ANALYSIS OF ORGANIC AGRICULTURE AND ITS SIGNIFICANCE IN TERMS OF THE ENVIRONMENT PROTECTION IN SERBIA[1]

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Abstract

Methods of organic agriculture that are already use in many countries in the world, has shown excellent results in the conservation of soil biodiversity, soil and water purification from pesticides and fertilizers. Biological control of pests, the use of natural substances in disease control, fertilizer use, such as manure and compost to increase soil fertility measures that are in accordance with the requirements of a healthy environment, and measures to allow maintenance of the ecological balance in nature. This paper seeks to address the conditions that are important for organic production and considering the natural resources and new agricultural techniques to reduce pollution by analyzing the controlled production conditions and identify measures for sustainable development of high quality food, protection of ecosystems, as well as maintaining and increasing soil fertility.

Key words: *Natural resources Serbian, sustainable development, organic farming, environmental protection*

Introduction

Agricultural production is based on natural resources, manpower and technical means of production. With the increasing population of the Earth, the natural food resources are scarce and a man is trying to influence them. New knowledge and activities of man, created pesticides,

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fertilizers to increase yields in crop production, machinery for faster and more efficient performance of agricultural practices and irrigation systems for intensive agricultural production.

However, all human activities in addition to the positive impact on increasing agricultural yields have negative consequences from the ecological point of view; such pesticides and fertilizers affect the agro ecosystem, environment and biosphere. Also, mechanized farming affect the soil pressure, which is why lees absorbing rainfall, while the remaining water, which flows through the compacted soil carries with it particles of harmful substances and chemicals that pollute the immediate environment. Also irrigated land affected by a hydrothermal and soil conditions, leading to a significant of relating nutrients to the deeper layers and the increase in harmful biological agents.

Like some kind of reaction to environmental degradation, which becomes more pronounced, the deterioration of food quality and consequently a growing threat to human health, has developed an organic agriculture.
Concepts ,,ecological", or "biological, organic agriculture" means the science and practice of systems and ways of performing plant and animal production that are contrary to your usual traditional agriculture. [10]

In Australia, the ecological (organic) agriculture has developed in one popular form named a permaculture. Such form of production takes into consideration the local culture, climate, the local samples and habits, so it offers a basic state on observation of area specific features, soil climate, flora and fauna, insolation and water, and classify them in an unique design, adjusted to specific user or users. The permaculture design is done according to a principle – care for Earth, care for humans, and reinvestments of surpluses, aiming to achieve the previous principles. In the permaculture, a man and his activities turn back to a natural matter circulation, as a part of a cyclic structure in which there is no waste and waste of energy. The permaculture principle bases on observation and application of eco-system organization in accordance with natural courses. By careful design fit and combine the plant cultures, which provide a mutual protection from pests, aiming to feed the population and to protect the agricultural land from degeneration. On the local level, the permaculture application substantially depends on some towns and municipalities management. English towns Bristol, Totnes and Straud have most accomplished in apply of the permaculture concept. [3]

Under the above mentioned synonyms consider the systems of agricultural production in which dominate ecological principles, brought into possible harmony with ecological requirements, which means that, besides a size and a quality of a desired product, takes care also on long-term effect of the system on natural resources and environment preservation.

The permaculture association in Serbia is just initiating and it has the national WWOOF (World Wide Opportunities on Organic Farms) support, the world organization of volunteers in organic agriculture.

Production of organic products is a great chance for Serbian agriculture given the great natural resources and the fact that over 80 percent of the land in Serbia is not contaminated, which an essential prerequisite for the successful development of organic is farming. When we add to the quality of soil with high humus content, it can be concluded that all the natural conditions for the development and justification of dealing with organic production.

Also, the potential is the presence of large areas of meadows and pastures that are not used in rural areas as a result of decades of continuous decline in the number of livestock in the country. These regions are often avoided because of the underdevelopment of the chemicals and pollution that accompanies development, and the natural communities and habitats preserved. Very strong resistance of indigenous breeds to their growing without major investments in health care and treatment, and in this way obtain special quality animal products for human consumption, which does not contain residues of various antibiotics and pesticides. [1]

In recent years significantly increased interest in organic agriculture, in response the increasing environmental degradation, deterioration in the quality of food and the growing threat to public health of the human population.

