Voćarstvo, 57, 215–216 (2023), 7–16
Journal of Pomology, 57, 215–216 (2023), 7–16
https://doi.org/10.18485/pomology.2023.57.215_216.1

UDC: 634.22(497.11)
Original scientific paper
Originalni naučni rad

Biological and pomological characteristics of autochthonous plum cultivars collected in western Serbia

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Received: 12 July 2023; Accepted: 18 July 2023

Abstract. During 2020 and 2021, the flowering phenophase and the most important characteristics of trees and fruits of fourteen *in situ* collected autochthonous plum genotypes grown in the area of western Serbia were studied. The results showed that none of the collected genotypes had low vigour, while the suckering tendency varied from low to extremely high, and yield efficiency ranged from medium to good. All studied genotypes were characterized by a long flowering period, with genotypes 'Š-GMNe/1' and 'Š-UžK/5' standing out for their very late onset of flowering. The tested genotypes had oval to elliptical fruit shape, small stone and medium flesh percentage. Regarding fruit size, most genotypes belonged to the small fruit group, a few were classified as medium-sized fruit and only one genotype ('Š-KrGP/2') fell into the large fruit category. Regarding the content of soluble solids, all tested genotypes showed good fruit quality. However, genotype 'Š-ČaB/1' was characterized by the highest content of soluble solids, total and invert sugars, which indicate its particular chemical composition.

Key words: plant data, flowering phenophase, morphometric properties, chemical composition of fruit

Introduction

Thanks to favorable climatic and soil conditions, plum has been cultivated in Serbia for a long time, but become economically important at the end of the 19th and the beginning of the 20th century (Milatović, 2019). Today, it is the most important and widespread fruit species in the country. According to FAOSTAT (2023), 412,788 tons of plums were produced in the Republic of Serbia in 2021, ranking the country third in the world. The almost total production refers to the European plum.

Plum is a fruit species characterized by a great biodiversity (Milatović, 2023). The territory of Serbia is characterized by a numerous and heterogeneous population of plum genotypes (Paunović et al., 2011), which are a part of Serbian tradition, customs and cultural heritage (Vujović et al., 2020). This diverse gene pool was initially selected by local plum growers with the aim of obtaining genotypes with good production traits (Milošević & Milošević, 2012), which were used for planting new plum orchards. As a result, some genotypes of local importance became dominant in plum production in Serbia for a certain period of time and were considered a limiting factor in the intensification of plum production (Mratinić, 2000). With the improvement of plum production in our country, the share of native genotypes in the assortment gradually decreased and is currently about 30% (Glišić et al., 2016; Milatović, 2019). In recent years, there has been an increased interest in planting new commercial orchards with the Sharka-tolerant autochthonous cultivar 'Crvena Ranka', which is suitable for the production of high-quality plum brandy (Popović et al., 2015). Apart from the importance for commercial production, autochthonous plum genotypes represent a genetic base of inestimable importance for clonal selection, as well as for further breeding work for the development of new plum cultivars (Ogašanović et al., 1994; Milošević, 2000; Milošević et al., 2021) or for the selection of promising clonal rootstocks, mainly for plum, but also for apricot and peach (Lučić et al., 2000).

Work on the collection and evaluation of autochthonous plum material has been carried out at the Fruit Research Institute, Čačak since its establishment until today (Ogašanović et al., 1996, Milenković et al., 2006; Glišić & Milošević, 2015; Milošević et al., 2017; Glišić et al., 2018; Tomić et al., 2019). The obtained results have indicated that some local plum genotypes are potential gene donors for many important biological traits such as late flowering and ripening, resistance to drought, extreme temperatures and pathogens (Paunović & Paunović, 1994; Mišić, 2002). Also, fruits of local plum genotypes are often characterized by good fruit quality that correspond to a specific use (Popović et al., 2015; Glišić et al., 2018), as well as high nutritional value, especially in terms of total phenols and antioxidant capacity (Tomić et al., 2019).

In order to continue the previously mentioned activities related to the preservation and sustainable use of plum genetic resources, the research covered in this study was also carried out. Therefore, the aim of this work was to evaluate plant data (tree vigour, suckering tendency and yield efficiency), flowering phenophase and pomological characteristics (morphometric characteristics and chemical composition of fruits) in fourteen indigenous plum genotypes collected *in situ* in the region of western Serbia.

