

Organic Fruit Production in Serbia

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Abstract

Organic fruit production and demands for such a production have been growing in Europe and worldwide. Agroecological conditions in Serbia exceptionally favour the development of organic fruit production, particularly of berries with raspberry varieties ranking first (raspberry from Arilje make up to 30% of the total world production of this species). Areas with organic orchards in our country amount to 2208.05 ha, ranking second, just behind the areas with cereals. The greatest areas with organic orchards are located in the regions of southern and eastern Serbia (1244.22 ha), then in Šumadija and western Serbia (830.61 ha). The Toplica District is a leading district in this most important region with the area of 1152.62 ha. Considering the fact that Serbia provides excellent natural capacities for the production of organic fruit, producers are still underutilizing these available natural resources, which represents a significant challenge for the future improvement of organic fruit production.

Key words: raspberries, apples, organic areas, producers, profitability

Introduction

Organic agriculture is such a system that enhances and promotes the health of ecosystems, including agroecosystem, whereby special attention is paid to the conservation of biodiversity, encompassing biological cycles and soil biological activity, which is achieved by the use of biological, mechanical and agricultural methods, excluding the application of synthetic materials (FAO, 1999; Golijan and Veličković, 2015; Popović et al., 2016). Organic fruit production is absolutely controlled and can be performed in the following ways: 1) picking native and wild fruits can be done if the areas on which these fruits grow have not been chemically treated with pesticides for previous three years and if fruit picking does not disturb species conservation or stability of the environment, 2) the second method is fruit growing in plantations; the conversion period in existing plantations is three years; this period can be shorter if there is an evidence that the soil was not previously treated with chemicals and 3) the method considered to be the best: orchard establishing in accordance with methods prescribed by legal regulations concerning organic production. Fruit production shows numerous advantages in comparison with other sectors of agricultural production because it provides: utilisation of various locations and regions, establishment of fruit plantations on soils of different qualities, as well as fruit growth under diverse climate conditions. The essential property of such a production is consistency with nature and its laws, by which natural defence plant ability is induced and greater resistance to diseases and pests is developed (Veličković, 2002; Veličković and Golijan, 2015). In Europe and the world, organic fruit production is more required than ever (Golijan and Popović, 2016). According to the International Trade Centre (ITC) fresh fruits rank first in the international trade (Batelja-Lodeta et al., 2012). Italy, Turkey, USA, France, Spain, Poland and Germany are the greatest organic fruit producers at the global level (Meredith and Willer, 2016). According to the report presented by Willer et al. (2013), organic fruits and vegetables in USA make even 40% of the total organic product market.

Marketing and profitability of organic fruits

Serbia is producing organic raspberries, sour cherries, blueberries, blackberries, apples, juices, concentrates and dried fruit. Another activity occurring in forest and mountain areas is the collection of forest fruit: blueberries, blackberries, wild strawberries, hip, elderberry, forest mushrooms (Roljević et al., 2009; Mitrović, 2013; <http://www.zdravasrbija.com>).

The majority of these organic products, as well as collected forest fruit, are placed on foreign markets (Milenković, 2011).

Organic apple production in Serbia is mainly performed in extensive plantations of old autochthonous varieties, such as Budimka, Russet apple, Kolačara and Šumatovka apple, as well as in intensive plantations of recently developed resistant varieties in which adequate cropping practices and pomotechnical measures are applied (Topaz, Prima, GoldRush) (Mitrović, 2013; <http://www.zdravasrbija.com>). The majority of these fruits and crops are exported.

Long-term plantations are mostly placed in the region of southern Serbia, which is well known for the production of organic raspberry, blackberry, plum, strawberry, apple and sour cherry. The raspberry variety from Arilje is very estimable in international markets and it makes up to 30% of total global raspberry production (Roljević et al., 2009).

Agroecological conditions in Serbia favour organic soft fruit production (strawberry, raspberry, blackberry, currant, bilberry, gooseberry, cowberry, chokeberries) (Keserović et al., 2008). However, raspberry production predominates, because raspberry varieties have been traditionally cultivated in significantly large areas, hence growers have mastered the raspberry growing practices (Milenković, 2011). Although our country is a leader among raspberry producers, organic raspberry production was initiated in Serbia as late as 1999 and nowadays it reaches 1000 t (Mišić et al., 2004). According to Roljević et al. (2009), the best way to establish a raspberry plantation in the organic system is to start with a young orchard on non-contaminated (virgin) soil. The conversion of traditionally produced raspberry into organically grown raspberry is easily done in our country. Considering the fact that the world market increasingly demands organic raspberry, growers should aim their activities at greater organic raspberry production, because they will gain large profit. The majority of growers, who opt for organic fruit production, do it just because of greater profit, since prices of organic fruits are considerably higher than prices of conventional fruits (Slattery et al., 2011).

