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BIOLOGICAL AND ECONOMIC CHARACTERISTICS OF PLUM CULTIVARS GROWN IN TWO PLUM-PRODUCING REGIONS OF BULGARIA

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Abstract

A comparative study was done on the biological and economic characteristics of plum varieties of Prunus domestica L. grown under agroecological conditions of Lovech (RIMSA – Troyan) and Gabrovo regions (the Plum Experimental Station Dryanovo). The observations were conducted in the period 2019 – 2021 of the varieties such as 'Čačanska lepotica', 'Čačanska najbolja', 'Čačanska rodna', 'Gabrovska', 'Strinava' and 'Stanley', selected for the control. The phenological phases of flowering and harvest maturity of the fruits were determined. Biometric measurements and the chemical composition of fresh plum fruits were made. It was found that the fruits of the large-size varieties such as 'Čačanska lepotica' and 'Čačanska najbolja' had an average weight (41 – 48 g) for the Troyan region, and 42 – 45 g for the region of Dryanovo, which are suitable for fresh consumption. The fruits of the 'Čačanska rodna', 'Strinava', and 'Gabrovska' contain over 20% dry matter in both regions, which makes them suitable for drying and distillation. The studied plum varieties are suitable for growing in the study areas and may be recommended for the expansion of the variety assortment in the establishment of new plum plantations for fresh consumption and processing.

Key words*: biometric measurements, chemical analysis, phenology, plum, variety.*

INTRODUCTION

The plum is a traditional fruit species in Bulgaria. The biological and economic characteristics of the plum define it as suitable for growing in the mountain and foot-hill regions. Plum plantations in Bulgaria are concentrated in four main plum-producing regions: Central Balkan Mountain (regions of Lovech and Gabrovo), Sredna Gora (regions of Stara Zagora and Plovdiv), Eastern Balkan Mountain (Targovishte and Shumen) and Western Balkan Mountain (Kyustendil and Sofia). These regions have favourable natural and economic conditions, determining the widespread distribution of the plum and are the main raw material base for the production of plum products for consumption, processing, and export to the foreign market (Vitanova et al., 2010; Sotirov et al., 2015).

In recent years, the interest of producers is growing in creating new intensive plantings and introducing new varieties, which are more productive, and tolerant to diseases and pests (Mladenova et al., 2017). According to data from the Ministry of Agriculture of Bulgaria, in 2020-2021 the areas occupied by plum plantations were 9.272 ha. For the same period, of the newly established plantations of fruit stone species, the largest share was occupied by plums (44%), followed by cherries (31%) (Agrostatistics Department, 2022). Market conditions require the offering to producers and consumers of varieties with high fruitfulness, attractive fruit, different purposes of fruit production, and a longer period of fresh fruit (Milatovic et al., 2018). World and Bulgarian selection provides the market with a set of varieties that meet these requirements. The choice of variety must be according to the agro-ecological conditions of the area where it will be grown. According to the selectionists, a thorough study of the impact of soil-climate conditions on the adaptation of the variety is necessary. Specific climatic conditions can have such an impact that the same variety in one country (region) shows high yields, but in another country, it does not show its biological potential (Glowacka & Rozpara, 2017).

In the current climate change, orchards urgently need strategies to adapt to climate change, such as finding varieties and hybrids resistant to

drought and high temperatures and measures to limit areas with fruit tree varieties vulnerable to drought and/or extreme temperatures and introduction of tolerant varieties, as well as new technologies to counteract the negative effects (Cosmulescu & Gruia, 2016).
The present study aims to enrich the knowledge of the biological and economic qualities of introduced and selected plum varieties grown in two typical plum-producing regions.