Materials and Methods

Plant material. The investigation included *in situ* characterization and evaluation of fourteen plum genotypes of unknown origin. These genotypes were represented by individual trees in the orchards of plum growers in the region of western Serbia during the 2020/21. Specifically, three genotypes ('Š-KrGP/1' to 'Š-KrGP/3') were collected in Gledić Mountains (region of Kraljevo); five genotypes ('Š-UžK/1' to 'Š-UžK/5') were collected in the village Karan (region of Užice); one genotype ('Š-ČaB/1') was collected from the village Baluga and two genotypes ('Š-ČaGG/1' and 'Š-ČaGG/2') were collected from the village Gornja Gorevnica (region of Čačak). In addition, one genotype each ('Š-GMNa/1', 'Š-GMT/1' and 'Š-GMNe/1') was collected from the villages Nakučani, Teočin and Nevade, respectively (region of Gornji Milanovac). Genotypes were named according to municipality, village, and order of harvest date [determined as the date when most of fruits were sufficiently coloured and soft for consumption, BBCH stage 89, according to Meier (2018)] (Table 1). Trees of all genotypes were grown on their own roots. The condition of trees (IBPGR, 1984) for most collected genotypes could be characterized as mature – non vigorous, except for genotypes 'Š-ČaGG/1' and 'Š-ČaGG/2', whose tree conditions was healthy – cropping well and old – declining, respectively.

Plant data. Plant data were described using the methodology given by IBPGR (1984) based on following parameters: tree vigour (on a scale of 1 to 9 based on height and spread of collected trees on their own roots), suckering tendency (on a scale of 0 to 9 based on tendency for suckering production under field conditions) and yield efficiency (on a scale of 3 to 7 based on the ratio between the yield and the cross-sectional area of the trunk).

Phenological characteristics. Dates of flowering onset (10% open flowers) and end of flowering (more than 90% fallen petals) was recorded according to the methodology recommended by Wertheim (1996).

Pomological characteristics. Fruit morphometric characteristics were determined on 25 fruits in three replicates using standard methods [technical scale Adventurer Pro AV812M (Ohaus Corporation, Switzerland) to measure fruit and stone weight expressed in g; digital caliper (Kronen, Germany) to measure fruit height,

Table 1. Location and condition of tree of the assessed autochthonous plum genotypes
Tabela 1. Lokacija i kondiciono stanje stabala ispitivanih autohtonih sorti šljive

Genotype *Genotip*	Location/*Mesto* Latitude *Geografska širina*	Longitude *Geografska dužina*	Altitude *Nadmorska visina*	Ripening time *Vreme sazrevanja*	Condition of tree* *Stanje stabala*
'Š-ČaGG/1'	43°57'439"N	20°19'285"E	358.00 m	July 30th	8
'Š-UžK/1'	43°54'725"N	19°52'314"E	562.00 m	July 30th	4
'Š-UžK/2'	43°54'633"N	19°52'220"E	540.00 m	July 30th	4
„Š-KrGP/1'	43°49'425"N	20°53'538"E	509.00 m	July 30th	4
'Š-KrGP/2'	43°49'423"N	20°53'544"E	507.00 m	July 31st	4
'Š-KrGP/3'	43°49'436"N	20°53'521"E	512.00 m	August 1st	4
'Š-ČaGG/2'	43°57'532"N	20°19'263"E	353.00 m	August 2nd	2
'Š-ČaB/1'	43°86'149"N	20°42'354"E	207.00 m	August 10th	4
'Š-UžK/3'	43°54'595"N	19°52'210"E	539.00 m	August 11th	4
'Š-UžK/4'	43°54'675"N	19°52'297"E	555.50 m	August 11th	4
'Š-GMNa/1'	44°09'304"N	20°40'967"E	443.00 m	August 12th	4
'Š-GMT/1'	44°09'090"N	20°24'009"E	642.00 m	August 12th	4
'Š-GMNe/1'	44°05'015"N	20°50'667"E	405.00 m	September 13th	4
'Š-UžK/5"	43°54'738"N	19°52'306"E	539.00 m	September 15th	4