Among certified producers of organic fruit in Serbia are the following: Nectar doo (Bačka Palanka), Foodland doo (Beograd), Ethnos Foundation (Šajkaš), BMD (Arilje), GO Organic doo (Subotica), VONI-M doo (Brus), Zdravo organic (Selenča), Agricultural farm Stojanović organic (Kikinda), Arpad Čikoš (Totovo Village), Gordana Šoškić (Zrenjanin), Nebojša Antić (Trgovište), while aronia products Maksim Tomić (Novi Sad) and Mira Bačanin (Zemun) (Ministry of Agriculture and Environmental Protection, 2016). Government subsidises significantly affect organic fruit production.

The abovementioned subsidises in this sector in Serbia amount to 16800 RSD per ha, which are somewhat higher than subsidises intended for conventional production (12000 RSD per ha) (Prodanović and Babović, 2014).

Prodanović and Babović (2014) performed the cost benefit analysis in relation to organic fruit production in Serbia, taking into consideration four representative fruit species: plum, apple, pear and raspberry (Tab. 1). Moreover the study showed that a great number of fruit species could be grown in the organic system with gained profits even higher than those in the conventional production system.

Tab. 1. Profitability in the production of organic and conventional fruits in the Republic of Serbia in 2014 (Prodanović and Babović, 2014)

Профитабилност органске и традиционалне воћарске производње у Србији у 2014. години (Prodanović and Babović, 2014)

Items	Plum / Шљива		Apple / Јабука		Pear / Крушка		Raspberry / Малина	
	Conv.	Org.	Conv.	Org.	Conv.	Org.	Conv.	Org.
Yields/ Приноси (t/ha)	34	23	40	15	20	11	13	12
Average price/Просјечна цијена (€/kg)	0.21	0.29	0.25	0.83	0.41	1.25	1.30	1.75
Gross income/ Приход (€/ha)	7.140	6.670	10.000	12.450	8.200	13.750	16.900	18.782
Overall costs/ Укупни трошкови (€/ha)	3.966	4.216	7.100	9750	5800	6490	11960	13200
Net income/ Нето приход (€/ha)	3.174	2.454	2.900	2700	2400	7260	4940	5582
Subsidies/ Субвенције (€/ha)	-	140	-	140	-	140	100	140
Profit/Profit (€/ha)	3.174	2.594	2.900	2840	2400	7400	5040	5722
Profitability index/ Индекс профитабилности	44.45	38.89	29.00	22.81	29.27	53.82	29.82	30.46

Source: Prodanović and Babović, 2014

Areas in the Republic of Serbia with Organically Grown Fruits

According to the most recent data of the Ministry of Agriculture and Environmental Protection (2016), total areas in the Republic of Serbia with organic status and the period of conversion amount to 9547.82 ha with the following structure: arable land (7998.47 ha) and meadow and pastures (1549.36 ha).

Areas with organically grown fruits ranked second, just behind areas with cereals (2827.59 ha) with the total distribution on 2208.05 ha. The smallest areas with organic plantations (8.23 ha) are located in the vicinity of Belgrade; out of these areas 6.4 ha are in the status of conversion, while 1.83 ha are cultivated with organic fruits. The largest areas with organically grown fruits are located in regions of southern and eastern Serbia (1244.22 ha), then in Šumadija and western Serbia with the share of 38%, i.e. 830.61 ha (Tab.2). In the regions of southern and eastern Serbia with the most significant organic fruit production, the following districts are the leading ones: Toplica (1152.62 ha), Zaječar (29.31 ha), Jablanica (27.39 ha), Podunavlje (10.08 ha), Pčinja (8.19 ha), Bor (8.09 ha) and then Nišava (4.12 ha), Braničevo (3.63 ha) and Pirot (0.79 ha) (Tab.3).

Tab. 2. Areas with organically grown fruits in 2014

Подручја са органском производњом у 2014. години

Region / Област	Area (ha) / Површина (ha)	%
Belgrade	8.23	0
Šumadija and Western Serbia	830.61	38
Southern and Eastern Serbia	1244.22	56
Vojvodina	124.99	6
<i>Total</i>	<i>2208.05</i>	<i>100</i>

Source: Ministry of Agriculture and Environmental Protection, 2016

Tab. 3. Organic fruit production in the Southern and Eastern Serbia in 2014

Органска производња воћа у подручју јужне и источне Србије у 2014. години

Region/District Област/округ	Period of conversion (ha) Период конверзије (ha)	Organic (ha) Органска (ha)	Total (ha) Укупно (ha)
Podunavski	0.00	10.08	10.08
Braničevo	3.48	0.15	3.63
Bor	2.45	5.64	8.09
Zaječar	23.96	5.35	29.31
Toplica	344.57	808.05	1152.62
Nišava	4.12	0.00	4.12
Pirot	0.31	0.48	0.79
Jablanica	27.39	0.00	27.39
Pčinja	6.00	2.19	8.19
<i>Total</i>	<i>412.28</i>	<i>831.94</i>	<i>1244.22</i>

Source: Ministry of Agriculture and Environmental Protection, 2016

In the regions of Šumadija and western Serbia, out of the total area with organically grown fruits of 830.61 ha, the largest areas are placed in the Mačva District (389.12 ha) and the Rasina District (352.25 ha).

