

FINANCIAL AND PRODUCTION ASPECTS OF GENETICALLY MODIFIED ORGANISMS¹

Milan Beslać², Ćorić Goran³

Summary

The purpose and goal of this research is to familiarize the general community, especially agricultural producers with the problem of financing the cultivation and trade of GMO and the problems Serbia is facing in the process of joining the EU. The paper uses an experimental method, the method of analysis, synthesis, induction and deduction, and presents the results which have been obtained by surveying 163 farmers from Vojvodina. The main results of this study show that, if the law so regulates, most agricultural producers agree to produce GMOs, but only if the conditions for the traditional production do not provide acceptable yield and income. The contribution of this paper is that it has shown that GMOs are such organisms that would never have been created in nature and that they actually represent a patent for certain organizations. It has also shown that there is a need for informing and educating farmers in the field of GMOs as well as the need for further research on this topic.

Key words: Financing GMO, DNA, Roundup, Genetic Engineering

JEL: G24, Q19.

Introduction

Genetically, modified organisms are those organisms created artificially in a laboratory in a way that they could never be created in nature. Therefore, genetically modified organisms are patents of organizations that create them and derive all other rights from the right to the patent. Financing, production and marketing of GMOs are becoming increasingly important in the world today, despite the fact that there are contradictory attitudes of scientists on this subject. In the EU countries, which allow the sales of GMO, labeling is required so that consumers can have the knowledge that they are buying a product with a GMO or not. In Serbia, the Law prohibits the production and marketing of GMOs. For

1 This study is the result of a theoretical and and field research of the author

2 Milan Beslac, PhD, full-time professor, High School for Business Economics and Entrepreneurship, Belgrade, Mitropolita Petra No. 8, 11 000 Belgrade, Serbia, tell: +381 63 302 797, E- mail: milan.beslac@vspep.edu.rs

3 Ćorić Goran, PhD, University Singidunum Belgrade, Danijelova 32 Beogard, Serbia

the purposes of this paper, a survey was carried out among 63 respondents - agricultural producers from Vojvodina. Their attitudes range from never to produce GMOs because they know their harmful consequences, to those who would produce them if it is legally allowed and if the desired income and yield could not be achieved by the production of traditional products. The research has shown that agricultural producers in Vojvodina do not have detailed knowledge about the production and effects of GMO production, which is why they need to be offered additional education, which will enable them to learn about the advantages and disadvantages of GMO production. The contribution of this paper is that it showed that the GMO is actually a patent for the exercise of all proprietary rights, as well as the right to prohibit the use of one's own seed for the next planting, insufficient knowledge of GMO farmers in Vojvodina, and that, in the next period, this topic must be given due attention and further research.

Definitions of GMO

There are numerous ways of defining and explaining genetically modified organisms (GMOs). Genetically Modified Organisms are organisms created by the use of genetic engineering techniques in laboratory conditions, using the recombination of deoxyribonucleic acid (DNA) and the direct injection of nucleic acids into cells or organelles (Manojlovic, 2012). This experimental technology combines the DNA of different species, creating unstable combinations of plant, animal, bacterial and viral genes that do not occur in nature. Genes are parts of molecules of deoxyribonucleic acid that produce a specific protein.

Genetically modified organisms in the field of plant production are agricultural plants that are newly produced plants through biotechnology, which are used for animal nutrition, through the food chain and for human consumption. (Ostojic, 2012). Plants are modified in laboratories to obtain the desired properties such as better resistance to herbicides or to increase the nutritional value of the plant. Traditionally, plants with outstanding characteristics such as higher yield or resistance are obtained by crossing, but among related species.

Genetically modified organisms are organisms that contain one or more genes that are introduced in the artificial manner and in laboratory conditions from another related, non-related or distant species (Trkulja et al., 2014).

The main objective of the application of genetic engineering in plant breeding is the same as with conventional methods with the desire to obtain improved properties (Skoric, 2006). The conventional method involves transferring genetic material sexually between individuals of the same or very close plant species, and the molecular biotechnology method transfers one or more desirable genes from any evolutionary category to the same or another category of organism, thus actually creating the genetically modified organisms (Konstatinoy, Mladenović-Drinić, 2006).

