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Phenological characteristics and fruit quality of introduced sweet cherry (*Prunus avium* L.) cultivars in agroecological conditions of Čačak

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Abstract. Phenological and pomological properties of nine introduced sweet cherry cultivars – 'Burlat', 'Early Bigi', 'Early Lory', 'Early Star', 'Junska Rana', 'Newstar', 'Merchant', 'Sunburst' and 'Vega', were studied in the vicinity of Čačak, during the two-year period (2018–2019). The investigation included morphometrical characteristics of fruit (fruit and stone weight; fruit dimensions – height, width and thickness; stalk length; fruit shape index; stone share), biochemical composition of fruit (soluble solids content; total sugars, inverted sugars and sucrose contents; total acids content; fruit juice pH, and sweetness index).

The cultivars were characterized by medium-early to medium-late flowering time, and ripening span from 2nd to 4th ripening-week of cherry season. The highest value of fruit weight was found in 'Sunburst' (4th week of cherry ripening season) and 'Early Star' (2nd week of cherry ripening season). The chemical analyses also pointed to the high quality of fruits for these two cultivars, so they can be recommended for the commercial sweet cherry orchards in the Republic of Serbia, in order to improve assortment structure, and to extend harvesting season. 'Merchant' was also characterized with exceptional quality, in terms of biochemical composition of fruits. In relation to early ripening time (earlier than 'Burlat'), cultivar 'Early Bigi' showed high values of quality parameters. Both 'Merchant' and 'Early Bigi' could be the part of sweet cherry assortment in a smaller extent, after verification in production conditions, and in the areas where they give good results.

Key words: *Prunus avium* L., cultivars, flowering time, ripening time, pomological characteristics

Introduction

Sweet cherry (*Prunus avium* L.) is an interesting and economically increasingly important fruit species in the Republic of Serbia. Agroecological conditions for its cultivation in Serbia can be described as very suitable, implying that sweet cherry ought to be more freely grown and widely spread, especially in the vicinity of bigger consumer centres.

To increase sweet cherry production in Serbia, it is necessary to introduce new cultivars which, when compared to existing ones, have more attractive appearance of the fruit and better quality. Cultivars should belong to different ripening-weeks of cherry season, in order to provide the market with high-quality fruits in the widest possible time span, and rationally organize the harvest. In different breeding programmes, special attention has been paid to obtain high-quality early ri-

pening sweet cherry cultivars that can compete with the well-known cultivar of standard quality 'Burlat', i.e. show better quality in terms of fruit size, firmness and cracking tolerance (Quero-García et al., 2019). Excellent results have been obtained with 'Early Lory' and 'Early Bigi' in France (Charlot, 2003) and 'Early Star' in Italy (Sansavini & Lugli, 2005). In addition to the cultivars of mid-early to mid-late ripening time with which growers already have some positive experiences ('Burlat', 'Sunburst', 'Vega' etc.), the newer cultivars with good pomological traits and earlier ripening time could be also recommended, after verification in certain productive circumstances ('Early Bigi', 'Early Lory', 'Early Star'; Radičević et al., 2017).

These trends in improving the assortment structure ought to be followed by positive developments in terms of growing technology, through the application of appropriate pomotechnical and agro-management practices. In this sense, it can be observed that production of cherries in Serbia is undergoing a sudden transition from extensive to very intensive cropping systems, whose initial results are encouraging, but where there are still a number of open issues for application in wide practices.

The aim of this work was to examine the characteristics of flowering phenophase, ripening time and fruit quality of some mid-early to mid-late sweet cherry cultivars. Based on the obtained results, the best cultivars will be recommended for growing in the Čačak region, as well as in other regions with similar environmental conditions.

Material and Methods

Plant material. Nine sweet cherry (*Prunus avium* L.) cultivars were used in this study viz., 'Burlat', 'Early Bigi', 'Early Lory', 'Early Star', 'Junska Rana', 'Newstar', 'Merchant', 'Sunburst' and 'Vega'. The trial was carried out in Jezdina, near Čačak (43°51' N; 20°18' E; 399 m above the sea), Western Serbia, which is of temperate continental climate, and a typical area for fruit cultivation.

Cultivars were grafted on Gisela 5 rootstock. The orchard was established in 2009, in a randomized block design with five trees in three replications, at a distance of 4.0 m × 2.0 m. Standard pomotechnical and agricultural practices were applied. The research was performed during 2018–2019.

