

THE CURRENT STATE OF ORGANIC PRODUCTION IN US AND THE WORLD

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Abstract

Stability and quality of agricultural production can be ensured by sustainable resource management. Health-safe products, economic benefit, preserving the environment and health can be achieved by organic production. Organic production in the World, Serbia, Montenegro, Croatia, Bosnia and Herzegovina, Slovenia and North Macedonia was analyzed in this research. Agricultural land covers 76 mill. ha which is 1.6% of world land. It is noted a growth trend of the organic agricultural area in 2021 by 1.7% according data collected from 191 countries. The largest organic agricultural land areas are in Oceania (36 mill. ha or 47%) and Europe (17.8 mill. ha - 23%) followed by Latin America (9.9 mill. ha - 13%), Asia (6.5 mill. ha, 8.5 percent), Northern America (3.5 mill. ha - 4.6%) and Africa (2.7 mill. ha - 3.5%). A trend of area growth in 2021 compared to 2020 was noted Serbia, Croatia, Slovenia, B&H and North Macedonia. The largest increase had North Macedonia (7794 ha, 109.1%), then B&H (2495 ha, 47.5%), Serbia (23527 ha, 21.8%) and Croatia (121924 ha, 12.3%). Great export opportunity of Serbia is in that it has excellent conditions for the growth of organic production, because of its excellent geographical position and good quality land.

Key words: *Organic production, trend of growth, health-safe products.*

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Introduction

Conservation of soil and water, protection of plant, animal, and human health, biodiversity, and agro-biodiversity can be made easy by growth of organic farming. It, with the application of ecological principles, emphasizes the control, quality, and safety of the product. Popovic et al. (2012) states that, for customers to obtain a high-quality, controlled product, organic production is required. Maintaining and improving of soil fertility in the long run can be achieved by organic farming. A production system - crop rotation harmonized with proper soil cultivation, fertilization based on soil fertility level (organic and other permitted fertilizers), and other cultural practices (Bavec & Bavec, 2006) maintain soil fertility. Using of biological fertilizers (derived largely from animal and plant wastes and nitrogen-fixing cover crops) in organic farming makes it a sustainable agricultural system. Products made on organic way have lower yields (for 5- 25%) and a slightly larger price for consumers. Soil well-provided with organic matter and possessing good structure and water-air properties is the main for organic farming to be successful and, in connection with that, main point of organic production is soil tillage. In the development of integrated systems very important are Field-rotation and crop- rotation. Weed control measures which are: proper treatment of crop residues and by-products of primary agricultural production; crop rotation; intercropping; companion cropping; exploitation of allelopathic relations etc. are important for organic production. Malesevic et al. (2008), Popovic et al. (2012) recommend that for weed control, disease, and pest control, it has to use plants that contain natural chemical toxins or possess allelopathic properties should be used in. Conventional agriculture, by use of chemical pesticides and synthetic fertilizers made the environmental damage, but organic farming could be the solution to it because it uses fewer pesticides, reduces soil erosion, decreases nitrate leaching into groundwater and surface water, and recycles animal wastes back into the farm (Popovic et al., 2019; 2022; Buric et al., 2023).

In 191 countries, on more than 76 million hectares of agricultural land cultivated by at least 3.7 million farmers, organic production is practiced. A growth trend of global sales of organic food and drink recorded and, in 2021, it reached almost 125 billion euro. Organic agriculture, farmland and sales of organic product, worldwide, according to the latest FiBL survey, reached another all-time high in 2021. This study aimed to determine the agricultural state production in our country and the world.

