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INFLUENCE OF THE COVID-19 PANDEMIC ON THE IMPORT AND EXPORT OF ROSES IN SERBIA

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ABSTRACT

Roses are an important part of the flower production in Serbia. The rose cut flowers, grafted plants and rootstocks are produced for both domestic and international market. During the past three years, Covid-19 pandemic influenced production and consumption of roses worldwide, so the aim of this study was to determine how the pandemic influenced export and import of roses in Serbia. In order to obtain more accurate data, the roses trade in Serbia during pandemic years (2020 and 2021) was compared to the average data for five year period before the pandemic (2015-2019). The rose plants (both grafted and rootstocks) have considerably larger share in rose export compared to cut roses. Before the pandemic the average export of rose plants was 1104.72 metric tons with average value of 2.28M (USD). However, in 2021 the quantity of exported plants remained almost the same (1102.7 tons) but the value increased by 41.9% (3.23M). The export markets also changed. For example, Russia was the main importer of Serbian rose plants before the pandemic. However export to Russia decreased by 52.16% while export to EU rose by 244% in 2021. The export of cut roses also increased considerably during the pandemic by 648%, from an average 0.03M before pandemic to 0.2M in 2021. In Serbia, the pandemic did not have a negative impact on roses production and trade, and export increased considerably. However, international market may change again after the pandemic and it is important to work on improving roses production in Serbia and increasing the competitiveness on international markets.

Keywords: *cut roses production, roses trade, grafted roses market, roses rootstock plants.*

INTRODUCTION

Roses, chrysanthemums, and carnations are often considered as traditional cut flowers, and they are the most represented and economically the most important on cut flowers world market. Besides, rose is a very popular garden plant or potted plant, worldwide (Darras, 2021; Roberts *et al.* 2003; Zlesak, 2006; Debener and Byrne, 2014). In Serbia, roses are also an important part of the flower production, and rose cut flowers, grafted plants and rootstocks are produced for both domestic

and international markets. According to The Observatory of Economic Complexity (OEC), Serbian exports of roses represented 1.36% of the world's roses market, and 2% of the European roses market in 2020 with the value of 2.7M (USD) (<https://oec.world/en/profile/hs92/roses>).

During the past three years, after the Covid-19 pandemic started, prophylactic measures, such as the social isolation and lockdowns were conducted in the majority of countries, having impact not only to human health, but also on the economy with the drop in consumption, reduction of the production system, income-generating activities were reduced, commercial establishments were temporary closed and the unemployment occurred in some sectors. The floriculture was also influenced by the pandemic, including production and consumption of roses worldwide (Clair *et al.*, 2021; Anacleto *et al.*, 2021; Lamm *et al.* 2021; Lioutas and Charatsari, 2021). For this reason, the aim of this study was to determine how the pandemic influenced export and import of roses in Serbia.

MATERIAL AND METHODS

The official statistical databases of Serbia were used in this study. The data on the export and import of roses (both plants and cut flowers) given in tons and USD were obtained from the databases of the Republic Bureau of Statistics (<https://data.stat.gov.rs/?caller=SDDDB>), for the period 2015-2021. The trend analysis was used to calculate trends for the years 2020 and 2021 in order to determine expected change in export and imports based on five years data (2015-2019) collected before the pandemic and to compare obtained data with real data collected for the pandemic years 2020 and 2021. Microsoft Excel 2007 was used for trend analysis. Also, in order to obtain more accurate data, the roses trade in Serbia during the pandemic years (2020 and 2021) was compared to the average data for the five year period before the pandemic (2015-2019).

RESULTS AND DISCUSSION

The data for the most important markets, those with the largest share in the export or import were presented in Tables 1, 2, 3 and 4. The rose plants (both grafted and rootstocks) have a considerably larger share in rose export compared to cut roses. For the observed period (2015-2021), total export of rose plants ranged from 1.9M (USD) to 3.2M (Table 1) while the value of rose cut flowers export ranged from 0.003M to 0.2M (Table 2). On the contrary, the import of the rose plants was significantly lower, not exceeding 0.3 M while the value of the import of rose cut flowers ranged from 0.97M to 3.14M during the same period.