Organic farming as a system takes into account environmental, economic and social aspects of agriculture at the local, national and global level. Therefore, the goal of organic agriculture is producing sufficient quantities of high - quality food to the rational use of natural resources and the environment.

One of the important aspects of organic farming is the socio-economic aspect. In fact, this kind of production requires a small investment in terms of products, materials and equipment, and thus the production can be included a large number of small producers. On the other hand, organic products are sold at higher prices that allow a fair income for producers and compensate for reduced yields and increased levels of the organic production method. The inclusion of small producers in organic production positively affecting the security of their existence at the place where they are located, and that affecting to on regional development and to on economy of the country. [11]

Steady growth in demand for organic products in the world suggests that this production method can be very profitable if properly used natural resources, knowledge and production experience.

Results and discussions

Serbia has very favourable natural conditions (soil and climate) for diversified agricultural production (as plant, as well as livestock production), it has experienced producers, top-experts and scientific workers, worldwide recognized selections of various plant products. The favourable climatic and natural conditions hasten the agriculture development. Lowland regions Vojvodina, Pomoravlje, Tamnava, Krusevac and Leskovac field are suitable for mechanized of crop and vegetable production. Mountainous and hilly regions are convenient for development of fruit, viticulture and livestock production. Hilly-mountainous area of Zlatibor, Rudnik, Stara Planina, Kopaonik and Sar Planina are suitable for development of sheep breeding, cattle breeding and forestry.

In the last two decades, in agriculture has been developed a new trend in healthy food production, based on a sustainable development concept. The organic agriculture bases on tradition, and using innovativeness and the results of scientific research, contributes to improvement of the environment and life quality. This production essence is to preserve and protect the eco-system, care for men and production of quality and healthy-safety food, as well as harmonization and proper execution of fertilization, crop rotations and protection of plants and animals with natural preparations.

In the organic production stimulate natural biological processes in which take part microorganisms, flora and fauna. In that way keeps and protects soil fertility and biodiversity, does not pollute land, air and water, while refuses from agricultural production can be used for production of highly valuable products (compost, bio-gas, etc.). [8]

Organic Farming

Scientific basis of organic farming are set 80s, based on research conducted in Europe, Japan and the United States. The primary research categories were : crop production, livestock production, horticultural production, reducing the risk of health and safety, economics and sociology, assessment and the use of basic resources and, management of pasture and woods.

The basis of all primary category represents crop production because of plant production is used to feed livestock and livestock provide organic fertilizer for plant nutrition. The investigations so scientifically developed following the most significant issues crop production and organic farming. For our production requirements of special importance: crop rotation, exchange of energy from conventional to organic farming method, green manure, cover crops, intercropping, use manure, composting, organic matter in the soil and its maintenance and its role in crop production, biological nitrogen fixation, land microbiological studies on pest control, new crops specifically for small farms, genetics and Selection of low pH and limited land fertility, machinery and equipment for organic cropping and small farms and economic and sociological evolution of the system of organic farming. [10]

The above questions are not only important for biological farming system (organic cropping), but can be, in general, relevant to all areas of plant production.

In modern processing plant production area has a special place. In conventional processing system, applicable to heavy machinery and tools, which a large number of walk consume large amounts of energy, and in addition have a negative impact on the physical and other properties of soils. Here, then, are the reasons why it is necessary to review and some changes in the processing of land for major agricultural crops. It is believed that the conventional treatment reduced gradually in order to

find a rational technology. Future solutions in streamlining the traditional treatment system will go towards reducing energy consumption and a smaller proportion to the investment. The concept of sustainable agriculture, tillage will have conservation character (above 30 % of crop residues remains on the soil surface), which will play an important role in preserving fertility and prevent degradation of land as a natural resource. [4]

It should be noted that the success in finding environmentally friendly solutions in the technology of crop production largely depend on environmentally educated people in agriculture and their involvement in the transfer of environmental knowledge and technology in agricultural practices. This is especially important if we consider our great advantage because still preserved and less polluted soil compared to developed Europe. Therefore, it is our opportunity far greater production of high-value and safe food and its export to foreign markets.

