

Doi: 10.46793/MAK2026.227S

## RASPBERRY PRODUCTION AS THE BASIS OF SUSTAINABILITY OF FAMILY HOLDINGS IN SOME REGIONS OF SERBIA

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**Abstract:** Fruit growing is one of the most important branches of agriculture in the Republic of Serbia. It is particularly important for the economic development of certain regions of Serbia. It contributes to solving economic and social problems on family holdings and stimulates the development of other economic activities. Of the total used agricultural land in Serbia, orchards account for 6.05% of the area. Raspberry is a specific fruit species that stands out from other berries in terms of its economic importance and market value. The most common variety in raspberries is Willamette, which is intended for freezing, with over 90% of the share. In 2024 the area under raspberry plantations in Serbia was 18,625 ha, the production volume was 94,026 t, and the average raspberry yield was 5 t/ha and 79.582 t of raspberries were exported, worth 247.3 million euro (SORS, 2025). Of the total exported quantities of raspberries, over 98% were exported as frozen. According to indicators and assessments based on appropriate criteria, raspberry production is economically justified and profitable for producers, providing economic security and sustainability for families for whom it is the main and only source of income. This research examined the state of raspberry production in Serbia, as well as the possibility of improving business and marketing efficiency. Based on statistical and field data, production and technical standards, a calculation procedure was used to analyze the economic effects of raspberry production and marketing, as a basis for the sustainability of family holdings in certain regions of Serbia.

**Keywords:** Raspberry, Production, Marketing, Economic effects, Sustainability, Family holdings

### INTRODUCTION

Raspberries have a long history of cultivation and development. According to legend, the scientific name of the raspberry, *Rubus idaeus*, comes from Mount Ida in Turkey (Bushway et al., 2008). Today, there are three main raspberry producing regions in the world: Russia, Europe (mainly Poland, Hungary, Serbia, Germany and the United Kingdom), and the Pacific coast of North America (British Columbia, Washington and Oregon). In eastern North America, almost all production is for the fresh market. Many other countries, such as Chile, New Zealand and Australia, also have significant production and supply the market with fresh raspberries during winter on the Northern Hemisphere (Bushway et al., 2008). The beginning of raspberry cultivation in Serbia dates back to 1880, when Serbian emigrants brought American red raspberry seedlings to the area around the city of Valjevo in Western Serbia (Milošević et al., 2025). In terms of quantity and value, it is the most

important berry fruit in Serbia. Red raspberries are easily propagated by cuttings and bear fruit early, in the second year after planting. They reach full fruit yield in the third year. Raspberry fruit is an excellent aromatic dessert fruit, with a tart and sour taste. They are used fresh and frozen, as well as for various forms of processing. The total area under raspberry plantations in Serbia in 2024 was 18.625 ha, and the average yield in 2024 was 5 t/ha (SORS, 2025). The total volume of raspberry production in 2024 was 94.026 t, which is 4.71% less than the previous year. The high growth rate of raspberry production in Western and Central Serbia is the result of the action of several factors, the most important of which are: growing demand on the world market; changing the assortment and cultivation technology; construction of new, reconstruction, expansion and modernization of existing cold storage facilities; organized appearance of leading Serbian export companies on the markets of Western Europe and America, etc. Rural areas of Serbia face serious economic challenges, including depopulation, low level of investment and limited access to infrastructure. These areas also have the potential for the development of agriculture in line with sustainable development (Vučić et al., 2025). The concept of agricultural development has been extended to sustainable agricultural and rural development (Sustainable agricultural and rural development, SARD) concept (Stojanović and Manić, 2009; Ristić, 2013). Raspberry production is the backbone of rural development in the hilly and mountainous regions of western Serbia (Glišić and Milošević, 2017; Milićević and Đurić, 2018).

Raspberry production in Serbia is concentrated in the western part of the mountainous area, i.e. in two main production regions: West Moravian (West Morava valley) and Podrinje-Kolubara (Drina and Kolubara valleys). In the first region, most of the production takes place in the vicinity of Arilje, and in the second, in the vicinity of Valjevo (Petrović et al., 2004). The economic importance of raspberries is determined by several important factors: the high and diverse use value of the fruit; high rate of profitability in favorable agroecological conditions; high product quality; supplementary employment of labor force and indirect impact on overall socio-economic development; raspberry honey production and so on (Petrović and Milošević, 2002). Raspberries are excellent for making jams, concentrations, juices, wines and other products (Read, 2023). The secret to the success of Serbian red raspberries lies in their production in small patriarchal-family plantations. These plantations are on average only 0.36 ha and rely on hand harvesting (Glišić and Milošević, 2017).

