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ANALYSIS OF THE SITUATION IN THE ORGANIC PRODUCTION SEGMENT IN BOSNIA AND HERZEGOVINA AND THE REGION

ANALIZA STANJA U SEGMENTU ORGANSKE PROIZVODNJE U BOSNI I HERCEGOVINI I REGIJI

Summary: *The aim of this paper is to identify the basic characteristics of organic production in the agricultural sector of Bosnia and Herzegovina in terms of determining the scope, trends and flows in the selected time period. In terms of competitiveness, special emphasis is placed on the position of Bosnia and Herzegovina in the region. That is, a comparative review with the countries of the region according to the available indicators of organic production within the data of the Research Institute for Organic Production (FiBL). The analysis is focused on the changes of relevant indicators for Bosnia and Herzegovina and the countries of the region in the period from 2010 to 2020. The analysis was made using methods of dynamic analysis (index numbers, average annual rate of change, trend) and comparison methods. The results of the research can be a starting point for policy makers in support of the development of the agricultural sector.*

Keywords: *organic production, agriculture, dynamic analysis, competitiveness*

JEL Classification: *C43, Q18*

Rezime: *Cilj ovog rada je identifikovati osnovne karakteristike organske proizvodnje u poljoprivrednom sektoru Bosne i Hercegovine u smislu utvrđivanja obima, trendova i tokova u odabranom vremenskom periodu. U smislu konkurentnosti poseban naglasak je stavljen na poziciju Bosne i Hercegovine u regiji, to jeste na uporedni pregled sa zemljama regiona prema dostupnim pokazateljima organske proizvodnje u okviru podataka Istraživačkog instituta za organsku proizvodnju (FiBL). Analiza je fokusirana na kretanje relevantnih pokazatelja za Bosnu i Hercegovinu i zemlje regiona u razdoblju od 2010. do 2020. godine. Analiza je rađena primjenom metoda dinamičke analize (indeksni brojevi, prosječna godišnja stopa promjene, trend) i metoda komparacije. Rezultati istraživanja mogu biti polazište kreatorima politika u podršci razvoju agrarnog sektora.*

Ključne riječi: *organska proizvodnja, poljoprivreda, dinamička analiza, konkurentnost*

JEL klasifikacija: *C43, Q18*

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1. INTRODUCTION

Increasing consumer awareness of the importance of a healthy diet and increasing demand for organically grown agricultural and food products resulted in the growing importance of organic production worldwide. The more intensive development of organic agricultural production is actually a response to the severe decline of food quality and endangering people's health. Further, the irrational use of natural resources, the ecological crisis, population growth and limitations of the traditional food system in the 21st century impose the need to introduce measures to achieve sustainable development. In this context, alternative methods of agriculture, i.e. organic farming and the transformation of typical food consumption, are particularly significant. Organic agriculture is seen as an ecologically sustainable, socially acceptable and economically sustainable food production system. Agriculture as a whole is considered a strategic sector, although its influence on

macroeconomic indicators decreases with the socio-economic development of countries. The agricultural sector generates national income, boosts the employment rate, reduces the foreign trade deficit, supplies the community with food and raw materials for industry, and fulfils fundamental ecological functions. The contribution of modern agriculture can be observed through three aspects: the impact on economic growth and development, the impact on the human environment and the impact on the natural environment (Hasan Arisoy, 2020). Therefore, the competitiveness of this sector is significant in all countries, both in relation to other sectors and in relation to other countries.

This paper aims to analyse the scope, trends and flows of organic production in Bosnia and Herzegovina compared to the region in terms of competitiveness. Therefore, after presenting the results of some research on organic agricultural production and the competitiveness of agriculture, the second part of the paper presents and analyses the characteristics of organic production in Bosnia and Herzegovina concerning the countries of the region. Finally, the conclusion delivers fundamental observations, views and recommendations for improving organic production.

2. LITERATURE OVERVIEW

A research, which aims to identify and define the characteristics of organic production in a particular country and/or to group countries according to similar features, is highly useful for different interest groups.