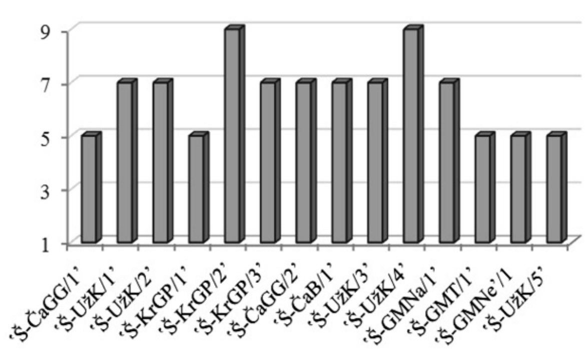
*Dying (1); Old – declining (2); Mature – diseased (3); Mature – non-vigorous (4); Mature – vigorous (5); Young – not yet bearing (6); Healthy – cropping poorly (7); Healthy – cropping well (8)/*Uginulo stablo (1); Staro stablo u izumiranju (2); Stablo u fazi rodnosti sa simptomima bolesti (3); Stablo u fazi rodnosti ograničenog vegetativnog rasta (4); Stablo u fazi rodnosti izraženog vegetativnog rasta (5); Mlado stablo koje još nije stupilo u rodnost (6); Zdravo stablo loše rodnosti (7); Zdravo stablo dobre rodnosti (8)*

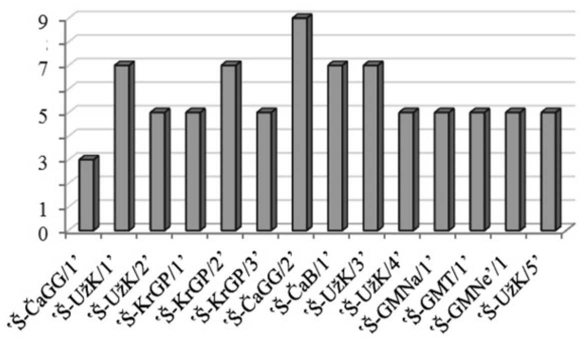
width and thickness expressed in mm; formulas [(fruit weight – stone weight) / fruit weight) × 100, and (fruit height^2 / fruit width × fruit thickness)] to calculate flesh percentage (%) and the fruit shape index, respectively]. Fruit chemical composition was determined on an average sample, with soluble solids content (%) measured using a portable refractometer (Hanna Instruments, Germany); content of total and invert sugars (%) was determined using the Luff-Schoorl method described by Egan et al. (1981); sucrose content (%) was calculated by multiplying the difference between total and invert sugars by the coefficient 0.95; total acids content (% malic acid) was determined by titration with 0.1 N NaOH in the presence of phenolphthalein as an indicator; pH value of fruit juice (pH) was measured using CyberScan 510 pH meter (Eutech Instruments Pte Ltd, Singapore).

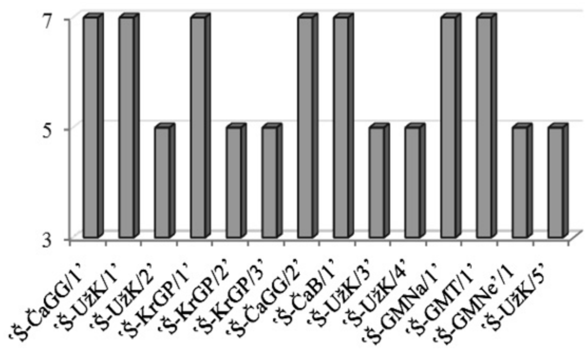
Statistical analysis. Analysis of variance (ANOVA) was used to determine the significance of differences among genotypes in fruit and stone weight, the flesh percentage, dimensions of fruit and fruit shape index. In cases where the F-test indicated significant differences, the test of arithmetic means was performed using the test of Least Significant Differences (LSD test) at a significance threshold of $P \leq 0.05$. Data analysis was performed using the SPSS statistical software package, version 8.0 for Windows (SPSS. Inc., Chicago, IL).

Results and Discussion

An important aspect of describing and characterizing local plum populations is examining their vigour considering that the intensive high-density plum orchards require low vigorous cultivars and rootstocks (Sosna, 2004; Hartmann et al., 2007). In addition, it is important to point out that the sucker production is a genetic predisposition of the rootstock, and a high suckering tendency is undesirable, because it requires the application of certain measures to remove them and leads to an increase in production costs (Mestre et al., 2017). Based on the plant data shown in Figure 1, it can be concluded that the tree vigour of the studied autochthonous plum genotypes ranged from medium to extremely strong, while the suckering tendency varied from low ('Š-ČaGG/1') to extremely high ('Š-ČaGG/2').