MATERIALS AND METHODS

The impact of the soil-climate conditions of the two regions on the vegetative and pomological characteristics of several plum varieties was investigated. The experiments were conducted during the period 2019-2021 in two plum plantations in the Lovech and Gabrovo regions, which fall into one of the main plum-producing regions - the Central Balkan Mountain region.
In the Research Institute of Mountain Stockbreeding and Agriculture of Troyan (Lovech district), the trees were planted on gray forest soils and at an altitude of 420 m. The plantation of the Experimental Station on Plum in Dryanovo (Gabrovo region) is on pseudopodzolic gray forest soil at an altitude of 300 m. In both plantations, the experimental trees were in full fruit-bearing period, as 5 trees of each variety were studied. The experiments were conducted with the following introduced and selected varieties: 'Čačanska najbolja', 'Čačanska lepotica', 'Čačanska rodna', 'Gabrovska', 'Strinava', and 'Stanley', selected for the control. The trees were grafted on yellow cherry plum (*Prunus cerasifera* Ehrh.) and a planting distance of 5x4 m, with tillage in the inter-row spacing and grown under non-irrigated conditions and the same level of agrotechnics.
During the vegetation of the plum trees, the flowering phases and fruit ripening periods were established for both regions.
At the onset of the technological maturity of the fruits, average samples of 30 fruits were taken for each variety and the following indicators were recorded:
Biometrical
- weight of fruit and stone fruit (g), relative share of fruit stone (%)
- fruit sizes - height, width, and thickness (mm);
- fruit yield (kg/tree).
Biochemical
- Refractometric solids (%);
- sugars by the method of Bartran and Kolthoff (%);
- organic acids by titration with 0.1 NaOH (%);
- tannins according to the method of Leventhal-Neubauer (%).
The observations and reports were conducted according to the methodology for the study of plant resources (Nedev et al., 1979).
The results were statistically processed by the method of analysis of variance (ANOVA) in Microsoft Excel (Data Analysis), and the LSD indicator was used at a significance level of 5% ($P<0.05$).

RESULTS AND DISCUSSIONS

In 2019, the average monthly temperature in March was 7.5ºC for Troyan and 10.07ºC for Dryanovo (Figures 1 and 2). The indicated temperatures are higher than the average characteristic of both regions, which is why the earliest onset of flowering is observed for the study period. In both regions, the beginning of flowering was observed on March 28 - 29 for 'Čačanska lepotica', 'Čačanska rodna', and 'Gabrovska', whereas this phase occurred on 01/04 April for 'Strinava', 'Čačanska najbolja', and 'Stanley'. The beginning of full flowering occurred simultaneously in both regions, during the first ten days of April. The end of flowering for the Dryanovo region occurred three days earlier (April 13 - 18), whereas in the Troyan region, it happened on April 16 - 18 (Figure 3).
The flowering phases in 2020 occurred two days earlier for the Troyan region, compared to the same phases for the Dryanovo region. This is due to the reported higher average monthly temperature in March (7.1ºC) in Troyan, compared to the typical one for the same month of the 20-year base period (6.1ºC) (Figure 1). For this reason, the beginning of flowering occurred in the interval 07 - 12 April. The earliest ripening period was reported for 'Čačanska lepotica' and 'Čačanska rodna', whereas the latest was for 'Čačanska najbolja' (Figure 4).
For the Dryanovo region, the beginning of flowering was observed on April 9, which for most varieties occurred simultaneously, while

for ‘Stanley’ and ‘Čačanska najbolja’ the peak was observed on April 11-12. The end of flowering for ‘Čačanska rodna’ was observed on April 19 (for the Troyan region), whereas in the other varieties, this phase occurred after two to three days. It was the latest for ‘Čačanska najbolja’ on April 26. The end of flowering for the Dryanovo region occurred between April 19 and 27, first with ‘Čačanska lepotica’, ‘Gabrovska’ and ‘Strinava’ varieties and lastly with ‘Čačanska najbolja’ (Figure 3).
The beginning of the vegetation in 2021 occurred later than the previous two years, which is because of the lower average monthly temperatures in March (3.6ºC - Troyan; 4.8ºC - Dryanovo) and April (9.4ºC - Troyan; 9.9ºC - Dryanovo) for both regions, compared to the typical temperatures for the regions (Figures 1 and 2). The beginning of flowering was in the second ten days of April, and in the Troyan region it took place between April 10-15, and in the Dryanovo plantations, it occurred April 13-20. In the period April 27-29, the end of flowering was marked for Troyan, whereas in Dryanovo this phase lasted until May 2 for ‘Čačanska najbolja’.