There are numerous problems with genetically modified organisms (Šavarlić, 2014) that consist of crossing the genes of one species with the genes of plants and animals of the

other species (bacteria with corn, a spider with a goat, a tomato with a fish, ..), and in the future very likely with man (pigs with a man - in order to obtain such “humanoid pigs” that would be used to transplant organs in human operations. GMOs are programmed to produce insecticides themselves (e.g. GM corn) and thus kill not only harmful insects but also useful ones, such as bees, or to be resistant to total herbicide (e.g. GM soy) that destroys all flora and fauna on treated areas except the treated plants (Ševarlić, 2014). The results and nutritional studies of experimental GMO animals show extremely poor results for the health of these animals (Ševarlić, 2014).

Common to all the foregoing definitions is that genetically modified organisms are organisms whose genome is modified, in the same way that it would never happen naturally, or in classical breeding. In genetically modified organisms, the host gene has been altered by genetic constructions of distant or completely unrelated species. In this way, natural boundaries are reversed and natural heritages are changed. Thus, this method of creating a GMO is dangerous for the future of all species and even for the overall life on the Earth.

Historical development of genetically modified organisms

The concept and the emergence of genetics

Genetics is a scientific discipline that has evolved from biology, and its etymological name derives from the Greek word ‘gene’, which, in translation, means ‘to give birth’, that is to say that genetics is a scientific discipline that studies the inheritance and variations in living organisms. Gregor Mendel, a priest from Brno, contributed significantly to the development of genetics. In 1865, he crossed various pea varieties and assumed that there were certain units that were passed from generation to generation. In this way, he set the basic laws of inheritance. In 1869, a Belgian, F. Mischer, quite accidentally discovered deoxyribonucleic acid. Although these two discoveries at the time remained unnoticed, during the twentieth century they laid the foundation of modern genetics.

Further development of genetics

Further development of genetics was influenced by Griffith, Avry, McLeod and McCarthy, who showed that hereditary changes in the bacterium of streptococcus were due to DNA. The theory of “one gene-one enzyme” was very significantly contributed by Beadle and Tatum (Dimitrijević, Petrović, 2004).

In 1952, Hershey and Martaways, investigating the Escherichia coli and T2 virus, proved that the DNA is the carrier of hereditary properties (Dimitrijević, Petrović, 2004).

On February 28, 1952, Frensis Creek announced that the secret of life was discovered by discovering the structure of DNA, (Dimitrijević, Petrović, 2004). This discovery is a crucial moment that laid the foundations for the further development of molecular genetics.

The last decade of the last century was a decade of commercialization of genetically modified organisms, especially in agriculture. In addition to commercialization in agriculture, genetically modified organisms were also used in medicine but with less success and in the year 1997 in the Roslin Institute of Edinburgh lamb Dolly was cloned, which represented the first cloning of a mammal.

Research: Financing Genetically Modified Organisms in Iraq and Law-Decree No. 81

Numerous local wars in the organization, or with the direct involvement, of great powers, in essence, always result in the economic exploitation of small but rich countries.

US President George W. Bush said, when US forces were entering in Iraq, that the US was in Iraq to sow the seeds of democracy in order to flourish and expand in the area of authoritarian regimes (Engdahl, 2005). This thought was interpreted, and later really carried out in wars in Egypt, Libya, Syria, but US President George W. Bush, recounting the aforementioned thought, did not mean the overthrow of authoritarian regimes and the establishment of democratically elected governments, but as it turned out, he meant the seed of genetically modified organisms.

The full power in Iraq, political and economic, was taken over by Paul Bremer III, who was appointed the Coalition Provisional Authority (CPA). Under his leadership, 100 different economic laws were enacted that came into force in 2004. Analyzing the content of the adopted laws of the decree, the former chief economist of the World Bank and the winner of the Nobel Prize for economics, Joseph Stiglitz, said that they were an even more radical form of “shock therapy” than those imposed on countries that were parts of the Soviet Union (Engdahl, 2005).