According to Yongrui Hou, Luo Tianyuan, and Hao Jing (2022), as the demand for organic products in the US rapidly grew, the domestic organic product supply stagnated and failed to meet the growing needs. They noticed that it was crucial to identify the factors that could intensify the scale of organic agriculture in the USA to expand organic supply capacity in the country. This study examined a wide range of determinants that might affect organic farming using a multivariate analytical model and state-level data from multiple sources and years. The results show that research funding would significantly increase the production of organic vegetables and the number of organic farms. The support of research institutions could significantly boost the development of organic agriculture. In addition, evidence suggests that agricultural workers are essential to the labour-intensive organic farming sector. The results indicate the importance of research and the expansion of consumer groups for organic products. This study implicates the importance of research, labour availability, and a solid consumer base as the key to strengthening the organic sector in the US and other countries.

A study by Oleg Bazaluk et al. (2020) points out that the Ukrainian organic food market is characterised by an insufficiently developed institutional environment, the absence of appropriate state financial support, a disproportion between the export of organic raw materials and finalised organic products, an inefficient distribution system, a low level of population awareness of the organic food benefits and small and medium-sized enterprises dominance. The basic tendency is excessive export orientation and weak diversification of goods and geographic structure at the same time. According to these authors, the export-oriented model for the domestic organic sector and the vertical integration of market participants can potentially promote the acquisition of competitive advantage in the global organic food market, which will favour the optimisation of the structure of production and trade, the development of producer cooperatives, experience and innovative exchange technologies. The conclusion is that the export potential of the organic sector of Ukraine can be realised through increasing competitiveness in the global organic food market by meeting the demand for certain products whose volume and range are insufficiently represented in some regions and by developing a new food logistics scheme.

Regarding agriculture, the concept of competitiveness was used in scientific publications in the 1980s and was mainly observed according to the size of farms and the volume of their operations. Over time, the number of determinants of competitiveness in agriculture increased, including economic, organizational, psychological and sociological factors. Therefore, in their paper (2022), the authors, Anna Nowak and Monika Róžańska-Boczula try to assess the competitiveness of agriculture in EU member states by applying the competitiveness pyramid model based on two groups of factors: sources of competitiveness and effects of competitiveness. The data for the period 2010-2019 were derived from Eurostat and FADN (Farm Accountancy Data Network) databases. The results of their research show that EU agriculture varies both in terms of resources and the relationship between factors of production, as well as their use efficiency. A clear difference in the level of competitiveness emerged between old and new member states, although some new countries ranked relatively high in terms of sources of competitiveness (the Czech Republic and Poland). It has been shown that human resources are of the most significant importance in the structure of sources of competitiveness. Nevertheless, the average area of the farm largely defines the decision on the management method.

Many scientists have investigated the economic competitiveness of agriculture. At the same time, much less attention is paid to the so-called green competitiveness. Given the global trend in the search for solutions to reduce the impact of the agricultural sector on the environment, authors Anna Nowak and Armand Kasztelan (2022) strive to explore the overlap between economic and green competitiveness. This study aims to answer the following questions: What is the level of economic and green competitiveness and overall competitiveness of agriculture in EU member states? Do the economic competitiveness results of the analysed countries match their green competitiveness rankings? Taxonomic methods were applied to design synthetic indices of economic, green and comprehensive competitiveness of 27 European Union member states based on multi-criteria sets of specific indicators from 2018. The results show that, in general, the level of agriculture green competitiveness is higher than the level of economic competitiveness in EU member states. At the same time, the developed rankings show that the economic and green competitiveness of individual countries are not related. For the first time, the research results plainly answer questions about the mutual relationship between economic and green competitiveness in agriculture. The added value of this study is that it introduces and tries to define the concept of green competitiveness and devises separate synthetic measures for economic and green competitiveness, and contrasts both types of competitiveness in EU member states.

