Original scientific paper | DOI 10.63356/agrores.2025.010

Plum market trends in Serbia

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Abstract

The authors used a quantitative research method to analyze the market trends of fresh plums in Serbia. For this purpose, they used competitiveness parameters that were processed using standard descriptive statistics tools. The goal was to review the foreign trade of plums, as well as to determine the trend of competitiveness indicators for this fruit. The results show that during the analyzed ten-year period from 2014 to 2023, there was a slight downward trend in all production parameters of this fruit, but that Serbia was self-sufficient in its production, as well as price-competitive on the world market. Also, a downward trend in certain competitiveness indicators was observed, which indicates a further strengthening of the market position of this fruit species. Further research should be focused on determining the causes of the trend in competitiveness indicators, as well as ways to strengthen them.

Key words: plum, market, competitiveness, export, import

INTRODUCTION

Plum is one of the most common fruit species in Serbia. Its area in 2023 was 74.418 ha, while production was at the level of 362.713 tons, according to available data from the Republic Statistical Office (2025). According to the same source, the production projection for 2024 is 387.227 tons with a yield of 5,2 t/ha. In 2023, 12.489.827 tons of plums were produced in the world, and the largest producer was China, whose production of this fruit species was far ahead of all countries in the world, at 6.888.895 tons, or more than half of the world's production (FAOSTAT, 2025). The ancient Slavs grew plums in their homeland, although the true origin of this culture is from Asia Minor (Drkenda et al., 2010). Plums are valued for fresh consumption and also for the fact that various products can be obtained from them (jams, compotes, jellies, candied fruit, frozen fruit, liqueurs, brandies) (Butac, 2010). They are the type of fruit with the highest nutritional value and with a high content of carbohydrates, minerals and vitamins that stimulate the human body health (Milošević & Milošević, 2018; Botu & Botu, 2007). According to Prodanović (2015), the economic importance of plum production is reflected in enabling entry into new markets, and increasing employment and the level of capacity utilization in agriculture, which in this way stimulate the development of entrepreneurship and the economy as a whole. The economics of plum production are influenced by numerous factors, the most important of which are: variety, location, agricultural technology, production costs, sales prices (Prodanović et al., 2017). In Serbia, certain varieties have a tradition of production and special importance in further processing (Cvetković & Glišić, 2020). It should also be noted that a modern cultivation system allows for rapid achievement of full yield, regular fertility and high fruit quality (Glišić et al., 2016).

The agricultural market is one of the most controlled. This arises primarily from the need to maintain food security in a given territory. Trade in agricultural products has become global, where the market policy implemented in a country can with great certainty affect the world market (Kovačević &

Jeločnik, 2022). As the same authors conclude, the specificities of the market and trade in agricultural products arise from the specificities of agricultural production, causing a number of similarities, but also differences in relation to other areas of trade. Some of the authors have previously addressed these specificities in their research (Matić, 2004; Zakić & Stojanović, 2008; Deckler, 2015; Kovačević & Jeločnik, 2022).

When it comes to trade parameters, according to available FAOSTAT (2025) data, we can conclude that Chile, with exports of 197,674 tons, is the world's largest plum exporter in 2023, while China, in addition to being the largest producer, is also the largest importer of this fruit species, with 89,610 tons in the same year. In their previous research, some of the authors primarily focused on the analysis of individual fruit species (Maksimović, 2012; Keserović et al., 2014; Vlahović et al., 2015; Milić et al., 2016, Stanković & Vaško, 2018; Užar et al., 2019; Nedeljković & Potrebić, 2020; Vlahović & Radojević, 2024; Erokhin et al., 2024). In previous research by domestic and foreign authors, there was no detailed research related to the analysis of foreign trade parameters and competitiveness of plums in Serbia and the region, i.e., some authors analyzed and predicted trends in plum production indicators. Thus, Nedeljković (2021) using quantitative research methods predicts the growth trend of plum production indicators in the Republika Srpska in the period from 2020 to 2024.

In accordance with the above, the aim of the research is to examine the foreign trade exchange of plums in Serbia, that is, the parameters of the competitiveness of this fruit species on the world market through pre-defined indicators and thereby determine its global competitiveness.