Spreading the seeds of genetically modified organisms in Iraq is governed by Decree-Law No. 81. named: “Patent Law, Industrial Design, Classified Information, Integrated Circuits and Plant Types” (Engdahl, 2005).

In this decree, among other things, it is stated that the patent owner is guaranteed the right to prohibit the production, exploitation, application, attempt of sale, sale and import of products produced on the basis of the patent, that the registered patent is valid for 10 years and that it is forbidden for farmers to use the plant seeds of protected crops preserved from the previous harvest as well as the seed of any other crop, (Engdahl, 2005).

Some believe that Monsanto company directly influenced and wrote the definition of the provision of this law - the decree. This decree also unambiguously shows that funding for GMO production will be at the expense of those sowing these products.

The role of Monsanto in the financing and production of GMOs and pesticides

The most famous representative of GMO and harmful pesticides is Monsanto. The first products of Monsanto were additives of food products such as artificial saccharin, caffeine and vanillin.

In 1976, Monsanto produced and marketed the Roundup, which became the trademark of Monsanto. In 1994, Monsanto produced the first biotechnological product called Posilac, bovine somatotropin (BsT or BST). In 1996, Monsanto placed a genetically modified soybean (Roundup Ready Soybeans) resistant to herbicide Roundup. In the same year, he also placed genetically modified cotton (Bollgard), which is resistant to insect pests. A year later, he placed the seeds of genetically modified corn (YieldGard Corn Borer), which is resistant to insects. In the same year, Monsanto modified the seeds of canola that are resistant to herbicide Roundup as well as Roundup Ready Cotton, which is also resistant to herbicide Roundup.

According to Monsanto's 1998 Vice-President, the company does not guarantee the food safety it produces, as its goal is to increase sales, and the FDA's task is to control security. This, in fact, means the total neglect of human health, and that the main goal is profit (Engdahl 2005).

In September 2016, the pharmaceutical company Bayer bought Monsanto for \$ 66 billion, with each share of Monsanto being paid at \$ 129, which is a 22% of the company's stock price.

The price at which Monsanto was purchased amounted to 175% of the GDP of Serbia in 2016, which amounted to 37,740,000,000 US \$ (SORS 2017).

There are numerous criticisms on Monsanto's account. Thus, in her study, The World According to Monsanto, Marie-Monique Robin (2009) says that this company does not mention any high-toxic products that have acquired tremendous wealth, or the carcinogenic substances that are destructive to both humans and the environment for decades since they leave long-lasting effects on several generations and cause problems with reproductive organs and sterility. The most important harmful pesticides are:

Polychlorinated biphenyl (PCBs) is a chemical compound over which Monsanto has a monopoly, and it has been placed in Europe under different names. This substance is very dangerous because it is carcinogenic, it does not decompose, it accumulates in the tissues of living organisms through the food chain, where it is permanently deposited. This product was first synthesized in America in 1925, and due to its toxicity was banned in 1977. The use of this product in Europe was banned in 2001 (Gavrančić, Skala, 2000).

Dioxin is a group of toxic chemical compounds which possess chemical elements such as carbon, hydrogen, oxygen, chlorine, and contain some polyhydride biphenyl. The most dangerous and poisonous so-called TCDD, which is one component of the herbicide Agent Orange used by the US in the war in Vietnam, which is produced by Monsanto. It is estimated that about three million Vietnamese people were exposed to this herbicide, and that 400,000 of them were killed and between 150,000 and 400,000 children were born with various defects. This compound also had negative consequences on US soldiers. After leading and ending a court dispute against the manufacturers of these compounds, seven companies paid \$ 180,000,000 for the damage, of which Monsanto paid 45.5% (Robin, 2009).

Roundup is a herbicide that Monsanto patented in 1969 and which is widely applied by ordinary farmers and growers of flowers considering it completely harmless. However, it has been shown that this herbicide adversely affects the health and environment of a person because it causes disorders in the reproductive system. By using this plant-protection herbicide, it easily enters the feeding chains of humans and animals. French molecular biologist Seralini conducted a research in laboratory conditions and found that GM corn treated with Roundup causes cancer and other disorders in laboratory animals. His study in 2012 indisputably demonstrated that Roundup and GMO cause damage to the liver and kidneys in laboratory rats and lead to tumors (Seralini 2012). This study was the first study the results of which were derived from the long-term feeding of laboratory animals (mice) with GMO corn NK 603. In some mice fed with corn NK603, tumors developed to up to 25% of their total weight. These results were reaffirmed in 2014 and published in the scientific journal *Environmental Sciences Europe*.