Materials and Methods

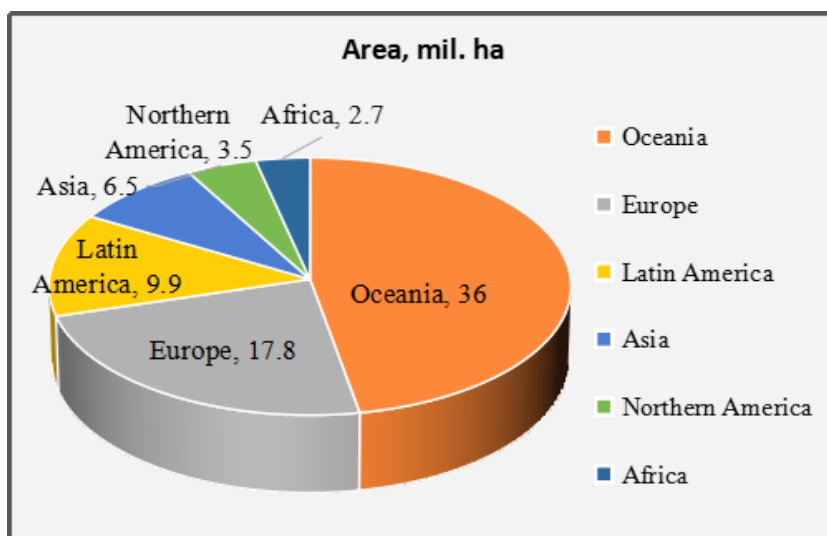
Organic production in Serbia, Montenegro, Croatia, Bosnia and Herzegovina, Slovenia and North Macedonia was analyzed in this research (FiBL, 2023; Willer et al., 2023) and possibilities for improving organic production were indicated. The survey results were processed descriptively and shown in tables and graphics.

Results and Discussion

World production of agricultural organic products

In 2021 (FiBL, 2023), in the world, more than 76.4 million hectares was belonged to organic farmland which was 1.6 percent of the total farmland and represented increasing of 1.7 percent compared to 2020. The largest organic agricultural land has Oceania (36.0 mill. ha or 47%), then Europe (17.8 mill. ha or 23%), Latin America (9.9 mil. ha or 13%), followed by Asia (6.5 mil. ha or 8.5%), Northern America (3.5 mil. ha or 4.6%), and Africa (2.7 mil. ha or 3.5%). Oceania (9.7%) and in Europe (3.6%; European Union: 9.6 %) are regions that have higher organic shares of the total agricultural land. The biggest organic agricultural land by area among countries have Australia (35.7 mil. ha), Argentina (4.1 mil. ha), and France (2.8 mil. ha), Picture 1.

Picture 1. Organic agricultural land in 2021 in million ha, by regions.



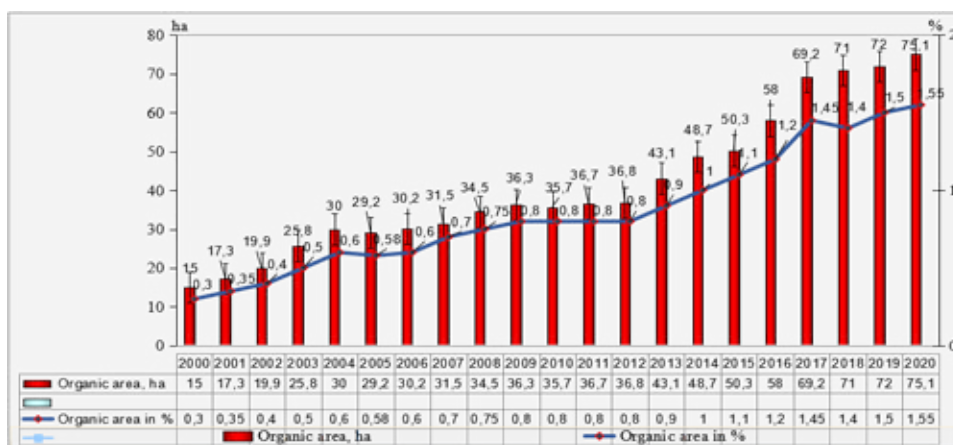
Rising of area of organic land was noted in Africa, Asia, Europe, and Oceania in 2021. (Table 1, Figures 1 and 2) while in North- and Latin- America it decreased.

Table 1. The World organic agricultural land in 2021 and the share of regions in it

Region	Organic agricultural land, ha	Shares of the total agricultural land, %	Shares	Increased
			of global organic agricultural land, %	
Oceania	35985809	9.7	47.1	+23.0
Europe	17844853	3.6	23.4	+4.4
Latin America	9870887	1.4	12.9	-1.55
Asia	6504211	0.4	8.5	+5.8
Northern America	3542140	0.8	4.6	-1.35
Africa	2663983	0.2	3.5	+17.3
World*	76403777	1.6	100	+1.7

Source: FiBL survey 2023. Note: Agricultural land includes in-conversion areas and excludes wild collection, aquaculture, forest, and non-agricultural grazing areas.

