STATE OF VEGETABLE ORGANIC PRODUCTION IN THE REPUBLIC OF SERBIA[1]

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Abstract

The areas under organic crop production in Serbia in 2021 amounted to 23,527 ha and were 12.2% higher compared to 2020. The largest areas in 2021 were under organic fruit production - 36%, under cereals - 28%, fodder plants - 19%, while the smallest land was planted and sown with vegetables, medicinal and herbs. Looking at regions, organic production was most represented in Vojvodina, where these areas accounted for 38.36%, followed by the region of Southern and Eastern Serbia with a share of 31.58%. Vegetable organic production in Republic Serbia has been gaining traction in recent years, driven by increasing consumer demanding for organic products and growing awareness of sustainable farming practices. Serbia has estrablished regulations for organic farming that aligh with EU standards, allowing producers to access both local and international markets. Serbia's diverse climate and fertile soil provide a good foundation for organic vegetable production. Farmers are increasingly adopting practices such as crop rotation and integrated pest management. Local markets, supermarkets, and export opportunities are expanding for organic products, supported by initiatives aimed at promoting Serbian organic goods. Farmers face challenges such as transitioning from conventional to organic practices, pest management, and market competition. The organic vegetable sector in Serbia shows promise for growth, contributing to both the local economy and environmental sustainability.

Key word: *vegetable, organic production, Republic of Serbia.*

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Introduction

Organic production is sustainable agricultural system that used biological fertilizers, ecologically based pest controls and nitrogen-fixing cover crops (Adamchak, 2024). This way of agricultural production is response to excessive use of chemical pesticides and synthetic fertilizer in a system known as conventional agriculture (Sumberg et al., 2022).

The advantage of the organic production lies in reducing soil erosion, decreasing nitrate leaching into groundwater and the recycling animal wastes. The counter arguments that make balance to the benefits of the organic production are higher food costs and lower yields (25% lower overall than conventionally grown crops, depending on the type of crop) (Seufert et al., 2012).

The concept of organic agriculture was developed in early 1900s thanks to scientifics who believed that the using of animal manures, cover crops, crop rotation and biologically based pest control resulted in a better farming system (Kirchmann et al., 2008). Throug 20th century organic practices are developing, establishing rouls and improves existing discoveries. In the lates decadess of the 20th century the organic production is experiencing rapid spread. The main reasons lies in greatr environmental awareness, concerns over the health impact of pesticides residues in soil and underground water and consumption of gentically modified crops (GMO) (Brookes, 2022). One of the most important things about organic production is that the price of organic products is generally higher than prices of conventional grown food. Depending on the product, the season, and the vagaries of supply and demand, the price of organic food can be anywhere from less than 10 percent below to more than 100 percent above that of conventionally grown produce (Adamchak, 2024).

Organic vegetable farming is subject to precise standards and certification that ensure organic food authenticity and quality. In the EU (EU Organic Certification in Europe) and USA regulatory bodies (USDA Organic Certificating), develop and enforce these standards to meet the increasing demand for organic products while consumer trust. The regulatory bodies maintain the list of banned substances, including synthetic pesticides, herbicides, and chemical fertilizers, that are incompatible with organic production. Farmers who practices sustainable agriculture must adhere to these lists and use natural pests, disease management alternatives, and other organic methods to have their healthy food certified as organic (European Commission, 2024).

In organic vegetable production one of the most important part is choosing a location and preparation of the land (Bažok et al., 2022): soil testing (pH, nutrient levels, and any deficient); soil preparation (adding the organic compost or well-aged manure to improve soil fertility and structure) and crop rotation (rotation of crops each season to prevent soil depletion and pest buildup).

Organic vegetable production in Serbia is a significant tool for the development of agricultural production in general. It is characterized by constant growth, constant advancement in knowledge, and numerous benefits for both the economy and the environment.

In 2022, 96.4 million hectares were under organic agricultural management worldwide (Fibl & IFOAM, 2024). This constituted 2.0 percent of the total farmland. Organic farmland increased by 26.6 percent or by 20.3 million hectares in 2022.

The region with the most organic agricultural land was Oceania, with 53.2 million hectares, followed by Europe with 18.5 million, Latin America (9.5 million), Asia (8.8 million), Northern America (3.6 million) and Africa (2.7 million).

The European Union brings set of Regulatory acts, begun with Regulation 2018/8489, focusing on the production and labelling of organic products[5]. This adopted legislation today is known as Basic Act that evolve until 2023. In 2023, two of the secondary regulatory acts underwent regular amendments. Specifically, the implementing regulation (EU) 2021/116512[6], containing the lists of authorized products and substances for use in organic production and the implementing regulation (EU) 2021/23251[7], which establishes the lists of third countries and third country control bodies recognized on the basis of equivalence under the relevant Article of the previous organic regulation, were both subject to two amendments each within the course of the year.

5 Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007; http://data.europa.eu/eli/reg/2018/848/oj

6 Commission Implementing Regulation (EU) 2021/1165 of 15 July 2021 authorizing certain products and substances for use in organic production and establishing their lists https://eurlex.europa.eu/eli/reg_impl/2021/1165/oj

7 Commission Implementing Regulation (EU) 2021/2325 of 16 December 2021 establishing, pursuant to Regulation (EU) 2018/848 of the European Parliament and of the Council, the list of third countries and the list of control authorities and control bodies that have been recognized under Article 33(2) and (3) of Council Regulation (EC) No 834/2007 for the purpose of importing organic products into the Union https://eurlex.europa.eu/eli/reg_impl/2021/2325/oj

In Europe, there is 18,5 million hectares were managed organically in 2022 (with EU countries – 16,9 million hectares). Leading country in terms of farmland under organic management is France with 2,9 million hectares; followed by Spain (2.7 million hectares), Italy (2.3 million hectares), and Germany (1.9 million hectares). These four countries collectively account for more than half of the European organic farmland.