Bovine Growth Hormone is a hormone that illuminates the pituitary of a cow and which facilitates the production of milk. The consequence of the entry of this modified hormone in cows is sterility, fetal deformity and udder inflammation. Milk cows which this modified hormone was injected into developed breast, prostate and colon cancer (Radoničić 2015).

Field survey of entrepreneurs in Serbia

If we look at the areas of agricultural land in Serbia, then we can certainly say that Serbia is an agrarian country. Namely, 58% of the total area of the Republic of Serbia is agricultural land (CIA. Gov.).

Table 1. Overview of used agricultural land in Serbia

Republic of Serbia	Int total	Family farms	Legal persons and entrepreneurs
	3,355,859	2,816,424	539,435
Serbia North	1,732,182	1,277,118	455,064
Belgrade	134,117	102,976	31,141
Vojvodina	1,598,678	1,174,142	423,923
Serbia South	1,623,678	1,539,306	84,372
Šumadija and West Serbia	975,672	941,359	34,313
South and East Serbia	648,006	597,948	50,948
Region of Kosovo and Metohija	-	-	-

Source: Statistical Office - Census of Agriculture 2012 in RS

In Serbia, the law prohibits the production and marketing of genetically modified organisms. In addition, 135 out of 169, or 80% of the entities within the Assembly of Cities and Municipalities adopted a declaration against the importation, cultivation, processing and trade of GMO and GMO products.

In order to assess the motivation of farmers for possible production of genetically modified organisms, for the purposes of this research a survey has been conducted in

which 163 farmers participated. It was carried out in direct association with agricultural producers called “100 paora plus”.

Description of the sample

Sample coverage: 163 farmers. The total number of couples in this association was 224 out of which 61 did not want to participate in the survey or were not available. They process 156,000 ha. The analyzed 163 farmers cultivate 712,000 ha.

Geographic location of the respondents: the territory of Vojvodina (Banat, Backa, Srem)

Area of land under cultivation: 50 to 3,000 ha

Kind of culture that is sown: wheat, corn, soybean, sunflower

Survey type and method: By telephone - telephone conversation

The questions which the farmers answered:

How much surface area do they cultivate?

What kind of culture do they grow?

Are they satisfied with state subsidies?

Do they know what GMOs are?

Do they produce GMOs and if they do, which culture?

If Serbia allowed the production of GMO by law, would they produce GMO and why?

Research results

Table 2. Land area treated by respondents

Surface area	> 50 ha	50- 200 ha	200-500 ha	< 500 ha
	12%	15 %	55%	18%

Source: field research by the authors

Table 3. The type of cultures that the respondents treat

Type of culture	Wheat	Corn	Soybean	Sunflower
	100 %			
	38%	21%	28%	13

Source: field research by the authors

Table 4. Attitudes of respondents regarding knowledge, production of GMOs and subsidies in Serbia

	Yes	No
Do they know what GMO is	100%	0%
Do they produce GMOs	0%	100%
Satisfaction with subsidies in the Republic of Serbia	0%	100%

Source: field research by the authors

All respondents said they knew what GMOs were, but most of them did not know the details of how GMOs were generated and what the possible dangers of using GMOs were.

None of the respondents said they would produce GMOs, stating that it was prohibited by law, although they had some knowledge that there was GMO production in Vojvodina.

Members of the Association “100 paora plus” were not satisfied with the subsidies of the Republic of Serbia, which amounted to 4,000 RSD per hectare.

Table 5. Attitudes of respondents on the production of GMOs if permitted by law

Would they produce GMOS in case of being permitted by law	Yes	No, Never	Maybe	Conditional
	68%	12%	9 %	11 %

Source: field research by the authors

This question gave the most interesting results.

Out of 163 respondents, 68% of them stated that they would produce GMOs in case of a law permit without any further consideration.