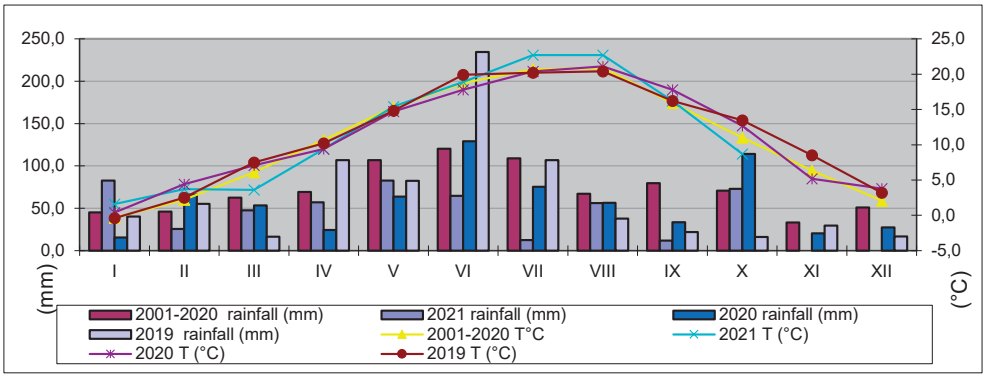

Figure 1. Average monthly temperature and monthly amount of precipitation for 2019-2021 (Troyan)

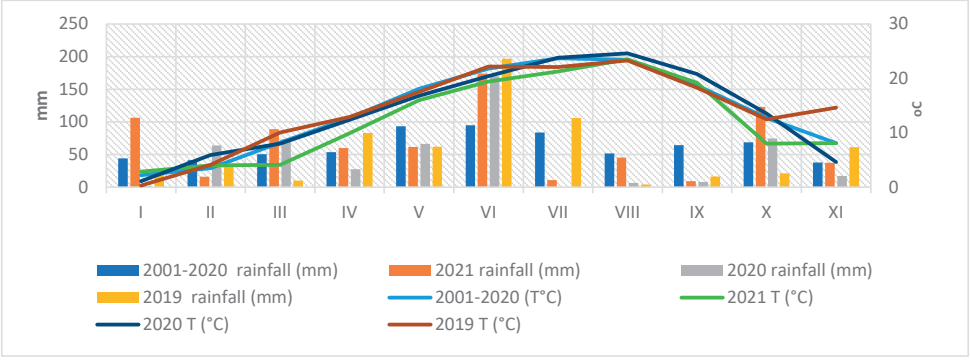

Figure 2. Average monthly temperature and monthly amount of precipitation for 2019-2021 (Dryanovo)

The earliest flowering period in both regions was observed in ‘Čačanska lepotica’, ‘Čačanska rodna’, and ‘Gabrovska’, two to three days earlier than the ‘Stanley’ standard. In the ‘Strinava’ variety, the flowering phases occur at the same time as in the ‘Stanley’ variety. ‘Čačanska najbolja’ began its flowering period up to 3 days later.

For the entire period of the study, the fruits of ‘Čačanska lepotica’ ripened the earliest at the end of July in the Dryanovo region (July 22-29). In the Troyan region, the same variety reached harvesting maturity at the beginning of August (02-09.08.). For the same region, in 2020, the earliest fruit ripening was observed for ‘Čačanska najbolja’ (31.07.), and in the other years, this variety ripened between 16.08

and 18.08. Under the climatic conditions of Dryanovo, the fruits of 'Čačanska najbolja' ripened at the same time as those of 'Stanley', at the end of August (20-28.09.). Fruits of 'Gabrovska', 'Strinava', and 'Čačanska rodna', ripened in mid-August (10-20.08.) in both regions (Figure 4). The 'Stanley' variety was harvested at the latest (20.08-07.09.) in the Troyan region.