Land cultivation

In breaking in the new technologies of land cultivation must take care of conditions in which the technologies will show the best possible efficiency. A main deficiency of traditional land cultivation is insufficient efficiency, due to numerous crossings of machines and generating units (aggregates) over the land, which leads to a structure change. Researches show that optimal soil compaction is directly connected to the cultivation.
In past years, a great attention was paid to reduction of cultivation, i.e. decrease of ploughing depth and reduction of number of crossings over the area. The reduced cultivation, unlike the conventional one, has series of advantages, but also imperfections. As the advantages are stated a better control of land erosion, conservation of water and land and a better efficiency of fossil fuels utilization, as non-renewable resource. The imperfections include the reduction of soil temperature during springtime, more problems regarding protection, especially from weed and decrease of herbicides efficiency. On suitable soil types (chernozem and alluvium), in optimal years, if there were previously deeply cultivated for some time, there could produce wheat, maize and soy, without a tillage. Here, for a minimal cultivation there are still many limitations for practical apply, owing to lack of appropriate mechanization and more efficient protection, primarily from weed, but also must accentuate that neither all soils are

suitable for the minimal cultivation. In our country has been done mainly on better soils, as chernozem. [2]

A need for decreasing a cost price of main products dictates a concept and cultivation system modification and new tools development. In past several decades, here strive to reduction of the existing conventional systems and adaptation of new land cultivation systems for specific crops, which would match to the specific climatic and soil conditions. The reduced cultivation systems have some advantages over the conventional, which reflect in better erosion control, preservation of soil moisture, energy and labour savings. Sometimes is necessary, in reduced systems, to leave more harvesting residues of preceding crop on soil surface and, in that case, these systems have the conservation character.

In the conservation systems with land cultivation reduction, or with its complete elimination, a direct influence of cultivation has been minimized, and harvesting residues of previous crop have been on the soil surface or directly below it. Uncultivated soil surface is less porous than regarding the cultivated soils, which results with higher moisture content, lower soil temperature, more organic matter at soil surface and greater participation of water-stable aggregates (generating units), and also higher density than conventional and less oxygen. Thanks to the harvesting residues at the soil surface, the increased moisture content due to evaporation decrease and favourable temperature regime set in motion a micro-biological activity and nitrogen mineralization, so in that way realizes faster nitrogen circulation and increases its availability. The content of nutrients is modified by ploughing layer's depth. Potassium and phosphorus are present closer to the soil surface, while calcium and magnesium wash out more. During winter, lower soil temperatures cause less nitrogen mineralization and its partly denitrification, but if we practice growing of cover crops, then they are in terms of mineral nitrogen seizing and prevention of nitrates washing out into ground waters. [12]

Fertilization

By introduction of new methods of livestock breeding gets large amounts of organic fertilizers (different types of manure), which can use rationally in crop farming, vegetable growing and viticulture. The organic fertilizers are irreplaceable when it is about land revitalization, i.e. improvement of

its physical, chemical and biological features. In the organic agriculture concepts, they are attached a great importance as well as to symbiotic and non-symbiotic nitrogen-fixers (bacterial fertilizers), since the mineral fertilizers omit.

As the organic fertilizers use: manure, compost, peat, worm fertilizer, green fertilizing, liquid manure, wood ashes, plant mixtures and other waste organic matters, originated as by-products in food technology and industry. [13]

In our country, besides the peat and the worm fertilizer produce also a mixture of peat and zeolite, as well as the organic fertilizers, originated by bio-conversion (using the micro-biological cultures) of different kinds of organic matters, from manure to a communal mud. Thereby was got a *teravita* fertilizer, by degraded cowshed manure, of high biological value (large number of useful bacteria) with high content of humus, macro and micro elements. From husks and poultry manure got an organic fertilizer *kofuna superfin*. Besides, on the market are also present the liquid organic fertilizers *teramin, humusin* and mix of peat and the organic fertilizers with zeolite. Regardless of which organic fertilizer uses, it has to be without harmful residues of pesticides, hormones and heavy metals, as well as without weed seeds and pests. In the organic agriculture, the fertilizers can also be from the organic production. There is necessary purity and quality of organic fertilizers, while otherwise can pollute land, water and plants.

The manure is a mixture of domestic animals' droppings and a litter. Quality of the manure depends on domestic animal species, the litter and the fertilizer age. Horse and sheep manure are more suitable for heavy and cold soils, because of higher content of solids are warmer, and also contain more nitrogen, phosphorus and potassium. The cowshed and pig manure contain more water, they are colder and more acidic, so they decompose slowly. Therefore they are more convenient for light sandy soils.