Of all the respondents, 12% of them said they would never produce GMOs. Out of these 12% who declared that they would never produce GMO, 80% were highly educated and graduated from the faculties of agriculture or agronomy. They were familiar with the negative and harmful phenomena resulting from the use of GMOs and therefore, there were no conditions that they produce GMOs. The remaining 20% were superficially familiar with the negative aspects of GMOs; they used their own production for personal nutrition and therefore did not want to “poison” themselves or anyone else.

Out of all respondents, 9% of them did not explicitly say whether they would produce GMOs. These respondents knew that there was a potential possibility of the negative consequences of the use of GMOs. Only as a last resort, if there were no conditions to achieve yield and revenue from traditional production, they would be in favor of GMO production.

A very interesting group of respondents (11%), which would not produce GMOs, but if all the others did, they would do it too. In fact, their motive was income and yield, that is, if their neighbors were to generate higher income and yield with the same costs, then they would also opt for the production of GMOs.

Table 6. The views of the respondents for the production of GMOs in the event of a permit by the Law

Why should they produce GMOs if allowed by law?	Lower costs	Higher yield	If America can do it so can I	If others do it so will I
	38%	21%	28%	13 %

Source: field research by the authors

From the previous table it is visible that 68% of 163 respondents would produce GMOs if allowed by law. However, these respondents had different reasons for doing this.

Of these respondents, 38% think that GMO production is realized with lower costs, and less work (one to two sprays and no more), higher yields and revenues can be provided. They believe that negative elements of GMO are not harmful because Americans use such products.

Of the respondents who declared to produce GMOs, 21% believe that GMO production will generate higher yields. In fact, they mistake yield with income. Namely, they consider that they will achieve higher yield per hectare due to less damage from various diseases, and at the same time they will achieve higher income as they will reduce production costs (lower number of treatments). They do not go into the costs of seed procurement and the costs of pesticide procurement etc.

For the respondents who declared that they would sow GMO, 28% of them compare themselves with the USA farmers since they say that if the USA can do it why should not they as well. They believe that the production of GMOs due to the demands of large and powerful countries will not be able to stop at the borders of Serbia because Serbia is too small and poor.

Of these respondents, 13% do not really want to produce GMOs, but they say that if everyone does it, then they will do it, too. They cannot be different from others.

Discussion and conclusions

So far, research has shown that there is no evidence that genetically modified organisms are harmless to human health, or there is no evidence that there is any risk of their use. A large number of researchers among the world-renowned scientists show that GMOs cause various diseases in animals that can be transmitted to humans via the food chain. Proponents of GMO production and marketing are multinational companies that produce seeds and pesticides necessary for the production of these organisms, and they are supported by some politicians. Since GMOs represent a patent, the producers of these organisms exercise their rights in accordance with patent rights, or according to the rules of intellectual property traffic. Many world researchers have proven the existence of the harmful effects of GMOs that come from the very nature of genetic engineering, which involves mixing the genes of plants and animals. A survey on a sample of 163 agricultural producers in Vojvodina shows that most of them would produce GMOs if there was no other solution for increasing yields and revenues. Research has shown that respondents have very modest knowledge about GMOs and therefore they have no knowledge that GMO seed trade is monopolistic. They also do not think that there can be an economic blockade when they will not be able to buy GM seed and pesticides, and they will not be allowed to sow their own seed. Since they do not have the help of cooperatives and other organizations to produce and market their products, it motivates them to produce what they can produce and market easily. Nevertheless, respondents consider that subsidies and better sales organization can achieve satisfactory revenues and yields even with conventional production.

Bearing in mind the area of agricultural land owned by Serbia, the level and development of the domestic seed industry, the cost of procurement of seeds and pesticides for GMOs, and ethical, ecological and health reasons, the Republic of Serbia has no reason to amend the Genetically Modified Organisms Act to permit the production and marketing of these organisms. The production and trade of GMOs in Serbia would cause irreparable damage because domestic production of seeds, planting material and breeding cattle would disappear. The results of this study and experimental research clearly show that there are very clear risks from the use of items of food containing GMOs. GMO easily comes to the human diet through the food chain of animals. Due to all this, in the following period, it is necessary to pay great attention to this topic by continuing further research on the attitudes of farmers and the medical professionals, then paying due attention to educating farmers and researching the impact of GMO on the health of humans and animals.