Studies conducted under the climate conditions of Serbia show that the fruit ripening of 'Čačanska najbolja', 'Čačanska rodna', and 'Gabrovska' varieties occurred in the first ten days of August, whereas the fruit of 'Strinava' ripened in the middle of the month (Milatovic et al., 2018).

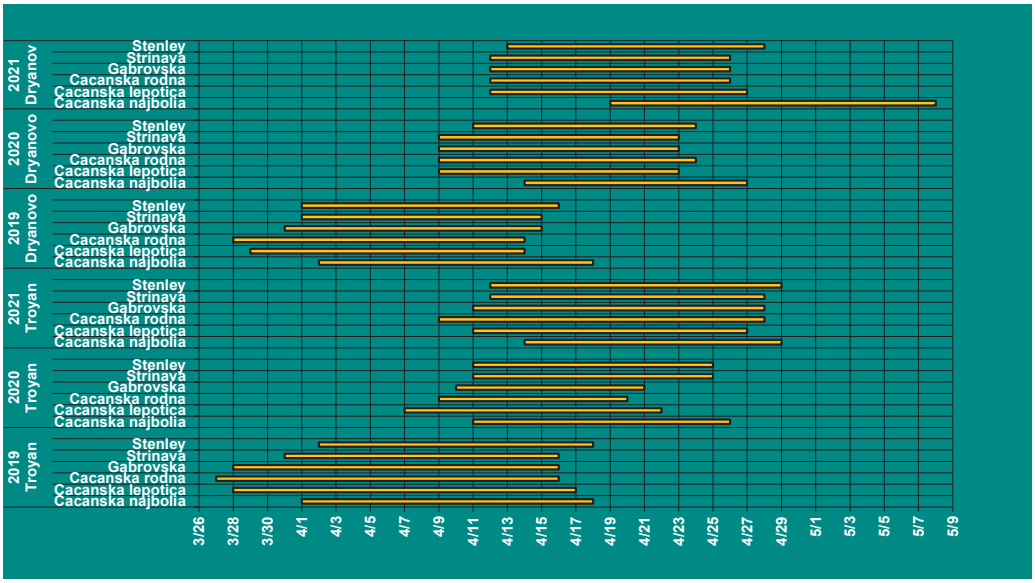

Figure 3. Flowering phases (2019-2021)

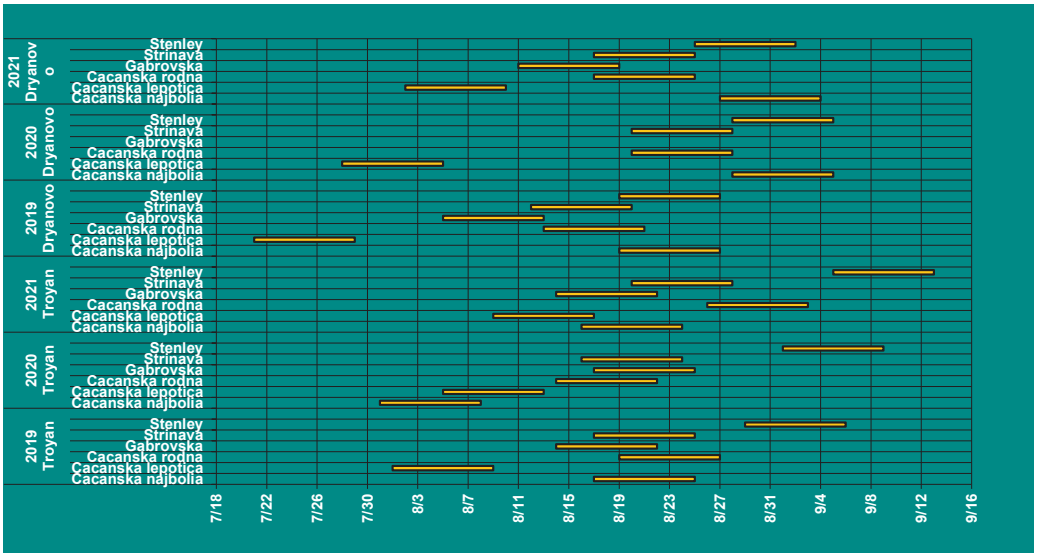

Figure 4. Fruit ripening periods (2019-2021)