Picture 2. World’s agricultural land for organic production (2000-2020). Area and share

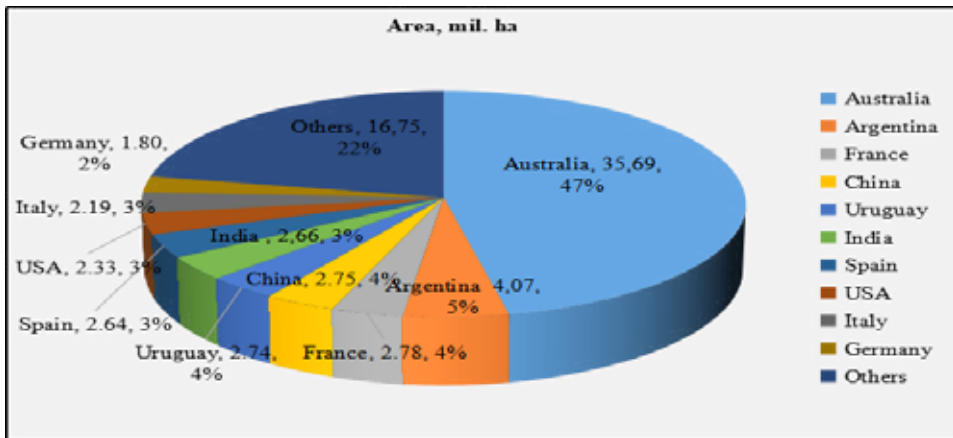


Source: FiBL-IFOAM-SOEL surveys 2001-2023

The biggest of a growth trend were in China (320000 ha or 13.1%), France (228000 ha or 8.9 %), and Spain (198000 ha or 8.1%), some countries decreases was recorded (in Argentina, 0.38 mil. ha less). The highest organic share has Liechtenstein (40.2%), Samoa (29.1 %), and Austria (26.5 %). Demand for organic products of consumers all around is showing a growing trend because COVID-19 has raised consumer interest in health. Country with the most organic agricultural land

was Australia (35.69 mil. ha) followed by Argentina (4.07 mil. ha), (2.78 mil. ha), China (2.75 mil. ha), Uruguay (2.74 mil. ha), India (2.66 mil. ha), Spain (2.64 mil. ha), USA (2.33 mil. ha), Italy (2.19 mil. ha), Germany (1.80 mil. ha), (Picture 3). Almost 80% of the world's organic agricultural land is in ten countries - total of 59.6 million hectares.

Picture 3. 10 countries with the largest areas of organic land in 2021 (mil. ha).



In 2021, there were 3,699 million of organic producers worldwide and, compared to the year before, their number increased by 4.9 %. More than 91% of them were in Asia (48.6 %), Africa (30.6 %), and Europe (12 %). The absolute highest numbers are in India 1.6 million farmers, then Uganda (400,000) and Ethiopia (218,000) (Table 2). The number of producers (in 2021) increased in Africa, Oceania, Europe, North and Latin America, while in Asia slightly decrease (Table 2).

Table 2. World: The producers number changes by region

Region	2020, no.	2021, no.	1 year growth, no.	1 year growth, %	10 years growth, no.	10 years growth, %
Africa	968'233	1'123'255	155'022	16.0%	595'342	112.8%
Asia	1'811'209	1'782'134	-29'075	-1.6%	1'171'012	191.6%
Europe	417'987	442'274	24'287	5.8%	152'646	52.7%
Latin America	262'115	280'436	18'321	7.0%	-27'111	-8.8%
Northern America	22'448	23'392	944	4.2%	6'794	40.9%
Oceania	15'930	18'479	2'549	16.0%	4'293	30.3%
World	3'496'898	3'669'201	172'303	4.9%	1'902'412	107.7%

Source: FiBL survey 2023.

Total of organic products retail sales in 2021

The World sales of organic food and drink, in 2021, according to the FiBL survey, it reached almost 125 billion euro which is 3 % higher than in 2020. Leading markets in 2021 were the United States (48.6 billion euro), Germany (15.9 billion euro), France (12.7 billion euro) and China (11.3 billion euro). The largest single market was the United States, followed by the European Union (46.7 billion euro) and China. By region, Europe had the lead (54.5 billion euro), followed by North America (53.9 billion euro) and Asia (13.7 billion euro). Estonia registered the biggest percentage market growth (21 %). Denmark with 13% had highest shares of organic market of the total market, then Austria (11.6 %), Luxembourg (11 %), and Switzerland (10.9 %), (The World of Organic Agriculture, 2023). Speaking of the countries of the former Yugoslavia, the largest area and share in organic production in 2021 was Croatia (121924 ha; 8.1%), followed by Slovenia (52078 ha; 10.8%), Serbia (23527 ha; 0.7%), North Macedonia (7794 ha; 0.6%), Montenegro (4404 ha; 0.57%), Bosnia & Herzegovina (2495 ha; 0.14%), (Table 3).