References

1. Dimitrijević, M., Petrović, S., (2004): Genetically Modified Organisms, Issues and Dilemmas, p. 5-29. Green Network of Vojvodina, R. Serbia. Available at: https://www.google.com/?gws_rd=cr,ssl&ei=nWJfWaetKsuAU7yXrNgP#q=genetivko+modified+organizmi+pitanja+i+dileme.
2. Engdahl FV, (2005): Seed of Destruction - Geopolitics of Genetically Modified Food and the Global Empire, p. 9-59 Dereta, Zagreb. R. Croatia.
3. Gavrančić, S., Skala, D. (2000): Polychlorinated biphenyls - Properties of application and degradation technology, p. 53-54, Chemical industry 2000 vol.54.br. 2 crp. 53-63,3 Faculty of Technology and Metallurgy, Belgrade, Republic of Serbia.
4. Constantine and Mladenovic-Drinić (2006): The biotic aspects of the exploration and exploitation of results in the field of genetically modified organisms, Biotics in our country and in the world, pp. 117-130, SANU, Belgrade, R. Serbia.
5. Manojlović, Z. et al. (2013): European Union regulations and World Trade Organization agreements in the field of cultivation and trafficking of genetically modified organisms, p. 2. The National Assembly of the Republic of Serbia, Republic of Serbia.
6. Ostojic, J. (2012): Genetically Modified Organisms, p. 2-3, available at: <https://suzofil.files.wordpress.com/2012/11/genetski-modifikovani-organizmi-jelena-ostojic487.pdf>.
7. Papić - Brankov T. (2013): Food of the Future or Bioterrorism p. 9-65., Official Gazette, Belgrade, Serbia,
8. Radoničić, S., (2015): Orthodoxy and GMO, p. 7-95, Otačnik, Belgrade. Serbia.
9. Robin R. (2010), The World According to Monsanto, Pollution, Corruption, and the Control of the World's Food Supply, available at: <http://www.feministes-radicales.org/wp-content/uploads/2010/11/Marie-Monique-ROBIN.-The-World-According-to-MONSANTO.-Pollution-Corruption-and-the-control-of-the-Worlds-Food-Supp>.

10. Seralini, Ž. E. (2014) People today are turned into guinea pigs, genetically modified order, p. , Satena Mundi, Belgrade, Serbia.
11. Ševrarlić M., (2014) People today are turned into guinea pigs, genetically modified order, p., Satin Mundi, Belgrade, Serbia.
12. Škorić, D. (2009) Genetically Modified Organisms - Future or Misconception, UDC 575.856:57.088.7 , available at: <https://www.google.rs/search?q=dragan+skoric+genetski+modifikovani+organizmi+buducnost&oq=dragan+skoric&aqs=chrome>
13. Trkulja, V., Bajrović, K., Vidović, S., Ostojić, I., Terzić, R., Ballian, D., Subašić, Đ., Mačkić, S., Radović, R., Čolaković, A. (2014) Genetically Modified Organisms (GMO) and Biosecurity, (Second Extended Edition), p. 8. Institute of Generic Engineering, Sarajevo, Bosnia and Herzegovina.
14. Law on Genetically Modified Organisms: “Official Gazette of the Republic of Serbia” No. 41/2009

Internet sources:

1. <https://www.cia.gov/library/publications/the-world-factbook/geos/ri.html>
2. https://www.google.rs/?gws_rd=cr,ssl&ei=L-NcWdOYNszSUduzl7gI#q=brief+52.
3. https://search.yahoo.com/search?ei=utf-8&fr=tightropetb&p=wikipedia&type=69367_070917

FINANSIJSKI I PROIZVODNI ASPEKTI GENETSKI MODIFIKOVANIH ORGANIZAMA

Milan Beslać, Goran Ćorić,

Summary

Svrha i cilj ovog istraživanja je da se najširoj zajednici, a posebno poljoprivrednim proizvođačima približi problem finansiranja uzgoja i prometa GMO i problemima sa kojima se Srbija suočava u procesu pridruživanju EU.