The total export of rose plants (in tons) did not change significantly during 2015-2019 with an average export of 1104.7 tons. The amount of exported plants dropped by 4% in 2020 compared to the average amount for the period of 2015-2019, but it decreased by 22.7% compared with the estimated expected value for 2020 according to trend analysis (Table 1). However, the average price per ton

increased from average 2064 USD/ton (2015-2019) to 2536 USD/ton (2020) and 2935 USD/ton (2021), which is higher than estimated by trend analysis. In that way, the value of export increased by 41.9% (3.23M) in 2021 compared to the average value of 2.28M for the years before the pandemic.

Table 1. Export of rose plants from Serbia during 2015-2021

Year	European union		CEFTA		Russia		World		World	
	t	USD*	t	USD*	t	USD*	t	USD*	t	USD*
2015	202.6	527.9	102	186.4	606.7	1199.8	994.4	2104.0	Estimated values based on 2015-2019 data	
2016	300.4	662.1	85.9	167.5	415.1	873.1	897.9	1883.0		
2017	449.3	879.1	99.3	175.0	463.8	1001.7	1136.4	2267.8		
2018	583.9	986.7	121.4	277.0	419.2	1036.5	1212.8	2529.8		
2019	652.2	1099.4	123	276.4	446.4	1088.1	1282.1	2620.4		
2015-19*	437.7	831.0	106.3	216.5	470.2	1039.8	1104.7	2281.0		
2020	630.4	1404.3	135.7	305.6	214.2	649.5	1060.3	2689.2	1371.8	2784.9
2021	709.3	2025.1	144.4	360.5	157.8	497.2	1102.7	3236.9	1460.8	2952.8

*Note: The value is given in thousands of USD; 2015-19 presents average value for five years period. CEFTA: Central European Free Trade Agreement

The export markets also changed. For example, Russia was the main importer of Serbian rose plants before the pandemic, but the amount of exported plants decreased considerably from an average of 470.2 tons to 214.2 tons in 2020 and 157.8 tons in 2021. In that way, the average value of export to Russia for the period of 2015-2019 decreased by 52.16% in 2021. However, although the value of exports to the EU rose by 244% in 2021 compared to the average value for the period of 2015-2019, we cannot conclude that this growth was influenced by the pandemic, because the export to EU had a tendency of growth during the observed period, and trend analysis showed that an increase of export to the EU was expected.

The rose plants are mostly imported to Serbia from EU, the amount of imported plants has been increasing over years, but the pandemic did not influence the import because the amount of plants (in tons) is not significantly different from the estimated amount according to trend analysis (Table 2).

Table 2. Import of rose plants to Serbia during 2015-2021

Year	European union		World		World	
	t	USD*	t	USD*	t	USD*
2015	28.5	59.7	28.9	60.6	Estimated values based on 2015-2019 data	
2016	12.5	35.0	12.5	35.0		
2017	39.0	129.3	39.0	129.7		
2018	69.1	280.9	69.1	280.9		
2019	80.4	212.0	80.4	212.0		
2015-19*	45.9	143.4	46.0	143.6		
2020	86.5	294.9	86.5	294.9	93.86	308.53
2021	91.4	309.3	91.4	309.3	109.82	363.12

*Note: The value is given in thousands of USD; 2015-19 presents average value for five years period

Table 3. Export of rose cut flowers from Serbia during 2015-2021

Year	European union		CEFTA		World		World	
	t	USD*	t	USD*	t	USD*	t	USD*
2015	21.3	57.6	8.7	19.3	30	76.9	Estimated values based on 2015-2019 data	
2016	0.0	0.0	0.0	0.0	0	0		
2017	0.0	0.0	1.3	2.7	1.3	2.7		
2018	37.6	79.2	0.0	0.0	37.6	79.2		
2019	6.1	10.7	0.0	0.0	6.1	10.7		
2015-19*	13.0	29.5	2.0	4.4	15.0	33.9		
2020	20.5	158.7	0.0	0.0	20.5	158.7	11.94	35.88
2021	27.4	219.8	0.0	0.0	27.4	219.8	10.92	25.24

