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ВЕСТНИК

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EFFICIENCY OF SOYBEAN PRODUCTION AS AN ALTERNATIVE SOURCE OF BIOFUEL IN THE ENERGY MARKET

Abstract. Active management in the oil and gas industry needs to take in account knowledge not only about fossil fuels but also various types of alternative fuels like biofuels. This thesis goal is to analyze the economics of producing Bio-Crude oil from a plant called Jatrophae curcadis, (or also known as "purging nut"). It is nowadays growing around subtropical regions of the North American continent, especially in Mexico, and southern Asia, and with lower yield can grow even in arid wastelands of Central Asia (in arid Mali it is grown to hold wildlife from plants). It is the very undemanding plant so the biofuel produced from it can be very cheap compared to other biofuels.

Biofuels are viewed as a possible fuel of the future. Concerning energy for cars there is intense "competition" stemming from electricity and rising in popularity due to modern research is also hydrogen. In general, biofuels are nowadays strongly supported in the European Union as well as in the United States of America and many other regions of the world.

The oil produced from this plant is not being traded on commodities markets yet but is viewed as biofuel of the future as currently sold soybean oil and palm oil are according to my analysis more expensive in many areas of the world. Production of the plant seeds (nuts) when pressed leads to bio-crude oil which can be processed to biocrude.

Economic analysis showed that given irrigation and good genetic selection of the plants to give higher production of seeds (price of the kg would be determining factor), the biocrude produced from the seeds has the potential to successfully compete with alternative fuels made from soybean or palm oils.

Keywords: diesel, gas, management, economic analysis, jatrophae curcadis, bio-crude, oil.

The USA used to be producing subsidized biocrude and export it to the EU and this act has led to bankruptcies of biocrude producers across the EU.

Germany has recently removed all subventions for biocrude production, causing its local biocrude producers to be un-competitive against the US imports. At the other end of the spectrum, Spain, another EU nation continues to have subventions, but local producers there too are unable to compete as loop holes in the current biocrude system allows imports to receive subventions too. This has created a general dissatisfaction that US biocrude producers are getting "double" subventions thus creating unfair competition.

European Trade Commissioner to the US, John Bruton (bioenergy-business.com) is quoted as saying, "*What we are witnessing here is US taxpayers effectively subsidizing European motorists to the tune of around $300m last year, and that figure is set to be even higher this year - all while Americans themselves are suffering at the pump*" (bioenergy-business.com).

The United States has been subsidizing biocrude production at USD$0.26 per liter for blended biocrude. This has caused another issue where countries such as Malaysia and Indonesia have been exporting to the USA their biocrude, mostly palm oil, and blending them with petroleum diesel in the US to qualify for the subventions and then exporting the blended fuel to Europe to collect the EU subventions. This has made it even more difficult for EU biocrude producers to be competitive. The European Biocrude Board (EBB) said that the fuel was cheaper when sold on the internal EU market than price for which the local EU producers can buy resources to produce it (bioenergy-business com).

The EC has threatened to bring the issue to the World Trade Organization (WTO) and has also threatened legal action. There have also been proposals that subventions for biocrude into the EU be removed for already subvented imported biocrude.

Argentina is just another country that has been benefiting from these subventions. The Argentinean biocrude producers have also joined the bunch of producers trying to make profits of its own subventions and also double subventions from the EU.

Escape clauses of various trade agreements have been taken advantage off to the horror of the European biocrude producers. Measures were taken by the US Congress to change the Energy law in regards to biocrude, but when the Energy Law was signed by the president, the biocrude trade and subventions clauses were left out. The problem continues and probably will end only in 2020 (grainet.com).

The EU is currently working on setting trade barriers and regulations in relation to biocrude. Limiting subventions and setting environmental limits on the bio-diesel products are possibilities. The EU currently is looking into biocrude producing countries, and is now stating that they might ban biocrude that is produced by raw materials that could cause environmental issues such as deforestation to grow biocrude plants.