U radu je korišćen eksperimentalni metod, metod analize, sinteze, indukcije i dedukcije, a prikazani su rezultati istraživanja koji su dobijeni anketiranjem 163 poljoprivrednika iz Vojvodine. Glavni rezultati ovog istraživanja pokazuju da bi, ukoliko zakonom tako bude regulisano, većina poljoprivrednih proizvođača pristala da proizvodi GMO, ali samo ukoliko se ne stvore uslovi da im tradicionalna proizvodnja ne obezbedi prihvatljiv prihod i prinos. Doprinos ovog rada je u tome što je pokazano da GMO jesu takvi organizmi koji se u prirodi nikad ne bi stvorili i da oni u stvari predstavljaju patent određenih organizacija. Isto tako pokazano je da postoji potreba za informisanjem i obrazovanjem poljoprivrednika iz oblasti GMO kao i potreba za dalje istraživanje ove teme.

Key words: Finansiranje GMO, DNK, Raundap, Genetski inženjering.

JEL: G24, Q19.

4 Milan Beslać, dr, redovni profesor, Visoka škola za poslovnu ekonomiju i preduzetništvo, Beograd, Mitropolita Petra broj 8, 11 000 Beograd, Srbija, tel: +381 63 302 797, E- mail: beslac011@ptt.rs

5 Ćorić Goran, doktorant, Univerzitet Singidunum Beograd, Danijelova 32 Beogard, Srbija
1594

CONTENT

1. Adriana Radosavac, Desimir Knežević
**ECONOMIC IMPORTANCE OF USE
OF PESTICIDES IN WHEAT PRODUCTION1323**
2. Berhe Gebregewergs, Muuz Hadush
**DOES CLIMATE CHANGE AFFECT PRICE OF VEGETABLES:
EVIDENCE FROM TIGRAI, NORTHERN MOST ETHIOPIA. . . .1335**
3. Grujica Vico, Aleksandra Govedarica-Lučić, Zoran Rajić, Radomir Bodirola,
Ivan Mičić, Silvija Zec Sambol, Marija Mičić
**MULTI ATTRIBUTE ASSESSMENT APPROACH
IN VEGETABLE PRODUCTION1355**
4. Igor Trandafilović, Vesna Conić, Aleksandra Blagojević
**IMPACT OF DEMOGRAPHIC FACTORS ON
ENVIRONMENTALLY CONSCIOUS PURCHASE BEHAVIOUR. . .1365**
5. Imre Milán Harcsa
**STUDY ON THE POTENTIAL OF SUBCONTRACT
PALINKA DISTILLATION1379**
6. Jelena Andrašić, Vera Mirović, Nada Milenković, Branimir Kalaš, Miloš Pjanić
**IMPACT OF TAKEOVER PROCESS ON EMPLOYEES -
EVIDENCE FROM FOOD, RETAIL AND FINANCIAL SECTOR. . .1393**
7. Jelena Birovljev, Danilo Đokić, Bojan Matkovski, Žana Kleut
**ECONOMIC PERFORMANCES OF AGRICULTURE
OF CEFTA AND FORMER CEFTA COUNTRIES1413**
8. Jelena Marković, Svetlana Stevović
**SUSTAINABILITY OF CHEMICAL SOIL QUALITY
IN SOUTHERN MORAVA RIVER VALLEY
IN CORELLATION WITH THE FLOODING1425**

9. Mile Peševski, Zoran Milovančević
**THE CHANGES IN THE USAGE OF AGRICULTURAL LAND
 IN EASTERN REGION OF REPUBLIC OF MACEDONIA
 BETWEEN 1991 - 20301437**

10. Odjuvwuederhie Emmanuel Inoni, 'Oraye Dicta Ogisi, Felix Odemero Achoja
**PROFITABILITY AND TECHNICAL EFFICIENCY IN HOMESTEAD
 CATFISH PRODUCTION IN DELTA STATE, NIGERIA1449**

