of interpretation (i.e., creators) [6, 58p.].

The results of creative self-realization of performers of monodic works, as a rule, are reflected in various versions, predetermining such a phenomenon as multivariance. According to the musicologist:

“Similarly, the origins of multivariance are based on the incessant variety of folk performing practice. The emergence of an original variant, the acquisition of a new semantic look in this creative process, and moreover, the consolidation in the memory of the performers in such way – is the eternal dialectic law of folk music and creative thought existence [6, 63 p.].

So, for example, if we fix the variations of one kuy from those that are perceived as priceless heritage which is transferred from hands to hands, we should be aware that the performance of the kuy “Adai” of Kurmangazy by Dina Nurpeisova and Kali Zhantleuova differs from each other, as well as “Kyzylkayin” in time-saved versions of Okap Kabigozhin and Lukpan Mukhitov.

Among the kuy, which are called as forming one more genre, it is important to show a group of situational kuy. The basis of the “relation” between these kuy – is common names, performed function, legends and history of origin. These include “Kenes”, “Bozaygir”, “16-zhyl”, “Shattyk”, “Okinish”, “Sagynysh” and others.

From this point of view, the definition of a genre, based on the names of the kuy does not give a correct solution, since the name of the kuy, depending on various circumstances, can not only be saved, but also changed. For example, among kuy there are those which names do not reveal its main meaning. For example, in the kuy of Akbikesh “Ainamkaldy” it is told that one “thing” has remained, but in fact, it belongs to the group of rituals associated with the tradition of the girl’s farewell songs (“synsu”, “farewell”). The names of some folk kuy do not relate to the content of their music at all. The formality of such names is due to the desire to designate the kuy so that it does not get lost among many folklore works. In addition, it is known that some kuy were preserved among the population under various names (Kurmangazy’s kuy “Toemurat” was called “Kyz Danaydyn kyrgyny”, “Turkmen kuy” by Dauletkerei – was called in another way “Korogly”, Kazangap’s kuy “Yskirma” was called “Teriskakpai”). If the discovery of a genre is associated with concentration based on the kuy names, then two different mentioned examples should form two genres.

Conclusion. In this regard, it should be emphasized that, related to monodic traditions, it is necessary to know the theoretical concept of T. Gafurbekov and expand its application.

Today we see that the intonation fund of the kuyshi as performers in a monodic culture is gradually losing its high professional level. We must agree that kuyshi performers do not go beyond previous versions, and giving preference to Kali Zhantleuov’s or Dina Nurpeisova’s variants, they do not develop a composer’s component in kuyshi’s art. For this reason, the extinction of centuries-old multivariate and regional traditions is obvious. At the same time, preference is given to creating kuy based on situational circumstances. Therefore, the creative process of the kuy art development takes place under the influence of not the internal (immanent), but external factors. In this regard, the following thought of T.B. Gafurbekov is important: “Let’s say, at the level of the tangible component – the carrier of the semantics of the Uzbek monody – the intonation dictionary, stable-mobile resources manifest themselves both sequentially, consistent with general architectonics of monodic process, and at a distance. In case of the latter type of presentation of thought, each new (next) phrase, melodic turn or mood certainly has continuation with the previous material. In connection with the foregoing, the question may arise: is there a similar polyphony, both in the heritage of the peoples and in composer’s work? Of course there is. However, in monodic process with the individual entry of the performer-creator into the world of the native melodic dictionary, each intonation movement, i.e. re-intonation, intonation expansion and cutting, intonation integration (focusing intonations from other works in one image, de-intonation (as opposed to re-intonation is the destruction of a known intonation) and rethinking of intonations leads to intonation creation, from the perspective of which it is necessary to look for the keys to the semantic treasury of a certain monody” [7, 71p.].

As a final conclusion, we emphasize the importance of considering the art of the Kazakh kuy in the system of monodic cultures and a new “clearing” of its inner nature. From this point of view, the theoretical concept of T. B. Gafurbekov, based on three mentioned factors, can form a common scientific platform for studying the traditions of the Turkic-speaking peoples based on improvisation.

А. Қ. Омарова¹, А. Ж. Қазтуғанова¹, Д. Ф. Каромат²

¹М. Әуезов атындағы Әдебиет және өнер институты, Алматы, Қазақстан;

²Өзбекстан Республикасының Ғылым Академиясы Өнертану институты, Ташкент, Өзбекстан

ЖАҢАҢДАҢУ ЖӘНЕ ЭТНОМУЗЫКАТАҢУ

Аннотация. Монодиялық мәдениеттегі макомның зерттелуіндегі ішкі табиғатына орай жіктелуін негізге алғанда, «жанр» категориясының анықталуы жалпы ғалымдар арасында пікірталастар туғызады. Оның нақтылы бір туындылар түріне немесе ұлттық өнер түріне пайдалану тұрғысынан анықталуы қиынға түсуде. Турасын айтқанда, ауызша дәстүрдегі суырып-салма өнері арқылы дамитын көпнұсқалық, тармақтық, аймақтық, жағдаяттық себептер және ұлттық музыкалық өнер түрінің «жанр» ретінде анықталуы диспропорциялық көрсеткіш ретінде теориялық сұрақтарға жетелейді. Осыдан «жанр» категориясының зерттеулерде келеңсіз қолданылуы қазақтың күй өнерінде кездескендіктен, яғни бір жағдайда күйдің өзі жанр ретінде анықталған болса, басқасында оның ішкі табиғатына байланысты пайда болатын факторлардың да жанр ретінде анықталып жүргені осы мақаланың зерттелуіне жетелейді. Мақалада, монодиялық мәдениеттегі бұл факторларлардың ара-жігін ажыратып, ғылыми тұрыдан саралаған белгілі ғалым, музыка зерттеуші Т.Б. Гафурбековтың еңбектері назарға алынып, оның теориялық концепциясында белгіленген «үштік фактор», яғни көпнұсқалық, тармақтық, аймақтық тараптар қазақтың күй өнеріндегі ішкі құбылыстармен ұштастырылып зерттелді.

Бұл теориялық категориялар бойынша қазақтың тармақтық күйлерін макро- және микрокөлемді туындылар ретінде ажыратуға келеді. Макрокөлемдегі тармақтық күйлерге – «Ақжелең», «Қосбасар», «Науайы», «Тоғыз тарау» және т.б. жатқызсақ, микрокөлемдегі Құрманғазының 3 күйі «Кісен ашқан», «Көбік шашқан», «Түрмеден қашқан», Токаның 4 күйден тұратын «Естірту», «Арнау», «Зарлау», «Жоқтау», Сыбанқұл Қолбасұлы «Аққудың атамекеніне қайытқаны», «Аққуды бидайық құстың қуғаны», «Аққудың балапандарын аймалауы» айтуға болады.

Аймақтық аттас күйлерге мысал ретінде Құрманғазы, Дәулеткерей, Динаның «Бұлбұл», «Жігер» күйлері, Батыш пен Сүгірдің «Ыңғай төкпелері» және т.б.

Күй өнерінде тағы бір жанр ретінде аталатын күйлердің қатарында жағдаяттық күйлер тобын да көрсету маңызды. Бұл күйлердің қатарында күйлердің аттарының, атқаратын міндеттерінің, аңыздары мен шығу тарихының ортақтығы алдыға шығады. Олардың қатарына, «Кеңес», «Бозайғыр», «16-жыл», «Шаттық», «Өкініш», «Сағыныш» және т.б. жатады.

Нәтижесінде, қазақтың күй өнерінің табиғаты монодиялық мәдениеттердің жүйесінде қарастырып, оның ішкі болмысын айқындауда маңыздылығы белгіленді. Осы тұрғыдан алғанда Т. Б. Гафурбековтың теориялық концепциясы, ішінара үштік факторға негізделген ғылыми тұжырымдары суырып-салма дәстүріне негізделген жалпы түркітілдес халықтарына ортақ мәдениеттерге ғылыми платформа қалыптастыра алатындығы анықталды.

Түйін сөздер: күй, маком, монодия, көпнұсқалық, тармақтық, аймақтық, музыка, дәстүр, музыкатанушы, ғалым.

А. Қ. Омарова¹, А. Ж. Қазтуғанова¹, Д. Ф. Каромат²

¹Институт литературы и искусства им. М. О. Ауэзова, Алматы, Казахстан;

²Институт искусствознания АН РУз, Ташкент, Узбекистан

ГЛОБАЛИЗАЦИЯ И ЭТНОМУЗЫКОВЕДЕНИЕ

Аннотация. Представленная в исследованиях монодической культуры интерпретация категории «жанр», базирующаяся на классификации макома исходя из его внутренней природы, порождая среди ученых разногласия, вызывает затруднения из-за обозначения ею конкретного вида произведений и/или национального вида искусства.

В частности, акцент на обстоятельствах, связанных с многовековым, разветвленным, региональным, ситуативным развитием в русле устной традиции и в рамках импровизационного искусства, и определение национального вида музыкального искусства как «жанра» приводят к диспропорциональным показателям в теоретических вопросах.

В этой связи прокомментированы причины, обусловившие некорректное использование категории «жанр» и в исследованиях казахского кюйевого искусства: в одном случае ее соотносят в целом с феноменом

«кюй», в другом – используют в отношении отдельных явлений, возникающих в процессе изучения его внутренне-самобытной природы.

«Триада факторов» – многовариантность, цикличность и локальность – составившая основу для концептуальных обобщений известного ученого-музыковеда Т.Б. Гафурбекова в трудах, раскрывающих ее системообразующий характер в монодической культуре, показана во взаимосвязи с принципами, отражающими жанровую специфику инструментальной музыки казахов.

К группам макрообъемных можно отнести «Акжелен», «Косбасар», «Науайы», и др., поскольку в природе этих кюев – композиция из 62 «ответвлений». К ветви микрообъемных относятся «Алып қара құс» – «Аңшының естіртуі», «Кемпірдің зары», «Аңшының жылауы мен жұбатуы»; «Кісен ашқан», «Көбік шашқан», «Түрмеден қашқан» Курмангазы, «Естірту», «Арнау», «Зарлау», «Жоқтау» Тока, «Аққудың атамекеніне қайытқаны», «Аққуды бидайық құстың қуғаны», «Аққудың балапандарын аймалауы» Сыбанкула Колбасулы и др.

В качестве примера приведены региональные одноименные кюи Курмангазы, Даулеткерей, Дины («Бұлбұл», «Жігер»), Бапыша и Сугура («Ыңғай төкпе» и др.).

В числе формирующих еще один жанр важно показать и группу ситуационных кюев. В основе «родства» – общность названий, функций, легенд и историй происхождения. В их числе – «Кенес», «Бозайғыр», «16-жыл», «Сағыныш» и др.

В качестве итогового вывода подчеркнута важность рассмотрения искусства казахского кюя в системе монодических культур и нового «прояснения» его внутренней природы. С этой точки зрения представленная в статье теоретическая концепция Т.Б. Гафурбекова актуализирована как способная сформировать для изучения традиций тюркоязычных народов, основанных на импровизации, на общую научную платформу.

Ключевые слова: кюй, маком, монодия, многовариантность, цикличность, локальность, музыка, традиция, музыковед, ученый.

Information about authors:

Omarova Aklima, Candidate of Art Sciences, Associate Professor, Institute of Literature and Art named for M. Auezov, Almaty, Kazakhstan; aklima_omarova@mail.ru; <https://orcid.org/0000-0002-8681-2207>

Kaztuganova Ainur, Candidate of Art Sciences, Institute of Literature and Art named for M. Auezov, Almaty, Kazakhstan; zhasaganbergen@mail.ru; <https://orcid.org/0000-0003-1248-2759>

Karomat Dilorom, PhD, Institute of Art Sciences, Academy of Sciences of Uzbekistan Tashkent, Uzbekistan; dilkaramat@gmail.com; <https://orcid.org/0000-0002-9025-6194>

REFERENCES

- [1] Al-Farabi (1993) Treatises on music and poetry/Trans. from Arabic. Almaty, Gylm (in Russ.).
- [2] Duisen G., Aitzhanova D. (2018) Formation of unified area of Kazakhstan and Central Asia: Issues and opportunities. Bulletin of the National Academy of Sciences of the Republic of Kazakhstan. Volume 6, Number 376 (2018), P. 192–199. <https://doi.org/10.32014/2018.2518-1467.45> ISSN 1991-3494
- [3] Amanov B.Zh., Mukhambetova A.I. (2002) Kazakh traditional music and the XX century. Almaty, Daik-Press, P. 236–287. ISBN: 5-7667-0045-8 (in Russ.).
- [4] Копбаева Л.Я. (1994) Kazakh kuy in the line of traditional genres of music of Central Asia (The insight into the aspect of Turkology). Proceedings of the I International Symposium of Turkic national musicians. Almaty. P. 124-125 (in Russ.).
- [5] Nesipbay R.T. (2000) Kuy-tokpe in the system of traditional world relations of the Kazakhs (issues of the theme, form and composition). Almaty, Nauka (in Russ.).
- [6] Kaztukanova A.Zh. (2008) Kazakh dedication kuy (genre and style issues). Monograph. Almaty. ISBN: 978-601-230-004-8 (in Kaz.).
- [7] Gafurbekov T.B. (1984) The folklore origins of Uzbek professional musical creativity. Tashkent: Ukituvchi (in Russ.).
- [8] Gafurbekov T.B. (1987) Creative resources of the national monody and their refraction in the Uzbek Soviet music. Tashkent, Fan (in Russ.).

**P. V. Menshikov¹, G. K. Kassymova², R. R. Gasanova³, Y. V. Zaichikov⁴,
V. A. Berezovskaya⁵, A. V. Kosov⁶, M. R. Arpentieva¹, M. E. Kirichkova⁷**

¹Tsiolkovskiy Kaluga state university, Kaluga, Russia;

²Abai University, Satbayev University, Almaty, Kazakhstan; Universitas Negeri Yogyakarta, Indonesia;

³Faculty of Pedagogical Education, M. V. Lomonosov Moscow State University, Moscow, Russia;

⁴M. M. Speranskiy Law Institute of the Vladimir State University named after A. G. and N. G. Stoletovs, Russia;

⁵A. P. Chekhov Taganrog Institute (branch), Rostov State Economic University, Taganrog, Rostov, Russia;

⁶Emergency Psychological Aid Department "Telephone Trust", Kaluga Complex Center
for Social Services "Zabota", Kaluga, Russia;

⁷European Association for Psychotherapy (EAP), Center for Professional Communications, Moscow, Russia.

