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COMPARATIVE ANALYSIS OF ORGANIC FOOD MARKETS IN THE REPUBLIC OF SERBIA AND THE NEIGHBOURING COUNTRIES

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SUMMARY

The aim of this paper is to analyze the current state and the achieved development of organic production in the countries of the region and the Republic of Serbia. The Republic of Serbia has significant potential for production of organic food, mostly due to its favourable climatic conditions. The comparative analysis in this paper includes the analysis of the areas under organic production, the number of organic producers and the development of organic food markets. Starting from the fact that organic production is still not sufficient in the countries of the region, the aim of this paper is to determine the prospects of organic production and appropriate measures to be taken in order to intensify this type of production in the Republic of Serbia and the neighbouring countries.

Key words: organic production, Republic of Serbia, neighbouring countries

INTRODUCTION

Organic agriculture is determined by the standards prescribed by IFOAM (International Federation of Organic Agriculture Movement) established in 1972. Namely, the first standards for organic production were defined in 1980 by IFOAM, and at the same time some countries created their own regulations in this area. With the regulation (EEC) 2092/91, the EU laid down standards that determine organic agriculture (1991). In 1999, the guidelines for organically produced food were published by the Codex Alimentarius – Guidelines for organic food production, processing, marking and marketing, joint program of the UN, WHO (World Health Organization) and FAO. IFOAM (International Federation of Organic Agriculture Movements) defines organic production as follows: "Organic farming is a production system that maintains the health of land, ecosystems and people. It relies on ecological processes, biodiversity and cycles that are adapted to local conditions. Organic agriculture combines tradition, innovation and science, for the benefit of the common environment, and promotes a fair relationship and a good quality of life for all people in that specific environment."

European Commission defines organic agriculture as follows: "Organic agriculture differs from other agricultural systems on several grounds. It advocates renewal of resources and recycling, returning soil to nutrients, with special care for animal welfare and the use of natural foods. Organic agriculture avoids the use of artificial pesticides, herbicides, chemical fertilizers, growth hormones, antibiotics and genetic manipulation. Instead, farmers use organic techniques that help maintain the ecosystem and reduce pollution (Schmid et al., 2008).

The increase of the market of organically produced food as well as the growth of agricultural land used for organic farming indicate accelerated development of organic agriculture in Europe and the neighbouring countries, which makes a valuable contribution to environmental protection. Around 1.4 million producers have organic production in 154 countries of the world (Willer and Kilcher, 2010).

Organic farming is a form of agriculture that excludes or strictly limits the use of certain methods, including synthetic petrochemical fertilizers and pesticides, plant growth regulators such as hormones, use of antibiotics in

livestock and genetically modified organisms, etc. Accordingly, it relies on techniques such as crop rotation, green manure, compost and biological pest control (European Commission, 2014).

According to Gold (2007), the USDA National Committee for Organic Standards defines organic farming as a system for managing organic products, promoting and improving biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological balance.

Organic farming is important primarily for protecting natural resources and the environment, contributing to preservation and improvement of human health. At the same time, the underlying criticism of organic farming is directed at lower cost-effectiveness of this production and usually significantly higher prices of organic products in comparison to products of conventional agriculture, making organic products unaffordable for a large number of consumers. Also, organic farming is mainly practised on smaller areas, in line with natural processes, and there is a slower turnover of capital as the volume of production is usually smaller compared to other types of agricultural production. Organic farming thus does not support the economies of scale, which often results in lack of interest for this type of farming among the producers, especially large food production systems directed at highly profitable activities. Consequently, there is often insufficient supply of organic agricultural products on the market, which is a serious problem that needs to be solved, along with the already high prices of these products (Tomić, 2015).

The objectives of organic farming can be summarized as follows: it avoids all forms of pollution, both in products and in the environment, maintains the natural fertility of the land, which enables sustainable agriculture and preservation of food safety, provides farmers with a decent standard of living to produce sufficient quantities and appropriate level of high-quality agricultural products, which influences the health of consumers (Stojan, 2003).

The Republic of Serbia has undeniably great natural potential for organic production. This is, above all, because of its favourable geostrategic position occupying the belt of moderate continental climate, but also its preserved agro-system and high-quality soil characteristic compared to the developed European countries. Legal provisions for organic farming in Serbia were introduced in 2000, when a law regulating organic production under the Law on Organic Production was adopted, while the new Law on Organic Agriculture was adopted in 2010 in accordance with the regulations of the European Union.