The subject of research in this paper is the area under raspberry plantations, production volume, average yield in the world and Serbia, producer and purchase prices, profitability of raspberry production, as well as the foreign trade balance of raspberries in Serbia in the last ten-year period. The aim of the research is to determine the economic justification of investments in establishing 1 ha of raspberry plantations, profitability and the possibility of improving raspberry production and marketing, as the basis for the sustainability of family holdings in certain regions of Serbia.

## **MATERIAL AND METHODS**

Data from several sources were used for research in this paper. Areas, volume of production and average yield of raspberries in the world and in Serbia, export, import and foreign trade balance of raspberries in Serbia, for the last ten-year period 2014-2023, were analyzed

based on statistical data collected from database sites Food and Agriculture Organization (FAO) and Statistical Office of the Republic of Serbia (SORS), website of the Ministry of Agriculture of Serbia and other relevant institutions. Also, based on the database of the System Market Information Agriculture of Serbia, producer prices and selling prices of raspberries on markets in Serbia were analyzed. According to data collected from producers through interviews from the area of Western Serbia, as well as professional standards, an economic analysis was made and financial indicators of raspberry production per unit area were determined. From the economic indicators, the amount of investments for the establishment of plantations and the fattening period of two years, the average annual financial result of raspberry production, the accumulative rate of invested capital, the economy of production and the return period of the investments made were determined. The results are presented in a table, and according to the appropriate criteria, an assessment is given on the profitability and economic justification of raising and exploiting raspberry plantations.

## RESULTS AND DISCUSSION

Raspberry production in the world and Europe - Raspberry is the most important berry fruit in the world, after strawberries and blackcurrants (Milošević et al., 2025). The areas, production volume, average yield in the world and indices of changes by individual years compared to the base year, during the period 2014-2023, are set out in Table 1.

Table 1. Areas and indices, volume of production, average yield of raspberries in the world and indices of change by year, during the period 2014-2023

Year	Area		Production volume		Average yield	
	ha	Index (2014=100)	t	Index (2014=100)	t ha <sup>-1</sup>	Index (2014=100)
2014	94,636	100.00	639,022.26	100.00	6.75	100.00
2015	103,078	108.92	686,471.64	107.43	6.66	98.67
2016	116,399	123.00	839,046.40	131.30	7.21	106.81
2017	120,079	126.89	818,311.60	128.06	6.81	100.89
2018	128,656	135.95	899,742.45	140.80	6.99	103.56
2019	<b>132,430</b>	<b>139.94</b>	877,834.87	137.37	6.63	98.22
2020	124,333	131.38	934,700.27	146.27	7.52	111.41
2021	118,286	124.99	921,105.83	144.15	7.79	115.41
2022	120,594	127.43	<b>959,776.75</b>	<b>150.19</b>	<b>7.96</b>	<b>117.93</b>
2023	121,056	127.92	940,979.29	147.25	7.77	115.11
<b>Average</b>	117,955	-	851,699.14	-	7.22	-

Source: Author's calculation based on FAO data, [www.fao.org/faostat/](http://www.fao.org/faostat/)

Based on the calculations in Table 1, it can be seen that the average area under raspberry plantations in the world in the period 2014-2023 was 117,955 ha, the average volume of raspberry production was 851,699,14 t, and the average yield was 7.22 t/ha. The areas increased from year to year and reached a maximum in 2019 in the amount of 132.43 ha (about 40% more than in 2014), and then slightly decreased by the end of the period. The volume of production in the mentioned period increased and reached a maximum volume in 2022 (over 50% more than in 2014), and then slightly decreased by the end of the period. The average yield fluctuated by year during the period, where in 2015 and 2019 it decreased compared to the base year (1.5-2%) and reached a maximum in 2022 and amounted to 7.96

t/ha (about 18% more compared to the base year, 2014). The amounts and structure of average areas, production volumes and yields by continent and their share in the world, in the period 2014-2023 are calculated in Table 2.