2. CHARACTERISTICS OF ORGANIC PRODUCTION IN BOSNIA AND HERZEGOVINA IN COMPARISON TO COUNTRIES IN THE REGION

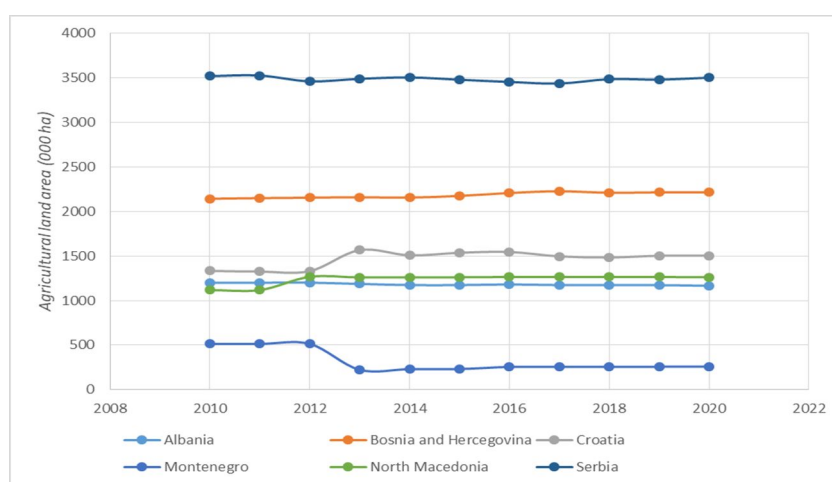
In Bosnia and Herzegovina, organic agricultural production began to develop in the 1990s, when promotion activities were initiated, and organic production, control and certification methods were applied. The Strategic Plan for Rural Development of Bosnia and Herzegovina for the period 2018-2021 stated that although Bosnia and Herzegovina has natural resources suitable for the development of organic production, the number of producers engaged in such production is small, and the quantities of organic food produced are modest. Based on the importance of organic production and the goals set in this paper, the analysis uses data from the Research Institute of Organic Production (FiBL). According to FiBL's latest survey of organic agriculture worldwide, organic farmland and retail sales continued to grow, reaching the highest level in history, as shown by data from 191 countries (data for end of 2021).

2.1. Share of organic in total agricultural land

According to Helga Willer, Bernhard Schlatter and Jan Trávníček (2023), there were more than 76.4 million hectares of organic agricultural land in 2021, including areas in conversion. The regions with the most extensive areas of organic agricultural land are Oceania (36 million hectares - almost half of the world's organic agricultural land, 47%) and Europe (17.8 million hectares, 23%). The highest absolute growth of organic farming land in 2021 was recorded in Europe (0.75 million hectares, 4.4%), followed by Africa (0.39 million hectares, 17.3%) and Asia (0.36 million hectares, 5.8%), while Latin America and North America record a decrease in organic agricultural land.

It is necessary to monitor the "agricultural land area" in thousands of hectares as a first indicator (graph 1) to analyse the situation regarding arable organic agricultural land in Bosnia and Herzegovina.

Graph 1 Movement of the "agricultural land area" (000 ha) indicator in the 2010-2020 period



Source: Authors according to data from FiBL Statistics 2023

Table 1 The average annual rate of change of the indicators "agricultural land area" and "area of agricultural land in the organic production segment" in the 2010-2020

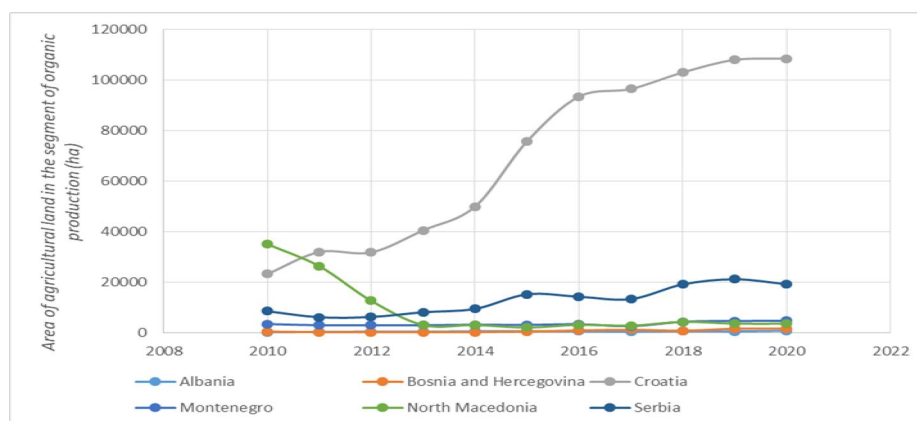
	Agricultural land area	
	Total	Organic production
Albania	-0.27	10.91
Bosnia and Herzegovina	0.3	10.22
Croatia	1.1	15
Montenegro	-6.04	2.8
North Macedonia	1.1	-18.46
Serbia	-0.05	7.59

Source: Authors according to data from FiBL Statistics 2023

In this context, Bosnia and Herzegovina comes second, after Serbia, with more than 2.2 million hectares of agricultural land in 2020, and there is noticeable growth for this indicator at a rate of 0.3% in the observed period 2010-2020 (table 1). The increase of this indicator is also noticeable in Croatia and North Macedonia, while Serbia and Albania recorded a slight decrease. A significant drop at the rate of 6.04% was evident in Montenegro.