*Tree vigour: 1 – extremely weak; 3 – weak; 5 – intermediate; 7 – strong; 9 – extremely strong/*Bujnost stabla: 1 – veoma kržljavo; 3 – kržljavo; 5 – srednje bujno; 7 – bujno; 9 – veoma bujno*

*Suckering tendency: 0 – absent; 1 – extremely low; 3 – low; 5 – medium; 7 – high; 9 – extremely high/*Sklonost ka formiranju izdanaka: 0 – odsutna; 1 – veoma mala; 3 – mala; 5 – srednja; 7 – velika; 9 – veoma velika*

*Yield efficiency: 3 – poor; 5 – intermediate; 7 – good/*Indeks rodnosti: 3 – nizak; 5 – srednji; 7 – visok*

Figure 1. Tree vigour, suckering tendency and yield efficiency of the assessed autochthonous plum genotypes
Slika 1. Bujnost stabala, sklonost ka formiranju izdanaka i indeks rodnosti ispitivanih autohtonih genotpova šljive

It is known that autochthonous plum genotypes are characterized by high, but not regular yields (Milatović, 2019). However, growers prefer cultivars that have both, high and regular bearing (Neumüller, 2011). During the experimental period, the evaluated genotypes had medium to good yield efficiency (Figure 1), but these studies should be continued under conditions of intensive application of cultural practices.

On average, all studied autochthonous plum cultivars flowered in April with an interval of 18 days between the earliest ('Š-ČaGG/2') and the latest ('Š-UžK/5') genotypes (Figure 2). For 50 European plum cultivars grown in the region of the Belgrade during ten years, Milatović (2023) found that the differences between the earliest and the latest flowering cultivar were 7 days. Our results can be explained by the fact that, in addition to the genotype, they were also influenced by the environmental conditions, which is due to the different locations where the genotypes were grown and monitored (Szabó, 2003). Furthermore, according to Radivojević (2020) an elevation increase of 33–34 m delays flowering by one day. Szabó (2003) found that the duration of blooming period is equally inherited and modified by environmental factors. In our study, the length of blooming period varied from 10 days ('Š-UžK/5'), to 13 days ('Š-UžK/1', 'Š-UžK/2', 'Š-KrGP/1', 'Š-KrGP/2', 'Š-UžK/3', 'Š-UžK/4', 'Š-GMNe/1'). Milatović (2019) calculated that, depending on the year, flowering phenophase of European plum cultivars lasted from 7 to 11 days. The same author divided the cultivars into three groups according to the flowering period: cultivars with a short flowering period (< 8 days), cultivars with an medium flowering period (8–10 days) and cultivars with a long flowering period (>10 days). The mentioned classification and the results obtained in our study, indicate that the studied genotypes are characterized by a long flowering time. Milošević et al. (2010) and Šebek (2016) reported similar results regarding the length of the flowering phenophase of autochthonous plum cultivars in the area of western Serbia and northern Montenegro, respectively.