The legislation of the Republic of Serbia related to organic production relies on EU regulations. Since 1990s when is established Terra's association is Subotica and founding Serbia Organic in 2009, a national association for organic production has the aim to unite organic stakeholders and support organic development. In cooperation with the Ministry of Agriculture, Forestry and Water Management and Serbian Chamber of Commerce and Industry, the promotion of the organic production in Republic Serbia has been raised to a higher level. Thus, Serbia is positioned as a stable producer of organic products, with plenty of room to expand and improve production.

Material and method

In this paper main focus is presenting the current state of vegetable organic production in Republic of Serbia, due to favorable climatic conditions and the population's growing needs for healthy food. In the paper will be used and systematically processed data of relevant public reports and published literature.

Results and discussion

The Republic of Serbia is located in the southeastern part of Europe, on the Balkan Peninsula, covering an area of 88,361 km^2. It extends between 41°53' and 46°11' north latitude and 18°49' and 23°00' east longitude. The climate of Serbia can be described as moderate-continental with more or less exposed local characteristics. Spatial distribution of climate parameters is conditioned by geographical position, relief and local influence (Jovanović Todorović et al., 2024). The average air temperature is 10.9°C at an altitude of 300 m; at altitudes between 300-500 m. above sea level is 10.0°C, and above 1000 m. above sea level it is 6.0°C. The annual sums of precipitation on average increase from above sea level and in lower areas, they range from 540 mm to 820 mm. In areas with altitudes above 1,000 m, the average annual rainfall ranges from 700 to 1,000 mm, while on certain mountain peaks the average value of precipitation is over 1,500 mm of water sediment (hidmet.gov.rs).

According to the first results of the 2023 Census of Agriculture, 4,073,703 are available ha of agricultural land, which is 21.3% less than available of agricultural land included in the Agricultural Structure Survey farms, 2018. Of that, 3,257,100 ha are used for agriculture land (UAA), 504,104 ha of forest area and 190,242 ha of other land. The largest area of agricultural land is located in the Region Vojvodina, 1,474,709 ha, and the increase in area compared to 2018 it was recorded only in the Belgrade region (increase of 2.3%).

The demand for organic products is the only one that has grown in the world, and in Serbia, after the great global economic crisis in 2008. The growth trend continued. Today in the world, the organic market is growing faster at the global level than the area under organic agricultural land, so its price is also increasing. The domestic market of organic agricultural products is still underdeveloped, despite significant advances in recent years. At the moment, the hilly and mountainous area of Serbia has the greatest perspective for the fastest expansion of organic production, and that means agribusiness from ecological agriculture. It provides the most favorable conditions for organic agriculture because more than 60 percent of Serbia's agricultural land is located in that area (Škorić, 2018).

Based on the certification process, Serbia has two types of organic producers. In the first type are individually certified producers who are the owners of the certificate, and in the second type are members of the group production who do not have physical certificate, but are part of the company that is controlling farmers and is a holder of the certificate (Kešelj Milovanović, 2022). According to the data from 2020 Serbia had 5315 cooperants involved in the system of group production, and 42 companies / organizers of the group production. In 2021 group production included 5805 cooperants which is an increase in the number of cooperants by 9.2 %.

According to the last Census of agriculture in 2023, areas under organic production in the Republic Serbia have increased by tree times than areas included in data of Census of the Agriculture in 2012. In structure of sown arable land areas, vegetable covers 1,8% of area, what is much less than areas under fodder crops (9,0%), Industrial crops (18,9%) and cereals (66,8%). During 2023 Serbia mostly exported vegetables and fruits, as well as cereals, wheat and corn.

In 2023 the organic vegetable production is spread on total area of 223,6480 ha, of which the organic status has 143,1139 ha, and 80,5341 ha are in period of conversion. Organic production is dominant in Vojvodina, following with

production capacities in South and East Serbia, Šumadija and West Serbia, and on last place are production capacities in Belgrade region (MAFWM, 2024).

Most dominant production is organic production of the chickpea, potato, melon, bean, pumpkin, onion, etc. About 7,000 households in Serbia are engaged in the production of organic food today and the exports worth about 60 million dollars a year.

The export of the organic products, including the vegetable is most intensive to the Germany (18,3 mill. EUR), The Netherlands (6,9 mill. EUR), France (4,2 mill. EUR), Poland (3,5 mil EUR), etc., with the total export to the EU countries with approximately of 44,0 mil EUR.

Conclusion

In the Republic Serbia, organic production represents the unused potential. Interest in organic production is primarily driven by the economic characteristics. Organic production in Serbia has an upward trend and represents an opportunity for small scale family holdings to provide economic sustainability through value added production. The support measures are not part of the long-term strategy, organic producers cannot plan investments in capacities and infrastructure. Farmers lacking managerial skills and marketing knowledge can and should be improved if future. Vegetable production is small, but can be expanded with adequate measures, with education of farmers, by making the knit network and opening to the market.

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