*Note: The value is given in thousands of USD; 2015-19 presents average value for five years period

The amount of exported rose cut flowers from Serbia is low and irregular over years before the pandemic (Table 3). However, export of rose cut flowers increased considerably during pandemic years compared to the period before the pandemic, by 648%, from average 0.03M before pandemic to 0.2M in 2021, more than it was estimated by trend analysis. Besides, the average price of 2260 USD per metric ton increased considerably to 7741 USD in 2020 and 8022 in 2021 (table 3), which is significantly higher than the prices of imported rose cut flowers which were: 1752 USD (average before pandemic), 3049 USD (2020) and 3542 USD (2021) (Table 4).

Table 4. Import of rose cut flowers to Serbia during 2015-2021

Year	European union		CEFTA		Ethiopia		Kenya		World		World	
	t	USD*	t	USD*	t	USD*	t	USD*	t	USD*	t	USD*
2015	346.9	665.5	26.6	50.7	92	56.8	260.8	173	742.4	975.4	Estimated values based on 2015-2019 data	
2016	370.2	558.5	24.2	47.5	54	56.8	442.4	550.9	844.4	1089.7		
2017	228.2	503.0	24.5	48.7	54	56.8	442.4	550.9	766.7	1237.2		
2018	312.7	716.1	20.1	43.0	68.5	157.1	400.3	572.3	817.5	1570.7		
2019	269.9	949.3	14.8	33.4	95.2	490.2	533.7	732.6	931.6	2314.9		
2015-19*	305.6	678.5	22.0	44.7	72.74	163.54	415.92	515.94	820.5	1437.6		
2020	133.2	524.7	0.4	1.2	84.9	476.9	426.6	911.2	657.2	2003.8	925.9	2385.6
2021	148.8	589.6	0.0	0.0	98.1	640.1	612.0	1738.8	886.7	3141.1	961.1	2701.6

*Note: The value is given in thousands of USD; 2015-19 presents average value for five years period

In Serbia, import of cut flowers decreased in 2020 probably because of the lower demand due to lockdowns, but in 2021 import increased (Table 4). A relatively small amount of cut roses is imported from the EU, the roses are mostly imported from Ethiopia and Kenya. During 2021, imports from Ethiopia and Kenya increased, while imports from the EU decreased (Table 4).

Anacleto *et al.* (2021) stated that the pandemic considerably influenced the floriculture sector, both production systems and stores and flower shops, creating a disconnection between all sectors of the production chain. Similarly, Bulgari *et al.* (2021) concluded that there was a reduction in the demand of cut flowers during the COVID-19 pandemic due to lockdowns and lack of social events, and Lioutas and Charatsari (2021) reported that a great amount of cut flowers was unsold or donated, at the beginning of pandemic in the Netherlands, while demand for indoor plants increased (Pérez-Urrestarazu *et al.* 2021), which correspond with the decrease in cut roses import to Serbia during 2020.

CONCLUSIONS

The pandemic considerably influenced the floriculture sector worldwide, including production and distribution of roses. The production of rose cut flowers, grafted plants and rootstocks is an important part of the floriculture sector in Serbia. The pandemic influenced demand for cut roses in Serbia, and import of rose cut flowers decreased in the first year of the pandemic (2020). However, export of both cut roses and rose plants increased considerably during pandemic years. Also, the export market for rose plants changed, and export of rose plants to Russia decreased by 52.16% while export to the EU rose by 244% in 2021. However, it is important to work on improving roses production in Serbia and increasing

competitiveness on international markets, because international markets may change again after the pandemic.

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