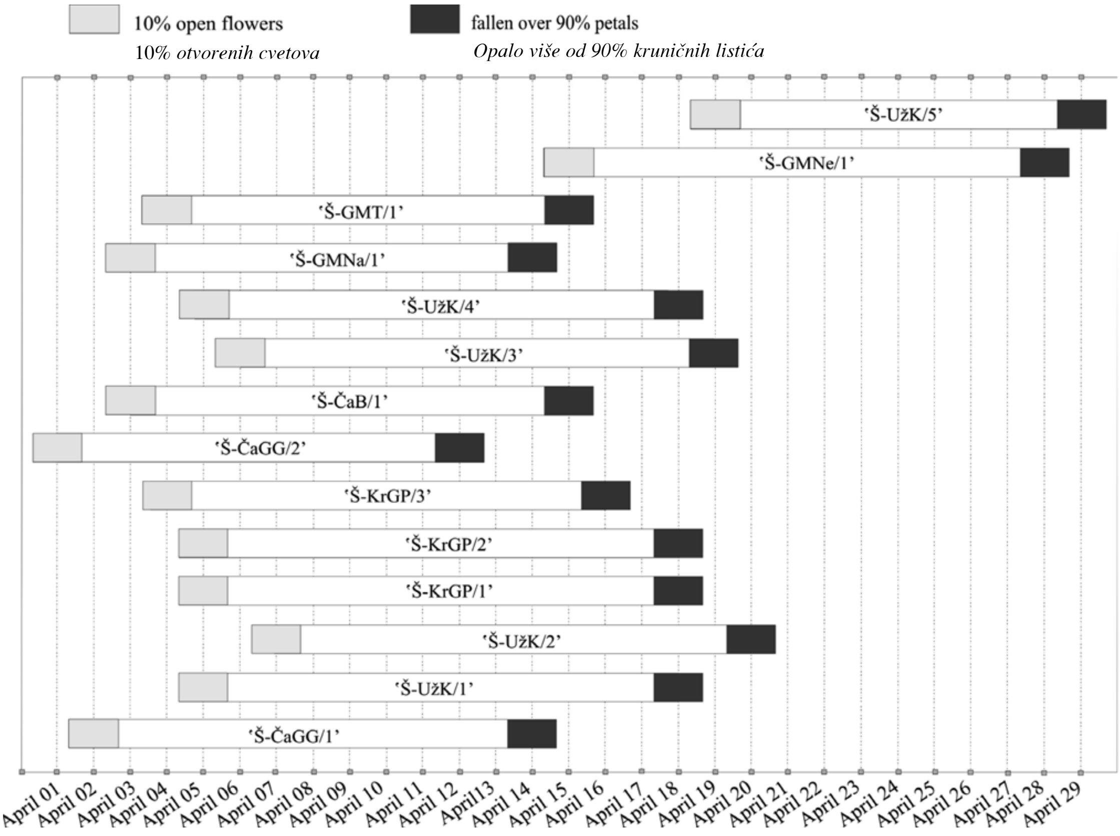


Figure 2. Flowering phenophase of the evaluated autochthonous plum genotypes
Slika 2. Fenofaza cvetanja ispitivanih autohtonih sorti šljive

Early flowering is the most critical stage in plum production because of possible damage from late spring frosts. In this regard, genotypes with late and prolonged flowering are of great importance (Glišić et al., 2012). All collected genotypes were characterized by prolonged flowering, while late flowering was observed in genotypes 'Š-GMNe/1' and 'Š-UžK/5'.

The collected autochthonous plum genotypes significantly differed in fruit and stone weight, flesh percentage (Table 2), as well as fruit dimensions and fruit shape (Table 3). The genotype 'Š-KrGP/2' was characterized by the largest fruit, and had the highest values for fruit and stone weight (37.13 g and 2.39 g, respectively), fruit height, width and thickness (40.94 mm, 36.39 mm and 38.86 mm, respectively). Moreover, this genotype had the lowest fruit shape index (1.18). On the other hand, the genotype 'Š-KrGP/3' had the lowest fruit and stone weight (11.76 g and 0.57 g, respectively), as well as the lowest fruit width and thickness (24.42 mm and 24.72 mm, respectively). The lowest fruit height was observed in genotype 'Š-ČaB/1' (29.16 mm), while genotype 'Š-UžK/5' had the highest fruit shape index (1.92). The fruit flesh percentage of the studied autochthonous plum genotypes ranged from 93.54% ('Š-KrGP/2') to 95.73% ('Š-UžK/3').

Table 2. Fruit and stone weight and flesh percentage of the evaluated autochthonous plum genotypes
Tabela 2. Masa ploda i koštice i randman mezokarpa ploda ispitivanih autohtonih sorti šljive

Genotype *Genotip*	Fruit weight *Masa ploda* (g)	Stone weight *Masa koštice* (g)	Flesh percentage *Randman mezokarpa* (%)
'Š-ČaGG/1'	17.24 ± 0.78 de*	1.08 ± 0.18 b	93.76 ± 1.20 cd
'Š-UžK/1'	13.83 ± 1.42 g	0.83 ± 0.05 bcde	93.96 ± 0.24 bcd
'Š-UžK/2'	13.11 ± 0.52 fg	0.68 ± 0.20 cde	95.51 ± 1.73 ab
'Š-KrGP/1'	20.82 ± 0.90 bc	1.11 ± 0.18 b	94.66 ± 1.05 abcd
'Š-KrGP/2'	37.13 ± 1.12 a	2.39 ± 0.41 a	93.54 ± 1.27 d
'Š-KrGP/3'	11.76 ± 0.53 g	0.57 ± 0.07 e	95.17 ± 0.60 abc
'Š-ČaGG/2	12.37 ± 0.27 g	0.64 ± 0.21 de	94.82 ± 1.58 abcd
'Š-ČaB/1'	13.39 ± 1.66 fg	0.85 ± 0.04 bcde	93.57 ± 0.57 d
'Š-UžK/3'	20.34 ± 1.33 bc	0.82 ± 0.16 bcde	95.73 ± 1.24 a
'Š-UžK/4'	21.43 ± 1.28 b	0.92 ± 0.04 bc	95.70 ± 0.44 a
'Š-GMNa/1'	15.47 ± 1.66 ef	0.66 ± 0.03 cde	95.69 ± 0.29 a
'Š-GMT/1'	21.50 ± 1.56 b	0.94 ± 0.15 bc	95.55 ± 0.86 ab
'Š-GMNe/1'	18.58 ± 1.15 cd	0.85 ± 0.05 bcde	95.42 ± 0.49 ab
'Š-UžK/5'	20.16 ± 2.84 bc	0.90 ± 0.18 bcd	95.55 ± 0.27 ab