The study shows that in 2019 the 'Čačanska najbolja' and 'Čačanska lepotica' varieties had an average fruit weight of 73.32 - 40.72 g for the Troyan region and 59.11 - 35.69 g for the Dryanovo region. For the rest of the varieties, the average weight was from 27.14 g for 'Čačanska rodna' to 31.17 g for 'Strinava' in the Dryanovo region, whereas in Troyan the fruits of the 'Gabrovska' variety had a weight of 29.88 g, and those of 'Strinava' was 38.27 g (Tables 1 and 2).

Table 1. Morphological indicators of fruits from the Troyan region (2019-2021)

Varieties	Fruit weight (g)	Stone weight (g)	Share of stone (%)	Fruit sizes (mm)			
				Length	Width	Thickness	Fruit stalk length (mm)
2019							
Čačanska najbolja	73.32	2.4	3.27	56.14	48.98	45.38	16.60
Čačanska lepotica	40.72	1.6	3.92	43.30	40.29	37.30	11.56
Čačanska rodna	33.25	1.3	3.90	46.08	36.64	33.10	16.61
Gabrovska	29.88	1.1	3.68	43.75	33.76	33.79	13.39
Strinava	38.27	1.2	3.13	46.22	37.70	36.71	15.61
Stanley	43.68	2.3	5.26	49.03	37.12	38.04	17.10
2020							
Čačanska najbolja	48.44	2.5	5.16	47.76	40.90	41.82	13.17
Čačanska lepotica	38.01	1.6	4.20	42.09	38.37	36.51	9.50
Čačanska rodna	31.83	1.3	4.14	44.94	36.49	33.69	15.05
Gabrovska	24.16	1.2	4.96	43.75	33.79	33.76	13.39
Strinava	32.08	1.3	4.05	46.22	36.71	37.70	15.61
Stanley	37.35	2.2	5.89	48.83	36.38	36.43	16.66
2021							
Čačanska najbolja	48.12	2.7	5.61	48.83	42.17	40.18	10.38
Čačanska lepotica	36.02	1.8	4.99	43.42	37.61	37.33	7.62
Čačanska rodna	17.77	1.1	6.19	38.11	30.01	26.73	14.27
Gabrovska	25.40	1.2	4.72	43.85	32.14	32.75	13.23
Strinava	29.14	1.2	4.11	44.37	32.99	34.65	12.39
Stanley	37.56	2.2	5.85	52.15	38.57	35.54	12.85
LSD 0.05	*3.6*	*0.2*	-	*1.6*	*1.2*	*2.8*	*3.1*
LSD 0.01	*4.7*	*0.1*	-	*2.0*	*1.6*	*3.6*	*4.1*
LSD 0.001	*6.0*	*0.1*	-	*2.6*	*2.1*	*4.7*	*5.2*

Table 2. Morphological indicators of fruits from the Dryanovo region (2019-2021)