11. Olja Munitlak - Ivanović, Jovan Zubović, Petar Mitić
**RELATIONSHIP BETWEEN SUSTAINABLE DEVELOPMENT AND
 GREEN ECONOMY - EMPHASIS ON GREEN FINANCE
 AND BANKING1467**

12. Petar Munćan, Dragica Božić
**FARM SIZE AS A FACTOR OF EMPLOYMENT AND INCOME
 OF MEMBERS OF FAMILY FARMS1483**

13. Rade Popović, Mira Kovljenić
**EFFICIENCY OF WHEAT PRODUCTION ON FARMS
 IN THE REPUBLIC OF SERBIA1499**

14. Radovan Damnjanović, Snežana Krstić, Milena Knežević, Svetislav Stanković,
 Dejan Jeremić
**THE DISCRIMINANT ANALYSIS APPLIED TO THE
 DIFFERENTIATION OF SOIL TYPES1513**

15. Slavica Otović, Dunja Demirović, Kristina Košić, Aleksandra Vujko
**FOSTERING ENTERPRENUERSHIP AT HIGH SCHOOLS:
 A CASE OF RURAL AREAS IN VOJVODINA (SERBIA).1523**

16. Vladimir Ilić, Ivan Bauer, Anastazija Tanja Đelić, Aleksandar Nešković
**INSTITUTIONAL SUPPORT FOR STRENGTHENING
 ENTREPRENEURSHIP IN AGRICULTURAL PRODUCTION
 OF THE REPUBLIC OF SERBIA1537**

17. Boro Krstić, Zorica Vasiljević, Miroslav Nedeljковиć
**INSURANCE CONTRACT AS THE BASIS FOR THE SAFETY OF
 AGRICULTURAL PRODUCERS IN THE REPUBLIC OF SRPSKA . .1555**

18. Dejan Sekulić, Aleksandar Petrović, Vladimir Dimitrijević
**WHO ARE WINE TOURISTS? AN EMPIRICAL INVESTIGATION
 OF SEGMENTS IN SERBIAN WINE TOURISM1571**

19. Milan Beslać, Ćorić Goran
**FINANCIAL AND PRODUCTION ASPECTS OF GENETICALLY
MODIFIED ORGANISMS1583**

20. Mlađan Maksimović, Darjan Karabašević, Miodrag Brzaković, Pavle Brzaković
**THE EFFECTS RESULTING FROM THE APPLICATION OF THE
CONCEPT OF THE SUSTAINABLE DEVELOPMENT OF RURAL
TOURISM ON STARA PLANINA1595**

21. Vesna Popović, Predrag Vuković, Milivoje Ćosić
**FOOD SAFETY AND QUALITY POLICY
IN THE REPUBLIC OF SERBIA1607**

22. Radovan Pejanović, Danica Glavaš-Trbić, Mirela Tomaš-Simin
**PROBLEMS OF AGRICULTURAL AND RURAL DEVELOPMENT IN
SERBIA AND NECESSITY OF NEW AGRICULTURAL POLICY. . . .1619**

23. Saša Marković, Slavoljub Vujović, Aleksandar Damnjanović
**MARKETING AND HIGHER EDUCATION -
CONDITION IN SERBIA.1635**

24. Semir Vehapi, Marina Milanović
**THE EFFECT OF MARKET ORIENTATION ON BUSINESS
PERFORMANCE OF SERBIAN ORGANIC PRODUCERS1651**

25. Suad Bećirović, Šemsudin Plojović, Enis Ujkanović, Senadin Plojović
**CHALLENGES AT STARTING AN AGRIBUSINESS IN THE HILLY -
MOUNTAINOUS REGIONS OF SOUTHWEST SERBIA.1669**

26. Vladimir Zakić, Vlado Kovačević, Jelena Damnjanović
**SIGNIFICANCE OF FINACIAL LITERACY FOR
THE AGRICULTURAL HOLDINGS IN SERBIA1687**

27. Željko Bjelajac, Marijana Dukić Mijatović, Željko Vojinović
**PROTECTION OF LAND IN THE REPUBLIC OF SERBIA
AND ECOLOGICAL SECURITY WITH REGARD
TO STRATEGIC AND LEGAL FRAMEWORKS1703**