*The different lower-case letters within columns indicates significant differences for P ≤ 0.05 (LSD test)/*Različita mala slova u kolonama označavaju značajne razlike za P ≤ 0,05 (LSD test)*

The results of the study of morphometric parameters obtained in this work are in agreement with the previously published results of Nenadović-Mratinić et al. (2007), Milošević et al. (2011), Milošević & Milošević (2012) who studied native plum cultivars in the Republic of Serbia. These results are also in line with the results reported by Šebek (2016) and Gunes (2003) for local plum cultivars collected in Montenegro and Turkey, respectively. Based on the obtained results regarding fruit weight and the classification given by Milatović (2019), the collected plum genotypes can be divided into three categories: i) a group of genotypes with small fruits ('Š-ČaGG/1', 'Š-UžK/1', 'Š-UžK/2', 'Š-KrGP/3', 'Š-ČaGG/2', 'Š-ČaB/1'); ii) a group of

Table 3. Fruit dimensions (height, width and thickness) and fruit shape index of the evaluated autochthonous plum genotypes
Tabela 3. Dimenzije ploda (visina, širina, debljina) i indeks oblika ploda ispitivanih autohtonih sorti šljive

Genotipe *Genotip*	Fruit height *Visina ploda* (mm)	Fruit width *Širina ploda* (mm)	Fruit thickness *Debljina ploda* (mm)	Fruit shape index *Indeks oblika ploda*
'Š-ČaGG/1'	34.75 ± 1.23 b*	27.29 ± 0.82 cd	29.02 ± 0.17 d	1.33 ± 0.03 gh
'Š-UžK/1'	30.01 ± 1.06 d	26.79 ± 1.94 de	26.17 ± 0.09 f	1.34 ± 0.07 gh
'Š-UžK/2'	32.38 ± 0.48 c	25.31 ± 0.52 fg	25.66 ± 0.12 fg	1.60 ± 0.07 de
'Š-KrGP/1'	38.83 ± 1.89 a	28.47 ± 0.86 bc	30.46 ± 0.52 c	1.74 ± 0.12 bcd
'Š-KrGP/2'	40.94 ± 0.32 a	36.39 ± 0.49 a	38.86 ± 0.56 a	1.18 ± 0.03 i
'Š-KrGP/3'	32.55 ± 0.97 c	24.42 ± 0.55 g	24.72 ± 1.25 g	1.76 ± 0.08 bc
'Š-ČaGG/2'	29.75 ± 0.41 d	25.36 ± 0.22 efg	25.99 ± 0.19 fg	1.34 ± 0.05 gh
'Š-ČaB/1'	29.16 ± 0.87 d	25.18 ± 0.68 g	25.76 ± 0.70 fg	1.32 ± 0.03 h
'Š-UžK/3'	32.08 ± 0.52 c	25.56 ± 0.96 efg	26.01 ± 1.02 f	1.56 ± 0.12 ef
'Š-UžK/4'	30.45 ± 0.53 d	26.09 ± 1.05 def	26.12 ± 0.72 f	1.36 ± 0.04 gh
'Š-GMNa/1'	32.74 ± 1.66 c	26.42 ± 0.38 def	27.52 ± 0.69 e	1.47 ± 0.03 fg
'Š-GMT/1'	39.93 ± 0.87 a	28.94 ± 0.69 b	31.97 ± 0.70 b	1.72 ± 0.09 cd
'Š-GMNe/1'	38.92 ± 0.15 a	28.98 ± 0.82 b	28.08 ± 0.38 de	1.86 ± 0.07 ab
'Š-UžK/5'	39.98 ± 1.07 a	29.02 ± 1.73 b	29.06 ± 1.45 d	1.92 ± 0.16 a

*The different lower-case letters within columns indicates significant differences for P ≤ 0.05 (LSD test)/*Različita mala slova u kolonama označavaju značajne razlike za P ≤ 0,05 (LSD test).*

genotypes with medium-sized fruits ('Š-KrGP/1', 'Š-UžK/3', 'Š-UžK/4', 'Š-GMT/1', 'Š-UžK/5'); iii) a group of genotypes with large fruits ('Š-KrGP/2'). Considering the classifications of the same author regarding to stone weight and flesh percentage, it can be said that the most of the studied plum genotypes are characterized by a small stone and a moderate percentage of the stone in relation to the fruit weight. From the obtained values of fruit shape index, it can be concluded that all studied genotypes had oval to elliptical fruit shape, which is more appreciated by consumers (Neumüller, 2011).