The aim of the paper is to analyze the current state and the achieved development of organic food production in the neighbouring countries and the Republic of Serbia. The following parameters were taken for comparison: total area in the organic farming system, areas under cereals, oilseeds, fruit and vegetables, as well as the total number of organic food producers. The analysis was done for the following countries: Romania, Bulgaria, Hungary, Croatia, the Republic of Macedonia, Bosnia and Herzegovina, Albania and the Republic of Serbia

MATERIAL AND METHODS

The data sources included available databases on organic farming and trade of organically grown products (FIBL), as well as publications of national and international institutions (Eurostat) and results of previous research by domestic and foreign authors on organic production. The research is based on processing of secondary data, using standard statistical mathematical methods. The intensity of changes is quantified by calculating the rate of change, using functions with the most adjusted trend lines to the original data. The time period of the research is from 2012 to 2016.

RESULTS AND DISCUSSION

Favorable climatic conditions and good soil characteristics are important prerequisites for production of organic food. However, the role of the state, which should motivate producers with appropriate incentives to opt for this type of agricultural production, is also very important. The average area on which organic production takes place in Europe is roughly slightly over 12 million hectares and has a significant growth trend. The total area of organic production in the EU-28 increased by 18.7% over the period from 2012 to 2016.

The country with the largest area of organic farming is Romania, where organic production is organized on 270,000 hectares, accounting for 2.04% of the total agricultural land in this country (Table 1). The areas of organic farming experienced an extremely significant increase, as in 2000 these areas were 17,000 hectares, reaching over 270,000 hectares in 2016 (Vidican et al., 2006), although in recent years there has been a certain decrease. In the structure of the agricultural land, more than a half (57.8%) is arable land, followed by meadows and pastures with 37%, while long-time plantations account for 1.8% of the agricultural land (<https://www.ifoam-eu.org/en/>).

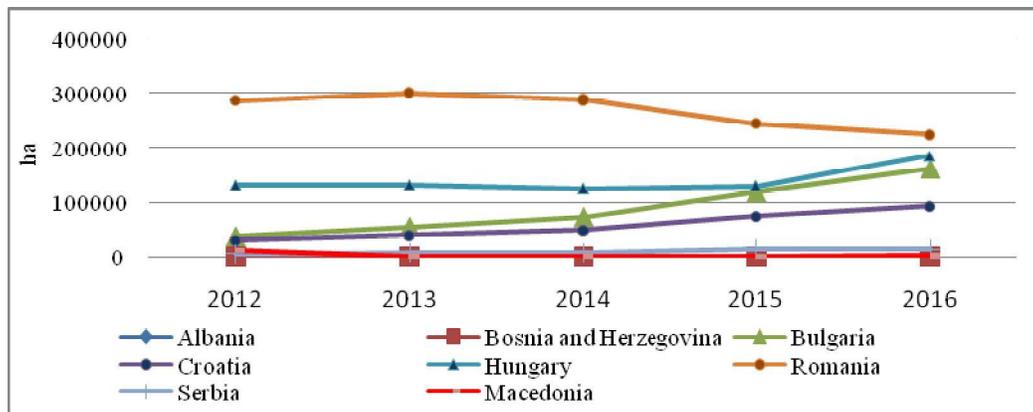


Chart 1: Movement of areas of organic production in selected countries, ha

Hungary has 140,000 hectares of land under organic farming. In the structure of agricultural land, over half (52%) are meadows and pastures, arable land accounts for 39%, while long-term plantations cover 4%. Bulgaria has about 90,000 hectares under organic farming. In the structure of agricultural land, 48% is arable land, followed by long-term plantations with 28% and meadows and pastures with 20%. In comparison to other countries in the region, Bulgaria, has the most intensive increase in the area of organic farming. The Republic of Croatia has 60,000 hectares used in the organic farming system. In the structure of agricultural land, slightly more than half (56%) is arable land, followed by grassland with 14%, vineyards and orchards with 13%, while 4% is used for spices and aromatic herbs. Other countries in the region have significantly less areas used for organic agricultural production. Hungary has the largest share of organic farming area, accounting for 4.21% of the total agricultural land in this country.