At present, biocrude production has an issue where the low-cost supply of raw materials is not easily available. In the USA, soybean biocrude is not cost effective unless government subventions and in place. Currently, algae are said to have the greatest potential to be the largest source of biocrude raw material (Spinks, 2013), but that has yet to be proven as to production and also costs involved. Work is currently being done on Jathropa curcas as a possible low-cost resource. According to news.mongabay.com it is quite possible that alternative primary bio-crude sources as vegetable oils may have worse environmental impact than classic fossil fuels.

The EU plans to implement tariffs to stop foreign entities profiting from its subventions but on the other hand may offer Latin America a deal to be able to import cheaper goods of other type like citrus fruits at subvented prices. Nevertheless, this would need agreement of all EU member states and that is very unlikely. Implementation of high import tarrifs has much higher probability.

WTO negotiations generally take a long time to materialize and possible preferential trade agreements between these countries would probably happen in order to solve this issue. As these geo-political issues are discussed and decided on, the work towards a source of raw material for biofuel continues. Jatrophae curcadis has been marketed and publicized heavily as the future of bio- diesel with very little thought or planning in the agronomy and logistical issues involved. Currently, the second wave of Jatrophae curcadis investors is moving in with more research and information and with the hope and perseverance that this time it will be more successful.

There is no doubt that subventions do help, but it would be so very helpful for this very young industry that the countries involved with or whom are within their political influence to work out the geo-political issues to help start an industry that could very well change the political climate around the world.

Bio-fuel Economics. As the world's population become more dependent on the motorized vehicle and with markets such as India and China grows, so does the demand for fuel. Biofuels will play a critical role in providing the supply with the increased demands. The use of biofuels is not new but just needs to be streamlined in terms of production and logistics. The production of biofuels will also in turn take advantage of the earth's most valuable assets, its population and land availability. Creating and taking advantage of human skills such as farming would be a socioeconomic event where villages to countries can be more independent. With large swaths of land currently with poor arable soil, with its millions of inhabitants in these areas, such a plant such as Jatrophae curcadis would be able to provide a significant socioeconomic impact.

All that requires different or new energy sources while bio crude being one the the prominent candidates, the processes used and investments done may not always be necessarily financially efficient. According to Tao and Aden (2009), current production process of biodiesel using ethanol made of corn, sugarcane, or soybean, the raw materials costs is the major contributor to the overall production cost, while the overall capital costs are not particularly large when compared to other processes or industries. Tao and Aden (2009) also added that future biofuels that require cellulosic processes and other advanced biofuels processes, such as butanol, would not only still face the high cost of raw material but also the high investments needed for the deconstruction of these materials.

Whether ethanol or biocrude is used, it is in nowadays view a move in the right direction. The proven warming climate and the persistent degradation of the living environment, offers us a choice to look at greener ways to power our engines. Hydro power has been used but is limited to many areas in the world. Solar and wind power has also been used and although getting popular, still quite expensive and also limited to only specific places around the world.

Anyway, the vast majority of our power plants and from the smallest of engines to the largest, fuel is still needed. Unfortunately, electricity batteries cannot be used everywhere. Bio-fuel is not going to completely substitute fossil fuel energy, at least this or next decade, but will definitely complement our current resources.

Sustained Competitive Advantage. Using resource-based theory, Barney and Clark (2007) present the concept that it is possible for a firm to possess a sustained competitive advantage over competitors. "*A firm is said to have a sustained competitive advantage when it is creating more economic value than the marginal firm in its industry and when other firms are unable to duplicate the benefits of this strategy*" (Barney and Clark 2007, 52). Sustained competitive advantage is possible when firm resources are heterogeneous and immobile as opposed to homogeneous and perfectly mobile. For the purpose of this thesis, "farm" can conveniently be substituted for "firm". If farm resource heterogeneity and immobility exists, then it may be possible for specific farm resources to be sources of sustained competitive advantage.