E-mail: mariam_rav@mail.ru, g.kassymova@satbayev.university

ARTISTIC AND AESTHETIC EDUCATION AND MUSICAL PSYCHOTHERAPY OF A SPECIALIST'S TRAINING

Abstract. A special role in the development of a pianist as a musician, composer and performer, as shown by the examples of the well-known, included in the history of art, and the most ordinary pianists, their listeners and admirers, lovers of piano music and music in general, are played by moments associated with psychotherapeutic abilities and music features. The purpose of the study is to comprehend the psychotherapeutic aspects of performing activities (using pianists as an example). The research method is a theoretical analysis of the psychotherapeutic aspects of performing activities: the study of the possibilities and functions of musical psychotherapy in the life of a musician as a "(self) psychotherapist" and "patient". For almost any person, music acts as a way of self-understanding and understanding of the world, a way of self-realization, rethinking and overcoming life's difficulties - internal and external "blockages" of development, a way of saturating life with universal meanings, including a person in the richness of his native culture and universal culture as a whole. Art and, above all, its metaphorical nature help to bring out and realize internal experiences, provide an opportunity to look at one's own experiences, problems and injuries from another perspective, to see a different meaning in them. In essence, we are talking about art therapy, including the art of writing and performing music - musical psychotherapy. However, for a musician, music has a special meaning, special significance. Musician - produces music, and, therefore, is not only an "object", but also the subject of musical psychotherapy. The musician's training includes preparing him as an individual and as a professional to perform functions that can be called psychotherapeutic: in the works of the most famous performers, as well as in the work of ordinary teachers, psychotherapeutic moments sometimes become key. Piano music and performance practice sets a certain "viewing angle" of life, and, in the case of traumatic experiences, a new way of understanding a difficult, traumatic and continuing to excite a person event, changing his attitude towards him. It helps to see something that was hidden in the hustle and bustle of everyday life or in the patterns of relationships familiar to a given culture. At the same time, while playing music or learning to play music, a person teaches to see the hidden and understand the many secrets of the human soul, the relationships of people.

Key words: art, music, piano, musician, composer, performer, psychotherapist, music therapy, music therapy, catharsis, self-realization.

Introduction. Each type of art is associated with the process and results of human consciousness. Being a special form of cognition of reality, art reaches its goals with various means of influence: music reaches its goals with sounds. Musical art, which directly and strongly affects a person, already in the first years of his life, occupies a large place in his general cultural development. Many writers, composers, musicologists have repeatedly emphasized that work on musical artistic and aesthetic education must be carried out systematically. It should be a mandatory part of the activities carried out by teachers to educate a harmoniously developed person in a manger, kindergarten, school, college, university. Modern scientists, teachers unanimously believe that the level of musical culture of the younger generation nowadays largely depends on solving the problem of organizing a holistic process of training, education

and development on an integrated musical, aesthetic and humanitarian basis. Musical art is a bright and irreplaceable means of forming a person as an original, holistic, authentic person, partner and professional. It is important to not only teach to expressively and cleanly sing, move to music, but also to provide conditions for the formation of a persistent need, the desire to communicate with music, create the opportunity to "reason" in it, since understanding music is a specific cognitive process that stimulates all types of human activity. This is the educational and aesthetic aspect of musical education. Music has great cognitive spiritual and moral significance (B. V. Asafiev, Yu. B. Aliev, E. Almazov, V. M. Bekhterev, T. S. Babadan, O. N. Varshavskaya, N. A. Vetlugina, A. I. Katinene, A. V. Keneman, D. B. Kabalevsky, A. Karasev, A. N. Leontiev, T. Lomova, N. A. Metlov, C. Orff, O. P. Radynova, M. A. Rumer, B. M. Teplov, K. V. Tarasova, V. N. Shatskaya, S. T. Sholomovich, G. A. Fortunatov, C. Fauzi and others). It is also a significant means of educating humanity and respect for oneself and people, including people of other cultures, international and national experiences and perceptions. Music developed an interested and enthusiastic attitude. If man or women admire the beautiful, kind, expressed in music, then it solves the main task of spiritual and moral education. It is successfully formed a variety of personal, social and professional qualities and skills. The fact is that in the process of musical artistic and aesthetic education, the creative side of man is activated. The essence of the cultural function of art is that it awakens, activates, and forms the spiritual activity of man and of community. "Spiritual and spirituality itself are defined as such a state and quality of consciousness that accumulates the highest life values (humanism, creativity, freedom and the motives and motivating creative forces corresponding to this level - selflessness, faith, asceticism" (Didenko, 2012: 13). The aesthetic education should not be only training in the technique of art under any circumstances. The aesthetic education simply should awaken in the soul experiences and representations of an aesthetic quality. First, it is necessary to place a person in such an environment that would always be beautiful. Then he himself must show grace in his personality, in wearing with others, in his studies and professional activities. All this can be achieved in the process of harmonious development of the soul - art. Musical education, musical activity - one of the central components of aesthetic education - plays a special role in the comprehensive development of a person, which is determined by the specificity of music as a form of art, the specifics of each age and the tasks of a life situation, as well as the goals of communicating with music.

The great importance of music in the music therapy system for mentally ill patients and psychological counseling of healthy people was noted by Alexander Yarotskiy, Sergey Korsakov, Vladimir Bekhterev, Sergey Konstorum, and others. The foundations of music therapy are also in the works of Matvey Mudrov, Sergey Botkin, Lev Brusilovskiy, Vladimir Zavyalov, Alex Pontwick, Helen Boni, Paul Nordof and Clive Robbins, Christoph Schwabe, Elena Galinsky, and other scientists of the past and the last century, which became the basis of modern practical, applied and theoretical researches (Petrushin, 1999). However, very few special studies have been devoted to studies of the role of the performer as simultaneously a "patient" and "psychotherapist", even if such a specialty as "musical rehabilitation" has existed and developed for a long time - treatment with music and singing various diseases, restoration of health after injuries (Shushardzhan, 2005). In our opinion, the lack of extensive and integrative work in this area is a serious omission: the separation of musical psychotherapy into active (playing and composing music) and passive (listening to music) is clearly not enough to understand the processes and effects that arise in the preparation and activities of musicians. At the same time, the study of the features and possibilities of the musical psychotherapeutic aspects of the activities of music performers (including pianists) is important not only for optimizing the educational and professional activities of musicians, but also for developing the theory and practice of psychotherapy.

The purpose of the study is to comprehend the psychotherapeutic aspects of performing activities (using pianists as an example).

The research method is a theoretical analysis of the psychotherapeutic aspects of performing activities: the study of the possibilities and functions of musical psychotherapy in the life of a musician as a "(self) psychotherapist" and "patient"

The results of the study. Aspects related to the psychotherapeutic capabilities and functions of music are important in the development of the pianist as a musician, songwriter and performer. This is well shown by the examples of the well-known, who have gone down in the history of art, and the most ordinary, ordinary pianists, their listeners and admirers, and connoisseurs of piano music and music in

general (Ayvankhov, 1992: 18). For almost any person, music acts as a way of self-understanding and understanding of the world, a way of self-realization, rethinking and overcoming life's difficulties - internal and external "blockages" of development, a way of saturating life with universal meanings, including a person in the richness of his native culture and universal culture as a whole (Brusilovskiy 1985: 262). Art and, above all, its metaphorical nature help to bring out and realize internal experiences, provide an opportunity to look at one's own experiences, problems and injuries from another perspective, to see a different meaning in them (Swain, 2016: 9). In essence, we are talking about art therapy, including the art of writing and performing music - musical psychotherapy. However, for a musician, music has a special meaning, special significance. Musician - produces music, and, therefore, is not only an "object", but also the subject of musical psychotherapy. The musician's education includes the training and education of him as an individual and as a professional, preparation for performing functions that can be called psychotherapeutic: in the works of the most famous performers, as well as in the work of ordinary teachers, the psychotherapeutic effects and aspects of activity sometimes become key. These effects can be divided into two main groups:

1) Playing and listening to music as an active musical psychotherapy of the performer himself, the practice of helping to solve the problems of development, personal and professional development of the pianist. In the role of "patient" is the performer himself;

2) Performance of music as an event of psychotherapeutic assistance to listeners as "patients". In the role of "patients" are listeners.

Most often, however, the performance of music is studied as an event of psychotherapy in the context of "ordinary musicians playing", performance outside a concert, educational or other professional situation, outside the context of "performer - listener".

As a result, the first aspect, as we have already noted, has been studied quite fully and variably. As a special case of "playing music in general", a professional performer cannot but feel the healing influence of music; it is extremely important for his personal and professional formation. However, the second aspect, the conscious and directed psychotherapeutic influence of the performer on his listeners, remains in the shadows: psychotherapy is not the target function of the musician's work; it was seen more as an "artifact" (characteristic of the performing skills of the greatest, such as Ferenc Liszt, Anton Rubinstein, Joseph Hoffmann, Sergey Rachmaninov, Vladimir Horowitz, etc.) than "fact".

At the same time, it should be noted that the achievements of modern musical psychotherapy are very significant. Piano music and performance practice sets a certain "viewing angle" of life, and, in the case of traumatic experiences, a new way of understanding a difficult, traumatic and continuing to excite a person event, changing his attitude towards him. It helps to see something that was hidden in the hustle and bustle of everyday life or in the patterns of relationships familiar to a given culture. At the same time, while playing music or learning to play music, a person teaches to see the hidden and understand the many secrets of the human soul, the relationships of people. Music, including in the process of singing and in dancing, affects a person in many ways, for example, researchers believe that under the influence of images generated by people when listening to music, catharsis occurs - the response to mental injuries experienced in childhood and adulthood is activated natural tendency and resources for self-healing. Therefore, in a variety of schools and traditions of musical therapy, a pronounced cathartic effect of listening and performing music is noted. It is celebrated even when it comes to the "magic" of the greatest pianists of the past and present.

In modern music therapy, several schools stand out.

The Swedish school is based on the ideas of psychoanalysis and implements the concept of psychoresonance of a person, his condition and music: a specialist using music brings the client to catharsis, facilitating his condition. Alex Pontwick and many other researchers note the phenomenon of psychoresonance: the deep layers of human consciousness resonate with sounding harmonic forms and are available for understanding. Based on the views of Carl Gustav Jung, his understanding of the "collective unconscious", developed ideas about how to reveal the deepest layers of the psyche through the relationship of sounds (Pontvik, 1955: 31). Ira Maximilian Altshuler discovered physiological changes in patients, adequate to certain types of musical influence (Altshuler, 1945: 17). She created a psychotherapeutic approach to "fine-tuning" the patient, initiating dialogue and building relationships with the person she called the izo-principle of music therapy (Davis, 2003: 248).

The British and American tradition is very rich in a variety of studies. Among the most popular areas are those that are devoted to mechanisms and technologies for working with people with different characteristics, diseases and deviations in development, behavior, etc., including with disabilities: children, adults, and the elderly. So, from the mid-twentieth century, Paul Nordoff and Clive Robbins have been studying the impact of music on children with disabilities, including in special education: first in the UK and then in the USA, they introduced programs for children with mental disorders, developmental delays and others disadvantages (Nordoff, Robbins, 2004: 3-4). The approach of these authors is based on the belief that everyone is able to find meaning and benefit from musical experience. The focus is on treatment through the creation of music by both a psychotherapist for a client and jointly by a specialist and client (Aigen, 2005: 14).

In addition, known is the method of music educator and psychotherapist Hellen Bonnie or the guided imagery in music (GIM) method. It was developed by her (Bonny, 2001: 174) based on the ideas of humanistic and transpersonal psychology. Guided images are used in traditional and alternative medicine, which involve the use of mental images to help with physiological and psychological disorders in patients. Usually a relaxing and focusing image is offered, and a person, using his imagination and discussing its results and processes, seeks to find constructive solutions to solve his problems. Music is used as a means to bring the patient to a higher state of consciousness, healing and constructive understanding of himself and the world. Music is a "co-therapist." GIM with children can be used in an individual or group setting and includes techniques of relaxation, identification, exchange of experiences and ideas, improvisation to reveal oneself and stimulate growth.

Music is also used as a "coping strategy" (music as a coping strategy), for coping with stress (Labbe, 2007: 167). A coping strategy is any technique or practice designed to reduce or overcome the negative effects associated with stress. Harmonious development of personality is impossible without understanding the harmony of sounds, rhythms, as music develops the sphere of feelings, promotes self-knowledge. Responsiveness to music, sensitivity to it is one of the most important musical abilities. Studies by scientists indicate that people growing up in conditions of emotional dissatisfaction associated with a lack of proper human attention to them, care and love, in most cases develop flawed. Musical art to some extent allows you to overcome stresses and injuries, neutralize the negative emotional background, enrich life with new positive impressions, feelings and perceptions (Arpentieva, Kassymova, Lavrinenko, Tyumaseva, Valeeva, Kenzhaliyev, Triyono, Duvalina, Kosov, 2019; Arpentieva, 2015; Kassymova, Stepanova, Stepanova, Menshikov, Arpentieva, Merezhnikov, Kunakovskaya, 2018; Kassymova, Tokar, Tashcheva, Slepukhina, Gridneva, Bazhenova, Shpakovskaya, Arpentieva, 2019; Kassymova, Tyumaseva, Valeeva, Lavrinenko, Arpentieva, Kenzhaliyev, Kosherbayeva, Kosov, Duvalina, 2019; Kassymova, Kosherbayeva, Sangilbayev, Schachl, Cox, 2018; Kassymova, Valeeva, Stepanova, Goroshchenova, Gasanova, Kulakova, Menshikov, Arpentieva, Garbuzova, 2019). It is known that elevated stress levels can lead to conditions such as mental illness, cardiovascular disease, eating disorders, gastrointestinal complications, sexual dysfunction, and skin and hair problems.

Although there are hundreds of different coping strategies, using music is one of the most effective and specific examples of coping (Jiang, 2013: 204), which is used to combat the negative effects of stress:

- 1) aimed at re-evaluating, changing values or patterns of understanding, behavior;
- 2) problem-oriented - focused on the causes of stress, including the elimination or adaptation to the stressor;
- 3) aimed at experiences and other reactions under stress (meditation, distraction or release of experiences), increased awareness, and reflection.

Music relieves stress by reducing or altering the response to it or mitigating some of the physiological effects of the stress response (McCaffrey, Edwards, Fannon, 2011: 188).