The Republic of Serbia has resources to develop organic production (land, climate, etc.), as a specific type of agribusiness. There are significant potentials for organic production in Serbia, which is proven by the fact that 5 to 10% of the land is unpolluted and ready for organic production (Paraušić et al., 2008). This is also stated by Vlahović et al (2015), who point to significant potentials for organic agricultural production in the Republic of Serbia, shown by the fact that about 10% of the land is unpolluted and thus ideal for organic production. Climatic conditions and still unpolluted environment represent a great advantage of the Republic of Serbia over other countries as it has more potential to increase the area of organic farming.

Table 1. Organic production parameters for selected countries (2012-2016)

Country	Area under organic production (ha)	Share of total agricultural land (%)	Number of organic food producers
Romania	270.179	2,04	13.265
Hungary	140.510	4,21	2.058
Bulgaria	89.789	1,94	4.677
Croatia	58.415	3,80	2.387
Republic of Serbia	10.754	0,28	1.591
FRY Macedonia	4.889	0,43	426
Bosnia and Herzegovina	511	0,03	31
Albania	612	0,05	46

Source: Authors' calculation according to FIBL data

According to März et al. (2013), about 829,000 ha of the land in the Republic of Serbia can be used for organic production, including areas for collecting wild berries, mushrooms and medicinal herbs. Out of this area, an average of only about 15,000 hectares is used for organic farming, which accounts for only 0.40% of the total agricultural land. This area is far smaller compared to most neighbouring countries. What is certainly positive in the Republic of Serbia is the intensive growth of the areas used in organic production. In 2012, the total area was 6,340 ha and by 2016 it reached 14,358 ha. However, in this year there was a slight decrease compared to the record year in 2015, when the area was 15,298 ha. During the period studied in this research, the growth of this area was at an average annual rate of 23%. In total organic production area, there were 12,929 hectares (90%) of arable land, while 1,429 hectares (10%) were under meadows and pastures.

The most significant increase in organic farming in the countries of the region was achieved by Bulgaria at a rate of 42.3%, reaching 160,000 hectares in 2016. At the same time, the area under organic farming in the Republic of Macedonia had a significant decrease at a rate of 28%, and in the last year of the studied period the area dropped to 3,200 ha. A factor which significantly affected the increase in the area of organic farming was decisions of certain countries, particularly the regulations of the European Union, encouraging this type of agricultural production by various types of subsidies and credit facilities. The general conclusion is that the countries of the region have relatively small areas of organic farming, as well as very little shares in the structure of the total agricultural land.

The number of producers engaged in organic farming – in the analyzed countries of the region, Romania has the largest number of organic food producers, on average over 13,000. According to Vasile et al. (2015), the organic sector in Romania has a small share in the agro-food system. The accelerated growth of the areas of organic farming in recent years has been accompanied by high potentials for development of organic farms in Romania. The attractiveness of the sector has led the farmers to dedicate part of their land to organic production. The first association of organic food Bioterra was founded in 1997. Romania, as a member state of the European Union, has benefited from European funds in the amount of 4 million euros through the European Agricultural Guidance and Guarantee Fund (EAGGF). Funds are distributed to potential individuals, taking into account the type of the farm and the area to be converted from conventional to organic production, using certain criteria. Using these criteria, and in accordance with internal regulations (Government Decision No.759/2010), farms dealing with plant and animal production are provided with financial resources to register and transition from conventional to organic production, even if their farms are in the process of transition from conventional to organic agriculture. In this context, the allocated funds differed in size of the farm: from 0.30 to 5 hectares amounting to 540 € from 5.1 to 20 hectares amounting to 611.43 € and for areas over 21 hectares, the financial resources were in the amount of 510 €. Joint CAP support and internal financial assistance have significant impact on increasing the potential of organic farming, attracting new producers and converting conventional agricultural land into organic farming.

The total budget for development of organic farming in Bulgaria is €82 million (2015). The main goals include significant increase of organic farming area, i.e. the goal is that agricultural land under organic production reaches 8% of the total agricultural land by 2020. Also, the total food sales should be 3% from organic food production system. There is significant support from the EU's rural development program as compensatory payments under agro-ecological schemes have been available since 2008. Payments are higher during the conversion period and depend on the type of crops. The amount of financial resources for pastures and meadows is 120 euro per hectare, while the largest payments are for orchards and vineyards (729 euro per hectare). Organic farmers are given additional subsidies for investments and for projects of young farmers (Apostolov, 2017).