Flowering and ripening time. Flowering phenophase was monitored using BBCH scale for determining beginning, full flowering and flowers fading (stages 61, 65 and 67, resp.; Meier, 2018). The abundance of flowering was expressed by grades: excellent (5), very good (4), good (3), weak (2), bad (1) and there were no flowers (0).

Ripening time was determined in the period of full ripeness (stage 89, according to BBCH scale; Meier, 2018). Cultivars were classified into one of the six week-groups according to ripening time (signs – or + emphasize that cultivar approaches the previous or next group in terms of ripening time). The classification of cultivars was based on the ripening time of 'Burlat', which belongs to the group of the second week of cherry fruit ripening (Milatović et al., 2015).

Morphometrical characteristics of fruits. Standard morphometric methods were used for the evaluation of fruit and stone weight, fruit dimensions (height, width, and thickness) and stalk length, on a sample of 75 fruits (25 fruits per replication). Fruit shape index was calculated as $\text{length}^2 \times \text{width}^{-1} \times \text{thickness}^{-1}$, and stone share as a percentage of stone weight in the total fruit weight.

Biochemical composition of fruits. In 2019, the following parameters were determined: soluble solids content (by portable refractometer, Hanna Instruments, Germany), total, inverted sugars and sucrose content (according to Luff-Schoorl; Egan et al., 1981), total acids content expressed in malic acid (by titration of 0.1 N NaOH with phenolphthalein as indicator), existing acidity (using the CyberScan 510 pH meter, Eutech Instruments Pte Ltd, Singapore). Sweetness index was calculated manually as the ratio of the total content of sugars and total acids content.

Data analysis. Standard error was calculated for the measured parameters. The data were statistically analysed using a two-factor analysis of variance (ANOVA). The significance of differences among mean values was determined by Duncan's Multiple Range Test at $P \leq 0.05$. Data analysis was done by using the SPSS statistical software package, Version 8.0 for Windows (SPSS. Inc., Chicago, IL).

Results and Discussion

Phenological characteristics. Among the investigated cultivars, 'Early Lory' and 'Junska Rana' had the earliest average beginning of the flowering phenophase, whereas the latest was in 'Sunburst' (Tab. 1). The period between the beginning and full flowering phenophases was 2–4 days, while the duration of the flowering phenophase lasted 10 ('Sunburst') to 15 days ('Burlat'). The results are in accordance to Nyéki & Soltész (1996), who stated that sweet cherry is characterized by short period between the beginning and full flowering, and by duration of the flowering phenophase in the span from 6 to 15 days. The same authors implied that, despite the order of the flowering beginning among the cultivars within the species is determined genetically, it can vary considerably depending on the locality and year. Thus, an established order of cultivars based on the beginning of the flowering phenophase does not exist – only the one that can be expected with the highest probability. The values of flowering abundance were relatively high, and this can be interpreted by genotypic specificities, but also with the rootstock influence. The lowest value of flowering abundance was observed in 'Merchant' (3.5; Tab. 1).

The ripening time was the earliest in 'Early Bigi', and the latest in 'Sunburst' (Tab. 2). The obtained results for some of the cultivars are similar to those obtained in the similar agroecological conditions (Radičević et al., 2016). For cultivars belonging to 2nd and 3rd ripening-week, ripening time is similar comparing to previously obtained results, and quite earlier when we compare cultivars belonging to later ripening-weeks (Radičević et al., 2014). The results for ripening time of 'Merchant' are not in accordance to those obtained by Milatović et al. (2021) – comparing to 'Burlat', ripening span is shorter (+5). In West Serbia cherry orchards, the trend of shortening ripening span is

Tab. 1. Flowering phenophase of sweet cherry cultivars in agroecological conditions of Čačak (average, 2018–2019)
Tab. 1. Karakteristike fenofaze cvetanja sorti trešnje u agroekološkim uslovima Čačka (prosek, 2018–2019. godina)