The alternative to at least some farm resources being heterogeneous and immobile is for all farm resources to be homogeneous and perfectly mobile. Under such a scenario every farm should behave exactly the same way in every respect because all farm resources have the potential to be identical. Since farms are clearly diverse in numerous ways, at least some farm resources must be heterogeneous and immobile.

Farm resources must be valuable, rare, imperfectly imitable, and exploitable in order to be potential sources of sustained competitive advantage. Farm resources can be imperfectly imitable (or costly to imitate) for one or a combination of three reasons:

a) the ability of a farm to obtain a resource is dependent on unique historical conditions,

b) the link between the resources possessed by a farm and a farm's sustained competitive advantage is causally ambiguous, or

c) the resource generating a farm's advantage is socially complex.

Sustained competitive advantage does not equal permanent competitive advantage. Competitive advantage can be sustained for a period of time and then lost due to resources becoming obsolete or irrelevant. Competitive advantage can be sustained only as long as a farm's resources meet the criteria previously described (Barney and Clark 2007).

Benchmarking. Robert C. Camp of xerox said the formal definition for benchmarking is "*finding and implementing the best business practices*" (1993, 25). Xerox uses "*the continuous process of measuring our products, services and practices against those of our toughest competitors or companies renowned as leaders*" for their benchmarking definition (Camp 1993, 23-24). Another informative definition is "*a method for identifying aspects of an organization's activity that could be more efficient and/or effective by comparison with other relevant organizations' performance*" (Francis and Holloway 2007, 172).

In their literature review on benchmarking, Dattakumar and Jagadeesh (2003, 176) said: "*Benchmarking is recognized as an essential tool for continuous improvement of quality.*" They identified more than 350 publications pertaining to benchmarking. Francis and Holloway

(2007, 171) said "*Twenty years of widespread use have seen benchmarking become an accepted management practice rather than just another management fad.*"

They also described 12 types of benchmarking, one of which is competitive benchmarking. Competitive benchmarking is the process of "*comparison to the best of the direct competitors*" (Francis and Holloway 2007, 174). Yeager and Langemeier (2009, 112) said *"…internal and external benchmarking is extremely important in gauging the competitiveness of individual farms and for determining the impact of a change in the farm operation.*" Besides benchmarking the study identified key factors related to financial performance measurement identified as farm size or economies of scale; input costs, particularly machinery cost; and plant yields. Plant price, though not as important historically, is starting to become a more important factor.

Jatrophae curcadis and its Uses. Jatrophae curcadis is a perennial plant belonging to the Euphorbiaceae family. It is commonly known as the physic nut. More common plants in the euphorbiaceae family include the rubber tree (hevea brasiliensis), cassava, castor oil plant, and the poinsettia plant. Jatrophae curcadis is native to Central America and the Caribbean. It has always been looked upon as a multipurpose plant that is drought resistant. Among the most common function of the Jatrophae curcadis is its use as fencing as it prevents animals from getting through when planted close together. If carefully planted, Jatrophae curcadis hedges not only protect gardens from hungry livestock but also reduce damage and erosion from wind and water (Henning, 1998).

Ochse (1980) writes that young leaves can be eaten and are favored for cooking with goat meat, to counteract the specific goat smell. The nuts are even eaten sometimes, although it is known they can be harmful to health. Sometimes leaves are used to repel flies. The oil has been used for illumination, cleaning, candles, adulteration of olive oil, and making Turkey red oil. Nuts can be strung on grass and burned like candlenuts (Watt and Breyer-Brandwijk, 1962).

In Central America people grow the plant as a host for the mealy insect bug. The plant is then harvested and processed to obtain paint type material. Ashes of the burned plant roots can be used as a substitute for salt (Duke, 2000). Agaceta et al. (1981) conclude that it has strong solvent activity.

Duke and Wain (1981) list it for homicide, piscicide, and raticide as well. The bark may be used as a fish poison (Watt, Breyer-Brandwijk, 1962). In South Sudan, the seed as well as the fruit is used as a contraceptive (List, Horhammer, 1969–1979) and its sap stains linen, and can, therefore, be used for marking (Mitchell and Rook, 1979).