The most of former Yugoslav republic of (Serbia, Croatia, Slovenia, B&H, and North Macedonia) recorded a trend of area growth in 2021 compared to 2020. The largest area increases recorded Macedonia (7794 ha), of 109.1%, then B&H (2495 ha, 47.5%), Serbia (23527 ha, 21.8%), Croatia (121924 ha, 12.3%). Slovenia recorded stagnation (52078 ha), while Montenegro recorded a decrease in surface area in 2021 (4404 ha) compared to 2020 (4823 ha), by 418.8 ha ie. 8.7%.

Table 3. Organic agricultural land by ex-Yugoslavia countries , 2020-2021,

Country/ Territory	Organic agricul- tu. land 2020, ha	Organic agricult. land 2021, ha	1 year growth, ha	1 year growth, %	10 years growth, ha	10 years growth %	Share in word, %
Slovenia	52078	52078	0.0	0.0	16977.0	48.4	10.8
Croatia	108610	121924	13314.0	12.3	90020.5	282.2	8.1
Serbia	19317	23527	4210.4	21.8	17187.3	271.1	0.7
North Macedo- nia	3727	7794	4067.0	109.1	-4937.2	-38.8	0.6
Montene- gro	4823	4404	-418.8	-8.7	1335.9	43.5	0.57
Bosnia & Herzeg.	1692	2495	803.3	47.5	2152.5	627.8	0.14

Source: statistics.fibl.org, FiBL survey 2023

The largest number of organic production producers, processors and importers in 2021 had Croatia (6024; 378; 12), then Slovenia (3685; 139; 28), Serbia (458; 152; 74), North Macedonia (887; 17; 8), Montenegro (422; 25), while smallest Bosnia & Herzegovina (90; 51), (Table 4).

Table 4. Organic producers, processors, importers and exporters of ex-Yugoslavia countries in 2021

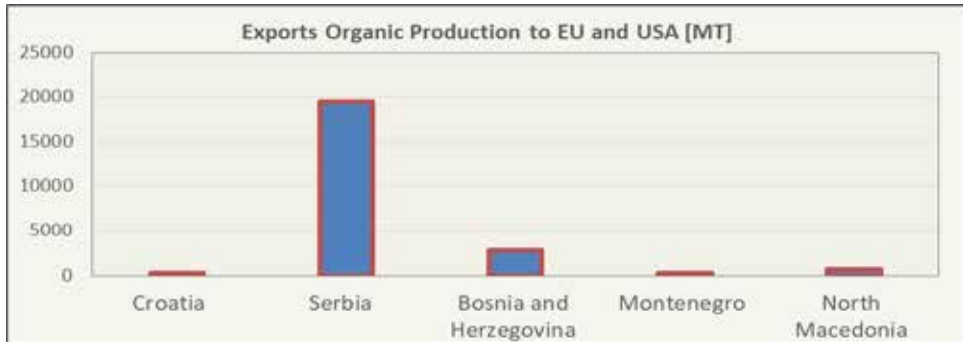
Country/Territory	Producers ¹	Processors	Importers	Exporters
Slovenia	3685	139	28	0
Croatia	6024	378	12	-
Serbia	458	152	74	82
North Macedonia	887	17	8	1
Montenegro	422	25	-	0
Bosnia& Herzegovina	90	51	-	20

The organic products largest exporter to the EU and USA in 2021 was Serbia (199468 MT), then Bosnia and Herzegovina (2788 MT), North Macedonia (662 MT), Croatia (27 MT), and Montenegro (17 MT), while Slovenia did not export organic products or did not submit export data (Table 5, Picture 4).