MATERIAL AND METHODS

For the purpose of the set goal, the paper will use an adequate methodology, which is reflected in the application of descriptive statistics for the assessment of the analysis of the movement of production and foreign trade parameters of plums in Serbia, i.e. the quantification of its changes (average, variation interval, coefficient of variation, rate of change). The measurement of the competitiveness of plums on the world market was carried out using the following indicators: market share, export price competitiveness, self-sufficiency index, absorptive power of the market, import dependence index.

Market share is expressed through the degree of importance of a country in total world exports and is calculated as follows:

- $\text{Market share} = (\text{Export of land})/(\text{World exports}) \times 100$

Export price competitiveness is a relative indicator and is represented through its index as follows:

- $\text{Index of export price competitiveness} = (\text{Export price})/(\text{Competitive price}) \times 100$

The import dependency index is an indicator that indicates the measure of a country's dependence on imports and is calculated as follows:

- $\text{Import dependency index} = (\text{Import})/(\text{Production} + \text{Import} - \text{Export}) \times 100$

The self-sufficiency index shows how capable a country is of meeting its needs through domestic production, or rather, it analyzes a country's independence in supplying certain products. It is expressed as follows:

- $\text{Self} - \text{sufficiency index} = (\text{Production})/(\text{Production} + \text{Import} - \text{Export}) \times 100$

The absorptive power of the market is an absolute indicator that represents the power of the domestic market to absorb a certain quantity of a product. It is obtained as follows:

- $\text{Absorptive power of the market} = \text{Production} + \text{Import} + \text{Export}$

For the purposes of the research, available data from the Statistical Office of the Republic of Serbia (2025), the Food and Agriculture Organization (2025), as well as data from the International Trade Center (2025) for the period from 2014 to 2023 were used. In addition, available scientific and professional literature by domestic and foreign authors in the subject area was used. The results are presented in tables and graphs in the remainder of the text of the paper.

RESULTS AND DISCUSSION

The average plum area in Serbia in the observed period exceeded 73.200 ha and showed stability in its movement in the analyzed period. The highest plum area was recorded at the beginning of the analysis period in and the lowest in 2017. We note that in the future period, a slight tendency to decrease the area under plums in Serbia is expected, which is -0,18%. As with the area under plums, the production of this fruit has a negative trend (-1,66%), but also greater instability in the analysis period measured by the correlation coefficient (19,13%). The average quantity of plums produced in Serbia for the observed ten-year period was 441.420,3 tons. The highest production was in 2020 and the lowest in 2017, when the smallest areas under this fruit were recorded. The average plum yield varied between 4.6 t/ha recorded in 2017 to a maximum of 8 t/ha in 2020, when the highest production was recorded. Also, as with the previous two parameters, the yield also recorded a slight negative trend (-1,47%) but a relative instability in the movement of 19,50% (Table 1).

Table 1. Dynamics of plum production parameters in Serbia (2014-2023)

	Average	Variation interval		Coefficient of variation (%)	Rate of change (%)
		Min.	Max.		
Areas (ha)	73.200,10	72.024,00	75.626,00	1,62	-0,18
Production (t)	441.420,3	330.582.000,00	582.547.000,00	19,13	-1,66
Yield (t/ha)	6,05	4,60	8,00	19,50	-1,47

Source: Author's calculation based on data RZS RS

When it comes to foreign trade parameters, it is important to mention that a surplus of 10.843 tons was achieved in trade in this fruit, i.e., in the analyzed period, the average plum export was 20.166,7 tons, while imports amounted to 932,3 tons. The highest export was recorded in 2020, when the highest plum production in Serbia was recorded, while the lowest was in 2017, when the lowest plum production and yield were recorded. Exports had a relatively stable trend in the analyzed period, but still showed a decreasing trend of -2,72% measured by the annual rate of change. In relation to exports, plum imports showed great instability in their trend from 2014 to 2023, as much as 82,34%, but also a growth trend of 3.76%. Plums were imported the most in 2018, which is logical considering that the previous year, 2017, was the year with the lowest production and yield. The lowest import was in 2019 (Table 2).

Also, from the following Table 2 we can see that world plum exports had an upward trend for the analyzed ten-year period (3,56%), while the trend in world exports was relatively stable in the observed period (9,98%). The average world plum export in the observed period was 771.341,2 tons, which shows that exports in Serbia were at the level of 2,61%. The maximum of world exports was reached in the last year of the analyzed period, and the minimum at the beginning of it.