Hungary has support from the EU rural development program in the form of compensatory payments for organic production approved within the agro-ecological program – payments for organic farming, management of organic lawns, organic orchards and organic waters. The support levels range from 100 to 500 euro per hectare (Deszeny and Drexler, 2017). In Croatia, there is also support under the EU's rural development program. Croatia became a member of the EU in 2013, although payments for organic production have existed since 2005 and they are about 30% higher than payments for conventional production. Support is also provided by the government and local self-government for certain events, especially agricultural fairs and free extension services as part of the public service provision (Znaor, 2017).

The economic aspects of organic farming have an important role for producers when deciding whether or not to opt for an organic food production method. The main problems include insufficient farm income, placement problems, low level of premiums for organic products and low or reduced subsidies. The difficulties also include high inspection costs, high prices of organic food certification, regulatory issues and the control system. The mentioned problems are especially related to the time needed for preparation of the documentation and reporting, as well as to the requirements that are difficult to implement. It is interesting that the difficulties in the production process, such as pronounced yield variation, low yields of crops and nutritional problems, were less significant (Sanders et al., 2014).

Analyzing the number of producers involved in organic farming, the Republic of Serbia is approaching the leading countries in the region with about 2000 registered producers in 2016. The largest number of organic food producers are located in western Serbia and Vojvodina, which are the most important production zones.

According to Kalentić et al. (2014), the main characteristic of organic production in Serbia is the existence of two basic groups or types of organic producers: the independent ones, who have a direct contract with one of the control organizations, and the so-called subcontractors, whose production is subject to group certification, permitted under the relevant law of the Republic of Serbia. The latter ones are organized in the following way: the producers are contracted by one of the companies that purchase their entire production for the export, while at the same time these

companies provide the producers with the support including inputs, education, costs of certification, where the holder of the certificate is a company, and not the producers

Motivation for transition of agricultural producers from conventional to organic farming must be also the economic one, although at the macro level, environmental protection (especially due to the climate change) and human health are very important. Accordingly, it is important that the state, using the available means, stimulates producers to increasingly focus on organic farming, which could have both social effects and certain personal economic benefits. In addition, the state must provide continuous education and information to the producers, as well as other supporting infrastructure, so that the producers can respond more effectively to market challenges (Tomić 2015). Padel (2001) concludes that there are many barriers to the transition to organic farming. Organic farming is an information-intensive production method that requires significant education and changes in the production system, which affects the decisions of the producers.

Vlahović et al. (2015) studied the motivation of producers who decided to produce organic food in the Republic of Serbia and reached the following conclusions: the primary and the most important motive for opting for organic agricultural production, indicated by half of the surveyed producers, is that they want to produce healthy and safe food primarily for themselves and their family members. In this way, they avoid the use of genetically modified organisms and the use of chemical substances (mineral fertilizers, plant protection products, etc.) that are often found in food produced in the conventional agriculture system. Another reason is ecological awareness (17%), i.e. living in accordance with nature. It is followed by the financial reasons (10%) such as: higher incomes, higher incentives compared to conventional production, higher prices for organic products compared to conventional agricultural products, etc. The fourth reason (9%) is protecting the environment and preserving biodiversity, and the same percentage of respondents stated other reasons, including: returning to the traditional way of food production, expanding product assortment on the market and owning small plots that are suitable for organic production.

The following part of the paper will focus on the analysis of the areas of organic farming under cereals, oilseeds, fruits and vegetables in the studied countries.

Cereals – the country with the largest area under cereals in organic farming in the analyzed countries is Romania, with averagely 88,500 hectares. In the structure of the areas under organic plant production, cereals in Romania account for 39%. Romania is followed by Hungary with 27,100ha, Bulgaria with 16,100ha and Croatia with 9,100ha (Chart 2). Other countries in the region have significantly less areas under cereals. The most intensive increase in the area is recorded by Bulgaria, reaching 31,200 hectares in 2016.