Many researchers, for example, Christoph Schwabe, distinguish the retrospective and prospective phases of music therapy (Schwabe, 1972: 58). Retrospective helps to survive the need for active disclosure of internal conflict. Listening and playing music leads to a confrontation of a person with his inner life, feelings, fears, etc. Unconscious or partially conscious conflicts remaining up to this time are transformed into concrete representations, necessity and desire collide. In the prospective phase, two approaches are possible: 1) discharge of mental stress, harmonization and restoration, correction of dysfunctional organ disorders; 2) the development of the need to listen and play music, expanding the range of experiences and

stabilizing balanced well-being, developing a person as a person and soul (Jiang, 2013: 204). Performing and listening to music serves to overcome painful manifestations, self-esteem disorders, and ambivalent behavior. Christoph Schwabe gives a detailed description of the music of various composers and its psychotherapeutic capabilities. In this context, he follows the American tradition of creating large catalogs of healing musical works of various genres and styles, taking into account the stimulating or calming therapeutic effect. Christoph Schwabe believes that the main task of music therapy as part of piano music performing practice is to penetrate into the deeper realm of the personality. Where it is impossible to penetrate with the help of the word: the performance and listening to music is based on the unchanging laws of nature, on the transcendental and therefore unknowable and inexplicable "world sound". This is especially evident in the works of folk music, as well as in such music as the choirs of Johann-Sebastian Bach, the works of Wolfgang-Amadeus Mozart, Ludwig van Beethoven and others (Schwabe, 1972).

The German school believes that the moment of human psychophysical integrity is important, directing efforts to the development of various forms of the integrated use of the healing effects of various types of arts. Carl Heinrich Maria Orff and Gunilda Kitman proposed a different approach (Orff schulwerk / schoolwork, Orff approach, "school work" or "schooling" music) in working with children with developmental problems, delays and disabilities (Orff and Keetman, 1954, 1960), relying on the music of C. Orff. The child needs a musical education oriented specifically to him ("child-centered way of learning"), music is a system similar to language, just like every child can learn a language without formal learning, every child can learn music in a caring and friendly atmosphere, maybe create ("the creation of elementary music», "elemental music making") (Shamrock, 1997: 42). After World War II, Theodor Helbrügge developed a holistic view of music as a synthesis of words, sounds and movements, the use of both music and game improvisation as a creative incentive for a child to explore himself and the world. The multisensory aspects of music used by the psychotherapist to meet the special needs of the child, and the different possibilities and limitations of different instruments were also studied (White, 2015: 46). In music therapy, within the framework of "social pediatrics", social integration and the involvement of parents in the therapeutic process are also important. The basis is "responsive interaction": the therapist meets the child in his world and reacts in accordance with his initiatives, combining humanistic acceptance and developing support.

The Swiss school is also psychoanalytic (the school of maieutics,) uses vocal therapy and psychotherapeutic performance (mainly on flutes because of their great impact on the psyche due to tessitura, as well as the inclusion of breathing in the process of psychotherapy (Mastropaolo, 1990: 3-4). Mastropaolo examines the process of musical psychotherapy in the context of the research of Sigmund Freud and his followers: music activates and gives way to unconscious aspirations, harmonizes the relationships of personality substructures, as well as personality and society.

The role of catharsis is also noted in Polish music therapy. One of the leading researchers in music therapy, Bogdan Dzemidok sees the catharsis function in that singing helps to "clear" of layered negative experiences, to embark on a new path of relations with the outside world (Dzemidok, 1974: 32). Another well-known researcher, music psychotherapist E. Galinskaya in music therapy distinguished:

- 1) methods aimed at responding, relaxing and activating;
- 2) training behavioral methods of teaching skills and communication;
- 3) creative methods in the form of instrumental, vocal, motor and complex improvisation;
- 4) psychedelic, ecstatic, aestheticizing, contemplative;
- 5) musical sensitivity training to develop the ability to see the manifestations and echoes of the life of music (Galińska, 1990: 77).

In Russian works, including the works of Vladimir Bekhterev, the beneficial effect of receptive (passive) and active (performing) music therapy was examined: the harmonizing and stimulating effect of music on the central nervous system and other body systems (Bekhterev, 1916). Scientists and teachers note that the catharsis effect is present due to the fact that in a person immersed in everyday life and losing its integrity in it, when a work of art lives. There is a way out of the bustle, disharmonious states (Kagan, 1996: 56), and the internal unity, a person experiences the expediency of the world and its significance, embeddedness in the world, "cleansing itself" of chance and fragmentation, alienation, everyday life (Kuznetsov, 1980: 235). In this case, catharsis occurs both at the level of physiological functions, and at the psychological and spiritual levels of man. One of the leading music educators in Russia, Sergei

Shushardzhan, notes the importance of developing non-specific adaptation reactions and the overall harmonization of a person. Following him, we believe that the soul of a person chooses or composes music that she needs, which expresses precisely her experiences (Shushardzhan, 2005: 133). However, since a musical text, like any other text, can be “read” in a variety of ways, even if the “educational reading” speaks a lot about the student to the teacher and students, much allows you to express and - along the way - correct - in your understanding of yourself and the world - to the student himself (Shushardzhan, 1998: 24). Music as a sphere of harmonies makes it possible to harmonize your world and the world of listeners. It shows how such harmony can be found and realized, how dissonances can and must be overcome, and how they arise and grow if a person does not make efforts to harmonize and / or behaves incorrectly - in relation to himself and the world. In order to maximize the use of the potential that has arisen while listening to or performing music, as in all other cases of the application of psychotherapeutic practices, it is very productive to recognize and speak out the intention and problem that we would like to strengthen or resolve (Arpentieva, 2017: 407-408).

Valentin Petrushin integrates well-known ancient and modern theories and technologies (techniques), prompting the client to recover immediately in all respects (Petrushin, 1999: 25), including values and worldview. At the beginning of this century, Alexander Klyuyev develops ideas about music therapy as an integrated method of helping people (Klyuyev, 2012). On the example of the work of such a physician as Rushel Blavo (Khaimov), one can see in his music therapy albums compositionally complex music recorded using modern technologies, taking into account the contents of various treatment programs (Blavo, 2003: 7-8). R. Blavo compositions include such therapeutic mechanisms of music therapy as catharsis and discharge, harmonization and correction of experiences, increasing sensitivity and accessibility for conscious experience of psycho- and sociodynamic processes, increasing the social activity of students, acquiring new means of expression, optimizing the conditions for learning and understanding, the transformation of new and restoration, renewal of old relationships, attitudes, attitudes (in particular, through the development of aesthetic their and moral needs) (Blavo, 2010: 11).

In general, in addition to the practice of training professional musicians, educators in Russia and the USSR attached great importance to music in education and development. “Listening to music, a person knows himself, and knows, first of all, that he, a person, is beautiful, born in order to be beautiful, and if there is something bad in him, then this bad must be overcome; music helps to feel bad in oneself”, “music straightens a person’s soul” (Sukhomlinskiy, 2001: 6), - V.A. Sukhomlinskiy, “... Music is the most favorable background against which a spiritual community of educator and children arises. It seems to open the hearts of people.

Listening to music, a person knows himself, and knows, first of all, that he, a person, is beautiful, born to be beautiful, and if there is something bad in him, then this bad must be overcome; music helps to feel bad in oneself” (Sukhomlinsky, 2001: 6). An ordinary listener is satisfied with a minimal semantic understanding of music. However, when trying to comprehend its internal, and not only external, meanings, specific cultural values and traditions behind the seeming “universal” musical “text”, a person is most often a professional musician, performer. He is include into dialogue with the author and performer of music and, through them, with the whole culture at a particular moment in its development. Understanding the music, the performer and the listener together study and reconstruct the authors' ideas about life and about themselves, about God, about people and their relationships with them. They can answer the question of what the music carries joy or suffering, despair or an attempt to gather, sadness or rage, etc. They can compare “your path” and the path of the music hero, your life, their circumstances - cultural, religious, and social, etc. The listener learns how to survive and transform difficulties, sharing or not sharing them with the heroes of music, rejects and accepts for themselves those value-semantic contexts that contain certain musical works. Performer - transfers these methods to him, understood by him and reconstructed by him during preparation for the concert and during the concert itself, direct contact with the audience as a group of “patients”, individual or group “patient” (client).

Musical performance practice is a practice of human development. Dialogue with music is for the pianist - teacher or performer - a way to harmonize and enrich their own lives and the lives of those around them: it is no coincidence that orchestrations and other arrangements, variations and remakes of some, affecting the deep emotions of people of different cultures and times, musical works, are so numerous and in demand. The very comparison of orchestrations and arrangements, arrangement and new

arrangement of music are one of the forms of music therapy, one of the types of dialogue. Even the teaching of musical psychotherapy acts as one of the most interesting areas of dialogue between teacher and student, allowing the student to penetrate into the deeper layers of musical creativity, organize his dialogue with music and text, as well as the dialogue of culture with culture, that harmony and integrity, those “cultural scientists”, which are inherent in music. Music as one of the most democratic forms of art is especially close to the concept of "folklore." Actually folk, folklore musical works, and musical hits, gaining the status of folk, are addressed to such "culturologists", fixing the leading values for each of the cultures: love, honor, strength, simplicity, etc. The “cultural pathogens” hidden in each such work both preserve and activate the values of cultures and peoples, allowing them to live happily and dignifiedly, cope with difficulties and develop, sometimes contrary to circumstances. They introduce the performer and his listeners to the horizons and world outlook of this or that culture and humanity as a whole, strengthening the “roots” of each individual life, the individual “crown” of which is richer the richer the “roots”. In general, analyzing works with the greatest psychotherapeutic potential, researchers at all schools note:

- 1) folk, folklore national = specific music, including songs and dances of each ethnic group, nationality;
- 2) author's classical music (which includes numerous works of the past);
- 3) music specially created for psychotherapy (“relaxation”, “spiritual development”, etc.) (“New Age” and its hybrids with ethical and spiritual-religious music).

Obviously, these groups sometimes intersect very closely, which indicates areas of music with the greatest healing potential.

According to many domestic and modern researchers, performing music acts as a practice of creative development of the personality of the musician and his listeners. Piano as an instrument requires from the person not only good technique, but also a huge personal commitment, a deep and complete understanding of life experience, an understanding of oneself and the world, without which it is impossible to become a real pianist - pianist, whose play becomes part of his life and the life of his listeners. In their “higher forms”, both the performer and the listener act as co-creators and co-performers of musical art. The performer affirms - broadcasts the ideal to the audience and the cultural values associated with it at the individual, personal, socio-historical and universal-cosmic levels. The listener, filling the work with an individual personal sense, reproduces the being of a work of art at the moment in a given space - within the framework of a certain culture, confirming it as a cultural value. A striking example is the description of Evgeny Trubetskoy, who talks about a radical revolution in his worldview from materialism to religious Christian philosophy, which was really realized in the process of listening to the IX symphony of Ludwig van Beethoven performed by a symphony orchestra conducted by Anton Rubinstein (Trubetskoy, 2011). Not some distant verbalizations of the meanings of the musical text, but specific sounding “cultural genes” broadcast by the performer and the meanings comprehended by the listener, make a spiritual revolution. Moses Kagan very precisely notes this moment: “music is a way of knowing the human spirit” (Kagan, 1996: 56). No less accurate is another observation: “Music was created to serve a holy purpose, to direct thoughts to that which is pure, noble, sublime, and to awaken devotion and thanksgiving to God in a person’s soul. What a huge difference between the use of music in antiquity and that far from noble purpose, which it often serves today!” (Kuznetsov, 1980: 240).

Conclusion. Of great importance in the formation of a musician-performer, which we see on the examples of many great pianists, as well as in the practice of concert performing and educational activities, is the musical-psychotherapeutic aspects and the functions of the training and labor activity of (future) professionals. The training and improvement of musical and performing personnel should be specifically aimed at understanding the psychotherapeutic functions of music, its performance and listening, with emphasis on the role of the performer as a practical psychologist - a “psychotherapist”. This emphasis suggests the importance of development, improvement as a person and a professional, the performer himself, relating to the public as a potential “patient” the leading meanings of human life and culture. Classical music possesses the greatest psychotherapeutic potential, harmoniously combining cultural-specific and spiritual-religious aspects, addressed to higher experiences and ideas about a person, the meaning of his life, and his love of life.

**П. В. Меньшиков¹, Г. К. Касимова², Р. Р. Гасанова³, Я. С. Зайчиков⁴,
В. А. Березовская⁵, А. В. Косов⁶, М. Р. Арпентьева¹, М. Е. Киричкова⁷**

¹Циолковский атындағы Калуга мемлекеттік университеті, Калуга, Ресей;

²Абай атындағы Қазақ ұлттық педагогикалық университеті, Satbayev University, Алматы, Қазақстан;
Ягьякарта мемлекеттік университеті, Индонезия;

³Педагогикалық білім беру факультеті, М. В. Ломоносов, Мәскеу, Ресей;

⁴Заң институты және М. М. Сперанский, Владимир мемлекеттік университет және
А. Г. мен Н. Г. Столетовтар, Владимир, Ресей;

⁵Таганрог институты және И. П. Чехов (филиал), Ростов мемлекеттік экономикалық университеті
(RSEU / RINH), Таганрог, Ресей;

⁶«Телефон трасты» жедел психологиялық көмек бөлімі, Калуга «Қамқорлық» халыққа әлеуметтік қызмет
көрсету орталығы, Калуга, Ресей;

⁷Европалық психотерапевтер ассоциациясы (ЕПА), Кәсіби байланыс орталығы, Мәскеу, Ресей

МАМАНДЫҚТЫҢ ОҚЫТУЫНА АРТИСТИКАЛЫҚ ЖӘНЕ ЭСТЕТИКАЛЫҚ БІЛІМ ЖӘНЕ МУЗЫКАЛЫҚ ПСИХОТЕРАПИЯ

Андатпа. Музыкант, композитор және орындаушы ретінде пианисттің дамуындағы ерекше рөлді өнер тарихына танымал еткен және мысалға келтірілген қарапайым кәдімгі пианисттер, олардың тыңдаушылары мен әуесқойлары, фортепиано музыкасы мен жалпы музыканы бағалаушылар психотерапиялық қабілеттермен және сәттермен байланысты етіп ойнайды. Музыканың ерекшелігі бар. Зерттеудің мақсаты - іс-әрекеттің психотерапевтік аспектілерін түсіну (мысал ретінде пианистерді қолдау). Зерттеу әдісі орындаушылық іс-әрекеттің психотерапевтік аспектілерін теориялық талдау болып табылады: музыканттың психотерапиясының мүмкіндіктері мен функцияларын зерттеушінің «(өзін-өзі) психотерапевт» және «пациент» ретіндегі өмірі. Музыка дерлік кез-келген адам үшін өзін-өзі тану және әлемді түсіну тәсілі, өзін-өзі тану, өмірдің қиындықтарын қайта қарастыру және еңсеру тәсілі - дамудың ішкі және сыртқы «тосқауылдары», өмірді жалпыға ортақ мағыналармен қанықтыру әдісі, оның ішінде өзінің туған мәдениеті мен жалпыға бірдей мәдениетті болу. Өнер және, ең алдымен, оның метафоралық табиғаты ішкі тәжірибені шығаруға және жүзеге асыруға көмектеседі, өз тәжірибесіне, проблемалары мен жарақаттарына басқа көзқараспен қарауға, олардағы басқа мағынаны көруге мүмкіндік береді. Негізінде, арт-терапия туралы, оның ішінде музыканы жазу және орындау өнері - музыкалық психотерапия туралы қарастырылады. Алайда музыкант үшін музыканың ерекше мәні, ерекше мағынасы бар. Музыкант - музыканы шығарады, демек, бұл тек «объект» ғана емес, сонымен қатар музыкалық психотерапия тақырыбы. Музыканттың дайындығы оны жеке тұлға ретінде және психотерапевтикалық деп атауға болатын функцияларды орындауға дайындауды қамтиды: әйгілі орындаушылардың шығармаларында, сондай-ақ қарапайым мұғалімдердің жұмысында психотерапевтік сәттер кейде басты рөлге ие болады. Фортепиано музыкасын орындау практикасы өмірдің белгілі бір «көру бұрышын» белгілейді, ал жарақат алған жағдайда қиын, травматикалық түсіну мен адамға оқиғаны қозғауды жалғастырудың жаңа тәсілі. Бұл күнделікті өмірдің кептелісінде немесе мәдениетке таныс қатынастарда жасырылған нәрсені көруге көмектеседі.