Table 2. Average areas under plantations and structure, average volume of production and structure, and average yield of raspberries by continent and in the world, during the period 2014-2023

Continent /World	Area		Production volume		Average yield (t ha <sup>-1</sup> )
	ha	Share (%)	t	Share (%)	
Europe	<b>91,396</b>	<b>77.48</b>	<b>556,743.60</b>	<b>65.37</b>	6.09
America	19,781	16.77	247,689.28	29.08	<b>12.52</b>
Asia	3,305	2.80	14,971.24	1.76	4.53
Africa	3,136	2.66	31,609.50	3.71	10.08
Australia and N. Zealand	337	0.29	685,52	0.08	2.03
World (total)	117,955	100.00	851,699.14	100.00	7.22

Source: Author's calculation based on FAO data, [www.fao.org/faostat/](http://www.fao.org/faostat/)

Based on the calculations in Table 2, it is concluded that of the average total area under raspberry plantations in the world (117,955 ha) in the period 2014-2023 year, in Europe is located 77.48% (91,396 ha). Of the average total volume of production in the world (851,699.14 t), in Europe it was produced 65.37% (556,743.60 t). The average yield of raspberries in the world was 7.22 t/ha, where the highest average yield was achieved in America in the amount of 12.52 t/ha, while in Australia and New Zealand it was only 2.03 t/ha. According to data (FAO, 2025), in the structure of total raspberry production in the world in 2023 (940,979.29 t), the Russian Federation was in first place with a share of 23.31% (219,338.33 t), in second place was Mexico with a share of 20.24% (190,411.55 t), in third place was Serbia with a share of 10.49% (98,674.00 t), followed by Poland's share of 10.21% (96,100.00 t), USA's share of 6.66% (62,640.00 t), Morocco's share of 6.50% (61,181.00 t), Portugal's share of 3.79% (35,660.00 t), Spain's share of 3.51% (33,070.00 t) and other countries with a share of 15.29% (143,905.02 t). In the above countries, almost all production is carried out in the open field, and recently, production under cover - plastic tunnels or roof type - is more common.

Raspberry cultivation in Russia has a centuries-old tradition. Although Russian raspberry production is the largest in the world, the entire production is consumed on the domestic market - fresh and processed (Vapa-Tankosić et al., 2015). In Poland, the focus is on the sale of frozen raspberries, and exports are mainly directed to Germany, France and Belgium. In the USA, raspberry areas and production have had an almost continuous growth trend since the mid-1990s, which continues today. In Spain, raspberries have been grown for more than three decades, both in greenhouses and outdoors (Milošević et al., 2025). Chile is a traditionally important producer in the raspberry market, with significant investments in product quality through the establishment of traceability systems. Ukraine has become a rapidly growing exporter of frozen raspberries in recent years, with continued export growth and expansion into new markets such as the EU, the USA and Canada. In Portugal, it was historically the primary raspberry variety for jam production, while it is now the dominant variety for fresh consumption (Milošević et al., 2025). Mexico, as a relatively new player in the global raspberry market, is investing significantly in more modern plantations. The focus is on fresh raspberries, and production is mainly under

greenhouses and foils, as much as 80%, with high yields of 15-20 t/ha, hand-picking and packaging in the field itself. An analysis of the average total areas, production volumes and average yields in selected European countries and the share in Europe, during the period 2014-2023 is given in Table 3.

Table 3. Average areas and structure under plantations, average volume of production and structure and average yield of raspberries by selected European countries and in Europe, during the period 2014-2023

Country /Europe	Area		Production volume		Average yield (t ha <sup>-1</sup> )
	ha	Share (%)	t	Share (%)	
Poland	<b>25,418</b>	<b>27.81</b>	105,867	19.02	4.17
Russia	24,894	27.24	<b>171,774</b>	<b>30.85</b>	6.90
Serbia	19,876	21.75	107,289	19.27	5.40
Ukraine	4,960	5.43	33,664	6.04	6.79
Spain	2,243	2.45	37,720	6.78	16.82
United Kingdom	1,446	1.58	16,251	2.92	11.24
Portugal	1,170	1.28	22,274	4.00	<b>19.04</b>
Other countries	11,389	12.46	61,905	11.12	5.44
Europe (total):	91,396	100.00	556,744	100.00	6.09