Among the collected plum genotypes with regard to the chemical composition of the fruits, the genotype 'Š-ČaB/1' can be singled out (Table 4). The fruits of this genotype had the highest content of soluble solids (24.55%), total sugars (14.32%) and invert sugars (8.04%). The fruits of genotype 'Š-ČaGG/1' were characterized by the highest content of sucrose (8.21%), while the fruits of genotype 'Š-KrGP/3' had the highest content of total acids (2.09%) and, at the same time, the lowest pH value of the fruit juice (3.01). The lowest content of soluble solids and total sugars was found in genotype 'Š-GMT/1' (14.25% and 9.70%, respectively), the lowest content of reducing sugars (3.24%) was found in genotype 'Š-UžK/1', and the lowest content of sucrose (3.84%) was exhibited by genotype 'Š-GMNe/1'. The lowest content of total acids (0.70%) in the fruits was found in genotypes 'Š-GMNe/1' and 'Š-UžK/5'. Also, genotype 'Š-UžK/5' had the highest pH value of the fruit juice (3.82). The results obtained in our study regarding chemical composition are in accordance with Nenadović-Mratinić et al. (2007) and Milošević & Milošević (2012).

Better fruit quality is associated with higher soluble solids content. It was found that a soluble solids content of 12% in early-maturing genotypes and 17% in late-maturing genotypes is the threshold for consumer acceptance (Crisosto, 2007; Neumüller, 2011). The results of this study indicate that all genotypes exhibited good fruit quality. In addition to fresh consumption, the content of soluble solids is a very important criterion for plum genotypes intended for processing (Milatović, 2019). Based on the obtained results and the classification published by the same author, it can be concluded that five genotypes ('Š-KrGP/1', 'Š-KrGP/2', 'Š-GMNa/1', 'Š-GMT/1', 'Š-GMNe/1') were characterized by medium content of soluble solids, while another five genotypes ('Š-ČaGG/1', 'Š-UžK/1', 'Š-UžK/2', 'Š-ČaGG/2', 'Š-UžK/4') had high soluble solids content. Furthermore, four genotypes ('Š-KrGP/3', 'Š-ČaB/1', 'Š-UžK/3', 'Š-UžK/5') had very high content of soluble solids.

Table 4. Fruit chemical composition of the assessed autochthonous plum genotypes
Tabela 4. Hemijski sastav ploda ispitivanih autohtonih sorti šljive

Genotype *Genotip*	SSC* *RSM* (%)	TS *UŠ* (%)	IS *IŠ* (%)	SC *SS* (%)	TA *UK* (%)	pH of fruit juice *pH soka ploda*
'Š-ČaGG/1'	19.50	13.20	4.56	8.21	1.11	3.29
'Š-UžK/1'	19.30	10.58	3.24	6.97	1.24	3.30
'Š-UžK/2'	18.25	10.82	3.84	6.63	1.27	3.42
'Š-KrGP/1'	16.60	10.95	3.72	6.87	1.35	3.01
'Š-KrGP/2'	16.55	9.95	3.96	5.69	1.94	3.01
'Š-KrGP/3'	20.05	10.95	5.35	5.32	2.09	3.01
'Š-ČaGG/2'	20.00	11.45	4.32	6.77	1.18	3.17
'Š-ČaB/1'	24.55	14.32	8.04	5.97	1.13	3.28
'Š-UžK/3'	20.45	13.20	7.85	5.08	1.29	3.28
'Š-UžK/4'	18.25	11.95	5.04	6.56	1.12	3.28
'Š-GMNa/1'	15.65	11.95	5.04	6.56	1.17	3.24
'Š-GMT/1'	14.25	9.70	4.91	4.55	1.13	3.33
'Š-GMNe/1'	16.10	10.45	6.41	3.84	0.70	3.60
'Š-UžK/5'	21.10	12.70	7.60	4.84	0.70	3.82