The situation with the indicator "area of agricultural land in the segment of organic production" (ha) is somewhat different (graph 2).

Graph 2 Movement of the indicator "area of agricultural land in the segment of organic production" (ha) in the period 2010-2020

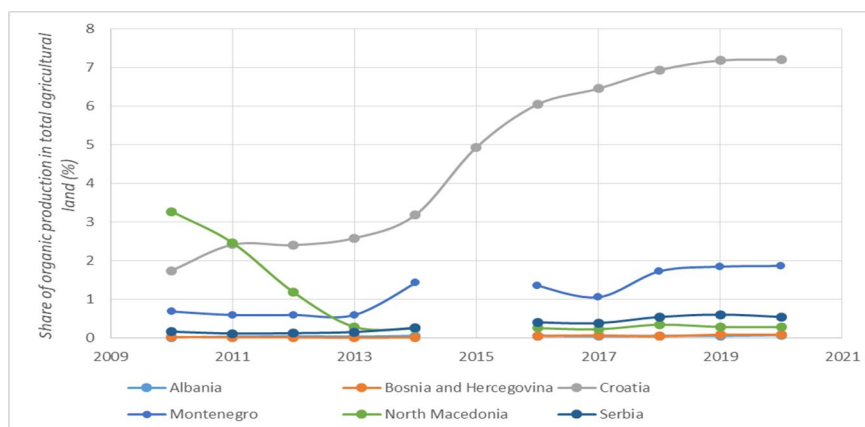


Source: Authors according to data from FiBL Statistics 2023

With value close to 1700 ha in 2020, Bosnia and Herzegovina is just ahead of Albania, and all other countries in the region are ahead of it. Comparing this with the previously analysed available agricultural land in Bosnia and Herzegovina, one concludes that the potential is not sufficiently utilized. Nevertheless, the fact that in the observed period, there is a continuous growth of this indicator in Bosnia and Herzegovina at an average annual rate of 10.22% is encouraging. According to this indicator, only Croatia and Albania recorded more rapid growth (table 1).

The previously presented indicators are absolute categories, and it is impossible to rely on their interpretation. Therefore, we examine the relative indicator "share of organic production in total agricultural land" (%), (Graph 3).

Graph 3 Movement of the indicator "share of organic production in total agricultural land" (%) in the period 2010-2020



Source: Authors according to data from FiBL Statistics 2023

Table 2 The average annual rate of change of the "share of organic production in total agricultural land" indicator in 2010-2020

	Share of organic production in total agricultural land
Albania	14.87
Bosnia and Herzegovina	11.61
Croatia	13.74
Montenegro	10.48
North Macedonia	-21.54
Serbia	12.46

Source: Authors according to data from FiBL Statistics 2023

According to the "share of organic production in the total agricultural land", Bosnia and Herzegovina is the worst-positioned in the observed period, with a geometric mean at the annual level of only 0.04%. The reasons for such a situation in Bosnia and Herzegovina are the inadequacy and ineffectiveness of farming policy, insufficient and unstructured incentives, delays and the like. Albania follows Bosnia and Herzegovina with a geometric mean of 0.05%, and Croatia is the best positioned with a geometric mean of 4.12%. However, following the movement of this indicator in the observed period for Bosnia and Herzegovina, there is still a noticeable trend of increase in the "share of organic production in total agricultural land" from 0.02% in 2010 to 0.09% in 2020, i.e. at an average annual growth rate of 11.61%. It means that an interest in organic production exists. It just needs to be encouraged and intensified in the proper way. In a segment of the growth rate of this indicator, Bosnia and Herzegovina is somewhere in the middle compared to the surrounding countries of the region. Albania and Croatia lead the way. The worst positioned is North Macedonia, which records a significant rate of decline according to this indicator, which implies a decreasing interest in organic production.

In general, it can be concluded that there is a positive trend for Bosnia and Herzegovina and that it is necessary to make an effort to use the available capacities better and more efficiently.

2.2. Economic activities related to organic production

"The number of agricultural producers in the organic production segment" is also an important indicator (table 3).