The area under cereals in the organic production system in the Republic of Serbia averaged 3,300 hectares. In the last year of the studied period it reached 4,600 hectares, showing a tendency of increase at an average rate of 16% per year. In the structure of the areas under organic plant production, cereals account for the most significant part, i.e. almost a third (32%) of the area. The most commonly grown cereals are: wheat with 46%, corn with 21% and barley with 9%. Relatively uncommon is spelt, which is very a prospective cereal suitable for organic production. The listed plant species have a share of three quarters in the structure of total areas under cereals.

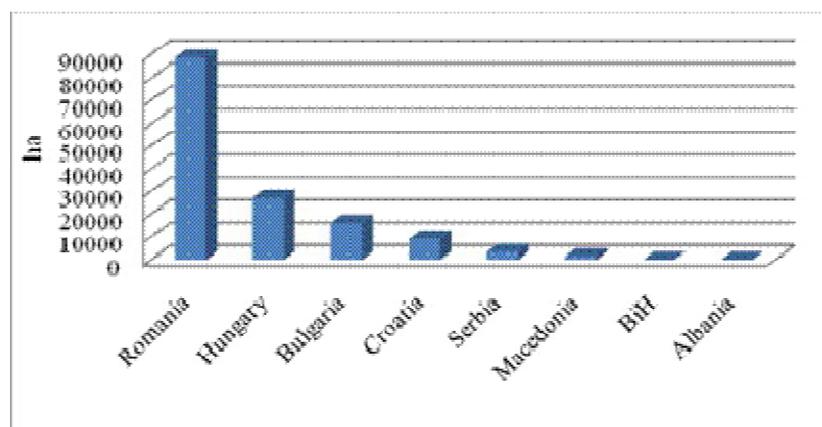


Chart 2: Areas under cereals in the organic production system (2012-2016), ha
Source: Authors' calculation according to FIBL data

Organic plant production is increasing in arable conditions surrounded by intensive conventional production. In order to prevent the harmful effects of synthetic materials from conventional production (mineral fertilizers, pesticides, growth stimulators, etc.), it is necessary to establish a natural barrier (belt) that primarily serves for

protection and restoration of biodiversity, manifested by increased number of useful insects, pollinators and predators, as well as by stimulating the bio-control process in agro-ecosystems (Ugrenović et al., 2012).

Oilseeds – the country with the largest area under oil plant species produced in organic farming is Romania, with averagely 49,700 hectares. In the structure of the area of organic plant production, oilseeds account for 22%. Romania is followed by Hungary with 9,200ha, Bulgaria with 6,400ha and Croatia with a significant area of averagely 4,600 hectares (Chart 3). The most intensive increase in the area is recorded in Bulgaria, where in 2016 this area reached 12,400 hectares.

The areas under oilseeds in organic farming in the Republic of Serbia averaged 1,800 hectares. In the last year of the studied period, it reached 2,900 hectares, with a tendency of increase at an average rate of 8% per year. In the structure of the area under organic plant production, oilseeds account for 12%. The most common oil plant species include: sunflower, which absolutely dominates with 60%, followed by soybeans with 20% and oilseed rape with a slightly lower share of 19%.

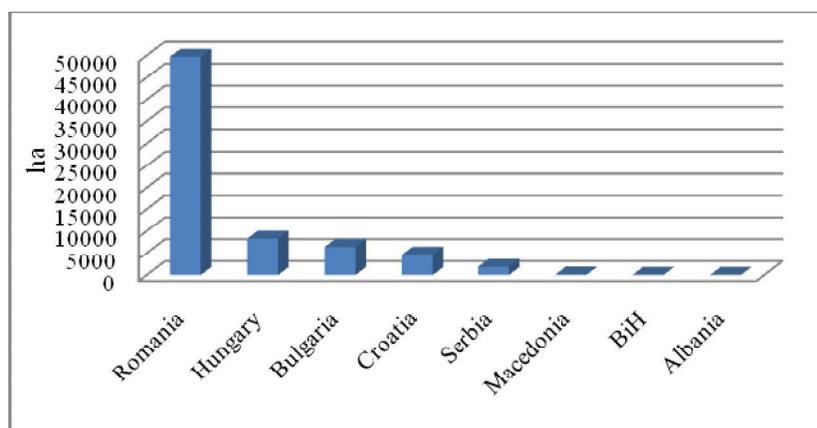


Chart 3: Areas under oil seeds in the organic production system (2012-2016), ha
Source: Authors' calculation according to FIBL data