Source: Author's calculation based on FAO data, [www.fao.org/faostat/](http://www.fao.org/faostat/)

According to the analysis (Table 3), the average total area under raspberry plantation in Europe during the period 2014-2023 year, amounted to 91,396 ha, where the dominant place belongs to Poland, a share of 27.81% (25,418 ha). Out of the average total volume of production in Europe (556,744 t), the largest volume was achieved in Russia, a share of 30.85% (171,774 t), and Serbia is in third place and in terms of area, a share of 21.75% (19,876 ha) and in terms of production, a share of 19.27% (107,289 t). Although Poland has the leading place in terms of areas under raspberry plantations in Europe, on the other hand, this country achieved the lowest average yield in Europe, in the amount of 4.7 t/ha during the analyzed period 2014-2023 year.

*Raspberry production in Serbia* - Serbia is one of the global leaders in the production of frozen raspberries, and almost all of its production is exported to the markets of developed countries. The average areas, average production volume, average yield by region and their share in Serbia, during the analyzed period 2014-2023, are calculated in Table 4.

Table 4. Average areas and structure, average volume of production and structure, and average yield by region and in Serbia, during the period 2014-2023

Region /Serbia	Area		Production volume		Average yield (t ha <sup>-1</sup> )
	ha	Share (%)	t	Share (%)	
Belgrade region	598.40	2.90	2,991.60	2.71	5.00
Vojvodina Region	1,002.00	4.86	5,254.80	4.75	5.24
The region of Šumadija and Western Serbia	<b>16,894.00</b>	<b>81.87</b>	<b>94,123.30</b>	<b>85.16</b>	<b>5.57</b>
Eastern Region and Southern Serbia	2,140.40	10.37	8,162.30	7.38	3.81
Serbia (total):	20,634.80	100.00	10,532.00	100.00	5.36

Source: Author's calculation based on SORS data, Statistical yearbooks, 2014-2023, [www.stat.gov.rs](http://www.stat.gov.rs)

Raspberry production in Serbia is territorially concentrated in: Western Serbia - Arilje, Požega, Užice, and Ljubovija), Northwestern Serbia - Valjevo, Šabac, Osečina) and Southwestern Serbia - Brus, Aleksandrovac and Kuršumlja (Veljković et al., 2025). According to the calculation in Table 4, looking at the average by region for the period 2014-2023, the largest areas under raspberry plantations are located in the Shumadija and Western Serbia Region, with a share of 81.87% (16,894 ha) in the total average areas under raspberry plantations in Serbia (20,634.80 ha). Also, the largest average total volume of raspberry production is in the same region, with a share of 85.16% (94,123.30 t). The average raspberry yield in Serbia during the analyzed period 2014-2023 was 5.36 t/ha, with the highest average yield in the Shumadiya and Western Serbia Region at 5.57 t/ha and the lowest in the Eastern and Southern Serbia Region at 3.81 t/ha.

Over 80,000 holding s in Serbia produce raspberries, the dominant variety is Willamett with a 95% share in total production, and it is mainly intended for freezing. Over 95% of raspberry production in Serbia is purchased by a large number of cold stores. Over 500 cold stores are involved in the purchase process, starting from micro-ones, with a few dozen tons of capacity, which serve as exclusive intermediaries, to the largest ones, with a capacity of several thousand tons, which produce and market final products (CCIS, 2025). In the period 2014-2023, average annual producer prices fluctuated by year from a low of 0.82 euro per kilogram in 2018 to a high of 4.12 euro per kilogram in 2022. The average selling price of raspberries at the Kvantaška market in Belgrade in the period 2014-2023 fluctuated by year, from a low of 1.66 euro per kilogram in 2018 to a high of 5.83 euro per kilogram in 2022. At green markets, selling prices of raspberries also varied by year, from a low of 1.91 euro per kilogram in 2018 to a high of 6.03 euro per kilogram in 2022 (<https://www.stips.minpolj.gov.rs/>).