According to Hartwell (1971), the extracts of Jatrophae curcadis are used in folk remedies for cancer. Reported to be abortifacient, anodyne, antiseptic, cicatrizant, depurative, diuretic, emetic, hemostat, lactagogue, narcotic, purgative, rubefacient, styptic, vermifuge, and vulnerary, physic nut is a folk remedy for alopecia, anasorca, ascites, burns, carbuncles, convulsions, cough, dermatitis, diarrhea, dropsy, dysentery, dyspepsia, eczema, erysipelas, fever, gonorrhea, hernia, incontinence, inflammation, jaundice, neuralgia, paralysis, parturition, pleurisy, pneumonia, rash, rheumatism, scabies, sciatica, sores, stomachache, syphilis, tetanus, thrush, tumors, ulcers, uterosis, whitlows, yaws, and yellow fever (Duke and Wain, 1981; List and Horhammer, 1969–1979).

Its wax may be applied topically to bee and incest stings (Watt and Breyer-Brandwijk, 1962). It also has specific use in different cultures. Colombians drink the leaf decoction for venereal disease (Duke, 2000) while Bahamans drink the decoction for heartburn. Costa Ricans poultice leaves onto erysipelas and splenosis and Guatemalans place heated leaves on the breast as a lactagogue. Cubans apply the wax to toothache while Colombians and Costa Ricans apply the wax to burns, hemorrhoids, ringworm, and ulcers. Barbadians use the leaf tea for marasmus, Panamanians use it for jaundice and Venezuelans take the root decoction for dysentery (Duke, 2000).

The seeds are used also for drops and skin ailments (Watt and Breyer-Brandwijk, 1962). While its leaves are regarded as antiparasitic, applied to scabies; rheumatism; also applied to hard tumors (Hartwell, 1971). Perry (1980) reports that its wax is used to dress sores and ulcers and inflamed tongues while its seed is viewed as aperient; the seed oil emetic, laxative, purgative, for skin ailments. Root is used as a disinfectant for bleeding gums and toothache. Otherwise used for rashes, shingles, and other skin diseases (Perry, 1980; Duke and Ayensu, 1984). Four antitumor compounds are reported from other species of Jatropha (Duke and Ayensu, 1984). The plant is sometimes used for cold sweats, colic, collapse, cramps, cyanosis, diarrhea, leg cramps.

Agronomy of the Jatrophae curcadis. The Jatrophae curcadis is a small tree with a gray bark which releases white watery wax when cut. Under perfect conditions the plant might grow to a height of 6-9m, but most commonly the plant would grow to 3-5m. The fruits may produce several plants during the year if conditions are right. The inflorescences yield a bunch of 10 or more ovoid fruits which have a fleshy exocarp which turns yellow and dries, the fruit matures and so does the seed. There are three to four seeds in the fruit and would eventually mature to dark oblong shaped seeds.

Jatrophae curcadis grows almost anywhere – even on gravelly, sandy and saline soils. It can thrive on the poorest stony soil. It can even grow in the crevices of rocks (Lele, 2006). The leaves shed during the winter months and form mulch around the base of the plant. The organic matter from shed leaves enhance earth worm activity in the soil around the root zone of the plants, which improves the fertility of the soil.

Climatically, Jatrophae curcadis is found in the tropics and sub- tropics and likes heat, although it does well even in lower temperatures and can withstand a light frost. Its water requirement is extremely low and it can stand long periods of drought by shedding most of its leaves to reduce transpiration loss (Lele, 2006).

Jatrophae curcadis can be cultivated between latitude 30°N and 35°S, which is a much larger belt around the earth compared to that of oil palm which is only within the latitude of 4°N and 8°S (Jongschaap et al.,2007). The potential of the amount of ground that could be cultivated with Jatrophae curcadis is astounding and has the ability to change the socioeconomic conditions of those regions.

Unfortunately, electricity batteries cannot be used everywhere. Bio-fuel is not going to completely substitute fossil fuel energy, at least this or next decade, but will definitely complement our current resources.