Cultivar *Sorta*	Flowering phenophase/*Fenofaza cvetanja*				
	Flowering onset *Početak cvetanja*	Full flowering *Puno cvetanja*	End of flowering *Kraj cvetanja*	Duration of flowering *Trajanje cvetanja*	Abundance of flowering *Obilnost cvetanja*
'Burlat'	05. 04.	09. 04.	20. 04.	15	4.0
'Early Bigi'	04. 04.	06. 04.	15. 04.	11	4.5
'Early Lory'	03. 04.	06. 04.	14. 04.	11	4.0
'Early Star'	05. 04.	07. 04.	18. 04.	13	4.5
'Junska Rana'	03. 04.	07. 04.	17. 04.	14	5.0
'Merchant'	04. 04.	08. 04.	15. 04.	11	3.5
'Newstar'	06. 04.	09. 04.	19. 04.	13	5.0
'Sunburst'	09. 04.	12. 04.	19. 04.	10	5.0
'Vega'	08. 04.	11. 04.	20. 04.	12	4.0

Tab. 2. Ripening time of sweet cherry cultivars in agroecological conditions of Čačak (average, 2018–2019)
Tab. 2. Vreme zrenja sorti trešnje u agroekološkim uslovima Čačka (prosek, 2018–2019. godina)

Cultivar *Sorta*	Harvest date *Datum berbe*	The number of days in relation to 'Burlat' *Broj dana uodnosu na 'Burlat'*	Week of ripening *Nedelja sazrevanja*
'Burlat'	27. 05.	/	2nd
'Early Bigi'	25. 05.	-2	2nd
'Early Lory'	26. 05.	-1	2nd
'Early Star'	30. 05.	+3	2nd (+)
'Junska Rana'	01. 06.	+5	3rd (-)
'Merchant'	04. 06.	+8	3rd
'Newstar'	06. 06.	+10	3rd (+)
'Sunburst'	09. 06.	+13	4th (+)
'Vega'	08. 06.	+12	4th

noticeable in past years, particularly for cultivars with later ripening time, and that is probably conditioned by climate.

For some of the earlier cultivars, grafted on the same rootstock, ripening time is about 10 days later than in conditions of Mačva (Milatović et al., 2011). Milatović & Đurović (2010) stated that the cherry ripening season is on average 2–10 days earlier in the Belgrade region than in West Serbia. Differences in the ripening time in different regions and localities of the Republic of Serbia should certainly be taken into consideration when choosing cultivars for commercial orchards, bearing in mind market requirements and possibility for placement fresh cherry fruits.

Pomological characteristics. Fruit size is one of the most important pomological properties, as well as one of the most important goals of the sweet cherry breeding programmes. In terms of their weight, the fruits of investigated cultivars were classified (classification by Milatović et al., 2015) as very large ('Early Star', 'Vega' and 'Sunburst'), large ('Early Bigi', 'Burlat', 'Junska Rana' and 'Merchant'), and medium-large ('Early Lory', 'Newstar'). The highest fruit weight was recorded in 'Sunburst' (10.19 g; Tab. 3). This is in accordance with previous results (Radičević et al., 2014), according to which this cultivar has exceptional fruit weight in similar agroecological conditions. High value of fruit weight was also found in 'Early Star' (9.15 g), giving to it a special attractiveness, particularly in the context of the early ripening time of this cultivar. The results are not in accordance with previously obtained for 'Newstar' (10.45; Radičević et al., 2014). In this research, lower result for fruit size was probably caused by overcropping – self-fertile 'Newstar' with high yield potential has that tendency, which was overlapped with the effect of low-vigorous rootstock Gisela 5 on fruit size. Discussing characteristics of 'Early Star' and 'Merchant', Usenik & Fajt (2019) stated that productivity and fruit quality of early cultivars were reduced in some years due to unfavourable weather conditions in the period before or during ripening.

Tab. 3. Fruit morphometric characteristics of sweet cherry cultivars in agroecological conditions of Čačak (2018–2019)
Tab. 3. Morfometrijske osobine ploda sorti trešnje u agroekološkim uslovima Čačka (2018–2019. godina)