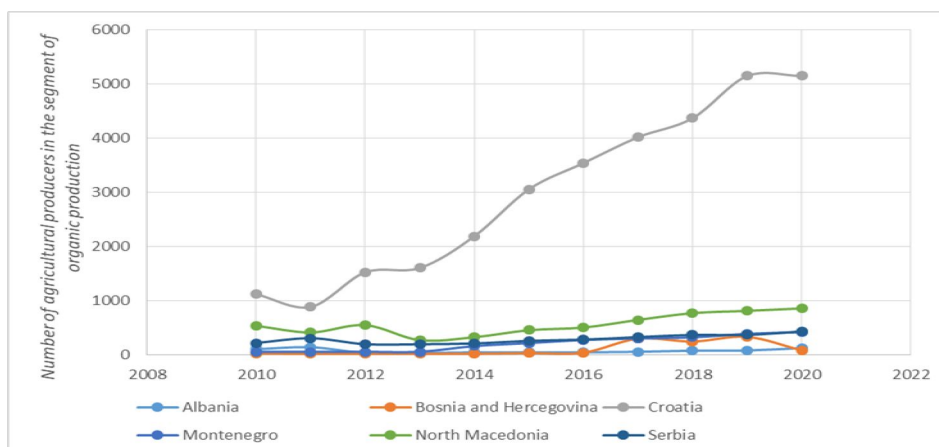
Table 3 Average annual value for "number of agricultural producers in the organic production segment"

	Number of agricultural producers in the organic production segment – geometric mean in the period 2010-2020
Albania	69.45
Bosnia and Herzegovina	59.78
Croatia	2531.60
Montenegro	165.64
North Macedonia	531.48
Serbia	283.12

Source: Authors according to data from FiBL Statistics 2023

When regarded through the averages and according to this indicator, the position of Bosnia and Herzegovina is the worst in the region. Nonetheless, it is necessary to point out that in the 2010-2019 period, the number of agricultural producers in the segment of organic production increased from 27 to 337, and a drastic decrease to 86 was recorded in 2020 (graph 4). Part of the reason for this drop may be the "lockdown" that occurred due to the Covid 19 pandemic. However, there are undoubtedly inadequate protection and support measures for organic production that the agricultural sector did not provide on time and in a proper manner. The mentioned drop is the reason that in the entire observed period, Bosnia and Herzegovina recorded an increase in the number of agricultural producers in the organic production segment at a rate of 11.11%, which would have been entirely different if a significant drop had not occurred in 2020 and the previous tendency had continued.

Graph 4 Movement of the "number of agricultural producers in the segment of organic production" indicator in the period 2010-2020



Source: Authors according to data from FiBL Statistics 2023

Table 4 The average annual rate of change of the "number of agricultural producers in the segment of organic production" indicator in the 2010-2020

	Number of agricultural producers in the segment of organic production
Albania	1.53
Bosnia and Herzegovina	11.11
Croatia	14.84
Montenegro	19.07
North Macedonia	4.32
Serbia	6.31

Source: Authors according to data from FiBL Statistics 2023

For agricultural producers in organic production, the possibility of marketing organic products, i.e. the existence of demand for said products, is especially significant. Nevertheless, data for the indicators "retail sales in the segment of organic production" (millions of euros) and "per capita consumption of organic products" (euros/person) were available only for Bosnia and Herzegovina and Croatia. In the observed period:

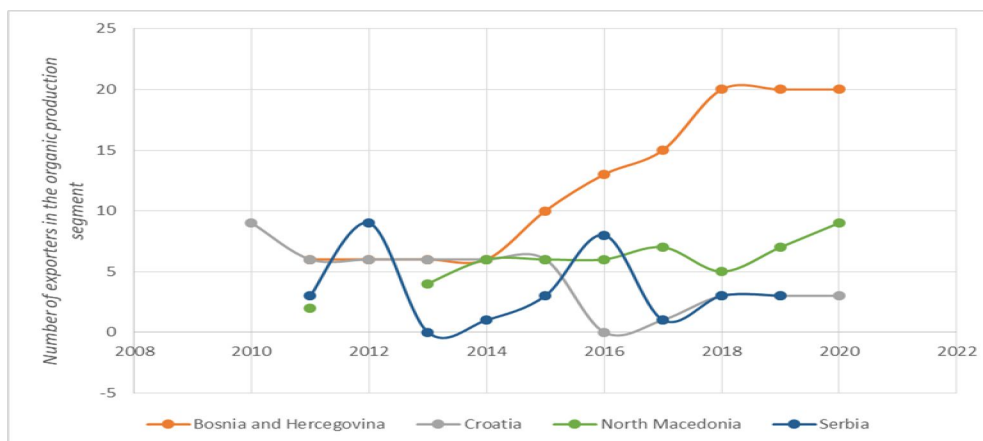
- the average value for the "retail sales in the segment of organic production" indicator in Bosnia and Herzegovina was 0.56 million euros, while in Croatia, it was 97.23 million euros,
- the average value for the "per capita consumption of organic products (euro/person)" indicator in Bosnia and Herzegovina was 0.12 euros per person and 23.06 euros per person in Croatia.