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ЭНЕРГЕТИКА НАРЫҒЫНДАҒЫ БИООТЫННЫҢ БАЛАМА КӨЗІ РЕТІНДЕ СОЯ ӨНДІРІСІНІҢ ТИІМДІЛІГІ

Аннотация. Мұнай-газ саласындағы белсенді басқару органикалық отын туралы ғана емес, сонымен қатар биоотын сияқты альтернативті отынның әртүрлі түрлері туралы білімді ескеруі керек. Бұл дипломдық жұмыстың мақсаты - Jatrophae curcadis (немесе «тазартқыш жаңғақ» деп те аталады) деп аталатын зауыттан алынатын био-шикі мұнай өндірісінің экономикасын талдау. Қазіргі уақытта ол Солтүстік Америка континентінің, әсіресе Мексика мен Оңтүстік Азияның субтропикалық аймақтарының айналасында өседі, тіпті Орталық Азияның құрғақ шөлдерінде аз өніммен өсе алады (құрғақ Малиде ол өсімдіктерден жабайы табиғат алып өседі). Бұл өте дәстүрлі емес өсімдік, сондықтан одан жасалған биоотын басқа биоотындармен салыстырғанда өте арзан болуы мүмкін.

Биоотын болашақ ықтимал отын ретінде қарастырылады. Автокөліктерге арналған энергетика туралы айтатын болсақ, электр энергиясының әсерінен болатын «бәсекелестік» және қазіргі заманғы зерттеулердің арқасында танымалдылықтың артуы да сутегі болып табылады. Жалпы алғанда, биоотын қазіргі кезде Еуропалық Одақта, сондай-ақ Америка Құрама Штаттарында және әлемнің көптеген басқа аймақтарында белсенді қолдау табуда.

Бұл зауытта өндірілген мұнай әлі тауар нарықтарында сатылмайды, бірақ болашақтың биоотыны ретінде қарастырылады, өйткені қазіргі уақытта сатылған соя майы мен пальма майы, менің талдауым бойынша, әлемнің көптеген бөліктерінде қымбатқа түседі. Өсімдік тұқымын (жаңғақты) биологиялық есепке дейін өңдеуге болатын био-шикі майға әкелу арқылы өндіру.

Осылайша, биоотын өндіріс үшін экономикалық жағынан тиімді, сонымен қатар ол экологиялық таза және қоғам үшін қауіпсіз.

Экономикалық талдау көрсеткендей, жоғары тұқым өндіруге арналған өсімдіктерді суару және жақсы генетикалық іріктеу (килограмның бағасы айқындаушы фактор болады) тұқымнан алынған биорент соя немесе пальма майының баламалы отындарымен бәсекеге түсе алады.

Түйін сөздер. Дизель, газ, менеджмент, экономикалық талдау, катрофалар, био-шикі мұнай.

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ЭФФЕКТИВНОСТЬ ПРОИЗВОДСТВА СОИ КАК АЛЬТЕРНАТИВНЫЙ ИСТОЧНИК БИОТОПЛИВА НА РЫНКЕ ЭНЕРГЕТИКИ

Аннотация. Активное управление в нефтегазовой отрасли должно учитывать знания не только об ископаемом топливе, но и о различных типах альтернативных видов топлива, таких как биотопливо. Целью этого тезиса является анализ экономики производства био-сырой нефти с растения под названием Jatrophae

curcadis (или также известного как «гайка очистки»). В настоящее время он растет вокруг субтропических регионов североамериканского континента, особенно в Мексике и Южной Азии, и с меньшей урожайностью может расти даже в засушливых пустынях Средней Азии (в засушливом Мали он выращивается для содержания дикой природы с растений). Это очень нетрадиционное растение, поэтому биотопливо, произведенное из него, может быть очень дешевым по сравнению с другими видами биотоплива.