Cultivar/Year *Sorta/Godina*	Fruit weight *Masa ploda* (g)	Širina ploda *Fruit width* (mm)	Fruit shape ratio *Indeks oblika ploda*	Stalk length *Dužina peteljke* (mm)	Stone share *Udeo koštice* (%)
Cultivar (A)/*Sorta (A)*					
'Burlat'	7.65 ± 0.29 d	24.16 ± 0.18 c	1.02 ± 0.04 ab	29.79 ± 1.15	5.62 ± 0.54 a
'Early Bigi'	8.36 ± 0.45 c	26.25 ± 0.68 b	0.87 ± 0.01 e	36.26 ± 1.06	5.09 ± 0.19 b
'Early Lory'	6.37 ± 0.10 f	22.59 ± 0.27 d	0.97 ± 0.02 bcd	32.39 ± 1.06	4.61 ± 0.42 c
'Early Star'	9.15 ± 0.37 b	26.20 ± 0.37 b	0.99 ± 0.02 bc	29.59 ± 0.27	3.91 ± 0.18 d
'Junska Rana'	7.07 ± 0.08 e	23.78 ± 0.17 c	1.09 ± 0.04 a	33.34 ± 0.81	4.69 ± 0.05 c
'Merchant'	8.66 ± 0.34 c	25.84 ± 0.30 b	1.07 ± 0.02 a	40.24 ± 0.51	5.67 ± 0.13 a
'Newstar'	6.56 ± 0.14 f	24.00 ± 0.51 c	0.91 ± 0.02 de	37.33 ± 1.76	3.74 ± 0.08 de
'Sunburst'	10.19 ± 0.27 a	27.18 ± 0.20 a	0.92 ± 0.02 cde	47.62 ± 0.80	3.56 ± 0.09 e
'Vega'	9.02 ± 0.21 b	25.68 ± 0.23 b	0.91 ± 0.02 de	39.17 ± 1.04	4.71 ± 0.11 c
Godina (B)/*Year (B)*					
2018	7.65 ± 0.21 b	24.55 ± 0.26 b	0.98 ± 0.02	36.37 ± 1.16	4.74 ± 0.19 a
2019	8.58 ± 0.29 a	25.51 ± 0.35 a	0.96 ± 0.02	36.01 ± 1.15	4.51 ± 0.16 b
ANOVA					
A	*	*	*	*	*
B	*	*	ns	ns	*
A × B	*	*	ns	ns	*

* ns – significant / not significant differences for $P \leq 0.05$ (F test); small-case letters in columns indicate significant differences for $P \leq 0.05$ according to Duncan's Multiple Range Test/* *ns – značajne razlike / razlike koje nisu statistički značajne za $P \leq 0.05$ (F test); mala slova u kolonama pokazuju značajne razlike za $P \leq 0.05$ primenom Dankanovog testa*

Fruit width had the highest value in 'Sunburst' (27 mm; Tab. 3), as well as in 'Early Star' and 'Early Bigi' (26 mm). Fruit shape index had the highest value in 'Junska Rana' and 'Merchant' (1.09 and 1.07, respectively), which is in accordance with their slightly elongated shape; the lowest was in 'Early Bigi' (0.87; broad-hearted shape).

As for the stalk length, it had the highest value in 'Sunburst' (47.62 mm), which belongs to the group of cultivars with a long stalk (>4.6 cm; Milatović et al., 2015). The results for fruit weight, fruit shape ratio and stalk length obtained for 'Merchant' are in accordance with those obtained by Milatović et al. (2021). According to the same classification, 'Early Lory', 'Burlat' and 'Early Star' belong to the cultivars with the short stalk (<3.5 cm). The highest value of stone share had 'Merchant' and 'Burlat' (5.67% and 5.62%, respectively), although all the cultivars had the low value of this parameter (<6%; Toth et al., 1996).

Analysis of variance showed a statistically significant influence of genotype, year and their interactions on the fruit weight and width, as well as on stone share (Tab. 3). The influence of year and interaction of variability factors were not statistically significant on fruit shape and stalk length, i.e. these parameters showed dependence on genotype only.

Biochemical composition of fruits. The high content of soluble solids is one of the main breeding objectives of stone fruits (Callahan, 2003), and one of the most important indicators of the sweet cherry fruit quality. Soluble solids content had the highest value in 'Sunburst' (15.70%), and the lowest in 'Early Lory' (11.80%) (Tab. 4).

The total and inverted sugars contents were also the highest in 'Sunburst' (12.20%; 11.80%, respectively), and the lowest in 'Early Lory' (8.45%; 7.97%, respectively). The content of total acids ranged from 0.46% ('Early Lory') to 0.60% ('Early Bigi'; 'Sunburst'), and pH of fruit juice ranged from 3.55 ('Vega') to 3.82 ('Early Lory'; 'Early Star'). According to Kappel et al. (1996), the optimum pH value of the sweet cherry fruit juice was 3.76, and the value closest to the 'ideal' was determined in 'Merchant' (3.77).