The compost is mostly used in garden, as organic fertilizer, and for making soil mixtures for vegetables and flowers growing in protected area. It is similar to manure by its content. It prepares from residues of plant and animal origin. In the organic production can add also worms in compost, while they mix and mineralize the compost by digesting the

organic matters. Today, for fast composting add mixtures of microorganisms to organic mass.

The green fertilizing is green plant mass which ploughs in. In such fertilizing method use plants which grow fast. They grow as the previous cultures, interplaned crops and subsequent cultures, and rarely during the whole year. The green fertilizer, as subsequent culture, sows in autumn: rape, mixture of hairy vetch, carnation clover and hybrid bearded darnel, mixture of hairy vetch and winter barley. The green fertilizer enriches soil mainly by nitrogen from the green mass and leguminous crops by nitrogen from air thanks to activity of legume bacteria, which live on their root and do the air nitrogen fixation.

It is well known that earthworms are good indicator of soil fertility. Only in fertile and unpolluted soil live the earthworms. It is a base for using the specific compost worms for the production of the organic worm fertilizer. The worm fertilizer is rich with humus (up to 25%), poor with mineral nitrogen (1-1.7%), but contains high amounts of phosphorus (up to 240 mg per 100 g) and potassium (up to 1400 mg per 100 g), as well as important micro-elements (zinc, copper, manganese, iron). The worm fertilizer uses in mixture with soil, for growing young plants and in protected area. [12]

Plant protection

We are all aware of a fact that we live in much polluted environment, so we have become sensitive to mention of chemical preparations for plant protection. For some time "unsprayed food" is in great demand. In the organic agriculture are forbidden all synthetic pesticides and herbicides. For plant protection are mostly used plant preparations and the most often preventively. There uses an allelopathic effect of other plants, too, their excretions drive away pests from crops. A fact that the environment in which we grow some culture is, at the same time, a habitat of numerous other organisms, of which are many useful; chemical preparations which use are as much harmful for them, as for the pests.

The International Federation of Organic Agriculture Movements (IFOAM) has given the standards according to which can produce the organic food.

The matter which uses in the organic agriculture must not be harmful or to have a negative effect to the environment. The matter must not increase unacceptable pollution of surface or ground waters, air and soil. All phases in its production have to be controlled and features which must be taken into consideration are: degradability, an acute toxicity towards other (non-target) organisms, a long-term chronic toxicity, chemical synthesized products and heavy metals.

All matters which use have to be degradable to CO_2, H_2O and/or on their mineral forms. Those matters with high acute toxicity to other organisms must have half-decomposition life of five days. Natural substances, which are not marked as toxic must not be degradable in limited period.

When a matter has relatively high acute toxicity for non-target organisms, there is inevitable to use it constrainedly. Measures which undertake have to provide such organisms' survival. There should be determined maximum allowed application doses. If there is no possibility for such measures application, use of that matter must not be allowed. The matter, which accumulates in organisms or systems of organisms, and the one which has, or is suspected to have, mutagenic of cancerous characteristics, must not be used.

The matter should not contain the harmful amount of chemicals, made by a man. Chemically synthesized products can be accepted only if they are equal to natural. [13]

Organic farming in the world and in Serbia

Organic production in the world is becoming more prevalent and economically significant, and about the importance of this type of production is the fact that today is conducted in 140 countries, at 32.2 million acres, on 633 891 farms, totaling 0.7 percent of the agricultural land on the planet and that its value exceeds $ 25 billion. World sales of organic production is increasing annually by 15%. The most important organic food markets are the U.S., Canada, Europe and Japan. In Europe, the largest consumers of organic food are: Germany, Great Britain, Italy and France. World sales of organic production is increasing annually by 15%. The most important organic food markets are the U.S., Canada, Europe and Japan. In Europe, the largest consumers of organic food are: Germany, Great Britain, Italy and France.