Музыкалық және орындаушылық кадрларды даярлау және жетілдіру арнайы музыканың психотерапиялық функцияларын, оны орындау және тыңдауды түсінуге бағытталған болуы керек, орындаушының практикалық психолог - «психотерапевт» ретіндегі рөліне баса назар аудару керек. Классикалық музыка үлкен психотерапиялық потенциалға ие, ол мәдени-рухани және діни аспектілерді үйлестіре отырып, адам туралы жоғары тәжірибе мен идеяларға, оның өмірінің мәні мен өмірге деген сүйіспеншілікке бағытталған. Сонымен қатар, адам музыканы ойнағанда немесе музыка ойнауды үйрену барысында адам жасырын нәрсені көруге және адам жанының көптеген сырларын, адамдардың қарым-қатынасын түсінуге үйретеді.

Түйін сөздер: өнер, музыка, фортепиано, музыкант, композитор, орындаушы, психотерапевт, музыкалық терапия, музыкалық терапия, катарсис, өзін-өзі тану.

**П. В. Меньшиков¹, Г. К. Касимова², Р. Р. Гасанова³, Я. С. Зайчиков⁴,
В. А. Березовская⁵, А. В. Косов⁶, М. Р. Арпентьева¹, М. Е. Киричкова⁷**

¹Калужский государственный университет им. К. Э. Циолковского, Калуга, Россия;

²Казахский Национальный педагогический университет имени Абая, Satbayev University, Алматы, Казахстан; Джокьякартский государственный университет, Индонезия;

³Факультет педагогического образования, Московский государственный университет им. М.В. Ломоносова, Москва, Россия;

⁴Юридический институт им. М. М. Сперанского Владимирского государственного университета им. В. Г. и А. Г. Столетовых, Владимир, Россия;

⁵Таганрогский институт имени А.П. Чехова (филиал), Ростовского государственного экономического университета (РГЭУ / РИНХ), Таганрог, Россия;

⁶Отделение экстренной психологической помощи "Телефон Доверия", Калужский комплексный центр социального обслуживания населения "Забота", Калуга, Россия;

⁷Европейская ассоциация психотерапевтов (ЕАР), Центр профессиональных коммуникаций, Москва, Россия

ХУДОЖЕСТВЕННО-ЭСТЕТИЧЕСКАЯ ПОДГОТОВКА СПЕЦИАЛИСТА И МУЗЫКАЛЬНАЯ ПСИХОТЕРАПИЯ

Аннотация. Особую роль в развитии пианиста как музыканта, сочинителя и исполнителя, как показывают примеры известных, вошедших в историю искусства, и самых обычных, рядовых пианистов, их слушателей и почитателей, ценителей фортепианной музыки и музыки в целом, играют моменты, связанные с психотерапевтическими возможностями и функциями музыки. Цель исследования – осмысление психотерапевтических аспектов исполнительской деятельности (на примере пианистов). Метод исследования – теоретический анализ психотерапевтических аспектов исполнительской деятельности: изучение возможностей и функций музыкальной психотерапии в жизнедеятельности музыканта как «(само)психотерапевта» и «пациента». Практически для любого человека музыка выступает как путь для самопонимания и понимания мира, путь самореализации, переосмысления и преодоления жизненных трудностей – внутренних и внешних «блокад» развития, путь насыщения жизни общечеловеческими смыслами, включения человека в богатство его родной культуры и общечеловеческой культуры в целом. Искусство и, прежде всего, его метафоричность помогают вывести наружу и осознать внутренние переживания, дают возможность взглянуть на собственные переживания, проблемы и травмы с другой стороны, увидеть в них другой смысл. По сути, речь идет о терапии искусством, в том числе искусством написания и исполнения музыки – музыкальной психотерапии. Однако для музыканта музыка имеет особый смысл, особое значение. Музыкант – производит музыку, и, значит, является не только «объектом», но субъектом музыкальной психотерапии. Подготовка музыканта включает подготовку его как личности и как профессионала к выполнению функций, которые можно назвать психотерапевтическими: в работах наиболее известных исполнителей, также как и в работе обычных педагогов, психотерапевтические моменты подчас становятся ключевыми. Фортепианная музыкально-исполнительская практика задает определенный «угол рассматривания» жизни, а в случае травмирующих переживаний – новый способ понимания тяжелого, травмирующего и продолжающего волновать человека события, меняя отношение к нему.

Обучение и совершенствование музыкального и исполнительского персонала должно быть конкретно направлено на понимание психотерапевтических функций музыки, ее исполнения и прослушивания, с упором на роль исполнителя как практического психолога-«психотерапевта». Классическая музыка обладает наибольшим психотерапевтическим потенциалом, гармонично сочетая культурно-специфические и духовно-религиозные аспекты, адресованные высшим переживаниям и представлениям о человеке, значении его жизни и его любви к жизни. Она помогает увидеть то, что было скрыто в суете повседневности или в привычных для данной культуры шаблонах отношений. Вместе с тем, исполняя музыку или участь исполнять музыку, человек учит видеть скрытое и понимать многочисленные тайны человеческой души, отношений людей.

Ключевые слова: искусство, музыка, фортепиано, музыкант, композитор, исполнитель, психотерапевт, музыкотерапия, музыкальная терапия, катарсис, самореализация.

Information about authors:

Arpentieva M.R., Grand doctor (Grand PhD) of psychological Sciences, associate professor, corresponding member of the Russian academy of Natural History (RANS), Academician of the International educational Academy, professor of the department at the development and education psychology, Tsiolkovskiy Kaluga state University, Kaluga, Russia; mariam_rav@mail.ru; <https://orcid.org/0000-0003-3249-4941>

Berezovskaya V.A., Senior Lecturer, Department of Choral Conducting, Chekhov Tagantog branch of the Rostov State Economical University, Taganrog, Rostov region, Russia; vasilisa.berezovskaya@yandex.ru; <https://orcid.org/0000-0003-1007-5121>

Gasanova R.R., Candidate(PhD) of Psychology, Senior Lecturer, Department of History and Philosophy of Education, Deputy Dean of the Faculty of Pedagogical Education, M.V. Lomonosov Moscow State University, Moscow, Russia; renata_g@bk.ru; <https://orcid.org/0000-0002-4641-0019>

Kassymova G.K., PhD, Yogyakarta State University, Indonesia; Senior lecturer at Abai Kazakh National Pedagogical University; Satbayev University in Almaty, Kazakhstan; g.kassymova@satbayev.university; <https://orcid.org/0000-0001-7004-3864>

Kirichkova M.E., PhD student, department of the social and organizational psychology, Tsiolkovskiy Kaluga State University, Kaluga, Russia; margaritak05@mail.ru; <https://orcid.org/0000-0003-3448-8852>

Kosov A.V., Candidate (PhD) of Psychological Sciences, associate professor, social worker, Emergency Psychological Aid Department "Telephone Trust", Kaluga Complex Center for Social Services "Zabota", Kaluga, Russia; sanslav@kaluga.net; <http://orcid.org/0000-0002-1691-8487>

Menshikov P.V., Candidate (PhD) of Psychological Sciences, Associate Professor, and Associate Professor of the Department of Psychology of Development and Education, Tsiolkovskiy Kaluga state University, Kaluga, Russia; edeltanne@list.ru; <https://orcid.org/0000-0001-6547-6032>

Zaichikov Y.V., Senior Lecturer of the Civil Law and Civil Procedure Department of M. M. Speranskiy Law Institute of the Vladimir State University, Vladimir, Russia; yaroslav_zaichikov@mail.ru; <https://orcid.org/0000-0003-3741-0559>

REFERENCES

- [1] Aigen K. (2005) *Being in Music: Foundations of Nordoff-Robbins Music Therapy*. Barcelona Publ. 410 p.
- [2] Altshuler I.M. (1945) The past, present, and future of musical therapy. *Educational Music Mag.*, Vol. 24, N 16, P. 16–54.
- [3] Arpentieva M. R., Kassymova G.K., Lavrinenko S.V., Tyumaseva Z.I., Valeeva G.V., Kenzhaliyev O.B., Triyono M.B., Duvalina O.N., Kosov A.V. (2019) Environmental education in the system of global and additional education. *Bulletin of National Academy of Sciences of RK*. Vol. 3, (379). P. 158–168. <https://doi.org/10.32014/2019.2518-1467.82>
- [4] Arpentieva M.R. (2015) Academic socio-psychological counseling and teaching of psychology. Kaluga: K.E. Tsiolkovskiy Kaluga state univ. publ.. 670 p. (in Russ.).
- [5] Arpentieva M.R. (2017) Rol' muzykal'noy psikhoterapii v protsessakh vnutrenney zhizni cheloveka [The role of musical psychotherapy in the processes of the inner life of a person]. In: E.I. Chernyak (ed.) *Etyudy kul'tury-2017: Materialy Mezhdunarodnoy nauchno-prakticheskoy konferentsii studentov, aspirantov i molodykh uchenykh, Tomsk, 20 aprelya 2017 g* [Etudes of Culture-2017: Materials of the International Scientific and Practical Conference of Students, Postgraduates and Young Scientists, Tomsk, April 20, 2017]. Tomsk: Publishing House of Tomsk State University, P. 406-417 (in Russ.).
- [6] Ayvankhov O.M. (1992) *Muzyka i peniye v dukhovnoy zhizni* [Music and singing in the spiritual life]. Moscow: Prosveta. 20 p. (in Russ.).
- [7] Bekhterev V.M. (1916) Voprosy, svyazannyye s lecheniyem i gigiyenicheskim znacheniyem muzyki [Issues related to the treatment and hygienic value of music]. *Obzor psikhiatricheskoy, nevrologicheskoy eksperimental'noy psikhologii* [Review of Psychiatric, Neurological Experimental Psychology], N 1-4, 124 p. (in Russ.).
- [8] Blavo R. (2003) *Istseleniye muzykoy* [Healing music]. St. Petersburg: Peter. 192 p. (in Russ.).
- [9] Blavo R. (2010) *Muzyka zdorovogo pozvonochnika. Istelyayushchaya sila zvuka* [Music of a healthy spine. The healing power of sound]. M.: RIPOL Classic. 176 p. (in Russ.).
- [10] Bonny H.L. (2002) Body listening: A new way to review the GIM tapes. *Nordic Journal of Music Therapy*. Vol. (2), P. 173-177. DOI: 10.1080/08098130209478060.
- [11] Brusilovskiy L.S. (1985) Muzykoterapiya [Music Therapy]. In: Rozhnov V.Ye. (ed.). *Rukovodstvo po psikhoterapii* [The Guide to Psychotherapy]. Tashkent: Medicine, P. 256-275. (in Russ.).
- [12] Davis, W.B. (2003) Ira Maximilian Altshuler: psychiatrist and pioneer music therapist. *Journal of Music Therapy*. Vol. 40. N 3, P. 247–263.
- [13] Didenko V.D. (2012) *The spiritual meaning of art (philosophical and aesthetic analysis)*. Moscow. 332 p.