Varieties	Fruit weight (g)	Stone weight (g)	Share of stone (%)	Fruit sizes (mm)			
				Length	Width	Thickness	Fruit stalk length (mm)
2019							
Čačanska najbolja	59.11	2.0	3.38	49.20	43.82	42.19	16.51
Čačanska lepotica	35.69	1.1	3.08	39.46	36.48	37.53	15.80
Čačanska rodna	27.88	1.4	5.02	42.98	32.08	33.59	21.42
Gabrovska	28.75	0.9	3.13	41.70	33.58	33.39	12.81
Strinava	31.36	1.4	4.46	42.86	33.01	31.17	13.20
Stanley	39.52	1.9	4.80	44.48	36.40	36.17	19.02
2020							
Čačanska najbolja	40.82	2.0	4.89	43.61	38.87	38.19	18.61
Čačanska lepotica	35.51	1.3	3.66	40.58	36.19	36.53	10.84
Čačanska rodna	22.09	1.0	4.52	37.27	30.60	29.07	17.01
Gabrovska	24.16	1.0	4.13	37.78	29.360	28.00	10.78
Strinava	23.97	1.2	5.00	38.00	31.68	33.34	16.38
Stanley	30.54	1.7	5.56	43.41	34.76	33.33	19.05
2021							
Čačanska najbolja	45.14	1.8	3.98	41.03	41.4	40.2	12.90
Čačanska lepotica	42.16	1.4	3.32	43.73.	36.26	38.77	9.86
Čačanska rodna	29.60	0.9	3.04	38.62	31.12	31.75	20.95
Gabrovska	28.61	0.9	3.14	41.73	33.65	33.32	14.04
Strinava	28.34	1.4	4.94	40.08	36.02	33.17	17.87
Stanley	36.47	1.8	4.93	44.85	36.12	36.33	18.78
LSD 0.05	*3.0*	*0.1*	-	*1.6*	*1.5*	*1.8*	*2.8*
LSD 0.01	*4.0*	*0.1*	-	*2.2*	*2.0*	*2.5*	*3.4*
LSD 0.001	*5.1*	*0.2*	-	*2.8*	*2.5*	*3.0*	*4.2*

For the Dryanovo region in 2020, lower values of the morphological indicators of the fruits were recorded than those for the Troyan region. When comparing the fruit weight, the average weight of 'Čačanska najbolja' is 48.44 g, for 'Čačanska rodna' it is 31.75 g in Troyan region. In comparison, fruit weight in the Dryanovo region was 40.84 g for 'Čačanska najbolja' and 22.09 g for 'Čačanska rodna'. The fruit weight of 'Gabrovska' is 24.16 g, for the conditions of both regions.

In 2021, the lowest fruit weight for the entire experimental period was measured for 'Čačanska rodna' variety (17.77 g) in the Troyan region. For the same variety in the Dryanovo region, an average weight of 29.60 g was reported. The 'Čačanska lepotica' and 'Gabrovska' varieties had a smaller fruit weight in Troyan (35.02 and 25.50 g) than values measured in Dryanovo (42.16 and 28.34 g).

There is a variation in the fruit weight of 'Čačanska rodna' in the Troyan region. In 2019 the average weight was 33.25 g and in 2021 it was 17.77 g (Table 1). Similar variation in the weight of the same variety was also found by other authors (Milatovic et al., 2016; Mitrovic et al., 2020). A similar variation for the Dryanovo region was reported for the 'Strinava' variety in 2019. The fruit weight was 31.17 g, and in 2020 was 23.97 g (Table 2).

'Gabrovska' and 'Čačanska rodna' varieties are distinguished by a small fruit stone (its average weight is from 0.9 to 1.1 g), and the largest size was found in the 'Čačanska najbolja' variety (2.0 and 2.7 g) for both regions.

The highest relative share of fruit stone to fruit weight was reported in the 'Stanley' standard (5.85 to 5.56%), in both regions. A higher percentage was reported for 'Strinava' (5.00%), 'Čačanska najbolja' (5.61%) and 'Čačanska rodna' (6.11%) over the years. In 'Gabrovska', 'Čačanska lepotica' varieties, and in some years in 'Strinava', the share of fruit stone did not exceed 4%.

Fruit sizes varied significantly among varieties. The highest value of fruit height was reported for 'Čačanska najbolja' (56.14 mm in Troyan and 49.20 mm in Dryanovo), whereas the lowest value was found in 'Čačanska rodna' (38.11 mm in Troyan and 37.27 mm in Dryanovo). For the rest of the indicators, this trend is maintained for both regions. The longest fruit stalk was measured in 'Čačanska rodna' (15.05 - 21.42 mm), and the shortest in 'Čačanska lepotica' (7.65 mm to 9.86 mm). The remaining varieties have a medium-long stalk