According to the 2011th The countries with the largest organic areas are Australia , which has 11.8 million ha, Argentina with 3.1 million hectares, 2.3 million hectares of China and the United States with 1.6 million acres. However, the number of farms and the ratio of area of arable land under organic crops in comparison with a conventional, is the largest in Europe. The percentage ratio of the areas of organic production in the surface states, gives a completely different picture with regard to the fact that the top 10 countries represented only European countries and Liechtenstein (26.4%), Austria (12.9%) and Switzerland (10.27 %). The largest area of organic production system in Europe, in Italy, Germany and the UK, and these countries are the most important sector of organic production. About 6% of arable land in organic production system in most European countries. More pronounced tendency of development of organic agriculture in the countries of Central and Eastern Europe such as the Czech Republic, Slovakia and Poland.

Some countries regard the primacy of certain products. For example, the largest producer of organic citrus fruits is Italy, Mexiko is largest producer of organic coffee and the largest producer of cocoa is Dominican Republic. Italy, Spain and France are the leaders in the production of organic grapes, while the largest producers of organic olive are Spain and Tunisia. Climate, historical heritage and the state support the organic sector to create the conditions of a country are the leaders of a specific organic production. [7].

In the period since 2007 – 2011th, the trade of organic products has grown from 23 to 40 billion dollars. And if there is an increased selling prices of organic products are still high at an average of 15% to 30 % compared to the products obtained by conventional production methods. Demand for organic food in the period since 2001. - 2011th in the U.S. has increased by 15-20 % .

Germany is one of the countries with a long tradition and high reputation in organic production, and is one of the leading producers of organic food, as well as one of the largest markets in the world with an annual turnover of around 3.9 billion euros. Consequently, the company offers over 1,800 organic products designated 35,000, Bio, organic certification, which is the official state symbol in Germany since 2001.

The country with the highest share of organic products in the market, compared to other products, Switzerland is 4.5%, which in addition has the highest consumption of organic products per capita (100 Euro per individual). [7]

The EU Member States, despite significant local production and further demonstrate the need for imports of organic products. Serbia can take advantage of the chance and invest significant amounts of organic products in the international market. Area under organic production in Serbia in the 2012th increased by nearly 30 % compared to the 2011., and an increase in organic livestock production complete. Taking into account all these unused natural opportunities that Serbia has , at the same time and the huge increase in demand for these products in most of the world markets, which can not meet their needs from their own production, there is a possibility that the trend of increasing size to continue in the coming years.

Organic agricultural production in our country is still in the development stage. Due to the potential offered by the natural resources of our country, the establishment of this type of production is a step forward not only in terms of rural development, environmental protection and improvement of human health, but also from the standpoint of economic prosperity. [1]

In July 2009th was done in the draft National Action Plan for the development of organic agriculture which defines the activities for the development of organic agriculture in the Republic of Serbia for the period since 2010. - 2015. [9]. The law's aims of : obtaining products with documented procedures production, sustainable socio- economic rural development, consumer protection, placing the label that clearly indicates the ways and methods for production of organic products, the protection of natural resources from pollution, long-term maintain and increase soil fertility , biodiversity conservation. [14]

The new law introduces some innovations, especially when it comes to certification. He confides separate certification organizations, and the Ministry of Agriculture authorizes to do the job, keep a register of organic production, certification bodies inspect and proposes measures for the development of organic agriculture. With us, in accordance with the Law on Organic Production, a certified organic product is marked "organic

product" code by the authorized organizations and national character. Appearance on national character provides the Minister. [9]

In Serbia, currently organic production is an area of about 829,000 ha, whether it be on products that have been certified or who are in the process of obtaining certification for organic production, arable land used for organic production occupies an area of 11,000 ha. There are around 150 certified producers and about 160 in the conversion process. Currently in Serbia, this type of farming deals with about 3,000 farms, which indicates that the job of a population of 9,000 people. The 2011th, The total area under organic production amounted to 6294.61 ha.

According to the above Table 1, the structure of land by type of crop production in the 2012th year is the most common fruit production with 46.36 %, followed by crop production with 41.31 %. Meadows and pastures occupy 7:57 % until vegetables are grown on 4.77 % of organic surfaces. [6]

Table 1. *Structure of the categories of crop production in 2012*

	Organic vegetable production in 2012th			
	Areas in conversion (ha)	**Areas with organic status (ha)**	**Total, (ha)**	**% of total arable area**
Crop production	1734,39	2.850,43	4584.82	41,31
Fruit production	1091,19	4054	5145.19	46.36
Vegetable production	233	296,5	529.5	4.77
Pastures and meadows	818,97	20,83	839.8	7.57
Total	3877,55	7222,26	11099.31	100