Table 5. Ex-Yugoslavia countries exports of organic products to the EU and USA in 2021

Country/Territory	Exports to EU [MT]	Exports to USA [MT]	Exports to EU and USA [MT]
Croatia		27	27
Serbia	19373	95	19468
Bosnia and Herzegovina	2762	26	2788
Montenegro	17		17
North Macedonia	654	8	662

Picture 4. Export of organic products to the EU and USA from ex Yu countries, 2021



Important Methods of Organic Farming

Governments defined organic agriculture. Farmers must be certified for their producing and products, to become labeled “organic”. In the European Union (EU), organic standards ban the use of genetically engineered plants or products, synthetic pesticides, fertilizers, ionizing radiation, sewage sludge. Organic certification and inspection in the EU (according to EU standards), are carried out by approved organic control bodies. The National Organic Standards of the Department of Agriculture defined organic farming, and many accredited organic certifiers are across the country.

Agriculture, organic production and the environment have been closely linked in the past years. Organic farming employs a variety of methods to cultivate crops and raise animals in a sustainable and eco-friendly manner. Each method is designed to work in harmony with nature and minimize the use of synthetic inputs: crop Rotation, composting, green manure cover crops, mulching, biological pest control, integrated pest management, natural weed control, non-GMO seeds - non-genetically modified seeds to maintain biodiversity and preserve traditional crop varieties, animal husbandry practices, and water conservation, Picture 4.

Picture 4. Important Methods of Organic



Farming <https://geopard.tech/blog/why-is-organic-farming-better-for-the-environment/>

These methods of organic farming prioritize environmental sustainability, soil health, and natural resource conservation. By adopting these practices, organic farmers contribute to healthier ecosystems, reduced environmental impact, and the production of nutritious and safe food (Bavec & Bavec, 2006; Malesevic et al., 2012; Ikanović & Popović, 2020; Zejak et al., 2012; Popović et al., 2012; 2019; 2022; Burić et al., 2023).

Organic farming holds the key to a sustainable future. Its myriad benefits, from preserving soil health and conserving water to providing healthier and safer food options, highlight its importance. By choosing organic products, consumers can support farmers, protect the environment, and contribute to a more resilient and balanced ecosystem.

Health, Ecology, Fairness, and Care are principles of organic agriculture which is answer to industrialization paradigm.

These principles and their interactions make a positive impact on economic, environmental, social, cultural, and health contexts. Popović et al. (2022), Burić et al., (2023) said that enhances of the immune system, reduces the presence of pesticides, boosts cardiovascular protection, prevents cancer and premature aging represent only a few of benefit of organic food.

Conclusion

Just 1.6% of the world's agricultural land is farmed organically. Oceania has the largest organic agricultural land areas (36 mill. ha or 47%), then Europe (17.8 mill. ha, 23%), Latin America (9.9 mill. ha, 13%), Asia (6.5 mill. ha, 8.5 percent), Northern America (3.5 mill. ha, 4.6%) and Africa (2.7 mill. ha, 3.5%). 80 percent of the total world's organic agricultural land (59.6 million hectares) are in the next ten countries: Australia, 35.69 mill. ha, Argentina, 4.07 mill. ha, France, 2.78 mill. ha, China, 2.75 mill. ha, Uruguay, 2.74 mill. ha, India, 2.66 mill. ha, Spain, 2.64 mil. ha, USA, 2.33 mil. ha, Italy, 2.19 mil. ha, Germany, 1.8 mil. ha.

In 2021. there were 20 countries with 10% or more of all agricultural land under organic management which is more compared with 2020 (18 countries). Countries with the largest share of organic land were Liechtenstein (40.2 %), Samoa (29.1 %), Austria (26.5%), Sao Tome and Principe (21.1 %) and Sweden (20.2 %).

An increase in the area of organic agricultural land experienced in 86 countries, while 37 countries reported decrease. Many countries kept up or initiated support activities for organic agriculture, including new action plans or policies aiming to foster growth.

A trend of area growth in 2021 compared to 2020 was recorded in Serbia, Croatia, Slovenia, B&H, and North Macedonia. The largest increase recorded Macedonia (7794 ha), of 109.1%, then B&H (2495 ha, 47.5%), Serbia (23527 ha, 21.8%), Croatia (121924 ha, 12.3%). Slovenia had a stagnation of surface area (52078 ha) was recorded, while Montenegro decreases in surface area in 2021 (4404 ha) compared to 2020 (4823 ha), by 418.8 ha i.e., 8.7%. Serbia's great export opportunity is excellent conditions for the growth of organic production thanks to our excellent geographical position and good quality land.

The challenge for future organic agriculture will be increase area and yields, maintain of environmental benefits, and while meeting the challenges of climate change and an increasing number of world's population.

Acknowledgments

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