Fruit – in fruit growing, organic principles include both collection of fruit from rural natural environments and cultivation of fruit species in plantations. Fruit is collected in accordance with the organic principles, i.e. by carrying out preliminary assessment of the ecological status of the area and fruit species. After three years of the transition period (application of organic agro-technical measures), conventional orchards can be converted into the organic type of production. Orchards should be set up on a suitable terrain, especially terrains that reduce the chance of developing diseases. All agro-technical measures are the same as for other organic plant production. Cutting is undertaken only in the most urgent form. Grape production is subject to the same principles as other types of plant production. These principles include: selecting resistant varieties and high-quality planting material, providing optimal planting conditions and applying cultivation and breeding measures. Planting the mixtures of grass and legumes between the lines of the vine contributes to better nutrition of the plants and reduction of soil degradation (<http://www.organiccentar.rs>).

Analysis of the countries studied in this paper showed that Romania has the largest area of 5,900 hectares under organically farmed fruit. In the structure of total areas under organic plant production, fruit has a modest share of 2.6%. The countries with the largest areas after Romania are Bulgaria with 4,000ha and Hungary with 2,200 hectares (Chart 4). The most intensive increase in the area under organically produced fruit was recorded in Bulgaria, where the area in 2016 reached 7,700 hectares.

In the Republic of Serbia the average area under fruit in organic farming amounted to 1,500 hectares, increasing to 1,900 hectares in 2016 at an average annual rate of 8%. In the structure of total areas under organic plant production, fruit accounts for one quarter. The most common fruit species are raspberries with 29%, apples with 24% and plums with 18%. The listed fruit species account for almost three quarters (71%) in the structure of the total area under fruit.

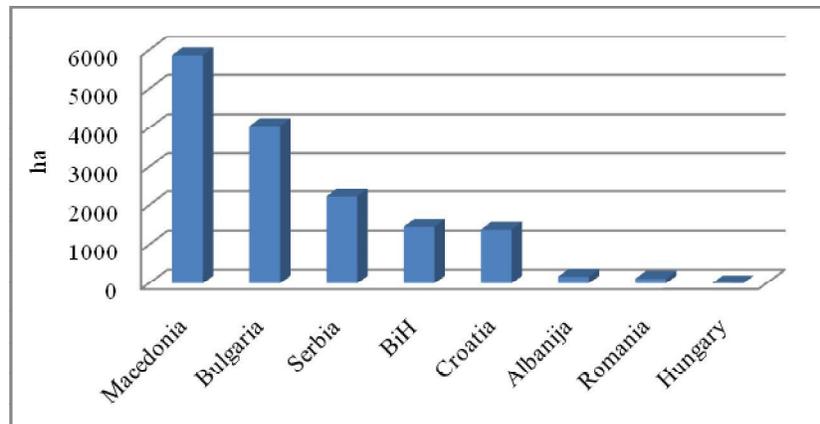


Chart 4: Areas under fruit in the organic production system (2012-2016), ha
Source: Authors' calculation according to FIBL data

Vegetables – Organic production involves production of vegetables in open fields (garden or field production) in protected areas (direct covering of plants, greenhouses made of glass or plastic), as well as a system of small garden cultivation. Hungary has the largest average area of 2,000 hectares under vegetables in the organic production system. It is followed by Bulgaria with 1,800 hectares and Romania with 1,200 hectares (Chart 5). The most intensive increase in the area was achieved by Bulgaria, where in 2016 the area reached 4,000 hectares.

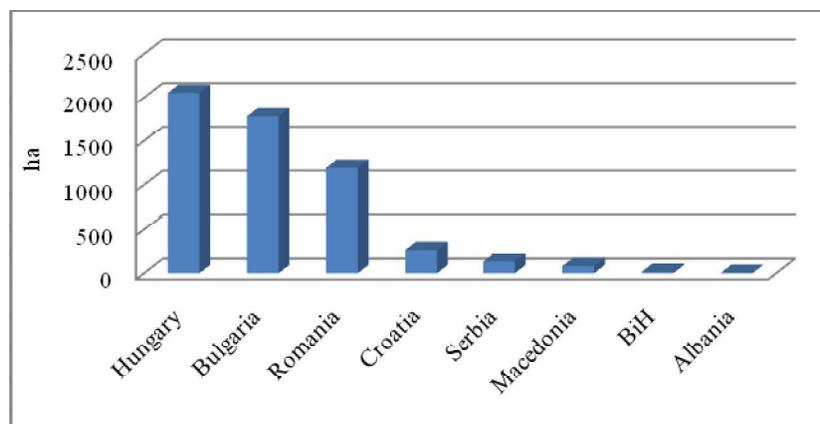


Chart 5: Areas under vegetables in the organic production system (2012-2016), ha
Source: Authors' calculation according to FIBL data