### Indicators of Profitability of Raspberry Production

Production, financial and market conditions, input and output price ratios, and other factors greatly influence the profitability of investing in this production (Galić et al., 2014; Bodiroga and Sredojević, 2017). According to data collected through interviews with producers in practice on the holding s of Western Serbia, as well as professional standards of raspberry production technology for the Willamett variety according to the vertical spalir system, with a planting distance of 2.50 x 0.25 m, the investment in raising 1 ha of plantations of this fruit species was determined (Table 5). The planned number of seedlings is 16.000, the planting period lasts two years, and the "small crop" of raspberries arrives in the second year after planting. Investments are determined by an interest rate of 8%.

Table 5. Total investments in establishing and growing 1 ha of raspberry plantations (Area: 1 ha; Cultivation system: spalir; 16.000 seedlings/ha)

Economic parameters	Years of establishment and raising of plantations (m)			Total (€)
	0	1	2	
Costs of materials	4,000.00	680.00	820.00	5,500.00
Labor work	340.00	330.00	260.00	930.00
Machine operation	250.00	240.00	190.00	680.00
Investing in an irrigation system	-	3,300.00	-	3,300.00
Design, supervision and control	220.00	200.00	180.00	600.00

Construction of auxiliary facilities, roads, etc.	150.00	150.00	200.00	500.00
Total investments from 1 to 7	4,960.00	4,900.00	1,650.00	11,510.00
The value of a “small” raspberry yield	-	-	530.00	530.00
Adjusted total investments (7-8)	4,960.00	4,900.00	1,120.00	10,980.00
Correction factor (1,08 <sup>m</sup> )	1.1664	1.0800	1.0000	-
Total investments at the beginning of the plantation exploitation period	5,785.00	5,292.00	1,120.00	<b>12,197.00</b>

Source: Author's calculation based on average amounts in the practice of raising raspberry plantations on family holdings in Western Serbia

With the calculative procedure in Table 5, investment investments increased by the appropriate amount of interest, at the end of the raspberry planting period (i.e. at the end of the second year), were determined in the amount of 12,197.00 euro per hectare. According to research results, the application of irrigation to smaller areas gave positive results in the form of high and uniform yields of quality raspberry fruits (Gajić et al., 2013). For the purposes of this research, based on data from the practice of raspberry production in Western Serbia, a calculation of individual and total costs of raspberry production per unit area was compiled. Based on the technological map, that is, the list of work processes (which was omitted due to limited space), from the spring work in the raspberry orchard, ending with the raspberry harvest, the amounts and structure of the total costs of raspberry production on an area of 1 ha were determined (Table 6).

Table 6. Total costs of raspberry production on a family holding on an area of 1 ha

Cost elements	Amount (€ ha <sup>-1</sup> )	Share (%)
Costs of materials (fertilizer, pesticides, water. etc.)	2,370.00	22.00
Machine operation	2,630.00	24.00
Labor work (own and hired)	4,870.00	45.00
Other costs (amortization, contractual obligations, etc.)	930.00	9.00
<b>Total costs (1+2+3+4):</b>	<b>10,800.00</b>	<b>100.00</b>

Source: Author's calculation based on raspberry production data on family holdings in W. Serbia

The total costs, which include the costs of: materials, machine operation, labor work engaged in the work in the raspberry plant and other costs, during regular raspberry production, amount 10,800 euro per hectare (Table 6). Given that in this area, raspberries are still harvested by hand, in the structure of total costs, labor costs have the largest share (45%). Based on the average yield of 5.3 t achieved in practice on the analyzed holding s in the Arilje area, as well as the average purchase price of raspberries of 4.0 euro per kilogram, the production value for one production cycle was determined. Of the economic indicators, the following were determined: financial result, cost price of one kilogram of raspberry, economy coefficient, accumulative rate and investment return period (Table 7).