These indicators are directly related to the style and standard of living, and the differences are more than pronounced. This result builds on the results of the study by Hou, Tianyuan and Jing (2022), which, among other things, highlights the importance of a solid consumer base for the organic sector development.

Globally, the market for organic products has reached almost 125 billion euros, according to FiBL. In 2021, the countries with the largest organic markets were the United States of America (48.6 billion euros), Germany (15.9 billion euros) and France (12.7 billion euros). The largest individual market was the United States of America (39% of the global market), followed by the European Union (46.7 billion euros, 37%) and China (11.3 billion euros, 9.1%). Switzerland had the highest consumption per capita in 2021, with 425 euros. The largest share of the organic market was achieved in Denmark (13.0%), Austria (11.6%) and Luxembourg (11.0%).

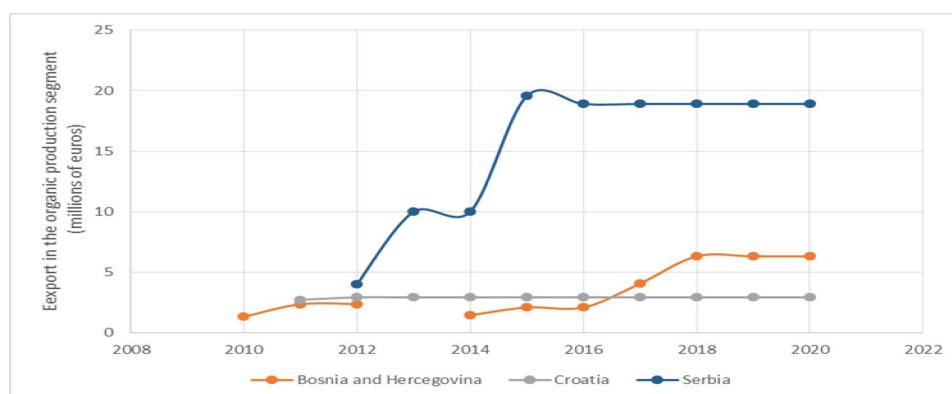
The indicators, "number of exporters in the organic production segment" and "exports in the organic production segment" (millions of euros), are analysed below. Data are available for Bosnia and Herzegovina, Croatia and Serbia.

Graph 5 Movement of the "number of exporters in the organic production segment" indicator in the period 2010-2020



Source: Authors according to data from FiBL Statistics 2023

Graph 6 Movement of the "export in the organic production segment" (millions of euros) indicator in the period 2010-2020



Source: Authors according to data from FiBL Statistics 2023

In the observed period, "the number of exporters in the organic production segment" is higher in Bosnia and Herzegovina than in Croatia and Serbia (graph 5). At the same time, it is growing the fastest - at a rate of 12.79% (table 5). Croatia even records a negative rate of change in the matter of "the number of exporters in the segment of organic production".