In the Republic of Serbia, the average area under vegetables in organic farming is very small, amounting to only 130 hectares. In 2016, the size of the area experienced a slight increase at a rate of 5% per year and reached 184 hectares. Such a small area can be accounted for by the fact that over 250,000 hectares under vegetables (including potatoes) are grown in the conventional production system. In the structure of the areas under organic production, vegetables have a very small share of only 1.3%. The most commonly cultivated vegetable crops are: beans with 14%, potatoes with 11% and zucchini with 10%. These crops account for slightly more than one third (36%) in the structure of the total areas under vegetables.

For organic production of vegetables, crop rotation and selection of vegetable species is of the great importance. Since production of organic vegetables requires more labour, it is a chance for growth of small farms, on which more work force can be employed. In organic production without pesticides, crop rotation has an important role in successful and efficient production. Vegetable crop rotation that is planned and professionally implemented affects the structure of the land, hydro- and aero-regime, nutrient content, balance of organic matter in the soil and biological activity in the soil. In organic production, the so-called combined crops, which conventional production considers as an outdated way of cultivating vegetables, are very important. The combined crop system is cultivation of two or more vegetable plant species on the same surface, which allows better use of the vegetation space while reducing the risk of diseases and pests. A steady increase in the demand for organically produced vegetables should

be a sufficient reason for both the profession and science to be more concerned with these issues and to work more on educating agricultural producers. And the producers must, above all, accept the economic logics of producing the goods that make the biggest profit (<https://durmitor.wordpress.com>.)

According to the official statistics, Bulgaria and Croatia have had the highest rate of expansion in their organic production sectors among 28 countries of the European Union in the last few years. In Bulgaria, the growth rate was over 310%, and in Croatia it was 193.4%. Statistics also show significant growth potential in the organic sector in these two countries. Despite these record rates of growth, however, organic farmers in both countries continue to face more challenges compared to their competitors in older EU member states (<http://organic-market.info>).

In order to ensure the economic viability of organic agriculture, it is necessary to take the necessary measures that will increase the yield and productivity of organic farms. In addition, the organic sector participants and agricultural institutions should make efforts to improve the transparency and practicality of the demand, eliminate weak points in the control system, and develop a better system of consumer awareness (Sanders et al., 2014).

CONCLUSION

Unlike the conventional production and processing methods, which aim to increase productivity and profit, organic farming produces foods safe for consumers' health, without polluting the environment, maintaining the natural ecological balance and sustainable energy sources. These are precisely the reasons why agricultural producers should opt for this kind of production.

The country with the largest area in organic farming is Romania, with over 270,000 hectares. It is followed by Hungary, Bulgaria and Croatia. Other countries in the region have much smaller areas with organic production. The average area in the Republic of Serbia is 15,000 hectares, with a growing tendency. However, this area is more than modest considering the existing resources.

In the countries of the region, there are few producers who opt for the organic production system. In the Republic of Serbia, the primary reasons for organic production is the need for consuming healthy and safe food, financial motives, raising environmental awareness and protecting the environment and preserving biodiversity.

The most important measure for development of organic agriculture is increasing state incentives in the form of subsidies or favourable loans. Also, it is necessary for the producers to be provided with continuous education in the field of organic production (technology, marketing, etc.), and it is important for producers to join associations in order to meet the demands for organic products on both domestic and international market.

Organic production in the countries of the region is still not sufficient. The largest areas under organic cereals, oilseeds and fruit are in Romania, while the largest area under vegetables is in Hungary. There are resources for development of organic production and it can be accelerated if the methods of organic production are taken from the countries with a successful tradition in this segment of agriculture (Germany, France, Italy, etc.).

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