Source: *Organic Farming in Serbia 2013th National Association for organic production, Serbia Organica, Belgrade*

Perennial species are grown to about 46.7 %, and one- on about 46 % of the total area under organic production, the remaining 7.3% are meadows and pastures. Of perennial species dominate apples, plums and berries, particularly raspberries. Of the annual species are the main cereals, soybeans and vegetables. Despite the fact that the berries are the main export species, manufacturers are opting for other species such as apples and plums. Apple surface with organic status amounted to 1177.55

hectares, while the conversion is 6.02 ha, which means that a total of 1183.57 ha. Surfaces with organic status of plum amounts 1188.56 ha area in conversion amount 39.48 ha for a total of 1228.04 ha. Also, there is a significant increase in the areas under the one species (Table 2.).

Table 2. *Areas according to a type of organic plant production in 2012*

Category	Plant production	Areas with organic status (ha)	Areas in conversion period (ha)	Total areas (ha)
Perennial fruit sorts	**Apple**	1,177.55	6.02	1183.57
	Raspberry	550	142.46	692.46
	Strawberry	41.42	11.54	52.96
	Plum	1188.56	39.48	1228.04
	Sour cherry	409.94	26.38	436.32
	Other	686.53	865.31	1551.84
Totally for category		4.054	1091.19	5145.19
Annual plant sorts	**Maize**	280.37	539.33	819.7
	Wheat	284.66	281.72	566.38
	Soy	104.53	39,5	144,03
Total		669.56	860,55	1530,11
	Vegetables	296.5	233	529,5
Other crop sorts		2181.47	873.74	3055.21
Totally for category		3,147.53	1.967,29	5,114.82
Pastures		20.83	818.97	839.7

Source: *Organic Farming in Serbia 2013th National Association for organic production, Serbia Organica, Belgrade*

The main objective of organic farms is the sustainability. It is important that a balanced relationship between crop and livestock production provide enough food to feed domestic animals or livestock to provide manure. On the average, 1 ha of crop production should be suspended 1-2 heads of cattle (depending on the type and intensity of production). [11]

Organic methods of animal husbandry conditions and provide a way of keeping animals, the type and quality of facilities, free movement of animals and the cultivation of the optimum density. Animals are fed organic food and provides the list of allowed nutrients. The Animal Health greatest attention is

paid to prevention, which includes all measures of hygiene. [12] On average about 90 % of feed domestic animals not used for their operations and products, but they returned in the form of liquid and solid excreta - organic fertilizers, without which no sustainable land. In organic farming, farm animals must be provided with suitable conditions for breeding, including their welfare and their health in accordance with the type and race. [5] According to test results, the Research Institute of Organic Agriculture, from Switzerland, in Germany, in the most organic livestock are bred sheep (8%), beef cattle breeds (3.2%) , and dairy cattle breeds (2.3) while only 1 % of poultry and pigs grown in an organic system. From organic animal products the highest consumption of organic milk, which is more widespread in supermarkets in most countries of the European Union. For now, the biggest production of organic milk in Denmark and is 15%. [7] In Serbia, according to Table 3. The structure of organic livestock production is as follows: organic status occupies most flocks which include sheep, goats and pigs (983 animals), while the number of sheep in conversion is still 3404 heads. Followed by poultry (chickens, geese, ducks, turkeys, guinea fowls), bee hives and the least number of animals in the herd which include cattle, buffaloes, horses and donkeys, which has in the conversion in 2164 and 230 head of cattle in the organic status. In Serbia, according to the test more than 4,000 farmers involved in organic production. The total value of organic production in Serbia can not be precisely determined due to the lack of clear empirical data.