Sweetness index had the highest value in 'Merchant' (23.89), pointing to its exceptional mesocarp quality. According to Milatović et al. (2021), high value of sweetness index (obtained as a relation of soluble solids and total acids content) was also obtained for 'Merchant'. High value of sweetness index also had 'Early Star' (20.45), as well as 'Burlat' and 'Sunburst' (>20). Quero-García et al. (2019) pointed that 'Early Star' is a 'superior quality, early, self-compatible sweet cherry cultivar'. When we relate its ripening time and fruit quality, we can resolve that this cultivar could be an important part of assortment structure in sweet cherry orchard in the Republic of Serbia.

Tab. 4. Biochemical composition of fruits of introduced sweet cherry cultivars (2019)
Tab. 4. Biohemijski sastav ploda introdukovanih sorti trešnje (2019. godina)

Cultivar *Sorta*	Soluble solids *RSM* (%)	Sugar content/Sadržaj šećera (%)			Total acids *Ukupne kiseline* (%)	Fruit juice pH *pH soka ploda*	Sweetness index *Indeks slasti*
		Ukupni *Total*	Invertni *Inverted*	Saharoza *Sucrose*			
'Burlat'	14.80	11.20	10.72	0.46	0.60	3.74	18.67
'Early Bigi'	11.80	8.45	7.97	0.45	0.46	3.82	18.37
'Early Lory'	14.70	11.20	10.59	0.58	0.55	3.71	20.36
'Early Star'	14.83	11.45	10.94	0.48	0.56	3.82	20.45
'Junska Rana'	13.55	10.70	10.42	0.27	0.57	3.69	18.77
'Merchant'	15.20	11.70	11.20	0.48	0.49	3.77	23.89
'Newstar'	13.80	10.20	9.72	0.50	0.52	3.64	19.61
'Sunburst'	15.70	12.20	11.80	0.33	0.60	3.70	20.33
'Vega'	15.35	10.95	10.42	0.50	0.58	3.55	18.88

Conclusion

Among investigated sweet cherry cultivars, according to characteristics expressed, mid-late and self-fertile cultivar 'Sunburst' showed the best results in terms of fruit size and biochemical composition of fruits. Considerable attention deserves 'Early Star', because of the earlier ripening time, and excellent pomological attributes in relation to the time of maturity. Previously named as a cultivar of local significance, mainly due to somewhat lower fruit firmness, 'Merchant' is characterized with an exceptional fruit quality and favourable ripening time, so it could be a part of the assortment in lesser extent, in the areas where it gives good results. Future investigation at different localities could give the answer if 'Early Bigi', with the earlier ripening time than 'Burlat', can compete with it regarding the quality and other biological and productive characteristics.

The improvement in assortment structure, along with the use of modern concept of growing of this species, can significantly improve both an overall state of sweet cherry growing in Serbia, and fruit growing production in general.

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References

Callahan A. (2003): Breeding for fruit quality. Acta Horticulturae, 622: 295-302.

Charlot G. (2003): La scelta varietale del ciliegio in Francia. Rivista di Frutticoltura e di Ortofloricoltura, 6: 17–21.

Egan H., Kirk R., Sawyer R. (1981): The Luff Schoorl method. Sugars and preserves. In: 'Pearson's chemical Analysis of Foods', 8th edition, Longman Scientific and Technical, Harlow, UK, pp. 152–153.

Kappel F., Fisher-Fleming B., Hogue E. (1996): Fruit characteristics and sensory attributes of an ideal sweet cherry. HortScience, 31(3): 443–446.

Meier U. (2018): Growth stages of mono- and dicotyledonous plants: BBCH Monograph. Julius Kühn-Institut, Quedlinburg, Germany.

Milatović D., Đurović D. (2010): Pomological properties of sweet cherry cultivars in the region of Belgrade. Journal of Pomology, 44(171/172): 87–93.

Milatović D., Đurović D., Đorđević B., Vulić T., Zec G. (2011): Pomological properties of new sweet cherry cultivars in high density planting. Proceedings of the III Conference 'Innovations in fruit growing – Improving the production of cherries', Belgrade (Republic of Serbia), pp. 163–171.