- [14] Dzemidok B. (1974) *O komicheskom* [On the comic] Moscow: Progress. 223 p. (in Russ.).
- [15] Fauzi C., Basikin1, Duisenbayeva Sh., Kassymova G. (2020) Exploring efl student teachers readiness and gender differences of learner autonomy. *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*. Vol. 1, (383). P. 288-299. <https://doi.org/10.32014/2020.2518-1467.34>
- [16] Galińska, E. (1990) Muzykoterapia w schizofrenii. *Zeszyt Naukowy Akademii Muzycznej we Wrocławiu*. Wrocław. N 48, P. 76–77 (in Poland).
- [17] Jiang J. (2013) The effects of sedative and stimulative music on stress reduction depend on music preference. *The Arts in Psychotherapy*. Vol. 40(2), P. 201–205. doi:10.1016/j.aip.2013.02.002.
- [18] Kagan M. (1966) *Muzyka v mire iskusstv* [Music in the world of arts]. St. Petersburg: Publ. "Ut", 232 p. (in Russ.).
- [19] Kassymova G.K., Stepanova G.A., Stepanova O.P., Menshikov P.V., Arpentieva M.R., Merezchnikov A.P., Kunakovskaya L. A.. (2018) Self-development management in educational globalization. *International journal of education and information technologies*. Vol. 12(12). P. 171-176.
- [20] Kassymova G.K., Tokar O.V., Tashcheva A.I., Slepukhina G.V., Gridneva S.V., Bazhenova N. G., Shpakovskaya E.Yu., Arpentieva M. R. (2019) Impact of stress on creative human resources and psychological counseling in crises. *International journal of education and information technologies*. Vol.13(1). P. 26-32.
- [21] Kassymova K.G., Tyumaseva Z.I., Valeeva G.V., Lavrinenko S.V, Arpentieva M.R., Kenzhaliyev B.K, Kosherbayeva A.N., Kosov A.V., Duvalina O.N. (2019) Integrative model of student and teacher stress coping: the correction of relations in educational, professional and personal interaction. *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*. Vol. 3, (379). P. 169-179. <https://doi.org/10.32014/2019.2518-1467.83>
- [22] Kassymova K.G., Valeeva G.V., Stepanova O.P., Goroshchenova O.A., Gasanova R.R., Kulakova A.A., Menshikov P.V., Arpentieva M.R., Garbuzova G.V. (2019). Stress of the innovation and innovations in education. *Bulletin of National Academy of Sciences of the Republic of Kazakhstan*. Vol. 6. P. 288-300. <https://doi.org/10.32014/2019.2518-1467.173>
- [23] Klyuev A.S. (2012) Muzykoterapiya kak metod muzykal'noy pedagogiki [Music therapy as a method of musical pedagogy]. *Iskusstvo i obrazovaniye* [Art and education]. № 4 (78), P. 106-109. (in Russ.).
- [24] Kuznetsov B.G. (1980) *A. Eynshteyn. Zhizn', smert', bessmertiyе* [A.Einstein. Life, death, immortality]. M., Science. 675 p. (in Russ.).
- [25] Labbe, E. (2007) Stress and Coping: The Effectiveness of Different Types of Music. *Applied Psychophysiology and Feedback*. Vol. 32(3), P. 163–168. doi:10.1007/s10484-007-9043-9
- [26] Mastropaolo, G. (1990) *Musiktherapie und Bambusflöten*. Zürich : Musikhaus Pan, Cop., 1990. 201 p. (in German).
- [27] McCaffrey T., Edwards J., Fannon D. (2011) Is there a role for music therapy in the recovery approach in mental health? *The Arts in Psychotherapy*. Vol. 38(3), P. 185–189. <https://doi.org/10.1016/j.aip.2011.04.006>
- [28] Nordoff P., Robbins Cl, (2004) *Therapy in Music for Handicapped Children*. Barcelona Publishers, 280 p.
- [29] Orff C.G.M., Keetman G. (1966) *Orff Schulwerk: Music for Children* (5 vol.). Mainz: Schott Music Inter-l. 1200 p.
- [30] Petrushin V.I. (1999) *Muzykal'naya psikhoterapiya. Teoriya i praktika* [Musical psychotherapy. Theory and practice]. Moscow: Vlados. 176 p. (in Russ.).
- [31] Pontvik A. (1955) *Heilen durch Musik*. Zürich: Rascher. 230 p. (in German).
- [32] Schwabe C. (1972) *Musiktherapie bei Neurosen und funktionelltn Storungen*. Jena, Gustav Fischer Verlag. 210 p.
- [33] Shamrock M. (1997) Orff- Schulwerk: An Integrated Method. *Music Educators Journal*. Vol. 83(6), P. 41–44. <https://doi.org/10.2307/3399024>
- [34] Shushardzhan S.V. (2005) *Rukovodstvo po muzykal'noy terapii* [Guide to music therapy]. M. 450 p. (in Russ.)
- [35] Sukhomlinskiy, V.A. (2001) *O vospitanii* [About education]. M.: QUANTA+. 436 p. (in Russ.).
- [36] Swain J.P. (2006, 2016) *Historical Dictionary of Sacred Music*. Oxford: Scarecrow Press 2006; Oxford: Rowman & Littlefield Publishers, 2016. 402 p.
- [37] Trubetskoy E.N.T. (2011) *Smysl zhizni* [Meaning of life]. M.: Institute of Russian Civilization. 656 p. (in Russ.).
- [38] White E.G. (2015) *Messages to young people*. New York: CreateSpace Independent Publ. Platform. 420 p.

УДК 622.273.2

У. Б. Баймуратов¹, Н. Ж. Жалгасулы²

¹Академик НАН РК, Институт социальной экономики и финансов, Алматы, Казахстан;

²д.т.н., профессор, Институт горного дела им. Д. А. Кунаева, Алматы, Казахстан

МЕДНОЕ БОГАТСТВО ТЮЛЬПАНОВОЙ СТЕПИ

(к 121-летию со дня рождения академика К.И. Сатпаева)

Титанический труд и яркая жизнь Каныша Имантаевича оставили глубокий след в науке и неизгладимую память у его современников. Первый из казахов инженер-геолог, доктор наук, академик, первый президент Казахской академии наук К.И.Сатпаев прошел суровый и счастливый путь борьбы и труда. С богатой эрудицией, прозорливым умом и целеустремленностью, обладавший поистине энциклопедическими знаниями и громадным жизненным опытом, с непоколебимой верой в свой народ он воплощал в себе лучшие черты человека современной эпохи – ученого, гражданина.

Он – организатор науки в Казахстане. Его роль в создании Академии наук Казахской ССР, крупный вклад, сделанный ученым в геологическую и горную науки, его большая государственная и общественная деятельность неопределимы.

Каныш Имантаевич Сатпаев – первый академик Академии наук СССР из среди коренного населения Казахстана и республик Средней Азии. Около сорока лет работал в Казахстане. За это время К.И. Сатпаев сумел многое сделать для развития науки вообще и геологии в частности, а также для решения проблемы раскрытия минеральных богатств республики.

Деятельность этого замечательного ученого и талантливого организатора была многогранной и насыщенной. Огромную роль сыграл К.И.Сатпаев в освоении Жезказгана и превращении его в крупнейшую базу цветных и редких металлов мирового значения. Но его заслуга не только в разведке этих месторождений. Одновременно с нею и на основе ее результатов К.И.Сатпаевым была разработана оригинальная геолого-генетическая концепция образованная богатейшего месторождения: используя ее, преемники ученого в Жезказганской экспедиции сумели в кратчайший сроки и с большой экономией средств нарастить крупные запасы руд и металлов. Эта теория основывалась на факторах контроля оруденения в Жезказгане, впервые выявленных К.И. Сатпаевым. Ныне они с большим эффектом применяются геологоразведчиками почти всех стран СНГ.

Большой вклад внес К.И. Сатпаев в разведку марганцевых месторождений Жезды-Найзатаского района, ресурсы которых в самые тяжелые годы Великой Отечественной войны позволили увеличить выплавку стали на заводах Урала и Кузбасса и дать стране многие десятки тысяч тонн необходимой стали.

За сводную монографию о раскрытии минерально-сырьевых ресурсов Жезказган-Улутауского района К.И. Сатпаеву была присуждена Государственная премия первой степени и присвоена ученая степень доктора геолого-минералогических наук без защиты диссертации. Этой работой К.И. Сатпаев показал, что является высококвалифицированным специалистом – геологом широкого профиля.

Под руководством выдающегося ученого была организована и проведена огромная работа по обобщению металлогении и прогнозов рудных месторождений в Центральном Казахстане, за которую восьми ее участникам во главе с Канышем Имантаевичем было присвоено звание лауреатов Ленинской премии.

Особенно много внимания уделял К.И. Сатпаев подготовке молодых кадров научных учреждений, в частности геологов. Значительную работу проводил ученый как государственный деятель. Он избирался депутатом Верховного Совета СССР и Верховного Совета Казахской ССР, неуклонно проводил в жизнь решения правительства, направленные на дальнейший рост минерально-сырьевых ресурсов Казахстана и всей страны, на их освоение. Значительным событием в этом направлении стало создание нового медеплавильного гиганта Жезказганского горно-металлургического комбината, который по праву носит имя К.И. Сатпаева.

В 1926 г. Каныш Имантаевич успешно заканчивает Томский технологический институт и получает звание горного инженера геологоразведочной специальности.

Это были годы становления горной промышленности и цветной металлургии в Казахстане. Зарождалась промышленность и в Центральном Казахстане. В тот период в Карсакпае на базе руд малоизученного в то время Жезказганского медного месторождения и углей Байконура возводился медеплавильный завод, строительство которого осуществлялось вновь организованным трестом "Атбасцветмет". В эту организацию и был направлен Каныш Имантаевич. На долю молодого геолога-разведчика выпала нелегкая задача – организовать разведку и изучение Жезказгана и Байконура. Район в те годы был труднодоступным и малоизученным в геологическом отношении, удаленным на 400 км от населенных пунктов и линии железной дороги. Уже с первого знакомства с районом и месторождениями Каныш Имантаевич сумел оценить его огромные перспективы.

В 1929 г. он поднял вопрос о развитии черной металлургии в Центральном Казахстане на базе Атасуйских железо-марганцевых месторождений. Одновременно с разработкой проблем, связанных с развитием медной промышленности в Жезказган-Улытауском районе, К.И. Сатпаев разведывал месторождения железа (Карсакбай), марганца (Жезды), угля (Байконур, Киякты), свинца (Кургасын). При его непосредственном участии была успешно решена проблема получения пресной воды для Большого Жезказгана.

В голодную годину 1930-1931 годов он проявил высокие нравственные и гражданские качества. Организовал «обоз жизни», спасая от голодной смерти детей умирающих кочевников-казахов, спасая будущее народа.

Уже к концу 1931 г. в регионе Жезказгана были выявлены запасы руд, поставившие его на первое место среди медных месторождений Советского Союза. Однако потребовались многие годы напряженного труда, чтобы вывести Жезказган в ранг крупнейших мировых месторождений.

В 1934 г. в Москве под руководством академика А.Д. Архангельского была проведена специальная научная сессия Академии наук СССР, посвященная производительным силам Жезказгана и Рудного Алтая. К.И. Сатпаев выступил с докладом о результатах работ и перспективах Жезказгана. На сессии было признано первостепенное значение Жезказгана для развития медной промышленности страны и необходимость ускоренного изучения ресурсов района.

После сессии Каныш Имантаевич был принят Г.К. Орджоникидзе, который, выслушав его доклад, согласился с необходимостью развития Большого Жезказгана. Вскоре было принято решение правительства Союза о сооружении железной дороги на Жезказган, завершившееся в 1937 г. В последующем 1938 г. было начато строительство Жезказганского медного комбината. Так завершился важный 15-летний период деятельности Каныша Имантаевича, в течение которого он показал себя блестящим разведчиком недр, тонким и глубоким исследователем и крупным организатором.

В начале Великой Отечественной войны Каныш Имантаевич назначается руководителем вновь организованного в системе Казахского филиала Академии наук СССР Института геологических наук и заместителем председателя Президиума филиала и переезжает в Алматы.

Неоценимую помощь в работе Филиала оказали эвакуированные в Казахстан виднейшие ученые того времени – президент Академии наук СССР В.Л. Комаров, академики В.А. Обручев, И.А. Бардин, А.А. Скочинский, И.А. Мещанинов, А.Д. Шевяков, А.А. Григорьев, З.В. Брицке и другие.

Руководимый Канышем Имантаевичем коллектив Филиала принял активное участие в работе Комиссии Академии наук СССР по мобилизации ресурсов Казахстана, Урала и Сибири на нужды обороны страны. Эта важная работа оказала большое влияние на развитие научных кадров республики.

В этот период Канышем Имантаевичем был завершен ряд научных трудов, за одну из них «Рудные месторождения Жезказгана» в 1942 г. был удостоен Государственной премии. В 1943 г. Каныш Имантаевич избирается членом-корреспондентом Академии наук СССР по Отделению геолого-географических наук.

Рос и развивался Казахский филиал Академии наук, пополнялся новыми институтами и секторами. К концу 1944 г. в его составе уже числилось 16 научных институтов, что создало предпосылки для организации на его базе Казахской Академии наук.

После победного завершения Отечественной войны Правительством Союза ССР выносятся постановления о подготовительных мероприятиях по созданию республиканской Академии наук, а 1-го июня 1946 г. состоялось торжественное открытие Академии наук Казахской ССР, Каныш Имантаевич был избран ее президентом.

Талант Каныша Имантаевича как ученого и организатора науки раскрылся на большой организационной и научной работе. В 1946 г. он избирается действительным членом Академии наук СССР.

Первые годы становления молодой Академии Наук Каз ССР были годами укрепления ее материальной базы и подготовки научных кадров, в первую очередь коренной национальности.

Впоследствии он писал: «Годы студенчества, проведенные мной в Томске в постоянном тесном общении с академиком М.А. Усовым, с его глубокими и свежими геологическими идеями, с его любовью к геологии и природе родной Сибири, с его обаятельными качествами как человека и как ученого, оставили у меня глубокое впечатление и чувство бесконечной благодарности к этому поистине благородному человеку, достойному сыну великого русского народа».

В Институте геологических наук под непосредственным руководством К.И. Сатпаева создаются основы горной науки Казахстана. В 1946 г. в соответствии с Постановлением Совета Народных Комиссаров Казахской ССР от 6 декабря 1944 г. Сектор горного дела ИГН КФАН СССР был преобразован в Институт горного дела Казахского филиала Академии наук СССР.

В соответствии с Постановлением СНК КазССР структура Института горного дела предусматривалась в составе 4-х секторов со штатом 29 человек, в их числе I доктор наук, 7 кандидатов наук и 10 младших научных сотрудников и 3 инженерно-технических работников.

28 марта 1945 г. на заседании Президиума КазФАН СССР, проходившем под председательством чл.-корр. АН СССР К.И. Сатпаева, было принято решение об организации в составе Каз. ФАН СССР Института горного дела.

7 апреля 1945 г. Постановлением Президиума КФАН СССР была утверждена дирекция ИГД Приказом от 25.04.45 г. по КазФАН СССР с назначением первого директора к.т.н. Лысенко Иван Захаровича, а заместителем директора – д.т.н. Бричкин Александр Васильевич.

Постановлением Президиума Каз.ФАН 29.05.45 г. №16 утвержден состав Ученого Совета Института горного дела, в который вошли: чл.-корр. АН СССР К.И. Сатпаев, заместитель председателя Совета Народных Комиссаров КазССР Д.А. Кунаев, к.т.н. И.З. Лысенко, д.т.н. А.В. Бричкин и др. Первым Ученым секретарем Института был утвержден Масгут Таирович Бакаев.

Создание специального научно-исследовательского Института горного профиля позволило начать разработку проблем, направленных на интенсификацию горнодобывающей промышленности республики с широкой постановкой натурных и лабораторных исследований.

Являясь председателем Ученого Совета Института горного дела, К.И. Сатпаев направлял работу Института на решение коренных вопросов горного производства в Казахстане.

Для достижения этих целей было необходимо разработать научные методы, позволяющие обоснованно устанавливать рациональные параметры горнодобывающих предприятий, способов вскрытия и систем разработки, буро-взрывных работ, способов разрушения горных пород при подземном и открытом способах разработки.

Ведущей и координирующей организацией в научной разработке поставленной проблемы, начиная с 1945 г., становится Институт горного дела Каз. ФАН СССР.