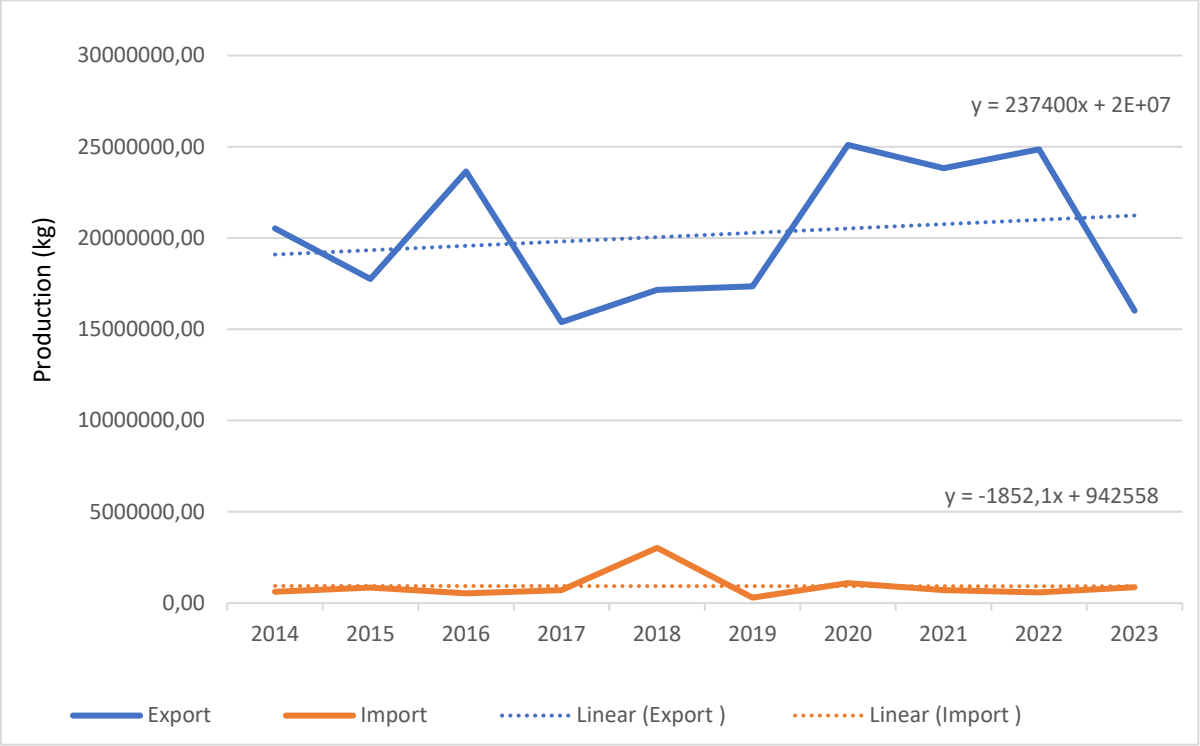
Table 2. Dynamics of foreign trade parameters of plums in Serbia (2014-2023)

	Average	Variation interval		Coefficient of variation (%)	Rate of change (%)
		Min.	Max.		
Export (kg)	20.166.704,50	15.393.737,00	25.101.876,00	19,19	-2,72
Import (kg)	932.371,10	299.323,00	3.028.500,00	82,34	3,76
World exports (kg)	771.341.200,00	643.259.000,00	881.045.000,00	9,98	3,56
Export price (EUR/kg)	0,527	0,39	0,63	17,09	1,32
Export price of competitors (EUR/kg)	1,00	0,86	1,16	8,19	2,01

Source: Author's calculation based on data ITC, 2024

The export price of plums in Serbia varied from 0,39 eur/kg in 2019 to 0,63 eur/kg in 2023 with a relatively stable trend over the analyzed ten-year period. The competitive price (world) was on average higher than the price in Serbia by some 0,48 eurocents in the period 2014-2023 and more stable in its trend over the same period with a slight upward trend of 2,01% (Table 2).

A visual representation of the foreign trade balance is provided by Graph 1, and the previously calculated foreign trade parameters represent the input data for calculating and reviewing the given parameters of plum competitiveness in Serbia.