The chemical analysis shows that for the conditions of Troyan, the highest content of dry matter is measured in the 'Strinava' variety (21.50%), whereas it is the lowest (15.56%) in 'Čačanska najbolja' (Table 3). 'Stanley', as a standard variety, is distinguished by the highest content of total sugars (12.33%), compared to the other varieties, which is the lowest in 'Gabrovska' fruits - 7.46%. The 'Stanley' variety has the highest content of inverted sugars (8.74%), whereas the 'Gabrovska' variety has the lowest values (3.63%). The highest content of sucrose is found in 'Čačanska rodna' (4.80%), whereas the lowest value is reported for 'Čačanska lepotica' (1.31%). Low values of organic acids below 1% were reported in all studied varieties in the Troyan region, as they were from 0.54% for 'Strinava' to 0.74% for 'Čačanska najbolja' and 'Čačanska lepotica'. Tannins are below 0.200% in all varieties, as the lowest value is registered in Serbian varieties, compared to the 'Stanley' standard (0.169%). In the Dryanovo region, 'Čačanska rodna' has 22.13% dry matter, followed by Strinava' with 20.22% and the lowest content is in 'Čačanska lepotica' with 17.62% (Table 3). 'Čačanska rodna' has a higher content of total sugars compared to the 'Stanley' standard (11.56%), whereas the other varieties are in this range. The fruits of 'Strinava' have the highest content of inverted sugars (8.10%), and those of the 'Gabrovska' variety have the lowest (5.01%). Serbian varieties have a higher percentage compared to the 'Stanley' standard (7.07%). The highest percentage of sucrose is reported in 'Čačanska rodna' (4.75%), whereas the lowest value is registered again in 'Strinava' (2.83%). In the 'Stanley' standard, the value is 4.30%, and the other varieties have a similar value. The highest value of organic acids is found in the fruits of 'Čačanska lepotica' and 'Strinava' (1.09%), 'Gabrovska' and 'Čačanska najbolja' have less than 1% and the lowest value is registered in the 'Stanley' standard (0.80%). The least amount of tannins is found in the fruits of 'Čačanska najbolja' (0.338%) and 'Čačanska rodna' (0.379%), while for the other varieties,

the values approach the 'Stanley' standard (0.459%).

The combined results from both regions indicate that 'Čačanska rodna' and 'Strinava' varieties have more than 20% dry matter, whereas 'Čačanska lepotica', 'Čačanska najbolja', and 'Gabrovska' have a lower percentage than the 'Stanley' standard. The content of organic acids for the Troyan region is below 0.74%, whereas for the Dryanovo region, it is above 0.80%. The 'Gabrovska' variety had the lowest content of total sugars, whereas their content was the highest in the fruits of 'Čačanska lepotica' and 'Čačanska rodna'. The highest value of sucrose is found in 'Čačanska rodna' variety.

Fruits containing a high percentage of dry matter and a low percentage of organic acids are suitable for processing, such as 'Čačanska rodna' and 'Strinava' varieties (Milatovic et al., 2016). Similar results of biometric measurements and chemical analysis of fruits were reported by publications of other authors who studied the same varieties (Bozhkova, 2013; Milatovic et al., 2016; Milatovic et al., 2018).