*SSC – Soluble solids content; TS – Total sugars content; IS – Invert sugars content; SC – Sucrose content; TA – Total acids content/*RSM – Sadržaj rastvorljive suve materije; UŠ – Sdržaj ukupnih šećera; IŠ – Sadržaj invertnih šećera; SS – Sadržaj saharoze; UK – Sadržaj ukupnih kiselina*

Conclusion

The results obtained in this study have shown the great heterogeneity of the autochthonous plum material present in Serbia. These findings impose the necessity of future activities in the form of ex situ collections and further evaluations to identify the most useful variables and single out specific autochthonous genotypes that will be useful for future plum breeding programmes or for commercial production of plum fruits for fresh consumption, drying or processing.

Acknowledgment

This work was supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia (Contract numbers: 451-03-47/2023-01/200215 and 451-03-47/2023-01/ 200011).

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BIOLOŠKO-POMOLOŠKE OSOBINE AUTOHTONIH SORTI ŠLJIVE KOLEKCIONISANIH NA PROSTORU ZAPADNE SRBIJE

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Rezime

Republika Srbija obiluje autohtonim sortama i populacijama domaće šljive koje su nastale kao rezultat dugotrajne selekcije od strane čoveka, kao i od strane edafskih, klimatskih i geomorfoloških uslova karakterističnih za područje u kom su nastale. One predstavljaju ogromno nacionalno bogatstvo i prirodni resurs koji nije u dovoljnoj meri istražen, a samim tim ni upotrebljen u adekvatne svrhe. Nažalost, sve je prisutniji trend gubitka genetičkih resursa uzrokovan prenamenom zemljišta i uvođenjem u proizvodnju novijih sorti visoke rodnosti. Rad na kolekcionisanju i proučavanju autohtonih genotipova šljive sa ciljem njihovog korišćenja u oplemenjivačkim programima i uvođenja u proizvodnju sprovodi se u Institutu za voćarstvo, Čačak od njegovog osnivanja do danas. U ovom radu su prikazani rezultati proučavanja najznačajnijih osobina stabla i ploda 14 autohtonih genotipova šljive nepoznatog porekla koji su, kao pojedinačna stabla gajena na sopstvenom korenu, in situ kolekcionisani na teritoriji Zapadne Srbije. Nazivi kolekcionisanih genotipova su formirani na osnovu geografskih odrednica (grad, opština i selo) i brojeva koji su dodeljeni prema redosledu sazrevanja. Najznačajnije osobine stabla (bujnost, tendencija ka formiranju izdanaka i koeficijent rodnosti ispitivani su prema metodologiji navedenoj u međunarodno priznatom deskriptoru (Descriptor List for Plum and Allied Species, IBPGR), dok su fenološke osobine (početak i kraj cvetanja) i pomološke osobine (masa ploda i koštice, randman ploda, dimenzije i indeks oblika ploda, sadržaj rastvorljive suve materije, ukupnih i invertnih šećera, sadržaj saharoze, ukupne kiseline i pH soka ploda) ispitivane korišćenjem standardnih metoda. Dobijeni rezultati su pokazali da u kolekcionisanom materijalu nema genotipova koji se odlikuju umanjenom bujnošću, dok je sklonost ka formiranju izdanaka varirala od male do veoma velike. Proučavani genotipovi su tokom perioda ispitivanja (2020/21) postigli osrednju do dobru rodnost. Svi proučavani genotipovi šljive su se odlikovali dugim cvetanjem, a kod genotipova 'Š-GMNe/1' i 'Š-UžK/5' je uočen veoma kasni početak cvetanja. Većina kolekcionisanih genotipova se odlikovala eliptičnim oblikom ploda, sitnom košticom i srednjim randmanom ploda. Grupa genotipova sitnog ploda je bila najbrojnija, dok se nekoliko genotipova odlikovalo srednje krupnim plodom, a samo jedan genotip ('Š-KrGP/2') krupnim plodom. Rezultati koji se odnose na sadržaj rastvorljive suve materije u plodu ukazuju na to da su se svi kolekcionisani genotipovi odlikovali dobrim kvalitetom ploda. U ovom pogledu prednjači genotip 'Š-ČaB/1' u čijim plodovima je utvrđen najviši sadržaj rastvorljive suve materije, ukupnih i invertnih šećera.

Ključne reči: osobine stabla, fenofaza cvetanja, morfometrijske osobine, hemijski sastav ploda