Graph 1. Plum import and export trends in Serbia

According to Vlahović & Radojević (2024), the basic measure of agricultural competitiveness is the ability of producers and companies to reduce operating costs and improve the quality of their products. One of the indicators of competitiveness is the market share, which in Serbia, when it comes to plums, was 2,63%. Market share has a relatively unstable trend (20,31%) but also a tendency to decline in the future period of -6,06%. Market share in Serbia, as the degree of importance of a country in the total export of the region or the world, was the highest in 2016 (3,20%), and the lowest in the last year of the observed period, namely 1,81% (Table 3).

The largest export of plums, measured quantitatively and achieved in 2023, was to Bosnia and Herzegovina (3.381.781 kg), while the largest import in the same year was recorded from Moldova (493.410 kg). (International Trade Center, 2024) According to the same source, other significant export destinations are Germany (3,053,196 kg), Austria (1,817.43 kg), Croatia (1,586,016 kg) and Montenegro (1,247.813 kg).

The relative competitiveness of a country in exports compared to other countries is provided by the obtained export price competitiveness index, which in the case of Serbia in the analyzed period was 53,03% (Table 3). It shows the ability of a country to sell its products at competitive prices on the international market. In this case, it shows a slight downward trend for the analyzed period and a relatively stable trend. Its improvement can be achieved by strengthening the efficiency of production itself, reducing costs, and innovations that enable a greater breakthrough on the market for a certain group of products.

Also, the following table 3 provides data on the import dependence index, which shows whether the country is dependent on imports, in this case plum imports from abroad. Given that this relative indicator, or its average, is only 0,30%, we can say that Serbia is not dependent on imports of this fruit species, but its movement throughout the entire analyzed period shows significant fluctuations.

Also, a slight growth trend of this index in the past ten-year period of 5,44% is noticeable. According to the calculated average self-sufficiency index of 104,6%, we can conclude that Serbia can independently meet its needs for this fruit species. A very stable movement of this parameter is noticeable throughout the observed period, but also a slight downward trend in the following period. The average Absorptive power of the market of the plum market in Serbia is 422.185,9 tons in the analysis period. It showed a relatively stable movement measured by the correlation coefficient, although with a downward trend of -1,6% (Table 3).

Table 3. Dynamics of plum competitiveness parameters in Serbia (2014-2023)

	Average	Variation interval		Coefficient of variation (%)	Rate of change (%)
		Min.	Max.		
Market share (%)	2,635	1,818	3,206	20,31	-6,064
Index of export price competitiveness (%)	53,036	40,206	65,268	17,84	-0,676
Import dependency index (%)	0,229	0,055	0,728	81,13	5,444
Self-sufficiency index (%)	104,612	103,147	105,929	0,81	-0,064
Absorptive power of the market (kg)	422.185.966,6	315.893.953	558.545.781	19,48	-1,593

Source: Author's calculation

CONCLUSION

After the above-mentioned in the paper, we can conclude that the production of plums in Serbia is one of the most common productions in fruit growing. Plum production is sufficient for the country's needs, i.e. it is not export-dependent, and according to the established surplus on the market, Serbia can be considered a stable exporter of this fruit. However, the analysis also determined a tendency to decline in certain competitiveness parameters such as market share, export price competitiveness, self-sufficiency and market absorption capacity, so that in the future it is necessary to strengthen its competitive capabilities in the application of modern production technology, greater market penetration, as well as the development of the domestic market in the form of strengthening and expanding existing processing capacities.

ACKNOWLEDGEMENT

Paper is a part of research financed by the MSTDI RS, agreed in decision no. 451-03-136/2025-03/200009 from 4.2.2025.

REFERENCES

Botu, I., & Botu, M. (2007). Limites and perspectives in plum cultivar breeding using conventional methods. *Acta Horticulturae*, 734, 321-325.

Butac., M. (2010). Ameliorarea prunului (Plum Breeding). Universitatii din Pitesti, p. 10.

Cvetković, M., & Glišić., I. (2020). Šljiva - tehnologija gajenja. Poljoprivredni fakultet, Univerzitet u Banjoj Luci, p. 11.

Declerk, F. (2015). Agricultural and Soft Markets. In: Handbook of Multi-commodity Markets and Products: Structuring, Trading and Risk Management, (eds.) Roncoroni, A., Fusai, G., Cummins, M., John Wiley & Sons Ltd., Chichester, UK.