К наиболее ранним и важным разработкам Института относятся работы по разработке научных принципов конструирования систем и созданию расчетных методов определения параметров камер и целиков при разработке Жезказганского месторождения, развитие и совершенствование теории процесса выпуска руды под обрушенными породами при разработке Лениногорского, Зырянского, Текелийского и других месторождений, обрабатывавшихся системой принудительного блокового обрушения, а также системой самообрушением руд и налегающих пород.

Внедрение этой системы только на рудниках Лениногорского полиметаллического и Зырянского свинцового комбинатах позволило увеличить добычу руды более чем в 4 раза, повысить производительность труда рабочего в 4 раза и снизить себестоимость почти в 2 раза.

В 1962 г. творческий коллектив, принимавший активное участие в разработке и внедрении системы принудительного блокового обрушения группа ученых и производственников в составе А.Ч. Мусина, А.Н. Джакупбаева, В.Г. Березы, И.М. Малкина, Д.С. Кутузова, А.С. Травкина, П.К. Халина, В.Н. Бублис было удостоена высокого звания лауреатов Ленинской премии.

К.И. Сатпаев много уделял внимания вопросам рационального и комплексного использования сырья. Еще в начале Великой Отечественной войны в целях скорейшей мобилизации сырьевых ресурсов для нужд обороны страны К.И. Сатпаев поднял вопрос об использовании старых рудных отвалов в степной части Казахстана для выплавки различных металлов.

На ряде рудников Казахстана применение камерно-столбовой системы привело к образованию больших объемов выработанного пространства и большим потерям руды в различного рода целиках. Решение вопроса о их погашении, научное обоснование параметров системы и выемки междукамерных целиков являлся одной из основных задач науки. В дальнейшем технология добычи с закладкой выработанного пространства была успешно применена на рудниках Жезказганского, Лениногорского, Текелийского и других комбинатах Казахстана.

Широкое внедрение данной технологии позволило приступить к повторной разработке месторождений, особенно тех, где применялась камерно-столбовая и панельная отработка рудных залежей. Повторная разработка позволила значительно увеличить запасы руды на горно-рудных предприятиях Жезказгана, Миргалимская, Лениногорска в других месторождений Казахстана. И в настоящее время руды, оставленные в целиках, являются наиболее богатыми участками Жезказганского месторождения, которые успешно обрабатываются по технологиям, разработанным в Институте горного дела.

Со дня образования «сектора горного дела» одним из основных направлений работы является создание комплекса машин для бурения, погрузки и транспорта горной массы, механизации и автоматизации основных и вспомогательных работ при подземной и открытой добыче руд.

К.И. Сатпаев всегда поддерживал все работы, которые способствовали улучшению условий труда горнорабочих. В 40-е годы на шахтах применялись ручные перфораторы и переносные лебедки. Когда в 1947 г. Институт горного дела было предложено перейти на технологию с применением самоходного оборудования в условиях Жезказгана К.И. Сатпаев не только поддержал предложение Института, но и поднял вопрос перед работниками комбината о недостаточных темпах развития работ по самоходному оборудованию и убедительно показал перспективность и своевременность идеи внедрения на шахтах самоходного оборудования.

Уже в 1949-1950 гг. в Институте были разработаны первые предложения о выемке залежей Жезказгана с применением самоходного оборудования.

В эти годы для Жезказгана было спроектировано и испытано 2 экспериментальных образца 4-х перфораторных буровых кареток СБК-4. На основе испытаний экспериментальных образцов буровых кареток сотрудниками Института совместно с работниками Жезказгана были разработаны, изготовлены и испытаны в производственных условиях буровые каретки различной модели. В 1955 г. работниками ДГМК на шахте 51 были проведены испытания однокубового строительного экскаватора с укороченным рабочим оборудованием 3-1003 с транспортировкой руды в вагонах ВОК-350 электровозом 1-ТЛ-М.

Итоги эксплуатации экспериментального участка имели исключительно важное значение – было практически доказано, что применение самоходного оборудования на рудниках Жезказгана вполне целесообразно и дает значительный экономический эффект.

Результаты экспериментальных работ на всех стадиях систематически докладывались Президенту Академии наук КазССР, что позволило академику К.И. Сатпаеву в 1960 г. обосновать в Правительстве КазССР и СССР целесообразность создания и внедрения самоходных машин на рудниках Жезказгана.

Наряду с исключительным вкладом в геологическую науку и практику К.И. Сатпаев оставил глубокий след в горной науке Казахстана, всеми способами поддерживал и направлял усилия работников Института горного дела в их работе по рациональному, комплексному использованию природных богатств Казахстана и созданию комфортных условия труда горнорабочих.

Все, чем жила наша страна, было близко и дорого Канышу Имантаевичу. Он руководил исследованиями, связанными с реализацией идеи строительства канала Иртыш-Караганда, позволившего создать крупный металлургический центр в этом регионе, принимал активное участие в решении такого важнейшего мероприятия государственного значения, как освоение целинных и залежных земель в Казахстане, за что в 1957 г. был награжден третьим орденом Ленина.

Каныш Имантаевич был глубоким и тонким знатоком казахской истории, этнографии, культуры и фольклора. Известный этнограф и композитор А.В. Затаевич, составитель сборника «1000 песен казахского народа» и «500 казахских кюйев», записал из уст Каныша Имантаевича, сопровождавшего себе на домбре, 25 таких народных песен и кюйев.

Общеизвестны археологические изыскания К.И.Сатпаева в Центральном Казахстане. Здесь и раскопы древних рудознатцев, находки каменных статуй Тюркского каганата и кипчаков, знаменитый «Карсакапский камень» с горы Алтын-Шоқы, близ Улытау, на котором высечена надпись о вторжении Тимура в 1391 г и многие другие.

Кузница кадров геологов, горняков и металлургов Казахский горнометаллургический (ныне исследовательский технический университет имени К.И. Сатпаев) также не выходил из его поля зрения. С 1937 г. – первого года выпуска инженеров в течение ряда лет он возглавлял Государственную экзаменационную комиссию.

Велика заслуга К.И.Сатпаева и в создании первых периодических научных изданий в Казахстане – журналов «Известия АН Казахской ССР, серия геологическая» и «Вестник АН Казахской ССР», главным и ответственным редактором которых он был со дня их основания. Он оставил большое научное наследие, им опубликовано более 800 печатных работ на разных языках мира.

Каныш Имантаевич Сатпаев в течение ряда лет был депутатом Верховного Совета СССР и Казахской ССР. Состоял членом Президиума Академии наук ССР, Комитета по Ленинским премиям по науке, Высшей Аттестационной Комиссии. Был избран почетным членом Академии наук разных стран, членом многих государственных комитетов и комиссий.

Как человек, Каныш Имантаевич был обаятелен, прост, справедлив и доброжелателен.

Родина достойно оценила большие заслуги Каныша Имантаевича: он был награжден четырьмя орденами Ленина, орденом Отечественной войны, медалями, удостоен звания Лауреата Ленинской и Государственной премий.

Его имя присвоено Жезказганскому медному комбинату, городу, Институту геологических наук, ряду школ и одной из центральных улиц города Алматы. Звезда, носящая имя «Сатпаева», летя во Вселенной вокруг Солнца и Земли, как бы вечно извещает о том, что в одном из уголков Земли есть страна Казахстан, где в XX веке жил и творил ученый, который своим подвижническим, самоотверженным трудом внес неопределимый вклад в историю развития не только этой страны, но и всего человечества.

Казахский народ, научная общественность независимой Республики Казахстан навеки сохранят память о выдающемся человеке, большом ученом Каныше Имантаевиче Сапаеве.

Со своей энергией, неизменным оптимизмом и теплой улыбкой он всегда был олицетворением жизни и любви к ней. Таким Каныш Имантаевич наполнился всем, кто его знал. Три больших дела он оставил после себя: первое – Жезказган, второе – Академия наук Казахстана, третье – Институт геологических наук. В них живут и работают сотни людей, которые продолжают дело достойного сына казахского народа, ученого – Каныша Имантаевича Сатпаева.

Пройдут года, появятся новые ученые, надолго сохранится благодарная память о первом руководителе Академии наук Республики Казахстан. Есть у нас одна просьба к руководству Корпорации «Казахмыс». После переименования на «Казахмыс» название «имени К.И. Сатпаева» не

пишется в официальных документах и в афишах корпорации. Если объединенные все месторождения меди Казахстана будут носить имя великого ученого, то от этого выиграют все. Наше поколение будет благодарно за это.

Еще предстоит осмыслить и по достоинству оценить масштабность научного и нравственного подвига выдающегося сына казахского народа.

ЛИТЕРАТУРА

- [1] Наука Советского Казахстана. 1920-1960. Алма-Ата: АН КазССР, 1960.
- [2] Академик К.И. Сатпаев. Сборник, посвященный памяти выдающегося советского ученого. Алма-Ата, 1935.
- [3] Вестник АН КазССР. Алма-Ата, 1969.
- [4] Вестник АН КазССР. Алма-Ата, 1979.
- [5] Вестник АН КазССР. Алма-Ата, 1989.
- [6] Т.М. Ермеков, Н.Ж. Жалгасулы, К.И. Сатпаев и горная наука // Вестник МН и ВО НАН РК. 1999. № 6. С. 3-5.

Юбилейные даты

ДРОБЖЕВ ВИКТОР ИВАНОВИЧ (к 80-летию со дня рождения)



11 апреля 2020 года исполнилось бы 80 лет академику Национальной академии наук Республики Казахстан Дробжеву Виктору Ивановичу.

Этапы его жизни и деятельности – это история становления и развития космической науки в Казахстане.

Деятельность Дробжева Виктора Ивановича как ученого и организатора науки неразрывно связана с Институтом ионосферы, где он прошел путь от рядового инженера, аспиранта, старшего научного сотрудника до директора Института, заместителя академика-секретаря Отделения физико-математических наук, заместителя Министра науки – президента Академии наук Республики Казахстан. Он стоял у истоков организации и становления Центра астрофизических исследований и Национального центра космических исследований и технологий.

Дробжев Виктор Иванович – один из ведущих ученых в области радио- и геофизики. Сфера его научных интересов – проблемы солнечно-земной физики и исследования причинно-следственных связей процессов в околоземном космическом пространстве. Им обоснована концепция волновой природы динамических процессов среднеширотной ионосферы и разработана их радио- и геофизическая диагностика. Он являлся одним из инициаторов создания и развития такого важного направления, как исследование динамических процессов в околоземном космическом пространстве, протекающих при интенсивных явлениях естественного и антропогенного происхождения (взрывы, землетрясения, пуски космических аппаратов, солнечные вспышки и другие).

Он внес неоценимый вклад по сохранению и развитию казахстанской науки и, в частности, по совершенствованию системы управления наукой в республике, формированию целевых научных программ, проведению государственной независимой экспертизы программ, созданию единого информационного пространства.

Являясь организатором и первым директором Института ионосферы, Виктор Иванович воспитал и создал научную школу ученых, которые являются членами Американского геофизического союза, Европейского геофизического общества; Американского математического общества; экспертами фонда INTAS; стипендиатами научной стипендии Республики Казахстан для выдающихся ученых и специалистов, внесших выдающийся вклад в развитие науки и техники; государственной стипендии для талантливых молодых ученых.

Признанием его научных заслуг является избрание академиком Национальной академии наук Республики Казахстан, членом Американского геофизического союза, академиком Академии космонавтики им. К. Э. Циолковского, награждение медалью им. С. П. Королева, орденом «Парасат», медалями «Астана» и «К 10-летию Конституции РК».

Для нас Виктор Иванович всегда будет являться живым и убедительным примером внимательного, доброжелательного, интеллигентного и глубоко порядочного человека, профессионала в лучшем смысле этого слова.

Жумабек ЖАНТАЕВ,
*Президент Казахстанского центра Международной академии наук Евразии,
член-корр. НАН РК, лауреат Государственной премии по науке и технике им. аль-Фараби,
директор Института ионосферы*

Информационное сообщение

ЗАЯВЛЕНИЕ Национальной академии наук РК в связи с пандемией коронавируса COVID-19

Уважаемые соотечественники! Наше беспокойство связано с появляющимися в СМИ некорректными, а порою вредоносными сообщениями о пандемии необычного и нового для мира коронавируса COVID-19. Некоторые из них договорились до того, что никакой пандемии нет.

Мы со всей ответственностью заявляем, что человечество стоит перед большой опасностью. В нашей стране приняты своевременные и действенные меры. Президент Республики Казахстан К.-Ж. К. Токаев объявил в республике чрезвычайное положение. В крупных городах объявлен карантин.

В СМИ опубликована статья первого Президента – Елбасы Н.А. Назарбаева, где он призывает казахстанский народ к единству и сплоченности. В своей статье Н.А. Назарбаев дает развернутый анализ в связи со сложившейся в нашей стране и в мире ситуации и о путях преодоления этой пандемии, о том, как разрешить возможные экономические трудности. Кроме организационных мероприятий, у нас есть Национальный фонд, составляющий 90 млрд долларов США. Елбасы также дал четкое указание о поддержке малого и среднего бизнеса и нуждающихся в материальной помощи граждан.

В настоящее время все страны, весь мир борется с чудовищной эпидемией, вызванной COVID-19. К сожалению, еще ни в одной стране она полностью не ликвидирована. Ещё ни в одной стране ученым-биологам и фармацевтам не удалось разработать эффективное лекарственное средство. Однако это не даёт повода для страха. Уже известны предложенные учеными эффективные комбинации, состоящие из известных лекарств. Кроме них, учеными-медиками разработаны различные терапевтические методики лечения с учетом реального состояния здоровья пациента. Наши врачи профессионально владеют методами общей клиники и повышения иммунитета и поэтому их пациенты выздоравливают. Нам всем надо верить в то, что в скором времени пандемия будет обуздана. Для этого мы все должны по призыву Елбасы Н.А. Назарбаева, сплотиться, объединить свои усилия и успешно, без потерь пережить этот отрезок нашей жизни.

Всемирная организация здравоохранения (ВОЗ) рекомендовала разработанные учеными США и Японии 2 дезинфицирующих антивирусных, против «COVID-19», средств – антивирусные санитайзеры. Они безупречно действуют, мгновенно уничтожая вирусы COVID-19. Однако входящие в их состав некоторые компоненты – химические вещества в Казахстане полностью отсутствуют или являются труднодоступными. Поэтому возникла необходимость их заменить и расширить варианты таких санитайзеров на другие, доступные химикаты, чтобы при этом сохранить их высокую биологическую, антивирусную активность. За эту задачу взялись ученые Института топлива, катализа и электрохимии им. Д.Сокольского. Ими были испробованы десятки различных химреактивов и созданы несколько составов дезинфицирующих средств – антивирусных санитайзеров. При поддержке Министра образования и науки РК А.К. Аймагамбетова они были испытаны в Национальном биотехнологическом центре (г.Нур-Султан) и Институте вирусологии и микробиологии (г.Алматы). Мы также благодарны акиматам городов Алматы и Нур-Султана, которые разрешили работать группе наших ученых в дни карантина. В результате этого, как показали химико-биологические исследования, найдены весьма эффективные, ни в чем не уступающие санитайзерам ВОЗа и в то же время доступные составы санитайзеров-дезсредств.