Somewhat smaller areas with organic fruits are located in the following Districts: Kolubara (41.49 ha), Raška (29.57 ha), Moravica (8.84 ha), Zlatibor (7.73 ha) and the Šumadija District (1.24 ha), while the smallest areas (0.39 ha) in this region are located in the Pomoravlje District (Tab.4) (Ministry of Agriculture and Environmental Protection, 2016).

The areas with organically grown fruits in Vojvodina are significantly smaller than areas in above mentioned regions and amount to 124.99 ha. The largest organic fruit growing areas in Vojvodina of 65.46 ha are located in the Srem District. Smaller areas are located in the North Bačka District (25.82 ha), then in the Central Banat District (18.12 ha), South Banat District (7.78 ha), North Banat District (5.64 ha) and the West Bačka District (1.4 ha), while the smallest areas amounting to 0.78 ha are located in the South Banat District (Tab. 5) (Ministry of Agriculture and Environmental Protection, 2016).

Tab. 4. Organic fruit production in the Šumadija and Western Serbia in 2014
Органска производња воћа у Шумадији и западној Србији у 2014. години

Region/District <i>Област/округ</i>	Period of conversion (ha) <i>Период конверзије (ha)</i>	Organic (ha) <i>Органска (ha)</i>	Total (ha) <i>Укупно (ha)</i>
Mačva	128.43	260.68	389.11
Kolubara	13.43	28.06	41.49
Zlatibor	7.07	0.66	7.73
Moravica	3.71	5.14	8.84
Raška	18.61	10.96	29.57
Šumadija	0.00	1.24	1.24
Pomoravlje	0.39	0.00	0.39
Rasina	39.56	312.69	352.25
<i>Total</i>	<i>211.19</i>	<i>619.42</i>	<i>830.61</i>

Source: Ministry of Agriculture and Environmental Protection, 2016

Tab. 5. Organic fruit production in the region of Vojvodina in 2014
Органска производња воћа у Војводини у 2014. години

Region/District <i>Област/округ</i>	Period of conversion (ha) <i>Период конверзије (ha)</i>	Organic (ha) <i>Органска (ha)</i>	Total (ha) <i>Укупно (ha)</i>
North Bačka	19.11	6.70	25.82
West Bačka	1.40	0.00	1.40
South Bačka	3.74	4.05	7.78
North Banat	1.12	4.52	5.64
West Banat	13.59	4.53	18.12
South Banat	0.78	0.00	0.78
Srem	61.82	3.63	65.46
<i>Total</i>	<i>101.56</i>	<i>23.43</i>	<i>124.99</i>

Source: Ministry of Agriculture and Environmental Protection, 2016

Conclusion

The Republic of Serbia is a country with preserved agroecosystems and with exceptionally abundant opportunities for improving not only the organic production of fruits, but the entire organic food sector. Fruit production is mostly found in the Southern region of Serbia, dominated by the production of organic raspberries, blackberries, plums, strawberries, apples and cherries. Agroecological conditions in Serbia are particularly favorable for the production of organic berries, however, raspberry production is dominant over other fruits, with the production of the "Arilje" raspberry comprising 30% of the total global production of raspberries-and Serbia being a world leader in the production of this type of fruit. Organic fruit production in Serbia occupies a surface area of 2208.05 ha, with the largest areas located in the region of Southern and Eastern Serbia (1244.22 ha). Despite our country providing exceptionally favourable natural conditions for the organic production of fruit, the full potential of unpolluted land is clearly not being utilized, therefore organic fruit producers should focus on this deficiency and improve this form of production, since the demand for organic fruit on the international market is unlimited.

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Органска производња воћа у Србији

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Сажетак

У свијету и Европи органска производња воћа бильежи континуиран раст и све већу тражњу. Агроеколошки услови у Србији пружају изузетне погодности развоја органског воћарства, нарочито јагодастих врста воћака, док водеће мјесто у органској производњи заузимају сорте малине (“Ариљска” малина чини чак 30% укупне свјетске производње ове врсте). Површине под воћњацима по концепту органске производње у нашој земљи износе 2208,05 ha налазећи се на другом мјесту, одмах иза највећих површина које заузимају житарице. Највеће површине у којима је заступљен систем органске производње воћа налазе се у региону јужне и источне Србије (1244,22 ha), а затим слиједе Шумадија и западна Србија са 830,61 ha. У овом најзначајнијем региону, водећи округ је топлички, са површином од 1152,62 ha. Иако се у Србији налазе одлични природни ресурси за органску производњу воћа, они су још увијек недовољно искоришћени од стране произвођача, што представља значајан изазов за унапређење органске производње воћа у будућем периоду.

Кључне ријечи: малине, јабуке, подручја са органском производњом, произвођачи, рентабилност

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Received: July 12, 2016
Accepted: December 17, 2016