Drkenda, P., Burkić, K., Kurtović, M., & Memić, S. (2010). Karakteristike rasta indukovanih sorti šljive, XXI naučno-stručna konferencija poljoprivrede i prehrambene industrije, Zbornik radova, p. 204.

Erokhin, V., Ivolga, A., Lazareva, N., Germanova, V., Igonina, E., & Sofin, A. (2024). China - Eastern Europe Agricultural Trade: (Dis)Advantages and Policy Responses. *Research on World Agricultural Economy*, 5(2), 82-101.

Glišić, I., Milošević, T., Ilić, R., & Paunović, G. (2016). Bujnost, prinos i masa ploda šljive (*P. domestica* L.) u zavisnosti od razmaka sadnje. Zbornik radova XXI savetovanja o biotehnologiji, 21(23), 269-276.

Statistical Office of the Republic of Serbia (2025). Available at: https://data.stat.gov.rs/Home/Result/130102?languageCode=sr-Cyrl (accessed on 12 February 2025)

Food and Agriculture Organization (2025). Available at: https://www.fao.org/faostat/en/#rankings/commodities_by_country (accessed on 9 February 2025)

International Trade Center (2025): Available at: https://www.intracen.org/ (accessed on 4 February 2025)

Keserović, Z., Magazin, N., Kurjakov, A., Dorić, M., & Gošić, J. (2014). Poljoprivreda u Republici Srbiji – voćarstvo. Statistički zavod Srbije, Beograd.

Kovačević, V., & Jeločnik, M. (2022). Tržište i trgovanje poljoprivrednim proizvodima. Institut za ekonomiku poljoprivrede, Beograd.

Maksimović, B. (2012). Primena marketing koncepcije u funkciji unapređenja uvoza voća i prerađevina iz Republike Srbije. Doktorska disertacija, Ekonomski fakultet, Univerzitet u Novom Sadu.

Matić, M. (2004). Specifičnosti poljoprivrede i važnost agroekonomske struke u tržišnim uvjetima poljoprivredne proizvodnje. *Agronomski glasnik*, 66(6), 455-465.

Milić, D., Lukač Bulatović, M., & Vučičević, V. (2016). Tendencije kretanja površina i proizvodnje voća u Vojvodini. *Agroekonomika*, 45(71), 57-66.

Milošević, T., & Milošević, N. (2018). Plum breeding. In: Advances in Plant Breeding Strategies: Fruits. Verlag, New York: Springer International Publishing AG, part of Springer Nature, 3, 162-215.

Nedeljković, M. (2021). Forecasting of plum production in Republic of Srpska. Proceedings of X International Symposium on Agricultural Sciences AgroReS 2021, 2010-2019.

Nedeljković, M., & Potrebić, V. (2020). Forecasting of Apple Production in the Republic of Srpska. *Western Balkan Journal of Agricultural Economics and Rural Development*, 2(1), 21-29.

Prodanović, R. (2015). Uticaj relevantnih faktora na proizvodnju, preradu i promet organskog voća. Doktorska disertacija, Novi Sad, Fakultet za ekonomiju i inženjerski menadžment.

Prodanović, R., Ivanišević, D., Jahić, M., & Kharud, M. M. (2017). Ekonomika proizvodnje šljive na malim gazdinstvima. *Ekonomija, teorija i praksa*, 10(2), 1-10.

Stanković, D., & Vaško, Ž. (2018). Forecasting Trends in the Apple Production in Bosnia and Herzegovina until 2020. *Agroznanje*, 19(1), 8-16.

Užar, D., Tekić, D., & Mutavdžić, B. (2019). Analiza i predviđanje proizvodnje jabuke u Republici Srbiji i Bosni i Hercegovini. *Ekonomija, teorija i praksa*, 12(4), 1-10.

Vlahović, B., Puškarić, A., & Veličković, S. (2015). Izvoz jabuke iz Republike Srbije: Stanje i tendencije. *Agroekonomika*, 44(65), 10-21.

Vlahović, B., & Radojević, V. (2024). Tržište kruške u Republici Srbiji. *Agroekonomika*, 52(104), 27-46.

Zakić, Z., & Stojanović, Ž. (2008). Ekonomika agrara. CID Ekonomskog fakulteta, Univerziteta u Beogradu, Beograd.