Главное требование, предъявляемое к санитайзерам – это мгновенное и полное уничтожение вирусов COVID-19. Именно мгновенно, а не через минуты, потому что за эти минуты человек может заразить рядом находящихся. У нас ведь уже имеются случаи, когда заразились сами медработники.

Рецепты санитайзеров на днях будут опубликованы на сайте НАН РК – [http:// nauka – nanrk.kz](http://nauka-nanrk.kz) и в других СМИ. В небольших количествах их может приготовить у себя дома каждый, кто знаком со школьной программой по химии.

Однако вопрос бесперебойной поставки этилового и изо-пропилового спиртов необходимо решить в масштабах республики. Раньше они производились в Казахстане, но в настоящее время эти предприятия их не выпускают. В больших количествах эти спирты используются в основном на двух заводах – в Шымкентском химико-фармацевтическом заводе (этиловый спирт) и химическом заводе г.Петропавловска (изо-пропиловый спирт). Они завозятся из г.Орск (Россия). Мы предлагаем организовать их бесперебойную поставку в каждый город, в каждый район и бесплатно раздавать их населению под присмотром акиматов через аптеки и местные поликлиники.

Себестоимость этих противовирусных санитайзеров мизерная, поэтому их следует повсюду раздавать бесплатно. Маски тоже желательно раздавать бесплатно. Нельзя позволять на этом наживаться некоторым безответственным бизнесменам. Акиматы должны строго контролировать и не позволять никому повышать цены на продукты питания. Об этом тоже дает прямое указание Елбасы в своей статье. Ведь действует же объявленное Президентом страны чрезвычайное положение, какие еще нужны права акиматам? За время карантина цены на некоторые продукты питания выросли в 3 раза. В магазинах появилось множество никем не проверенных, якобы противовирусных, растворов, как ими написано – против COVID-19. На приведенной этикетке указано, что содержание этанола – 60% (на самом деле еще меньше). А по рекомендации ВОЗа и по нашим исследованиям содержание этилового спирта должно быть не менее 80%, изо-пропилового спирта – не ниже 75%. Иначе желаемого результата не будет. Недопустимо так вводить людей в заблуждение.

Маски тоже продают по завышенной цене, к тому же они не способны защитить людей от вируса COVID-19. Только несколько видов масок фильтруют эти вирусы, но они дорогие и мало-доступные. Но, в то же время любые маски все равно нужно применять, так как они защищают лицо человека от прямого попадания вирусов в случае кашля, чихания и физического контакта, механически экранируя лицо. Это тоже полезно, как и необходимость поддержания двухметровой дистанции от любого собеседника. Еще раз подчеркиваем – самое главное поддерживать свои руки в чистоте – чаще мыть их с мылом и обрабатывать противовирусным санитайзером-спреем, рекомендованным ВОЗом или НАН РК. Лучше приобрести спирт (этиловый или изо-пропиловый) и приготовить по нашим рецептам у себя дома. При этом нельзя опускать содержание спирта ниже 80%. Иначе пользы от него не будет. Водка для этой цели не годится. Употреблять ее, т.е. пить, как советуют некоторые в СМИ, также бесполезно и даже вредно, так как при этом человек теряет самоконтроль и не соблюдает меры предосторожности. Если маски нет, то вполне для механического экранирования лица может пригодиться многослойная марлевая повязка. К тому же, ее можно каждый день стирать с мылом, прогладить горячим утюгом и использовать снова. А предлагаемые маски для повторного использования не годятся.

Имеют большое значение все известные способы, повышающие иммунитет и физическое состояние человека. Нужно также отгонять страх и пессимизм. Как написано в статье Нурсултана Абишевича, мы должны всегда помнить, что Казахстан является высокообразованной страной с развитой наукой и культурой. В целом по интеллектуальному развитию в Азиатском континенте мы в этом уступаем лишь Японии, Южной Корее и Китаю. Остальные государства – или наравне, или позади нас. Это наше большое достижение.

Поэтому наш народ, проявив высокую сознательность, не допустил разгула пандемии по стране и практически обуздал очаги эпидемии. Нашим соотечественникам за относительно короткое время пришлось, после трагедии в городе Арыс, второй раз создать огромный пул добровольных пожертвований для оказания помощи в борьбе с пандемией. Однако с каждой практикой наше общество должно взрослеть и в этот раз эти, в своей первооснове народные деньги, должны тратиться на системные конкретные и прозрачно обнародованные цели. В том числе необходимо принять государственную программу для создания отечественных противовирусных препаратов. В нашей республике имеются три крупных научных центров по вирусологии, кроме вышеназванных двух, действует ещё один крупный центр – на ст. Отар близ г.Алматы. Основные исследования должны проводиться в них. Однако управлять этой программой должны ученые-специалисты, а не далекие от науки бизнесмены и чиновники.

Пандемия пройдет. А нам надо предпринимать меры по дальнейшей диверсификации экономики страны и улучшению благосостояния народа. Экономическую безопасность страны можно обеспечить и укрепить путем переработки минерального сырья, включая нефть и газ, и продукты металлургических заводов, превращая их в собственные изделия, товары, машины и приборы на научной основе. Необходимо использовать все возможности агропромышленного комплекса, особенно животноводства с учетом того, что поголовье скота растет в геометрической прогрессии. Самое главное – необходимо обуздать коррупцию и твердо встать на открытый, демократический путь развития и, как говорил Елбасы Н.А. Назарбаев, привлекая к руководству талантливых специалистов, обеспечивая в стране меритократическое правление экономикой страны.

Дорогие друзья! Еще раз призываем всех вас к сплоченности, единству и дружбе ради светлого будущего казахстанского народа. Именно эти качества нашего народа выделил наш Елбасы – Н.А. Назарбаев в своей статье «Когда мы едины – мы непобедимы» и предложил «отбросить в сторону апатию, тревогу, пассивность и вместе со всем миром укреплять себя на пути выхода из кризиса». Действительно, за последние десятилетия мы многое пережили, вместе переживем и эту напасть. Несомненно, мир после пандемии изменится, он уже изменился, но останутся лучшие качества человека – доброта, дружба, сострадание – которые и спасут этот мир.

Желаем всем здоровья, счастья и благополучия во всем.

*Президент Национальной академии наук РК,
Лауреат Государственной премии РК,
академик Журинов М.Ж.*

Рецептуры антисептиков-санитайзеров для рук, рекомендуемые ВОЗ (V ~ 100 мл)

№	РЕЦЕПТУРА №1	РЕЦЕПТУРА №2
1	Этанол 96%: 80 мл	Изопропиловый спирт 99,8%: 75 мл
2	Перекись водорода 3%: 4,2 мл или 30%: 0,5 мл	Перекись водорода 3%: 4,2 мл или 30%: 0,5 мл
3	Глицерин 98%: 1,5 мл	Глицерин 98%: 1,5 мл

Рецепты антивирусных санитайзеров, предлагаемые НАН РК:

РЕЦЕПТУРА №3	1. Этанол 96% – 80 мл 2. Уксусная кислота 9% – 3 мл (аптечная) или 50% (производственная) – 0,5 мл 3. Оливковое или любое другое растительное масло – 0,3 мл Остальное: чистая вода (дистиллированная или кипяченая) – 15,5 мл, т.е. долить до объема 100 мл.
РЕЦЕПТУРА №4	1. Изопропиловый спирт 99,8% – 75 мл 2. Соляная кислота (30%) – 0,3-0,5 мл 3. Оливковое (или другое пищевое масло – хлопковое, подсолнечное) – 0,3 мл Эту смесь необходимо залить чистой водой до объема 100 мл
РЕЦЕПТУРА №5	1. Изопропиловый спирт 99,8% – 75 мл 2. Натрия гидроксид NaOH (30%) – 0,3-0,5 мл 3. Подсолнечное масло (или любое другое) – 0,3 мл Остальное: вода до объема 100 мл
РЕЦЕПТУРА №6	1. Этиловый спирт (96%) – 80 мл 2. Щелочь – NaOH (30% р-р) – 0,3мл 3. Оливковое (или др.) масло – 0,3 мл Остальное: чистая вода
РЕЦЕПТУРА №7	1. Изопропиловый спирт 99,8% - 75 мл 2. Гипохлорит натрия (30%) – 0,5 мл 3. Оливковое (или др.) масло – 0,3 мл Остальное: чистая вода

Исследования по разработке антивирусных санитайзеров продолжаются.

Антивирусные санитайзеры разработаны в Институте топлива, катализа и электрохимии им.Д.В. Сокольского, биологические, антивирусные испытания проводились в Национальном центре биотехнологии (г.Нур-Султан) и Институте вирусологии и микробиологии (г.Алматы).

МАЗМҰНЫ

Ғылыми мақалалар

<i>Рақышев Б.</i> Пайдалы қазбаларды ашық игеру жүйелерін негіздеу және олардың жаңа жіктелуі.....	6
<i>Жуматаева Ғ., Битилеуова З., Байбураева Ж., Жанбиров Ж., Таран И.</i> Қазақстан Республикасының өңірлерінде жүк автомобильдерін пайдалану мәселелері.....	15
<i>Гапонов Н.В., Свистунов С.В., Бондаренко Н.Н., Романенко И.А.</i> Қан көрсеткіштеріне дейтерий суының әсері және макак-резустардың қоректік заттарының қорытылуы.....	22
<i>Кохметова А., Атишова М.</i> Пиренофорозға <i>Pyrenophora tritici-repentis</i> төзімді бидай генотиптерін идентификациялау.....	29
<i>Доронин В.А., Синченко В., Дрига В.В., Кравченко Ю., Полищук В.В., Николайко В.П., Полищук Т.В.</i> Тамшылатып суару жағдайында мискантус отырғызу материалын қалыптастыру ерекшеліктері.....	36
<i>Кохметова А.М., Атишова М.Н., Ғалымбек К.</i> Молекулалық маркерлерді қолданып сабақты, сары және қоңыр татықа төзімді бидай гермоплазмаларын идентификациялау.....	45
<i>Насиев Б.Н., Мамолов И.Г., Беккалиев А.К.</i> Каштан топырақтардың фосфор мен алмаспалы натрий мөлшерінің мал жаю әсерінен өзгеруі.....	53
<i>Шерне В.С., Аубакиров Х.А., Лаврентьев А.Ю., Семенов В.Г., Баймуканов Д.А.</i> Үйректер үшін аралас азықтарда энзимді препараттарды қолдану.....	62
<i>Балыкин А.А., Шашиқаров Л.Г., Мефодьев Г.А., Семенов В.Г.</i> Жаздық бидай өсімдігі дәндерін және сортын егу алдында өңдеуге байланысты жапырақ ауданы.....	70
<i>Насиев Б.Н., Янчева Х.Г., Жанаталов Н.Ж.</i> Судан шөбін жайылымдық режимде пайдалану.....	76
<i>Жайлибаева Л.А., Олейченко С.Н., Есеналиева М.Д., Demirtaş I.</i> Қазақстанның Оңтүстік-Шығысында «Брянское диво» ремонтантты танқурай сортының зиянкестер мен ауруларын зерттеу.....	84
<i>Карынбаев А.К., Баймуканов Д.А., Бекенов Д.М., Юлдашбаев Ю.А., Чиндалиев А.Е.</i> Қазақстанның оңтүстік-шығыс табиғи жайылымдарының экологиялық мониторингі және өнімділігі.....	91
<i>Жукова Г.С., Долбик-Воробей Т.А., Островская Н.В., Бурланков П.С., Кремер Н.Ш.</i> Корпоративтік әлеуметтік жауапкершілікті іске асырудың сандық технологиялары.....	99
<i>Наумкин В.А.</i> Шағын кәсіпорындардың қаржы ресурстары: оларды қалыптастыру көздеріне әсер ететін ішкі және сыртқы факторлар.....	106
<i>Путихин Ю.Е., Акимова Ю.Н., Островская Н.В., Манвелова И.А., Негашев Е.В.</i> Бухгалтерлік есептің ұлттық жүйелерін жіктеуге тұжырымдамалық тәсілдер.....	111
<i>Петров А., Сембиева Л.М.</i> Корпоративтік жүйелердегі есеп айырысулардың ішкі аудитінің ұйымдастыру-әдістемелік механизмі.....	119
<i>Ж. А. Кеворкова, Г. С. Жукова, О. Антонова, Т. А. Долбик-Воробей, А. М. Петров</i> Организационные условия перехода на МСФО в контексте искусственного интеллекта.....	128
<i>Абылкасимова Ж.А., Орынбекова Г.А., Алибаева М.М., Осадчая О.П.</i> Қазақстан кәсіпорындарының инновациялық қызметін талдау.....	137
<i>Бимұратова А., Токарева Е., Махатова А., Череп А.</i> Банктердің әлеуметтік жауапкершілігінің әлемдік Тәжірибесі.....	146
<i>Әбсаттаров Ғ.Р.</i> Құқықтық мәдениеттің жүйелік-саяси сипаттамасы.....	153
<i>Медведева Т.Н., Троякова Ю.К.</i> Хакасиядағы этникалық қоғамдық ұйымдар.....	162
<i>Фомина Л.Ю.</i> Жеке және отбасылық өмірді құрметтеу құқығы және мемлекеттік қызмет: тәжірибе адам құқықтары жөніндегі еуропалық соттың.....	169
<i>Краевский В.Н., Скорык М.О., Богдан С.В., Гмыря В.П.</i> Есептік жүйелердің когеренттілігі: мазмұнының трансценденттілігі және тағайындау имманенттілігі.....	176
<i>Райымқұлова А.</i> Қазақ музыкалық мәдениеті хх ғасырдағы жаһандану кезеңінде: мәдениетаралық өзара әрекеттестіктегі этникалық дәстүрлер мен композиторлық мектеп.....	185
<i>Касьмова Г.К., Лавриненко С.В., Крайнова Е.Р., Гасанова Р.Р., Горелова И.В., Каменская Е.Н., Косов А.В., Арпентьева М.Р.</i> Қазіргі заманғы тұжырымдамалар мен архетиптер білім басқаруда: психологиялық, әлеуметтік және экономикалық әсерлер.....	194
<i>Нестеров А.Ю.</i> Ресей Федерациясындағы пробация қызметінің институты.....	205
<i>Омарова А.Қ., Қазтуғанова А.Ж., Каромат Д.Ф.</i> Жаһандану және этномузыкатану.....	216
<i>Меньшиков П.В., Г.К. Касьмова, Гасанова Р.Р., Зайчиков Я.С., Березовская В.А., Косов А.В., Арпентьева М.Р., Киричкова М.Е.</i> Мамандықтың оқытуына артистикалық және эстетикалық білім және музыкалық психотерапия.....	222