Table 3. Chemical composition of fresh plum fruits on average for 2019-2021

Varieties	Dry matter (%)	Total sugars (%)	Inverted sugars (%)	Sucrose (%)	Tannins (%)	Acids (%)	Gluco acidimetric index
Troyan							
Čačanska najbolja	15.56a	9.61ns	5.71ns	3.70ns	0.142ns	0.74ns	12.72ns
Čačanska lepotica	17.73a	11.51ns	7.33ns	1.31ns	0.130ns	0.70ns	16.20ns
Čačanska rodna	20.50bc	9.83ns	5.63ns	4.08ns	0.142ns	0.61ns	16.11ns
Gabrovska	17.50a	7.46ns	3.85ns	3.05ns	0.163ns	0.63ns	11.77ns
Strinava	21.50c	8.92ns	5.90ns	2.34ns	0.184ns	0.54ns	16.99ns
Stanley	19.36b	12.33ns	8.74ns	3.32ns	0.169ns	0.56ns	23.61ns
LSD 0.05	*2.9*	*4.5*	*4.5*	*2.2*	*0.1*	*0.2*	*8.9*
Dryanovo							
Čačanska najbolja	19.51ab	11.13b	7.44ns	3.73b	0.338nss	0.92ns	12.05ns
Čačanska lepotica	17.62a	10.81ab	7.28ns	3.53ab	0.410ns	1.09ns	9.94ns
Čačanska rodna	22.13c	12.32bc	7.74ns	4.75bc	0.379ns	1.08ns	11.35ns
Gabrovska	17.99a	9.81a	5.96ns	3.84b	0.410ns	0.92ns	11.01ns
Strinava	20.22b	10.94ab	8.10ns	2.83a	0.458ns	1.09ns	10.01ns
Stanley	18.79a	11.56b	7.07ns	4.30b	0.459ns	0.80ns	14.52ns
LSD 0.05	*1.9*	*1.2*	*1.4*	*0.8*	*0.2*	*0.2*	*2.7*

Average values followed by a difference in the letters in one column indicate a statistically significant difference ($P<0.05$).

In both regions, the highest yield was reported for all studied varieties in 2019. The yield from 'Gabrovska' variety is 53 kg/tree (Dryanovo region) and 25 kg/tree (Troyan region), and it is 42 kg/tree for the 'Stanley' standard (Table 4). In 2020, in the Dryanovo region, the amount of rainfall was 0 mm in July and in August 6.5 mm (Figure 2). Based on this, the yield in Dryanovo is lower than that in Troyan, for all studied varieties. In 2021, 'Čačanska lepotica' (Troyan region) and 'Čačanska najbolja' (Dryanovo region) had good fruitfulness (34 kg per tree). For the Troyan region, the yield of the 'Čačanska rodna' variety has been similar over the years, as it has a low coefficient of variation (11.53%). The remaining varieties have over 20% coefficient of variation, which is why the yield varies over the years (Table 4).

Table 4. Average yield (2019-2021)

Years	2019	2020	2021	*Ave*	*Std*	*CV%*
	kg per tree					
Varieties	**Troyan**					
Čačanska najbolja	19	32	10	20.3	11.06	54.39
Čačanska lepotica	22	19	34	25.0	7.93	31.74
Čačanska rodna	23	29	26	26.0	3.00	11.53
Gabrovska	25	18	17	20.0	4.35	21.79
Strinava	18	9	8	11.6	5.50	47.20
Stanley	42	13	26	27.0	14.52	53.79
	Dryanovo					
Čačanska najbolja	24	26	34	28.0	5.29	18.89
Čačanska lepotica	23	6	21	16.6	9.29	55.74
Čačanska rodna	18	26	18	20.6	4.61	22.34
Gabrovska	53	28	20	33.6	17.21	51.13
Strinava	22	11	14	15.6	5.68	36.29
Stanley	42	13	45	33.3	17.67	53.01

CONCLUSIONS

The flowering phase occurred almost simultaneously in both regions. The earliest date was reported for 'Čačanska lepotica' and 'Gabrovska' varieties, whereas 'Čačanska najbolja' was the latest, compared to the 'Stanley' standard. Harvest maturity occurred from the end of July to the beginning of September, which would ensure a long period of marketing of fresh plum fruits.

The climatic conditions of the Central Balkan Mountain region have a positive effect on the biological and economic qualities of the studied varieties. From the biometric and chemical analyses of the plum fruits for both regions, it was established that:

'Čačanska najbolja' and 'Čačanska lepotica' have large fruits that contain a low percentage of organic acids and a high percentage of total sugars, which makes them suitable for fresh consumption;

The fruits of 'Čačanska rodna' and 'Strinava' varieties have a high percentage of dry matter and sucrose, which makes them suitable for processing;

'Gabrovska' has good fruitfulness and its fruits are suitable for fresh consumption and processing.

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