Table 3. *The structure of organic livestock production (2012).*

	Organic livestock production 2012th the conversion period	
	Conversion period- Number of livestock, poultry birds, beehives hives	**Organic status Number of livestock poultry birds, beehives hives**
Herds (cattle, buffaloes, horses, donkeys)	2164	230
Flocks (sheep, goats, pigs)	3404	983
Poultry (chickens, geese, ducks, turkeys, guinea fowls)	4276	3600
Beehives	2610	4394

Source: *Organic Farming in Serbia 2013th National Association for organic production, Serbia Organica, Belgrade*

The interest in organic farming, which is also reflected in the market for organic products in the last ten years has increased three times. Despite the current difficulties, organic farming is moving towards alignment with the needs of market development and conservation of the environment and to reduce the quantity at the expense of food, while favoring agricultural techniques that optimal use of natural resources (recycled biomass and energy) and minimize waste matter. [11]

Conclusions

A basic characteristic of organic production is the production of highly valuable and healthy-safe food, as well as preservation and protection of the environment, by which ensure "clear" soil, water and air. Besides the existing difficulties is worth investing in such production form, for several reasons. That is to say, the organic production is a profitable agricultural production, export program is competitive, very important factor of sustainable development, and considering that it is work-intensive production makes better opportunities for employment, and also the opportunities for foreign capital investments in our market and connections at the regional level. The organic products can use for development of eco-tourism and, in that way, accelerate development and revitalization of rural areas and revival of traditional rural values.

Considering the state of eco-systems preservation almost on the entire territory of the Republic of Serbia, as well as its territory's diversity, we can conclude that there are great potentials for development of the organic production. The potentials must not be only a statement, considering to tendencies on the modern market, but surely must be put into operation. Benefits would be mutual, as for producers, as well as for consumers, not only in Serbia, but on the international market, while Serbia will quickly involve in modern courses of agricultural production and position as an important producer of organic products.

Literature

1. Arsić Slavica, Kljajić Nataša, Ivić Milenko (2012): *"Levistock and the development of organic livestock production in hilly and mountainous areas on the basis of available resources in Serbia*,, pp 121-138. Warsaw Poland, Rural development policies from the EU enlargement perspective, Vol. 9. Rural areas and development.

2. Prof. Dr Branka Lazić, prof. Dr Miroslav Malešević*: Organska poljoprivreda* ? Da! www.zelenamreza.org (06.08.2013.)

3. Ekologija e-magazin, *Permakultura Sepa Holcera* (preuzeto 10.05.2013.)

4. Nataša Kljajić, P. Vuković, Slavica Arsić (2008): *„Organska poljoprivredna proizvodnja i uloga marketinga"* Ekonomika Poljoprivrede 55, Beograd, str. 421-429 Oktobar-Decembar, 2008.godine, God./Vol. LV, br../N° 4 (339-432).

5. *Nacionalni akcioni plan razvoja organske proizvodnje u Srbiji (radni dokument) 2009 Beograd,* Ministarstvo poljoprivrede, šumarstva i vodoprivrede Republike Srbije.

6. Nacionalno udruženje za razvoj organske poljoprivrede „Serbia organica" 2012., *Organska poljoprivreda u Srbiji 2013, Januar, 2013 Beograd.*

7. *Organic Agricultural land*, www.organic-world.net (25.02. 2013.)

8. Predrag Vuković, Slavica Arsic, Lana Ivanović (2007 god): *„Organic farming and enviroment"* Scientifical papers faculty of agriculture XXXIX, Part II-a, University of agricultural sciences and veterinar medicine of the banat Timişoara, Timişoara, pp. 17 – 23.

9. *Pravilnik o kontroli i sertifikaciji u organskoj proizvodnji i metodama organske proizvodnje*, Službeni glasnik RS br. 48/2011.

10. Sredojević Z.: *Ekonomski problemi ekološke poljoprivrede, Beograd, 2002.*

11. Slavica Arsić, Predrag Vuković, Nataša Kljajić (2011): *„Opportunities and perspective for development of organic production in rural areas of Serbia"*, International conference: Rural developemt policies from the EU enlargement perspective".Tematic Proceeding. Ecka. 8-9. September. pp. 13-21. Publisher: Institute of Agricultural Economics, Belgrade.

12. Slavica Arsić, Nataša Cecić, Predrag Vuković (2007 год):„*Organska poljoprivreda u funkcij zaštite životne sredine*“ str. 9-17 XII savetovanje o biotehnologiji – zbornikradova Vol.12 Čačak, 02-03 mart, Agronomski fakultet u Čačak.

13. Zemlja Magazin: *Priručnik za organsku proizvodnju* (Organska materija zemljišta) http//zemlja.rs (30.07.2013).

14. *Zakon o organskoj proizvodnji Službeni glasnik* br. 30/10 od 7.5.2010.