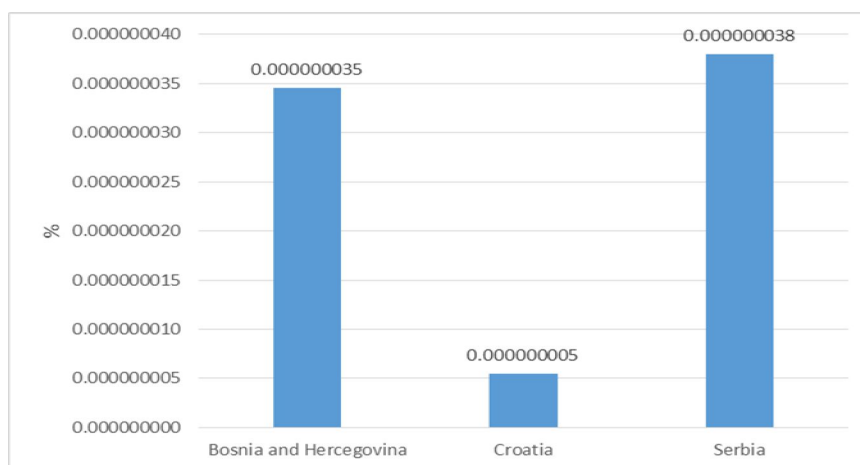
Table 5 The average annual change rate of "number of exporters in the organic production segment" and "export in the organic production segment" (millions of euros) indicators in the period 2010-2020

	Number of exporters in the organic production segment	Export in the organic production segment
Bosnia and Herzegovina	12.79	17.1
Croatia	-9.5	0.72
Serbia	0	18.83

Source: Authors according to data from FiBL Statistics 2023

In total, "export in the segment of organic production" is higher than in Croatia, which is not a basis for conclusions due to absolute indicators and at the same time, it is growing faster than in Croatia. In comparison, Serbia has higher "exports in the segment of organic production" than Bosnia and Herzegovina, but the growth rates are very similar. To compare the relative positions, we also examined the share of "exports in the segment of organic production" in the GDP for 2020¹ on Graph 6 (Statisticstimes 2023). The conclusion is the same: Bosnia and Herzegovina is significantly better positioned than Croatia, while Bosnia and Serbia are in a very similar position.

Graph 7 Share of "export in the organic production segment" (millions of euros) in GDP in 2020



Source: Authors according to data from Statisticstimes 2023

Even though the paper does not aim to analyse the existing and possible markets for exporting organic products, it is rather interesting to observe the world's largest importers of these products. Imports of organic products to the US and the EU amounted to 4.7 million metric tons in 2021. In the same year, 2.9 million metric tons of organic agricultural and food products were imported into the European Union, representing an increase of 2.8% compared to the 2.8 million MT imported in 2020. The main importing EU member countries in 2021, which accounted for more than half of the organic imports of the European Union, were the Netherlands and Germany (Willer, Schlatter and Trávníček, 2023).

CONCLUSION

Organic production is becoming more and more important worldwide. The growing importance can be observed in the light of modern challenges for agriculture, which relate to increased competition in the field of alternative use of natural resources, preservation of biological diversity, food safety and climate change mitigation, on the one hand, and growing consumer awareness of the importance of a healthy diet and the growing demand for organic agricultural products on the other hand. All in all, organic production is a segment of agriculture that ensures sustainability in the future.

For farmers in Bosnia and Herzegovina, the (re)orientation towards organic production represents a significant opportunity to expand the production and supply of traditional agriculture with a targeted volume of organically produced agricultural and food products. Empirical data and comparisons presented in this paper confirm the fact that Bosnia and Herzegovina has significant resources and capacity for intensive development of organic

¹ Data on GDP according to <https://statisticstimes.com/economy/countries-by-gdp.php>, accessed on 16th February 2023

production. Therefore, systemic support for this segment through appropriate incentives, education and promotion are of exceptional significance.

According to the "number of exporters" and the "exports in the organic production segment", Bosnia and Herzegovina is quite satisfactorily positioned in the region, indicating that it is profitable to invest in organic production. Nonetheless, the data show that producers' interest in organic production has dropped significantly in the past few years, which is a terrible sign. Within the agricultural policy of the European Union, agrarians are provided with support per hectare of agricultural land when they voluntarily agree to switch to organic farming practices and methods or to retain them. Such practice should be intensified in Bosnia and Herzegovina. It is also essential that organic producers organize themselves through appropriate mechanisms in order to jointly offer their products on the domestic and international markets, where there is undoubtedly a greater demand for such products.

In addition to primary organic production, discussed in this paper, the processing industry also needs support and incentives to increase the amount and expand the range of processing of organic agricultural products. In addition to the effects on the expansion of organic production, this would also increase the product's added value. At the end of the supply chain, it is necessary to support the arrangement and promotion of locations for selling organic products within shopping centres and other outlets.

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