На сегодняшний день биотопливо рассматривается как возможное топливо будущего. Что касается энергии для автомобилей, то интенсивная «конкуренция», вызванная электричеством, и рост популярности благодаря современным исследованиям также является водородом. В целом, биотопливо в настоящее время активно поддерживается в Европейском союзе, а также в Соединенных Штатах Америки и во многих других регионах мира.

Нефть, добываемая на этом заводе, еще не торгуется на товарных рынках, но рассматривается как биотопливо будущего, поскольку в настоящее время проданное соевое масло и пальмовое масло по моему анализу дороже во многих районах мира. Производство семян растений (орехов) при прессовании приводит к био-сырой нефти, которая может быть обработана до биоучета.

Тем самым биотопливо является экономический выгодным для производства и экологический чистым и безопасным для общества.

Экономический анализ показал, что при условии орошения и хорошего генетического отбора растений для получения более высокой продукции семян (цена на килограмм будет определяющим фактором) биорента, полученная из семян, может успешно конкурировать с альтернативными видами топлива из сои или масла пальмы.

Ключевые слова: дизель, газ, менеджмент, экономический анализ, jatrophae curcadis, био-сырая нефть.

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REFERENCES

[1] Perry L.M. Medicinal plants of east and southeast Asia. Cambridge: MIT Press, 1980.

[2] Peterson C.A. Jatropha: The next big thing in bio-fuel? // Malaysian Business, 1 Apr. 2008: 27. Ramachandra T.V., Krishna S.V., Shruthi B.V. Decision support system to assess regional biomass energy potential // International Journal of Green Energy. 1 (2004), 407-428.

[3] Spinks P. Hope for algae-powered future. The Sydney Morning Herald. Technology. August 6 (2013).

[4] Tao L., Aden A. The economics of current and future bio-fuels // NREL report, In Vitro Cell.Dev.Biol. The society for In Vitro Biology, 45:199-217, 2009.

[5] Abisheva G.O., Mukhamadeyeva R.M., Mukhamadeyeva I.A., Mukhamadeyev T.M., Akokhova N.V. The integrated system of ensuring sustainable development of the region // 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. 2019. P. 3708-3714.

[6] Ignatov V.G. Social economy. M.; Rostov-on-Don: Publishing house: March, 2005. P. 249-250.

[7] Social functions of sports. http://www.bankreferatov. ru/db/M/CA C3AEAD90177EDCC325725E004

[8] Sociology of education http://www.socio.rin.ru/cgi-bin/article

[9] Ismailova N.T., Abisheva G.O., Ismailova D.T. (2019) The role of EVENT-marketing in management // News of the National academy of sciences of the Republic of Kazakhstan. Series of social and human sciences. 2019. Vol. 6, No. 328. P. 94-98. ISSN 2224-5294. https://doi.org/10.32014/2019.2224-5294.201 Michal, Igor. 1994. Ecological stability. Brno: Veronica, 1994. ISBN 80-85368-22-6

[10] Abisheva G.O., Ismailova D.T., Taukenova L.Zh., Mazhikeeva S.S., Ismailova N.T. (2019). Coaching as a tool for enterprise development // News of the National academy of sciences of the Republic of Kazakhstan. Series of agricultural sciences. 2019. Vol. 6, No. 54. P. 24-27. ISSN 2224-526X. https://doi.org/10.32014/2019.2224-526X.71

[11] Abisheva G.O. Nurgalieva A. Sh., Ismailova D.T., Ismailova N.T., Zhumagulova A.K. (2019). Academic freedom attractive challenge of modern university // Reports of the National academy of sciences of the Republic of Kazakhstan. 2019. Vol. 6, No. 328. P. 66-72. ISSN 2224-5227. https://doi.org/10.32014/2019.2518-1483.161 ISSN 2518-1483 (Online), ISSN 2224-5227 (Print) Michal, Igor. 1994. Ecological stability. Brno: Veronica, 1994. ISBN 80-85368-22-6

[12] Deberdeev A. The state of social infrastructure as one of the main problems of the village // AlPari No. 6. P. 81-84.