Table 7. Economic indicators of planting and production of raspberries on a family holding

<b>Economic indicators</b>	<b>Amount</b>
I Total investments in raising raspberry plantations	12,197.00 €
II Economic indicators of annual raspberry production	
Production value (5,300 kg * 4.0 € kg <sup>-1</sup> )	21,200.00 €
Total costs	10,800.00 €
Financial result: profit/loss (1-2)	10,400.00 €
Cost price of 1kg of raspberries (2/5,300 kg)	2.04 €
Efficiency coefficient (1/2)	1.96
Accumulation rate (3/1)	85%
Pay back period (1/3)	1.17 years

Source: Author's calculation based on raspberry production data on family holdings in W. Serbia

Using the calculative procedure in Table 7, the production value was determined in the amount of 21,200 euro per hectare. The difference between the production value and total costs gives a positive financial result (profit) in the amount of 10,400 euro per hectare. The cost of raspberries is 2.04 euro per kilogram and is much lower compared to the selling (repurchase) price of 4.0 euro per kilogram, which is favorable for raspberry producers. The efficiency coefficient is 1.96 and is far above the minimum amount of 1. The accumulation rate shows that for every 100 euro of invested capital, about 85 euro is achieved for accumulation. The return time of invested capital in establishing and growing raspberry is 1.17 years, i.e. the invested capital can be recovered in the second year of exploitation of raspberry plantations. Based on the established indicators and assessments based on appropriate criteria, it can be concluded that raspberry production is economically justified, highly profitable for producers, and provides economic security and sustainability for families for whom it is the main and only source of income. According to the latest data, there are around 500 cold storage facilities in Serbia with a capacity of 600,000 t that are engaged in fruit freezing (CCIS, 2025). During the season, these facilities are regularly inspected, and the Ministry of Internal and Foreign Trade is solely responsible for illegal purchase points, which represent one of the biggest problems during the raspberry harvesting and purchase season.

### **Foreign Trade Balance of Serbian Raspberries**

The sale of raspberries on the domestic market is negligible. Almost all frozen raspberries are exported from Serbia. In 2024, 79,582 t of raspberries were exported from Serbia, worth 247.3 million euro (SORS, 2025). Raspberries were mainly exported frozen (almost 99%). The largest quantities of raspberries were exported to the European Union countries: Germany, France, Belgium, the Netherlands, Austria and Sweden. Of the other countries, raspberries were exported to the USA, Great Britain, Switzerland, Canada, Argentina and others. Germany and France are the largest buyers of Serbian raspberries and exports to these two countries account for almost 50% of total raspberry exports. In the value of total fruit exports in 2024, which amounted to 746.5 million euro, raspberries accounted for 33.1%. In 2024, into Serbia were imported 2.319 t of raspberries, with an import value of 6.3 million euro (SORS, 2025). The largest amount of raspberries was imported from Bosnia and Herzegovina, over 50% of the total imported raspberries, in the amount of 1.385 t and a value of 3.5 million euro, and significantly less from other countries. The average

amounts of exports, imports and foreign trade balance of raspberries of Serbia for the period 2014-2023 are determined in Table 8.

Table 8. Average amounts of export and import of raspberries to the European Union and the world and the foreign trade balance of raspberries in Serbia, during the period 2014-2023

Indicators	Export		
	World	EU	EU share in the world (%)
Fresh raspberries (t)	3,513.3	3,489.3	99.32
Frozen raspberries, sugar-free (t)	90,993.2	76,344.4	83.90
Fresh raspberries (in 000 USD)	6,914.2	6,850.0	99.07
Frozen raspberries, sugar-free (in 000 USD)	284,089.1	231,336.4	81.43
<b>Total (in 000 USD)</b>	<b>291,003.3</b>	<b>238,186.4</b>	<b>81.85</b>
	Import		
Fresh raspberries (t)	103.7	88.2	85.05
Frozen raspberries, sugar-free (t)	6,801.3	1,054.9	15.51
Fresh raspberries (in 000 USD)	370.4	272.9	73.68
Frozen raspberries, sugar-free (in 000 USD)	17,776.4	3,136.6	17.65
<b>Total (in 000 USD)</b>	<b>18,146.8</b>	<b>3,409.5</b>	<b>18.79</b>
	Foreign trade balance		
Fresh raspberries (t)	3,409.6	3,401.1	99.75
Frozen raspberries, sugar-free (t)	84,188.9	75,289.5	89.43
Fresh raspberries (in 000 USD)	6,543.8	6,577.1	= 100.00
Frozen raspberries, sugar-free (in 000 USD)	266,312.7	228,199.8	85.69
<b>Total (in 000 USD)</b>	<b>272,856.5</b>	<b>234,776.9</b>	<b>86.04</b>