Ғылым күніне

<i>Баймұратов Ұ.Б., Жалғасұлы Н.Ж.</i> Қызғалдақ даланың мыс байлығы.....	233
---	-----

Мерейтойлар

<i>Дробжев Виктор Иванович (80 жасқа толуына орай).....</i>	239
---	-----

Ақпараттық бағдарлама

<i>Жұрынов М.Ж.</i> ҚР Ұлттық ғылым академиясының COVID-19 коронавирусының пандемиясына байланысты мәлімдемесі.....	241
---	-----

СОДЕРЖАНИЕ

Научные статьи

<i>Ракишев Б.</i> Обоснование систем открытой разработки полезных ископаемых и их новая классификация.....	6
<i>Жуматаева Г., Битилеуова З., Байбураева Ж., Жанбирова Ж., Таран И.</i> Проблемы эксплуатации грузовых автомобилей в регионах Республики Казахстан.....	15
<i>Гапонов Н.В., Свистунов С.В., Бондаренко Н.Н., Романенко И.А.</i> Влияние дейтериевой воды на показатели крови и переваримость питательных веществ макак-резусов.....	22
<i>Кохметова А., Атишова М.</i> Идентификация генотипов пшеницы, устойчивых к пиренофорозу <i>Pyronophora tritici-repentis</i>	29
<i>Доронин В.А., Синченко В., Дрига В.В., Кравченко Ю., Полищук В.В., Николайко В.П., Полищук Т.В.</i> Особенности формирования посадочного материала мискантус в условиях капельного орошения.....	36
<i>Кохметова А.М., Атишова М.Н., Галымбек К.</i> Идентификация гермоплазма пшеницы, устойчивой к бурой, желтой и стеблевой ржавчине с использованием молекулярных маркеров.....	45
<i>Насиев Б.Н., Манолов И.Г., Беккалиев А.К.</i> Изменение содержания фосфора и обменного натрия каштановых почв под воздействием выпаса.....	53
<i>Шерне В.С., Аубакиров Х.А., Лаврентьев А.Ю., Семенов В.Г., Баймуканов Д.А.</i> Использование энзимных препаратов в комбикормах для утят.....	62
<i>Балыкин А.А., Шашикароев Л.Г., Мефодьев Г.А., Семенов В.Г.</i> Площадь листьев растений яровой пшеницы в зависимости от предпосевной обработки семян и сорта.....	70
<i>Насиев Б.Н., Янчева Х.Г., Жанаталапов Н.Ж.</i> Использование Суданской травы в пастбищном режиме.....	76
<i>Жайлибаева Л.А., Олейченко С.Н., Есеналиева М.Д., Demirtaş I.</i> Изучение и определение болезней и вредителей ремонтантной малины «Брянское диво» на Юго-Востоке Казахстана.....	84
<i>Карынбаев А.К., Баймуканов Д.А., Бекенов Д.М., Юлдашбаев Ю.А., Чиндалиев А.Е.</i> Экологический мониторинг и урожайность естественных пастбищ Юго – Востока Казахстана.....	91
<i>Жукова Г.С., Долбик-Воробей Т.А., Островская Н.В., Бурланков П.С., Кремер Н.Ш.</i> Цифровые технологии реализации корпоративной социальной ответственности.....	99
<i>Наумкин В.А.</i> Финансовые ресурсы малых предприятий: внутренние и внешние факторы, влияющие на источники их формирования.....	106
<i>Путихин Ю.Е., Акимов Ю.Н., Островская Н.В., Манвелова И.А., Негашиев Е.В.</i> Концептуальные подходы к классификации национальных систем бухгалтерского учета.....	111
<i>Петров А.М., Сембиева Л.М.</i> Организационно-методический механизм внутреннего аудита расчетов в корпоративных системах.....	119
<i>Кеворкова Ж.А., Жукова Г.С., Антонова О., Долбик-Воробей Т.А., Петров А.М.</i> Жасанды интеллект контекстіндегі ХҚЕС-ке көшудің ұйымдастырушылық шарттары.....	128
<i>Абылкасимова Ж.А., Орынбекова Г.А., Алибаева М.М., Осадчая О.П.</i> Анализ инновационной деятельности предприятий Казахстана.....	137
<i>Бимуратова А., Токарева Е., Махатова А., Череп А.</i> Мировой опыт социальной ответственности банков.....	146
<i>Абсаттаров Г.Р.</i> Системно-политическая характеристика правовой культуры.....	153
<i>Медведева Т.Н., Троякова Ю.К.</i> Этнические общественные организации в Хакасии.....	162
<i>Фомина Л.Ю.</i> Право на уважение частной и семейной жизни и государственная служба: практика европейского суда по правам человека.....	169
<i>Краевский В.Н., Скорык М.О., Богдан С.В., Гмыря В.П.</i> Когерентность учетных систем: трансцендентность содержания и имманентность назначения.....	176
<i>Раимкулова А.</i> Казахская музыкальная культура на перекрестках глобализации: этнические традиции и композиторская школа в межкультурном взаимодействии.....	185
<i>Касымов Г.К., Лавриненко С.В., Крайнова Е.Р., Гасанова Р.Р., Каменская Е.Н., Косов А.В., Арпентьева М.Р., Горелова И.В.</i> Современные концепты и архетипы в управлении образованием: психологические, социальные и экономические аспекты.....	194
<i>Нестеров А.Ю.</i> Институт службы пробации в Российской Федерации.....	205
<i>Омарова А.Қ., Казтуганова А.Ж., Каромат Д.Ф.</i> Глобализация и этномузыковедение.....	216
<i>Меньшиков П.В., Касымов Г.К., Гасанова Р.Р., Зайчиков Я.С., Березовская В.А., Косов А.В., Арпентьева М.Р., Киричкова М.Е.</i> Художественно-эстетическая подготовка специалиста и музыкальная психотерапия.....	222

Ко дню науки

<i>Баймуратов У.Б., Жалгасулы Н.Ж.</i> Медное богатство тюльпановой степи.....	233
--	-----

Юбилейные даты

Дробжев Виктор Иванович (к 80-летию со дня рождения)	239
--	-----

Информационное сообщение

<i>Журинов М.Ж.</i> Заявление Национальной академии наук РК в связи с пандемией коронавируса COVID-19.....	241
--	-----

CONTENTS

Scientific articles

<i>Rakishev B.</i> Justification of systems of open cast development of useful fossils and their new classification.....	6
<i>Zhumatayeva G., Bitileuova Z., Bayburayeva Zh., Zhanbirov Zh., Taran I.</i> Problems of operation of trucks in the regions of Kazakhstan.....	15
<i>Gaponov N.V., Svistunov S.V., Bondarenko N.N., Romanenko I.A.</i> Effect of deuterium water on blood values and digestibility of nutrients of rhesus macaque.....	22
<i>Kokhmetova A., Atishova M.</i> Identification wheat genotypes resistant to tan spot <i>Pyrenophora tritici-repentis</i>	29
<i>Doronin V.A., Sinchenko V., Driga V.V., Kravchenko Yu.A., Polishchuk V.V., Mykolayko V.P., Polishchuk T.V.</i> Features of formation of miscanthus planting material in conditions of drip irrigation.....	36
<i>Kokhmetova A.M., Atishova M.N., Galymbek K.</i> Identification of wheat germplasm resistant to leaf, stripe and stem rust using molecular markers.....	45
<i>Nasiyev B.N., Manolov I.G., Bekkaliyev A.K.</i> Change of phosphorus and exchange sodium conditions of chestnut soils under the influence of grazing.....	53
<i>Sherne V.S., Aubakirov Kh.A., Lavrentiev A.Yu., Semenov V.G., Baimukanov D.A.</i> Use of enzyme preparations in compound feed for ducklings.....	62
<i>Balykin A.A., Shashkarov L.G., Mefodyev G.A., Semenov V.G.</i> Leaves area of spring wheat plants depending on preseedling treatment of seeds and varieties.....	70
<i>Nasiyev B.N., Yancheva H.G., Zhanatalapov N.Zh.</i> Pasture mode for use of Sudan grass.....	76
<i>Zhailibayeva L.A., Oleichenko S.N., Esenalieva M.D., Demirtaş I.</i> Study and determination of diseases and pests of repair raspberry «Bryanskoe divo» in the South-East of Kazakhstan.....	84
<i>Karynbayev A.K., Baimukanov D.A., Bekenov D.M., Yuldashbayev Yu.A., Chindaliyev A.E.</i> Environmental monitoring and crop yield of natural pastures of the southeast of Kazakhstan.....	91
<i>Zhukova G.S., Dolbik-Vorobey T.A., Ostrovskaya N.V., Burlankov P.S., Kremer N.Sh.</i> Digital technologies for implementing corporate social responsibility.....	99
<i>Naumkin V.A.</i> Financial resources of small businesses: internal and external factors influencing the sources of their formation.....	106
<i>Putihin Y.E., Akimova Y.N., Ostrovskaya N.V., Manvelova I.A., Negashev E.V.</i> Conceptual approaches to classification of national accounting systems.....	111
<i>Petrov A.M., Sembiyeva L.M.</i> Organizational and methodical mechanism of internal audit of settlements in corporate systems.....	119
<i>Kevorkova Z.A., Zhukova G.S., Antonova O., Dolbik-Vorobey T.A., Petrov A.M.</i> Organizational prerequisites for transition to IFRS in the artificial intelligence context.....	128
<i>Abylkassimova Zh., Orynbekova G., Alibayeva M., Osadchaya O.</i> Analysis of innovation activities of enterprises of Kazakhstan.....	137
<i>Bimuratova A., Tokareva E., Makhatova A., Cherep A.</i> World experience of social responsibility of banks.....	146
<i>Absattarov G.R.</i> System-political characteristics of legal culture.....	153
<i>Medvedeva T.N., Troyakova Y.K.</i> Ethnic public organizations in Khakassia.....	162
<i>Fomina L.Yu.</i> Right to respect for private and family life and public service: practice of the European Court of Human Rights.....	169
<i>Kraievskiy V.M., Skoryk M.O., Bohdan S.V., Hmyrya V.P.</i> Coherence of accounting systems: transcendence of content and immunity of purpose.....	176
<i>Raimkulova A.</i> Kazakh music culture on the globalization crossroads: ethnic traditions versus composer school in intercultural interaction.....	185
<i>Kassymova G.K., Lavrinenko S.V., Kraynova E.R., Gasanova R.R., Kamenskaya E.N., Kosov A.V., Arpentieva M.R., Gorelova I.V.</i> Modern concepts and archetypes of the management in education: psychological, social and economical aspects.....	194
<i>Nesterov A.Y.</i> Institute of probation service in the Russian Federation.....	205
<i>Omarova A.K., Kaztuganova A.Zh., Karomat D.F.</i> Globalization and ethnomusicology.....	216
<i>Menshikov P.V., Kassymova G.K., Gasanova R.R., Zaichikov Y.V., Berezovskaya V.A., Kosov A.V., Arpentieva M.R., Kirichkova M.E.</i> Artistic and aesthetic education and musical psychotherapy of a specialist's training.....	222

To the day of science

<i>Baimuratov U.B., Zhalgasuly N.Zh.</i> Copper wealth of the tulip steppe.....	233
---	-----

Anniversary dates

Drozhev Viktor Ivanovich (on the occasion of his 80th birthday).....	239
--	-----

Informational message

<i>Zhurinov M.Zh.</i> Statement of the National Academy of Sciences of the Republic of Kazakhstan in connection with the pandemic of the coronavirus COVID-19.....	241
--	-----

**Publication Ethics and Publication Malpractice
in the journals of the National Academy of Sciences of the Republic of Kazakhstan**

For information on Ethics in publishing and Ethical guidelines for journal publication see <http://www.elsevier.com/publishingethics> and <http://www.elsevier.com/journal-authors/ethics>.

Submission of an article to the National Academy of Sciences of the Republic of Kazakhstan implies that the described work has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see <http://www.elsevier.com/postingpolicy>), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. In particular, translations into English of papers already published in another language are not accepted.

No other forms of scientific misconduct are allowed, such as plagiarism, falsification, fraudulent data, incorrect interpretation of other works, incorrect citations, etc. The National Academy of Sciences of the Republic of Kazakhstan follows the Code of Conduct of the Committee on Publication Ethics (COPE), and follows the COPE Flowcharts for Resolving Cases of Suspected Misconduct (http://publicationethics.org/files/u2/New_Code.pdf). To verify originality, your article may be checked by the Cross Check originality detection service <http://www.elsevier.com/editors/plagdetect>.

The authors are obliged to participate in peer review process and be ready to provide corrections, clarifications, retractions and apologies when needed. All authors of a paper should have significantly contributed to the research.

The reviewers should provide objective judgments and should point out relevant published works which are not yet cited. Reviewed articles should be treated confidentially. The reviewers will be chosen in such a way that there is no conflict of interests with respect to the research, the authors and/or the research funders.

The editors have complete responsibility and authority to reject or accept a paper, and they will only accept a paper when reasonably certain. They will preserve anonymity of reviewers and promote publication of corrections, clarifications, retractions and apologies when needed. The acceptance of a paper automatically implies the copyright transfer to the National Academy of Sciences of the Republic of Kazakhstan.

The Editorial Board of the National Academy of Sciences of the Republic of Kazakhstan will monitor and safeguard publishing ethics.

Правила оформления статьи для публикации в журнале смотреть на сайте:

[www:nauka-nanrk.kz](http://www.nauka-nanrk.kz)

ISSN 2518-1467 (Online), ISSN 1991-3494 (Print)

<http://www.bulletin-science.kz/index.php/en/>

Редакторы *М. С. Ахметова, Т. А. Апендиев, Д. С. Аленов*
Верстка на компьютере *Д. А. Абдрахимовой*

Подписано в печать 10.04.2020.
Формат 60x881/8. Бумага офсетная. Печать – ризограф.
15,5 п.л. Тираж 500. Заказ 2.