Source: Author's calculation based on SORS data, <https://data.stat.gov.rs/>

Based on the calculations in Table 8, during the period 2014-2023, the average export of frozen raspberries from Serbia amounted to 90,993.2 t and 3,513.3 t of fresh raspberries, and the average value of total exported raspberries amounted to over 291 million US dollars. Of this amount, over 99% of raspberries were exported to the EU, and about 1% to other countries in the world. The average import of frozen raspberries to Serbia in the same period amounted to 6,801.3 t and 103.7 t of fresh raspberries, and the average value of total imported raspberries amounted to 18.1 million US dollars. Therefore, during the analyzed period, Serbia's raspberry exports and imports achieved a positive foreign trade balance in the amount of 84,188.9 t of frozen raspberries and 3,409.6 t of fresh raspberries, with a total value of 272.8 million US dollars. Improving the frozen raspberry value chain requires strengthening the market position, as well as introducing innovative value-adding phases, meeting the necessary standards, but also a joint approach, which would to some extent solve the problem of low bargaining power (Sredojević et al., 2013; Milić et al., 2017). Value addition is primarily achieved through new types of processing, such as freeze-drying, delivery of raspberries in "retail-ready" packaging, etc. A certain number of cold storage exporters have managed to bypass intermediaries and add about 20% to the selling price through packaging in smaller packages. However, the share of such exports in total frozen raspberry exports is still low and does not exceed 10 to 15% (CCIS, 2025). For higher value-added products, key activities are introducing new phases to finalize the

product, mastering finishing and processing techniques, dissemination of market information, promotion and branding of final products (Sredojević et al., 2013). The export of raspberries and other berries from Serbia generates a significant foreign exchange inflow, and therefore efforts should be made to preserve partnership relations with subcontractors and buyers abroad. Continuity and constant work on improving production and marketing are needed, in which all actors in the Serbian raspberry value chain should participate.

## CONCLUSION

Raspberry is a specific fruit species that stands out from other berries in terms of its economic importance and market value in Serbia. The total area under raspberry plantations in 2024 in Serbia was 18,625 ha, the production volume was 94,026 t, and the average raspberry yield was 5 t/ha. The most common variety in raspberry plantations is Willamette, which is intended for freezing, with over 90% of the share. In 2024 from Serbia were exported 79.582 t of raspberries in worth 247.3 million euro. Of the total exported quantities of raspberries, over 98% were exported frozen. During the period 2014-2023 the average value of total exported raspberries from Serbia was over 291 million US dollars. During the same period, Serbia's raspberry exports and imports achieved a positive foreign trade balance worth a total of 272.8 million US dollars. Today, small quantities of fresh raspberries are exported from Serbia. They are mainly sold on the domestic market, 2-4% of total production.

However, the transition to the production and marketing of fresh raspberries for consumption requires significant investments, primarily the introduction of a new assortment, to obtain larger fruits more suitable for consumption and a longer shelf life, then more intensive irrigation, as well as production in greenhouses in order to extend the season and improve yield and quality. Although it is one of the world's largest raspberry producers, Serbia hardly produces or exports jams, juices and other raspberry products. The demand for organic raspberries is still higher than the supply, and the prices achieved are significantly higher than the frozen segment. A series of irregularities accompany the harvesting and purchase of raspberries in Serbia, and the biggest problem is still unregistered purchase points.

According to established indicators and assessments based on appropriate criteria, raspberry production in the current conditions in Serbia is economically justified, profitable and sustainable for producers, providing economic stability and security for families for whom it is the main and only source of income. Stronger control in the value chain, with clear traceability by stage, provides the opportunity for better quality and compliance with EU standards. High quality protected geographical origin, such as Arilje raspberries form the basis for strengthening the competitive position in the international market. In order to further improve and preserve the existing competitive position, the Serbian raspberry sector should focus on higher levels of added value and market diversification. The future and sustainability of family holding s focused on raspberry production, as well as the Serbian raspberry sector, lies in further strengthening existing and developing new value chains.

## ACKNOWLEDGMENT

This paper is a result of the research within the "Treaty of realization and financing of scientific research work in 2025 between the Ministry of Science, Technological Development and Innovation of the Republic of Serbia and the Faculty of Agriculture, University of Belgrade", Number 451-03-47/2023-01/200116

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