Milatović D., Nikolić M., Miletić N. (2015): Sweet and sour cherry – second edition. Scientific Pomological Society of Serbia, Čačak, Republic of Serbia.

Milatović D., Zec G., Boškov Đ., Đurović D., Đorđević B. (2021): Biological and productivecharacteristics of early sweet cherry cultivars in the Belgrade Danube region. Journal of Pomology, 55(209/210): 7–14.

Nyćki J., Soltész M. (1996): Floral biology of temperate zone fruit trees and small fruits. Akadémia Kiadó, Budapest, Hungary.

Quero-García J., Iezzoni A., López-Ortega G., Peace C., Fouché M, Dirlewanger E., Schuster M. (2019): Advances and challenges in cherry breeding. In: 'Achieving sustainable cultivation of temperate zone tree fruits and berries', Lang G. (ed.), Burleigh Dodds Science Publishing Limited, Cambridge, UK.

Radičević S., Cerović R. (2014): Ripening time and fruit quality of introduced sweet cherry (*Prunus avium* L.) cultivars. Journal of Mountain Agriculture on the Balkans, 17(6): 1558–1571.

Radičević S., Marić S., Cerović R., Milošević N., Mitrović O. (2016): Cultivar composition and fruit quality of introduced sweet cherry (*Prunus avium* L.) cultivars. Journal of Pomology, 50(195/196): 101-109.

Radičević S., Milatović D., Ognjanov V., Keserović Z., Fotirić-Akšić M. (2017): Contemporary sweet and sour cherry production. Abstract Book of the Conference 'Contemporary fruit production', Banja Koviljača (Republic of Serbia), pp. 27–30.

Sansavini S., Lugli S. (2005): New sweet cherry cultivars developed at the University of Bologna. Acta Horticulturae, 667: 45–51.

Toth G., Auer M., Auer F. (1996): Pomological features of sweet cherry cultivars from abroad: their adaptation to Hungarian conditions. Acta Horticulturae, 410: 25–33.

Usenik V., Fajt N. (2019): Sweet cherry cultivar testing in Slovenia. Acta Horticulturae, 1235: 265–270.

FENOLOŠKE KARAKTERISTIKE I KVALITET PLODA INTRODUKOVANIH SORTI TREŠNJE (*Prunus avium* L.) U AGROEKOLOŠKIM USLOVIMA ČAČKA

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Rezime

U cilju povećanja proizvodnje trešnje u Republici Srbiji, neophodno je uvođenje novih sorti koje u poređenju sa postojećim imaju atraktivniji izgled ploda i bolji kvalitet. Sorte treba da pripadaju različitim nedeljama sazrevanja trešnje, kako bi se tržištu obezbedili kvalitetni plodovi u što širem vremenskom periodu, a berba racionalno organizovala. U različitim programima oplemenjivanja u svetu posebna pažnja je posvećena dobijanju visokokvalitetnih ranih sorti trešnje koje mogu da konkurišu standardnoj sorti Burlat, odnosno da pokažu bolji kvalitet u pogledu krupnoće, čvrstine i otpornosti ploda na pucanje. Odlični oplemenjivački rezultati su postignuti sa sortama Early Lory i Early Bigi u Francuskoj, kao i sa sortom Early Star u Italiji.

Fenološka i pomološka svojstva devet introdukovanih sorti trešnje (Burlat, Early Bigi, Early Lory, Early Star, Junska Rana, Newstar, Merchant, Sunburst i Vega), proučavana su tokom dvogodišnjeg perioda (2018–2019. godine) u okolini Čačka (lokalitet Jezdina). Ispitivanjima su obuhvaćene karakteristike fenofaza cvetanja i zrenja, morfometrijske karakteristike ploda (masa ploda i koštice; dimenzije ploda - visina, širina i debljina; dužina peteljke; indeks oblika ploda; udeo koštice u ukupnoj masi ploda), biohemijski sastav ploda (sadržaj rastvorljivih suvih materija; sadržaj ukupnih šećera, invertnih šećera i saharoze, sadržaj ukupnih kiselina, pH soka ploda i indeks slasti).

Za ispitivane sorte je karakteristično srednje rano do srednje pozno vreme cvetanja, kao i vreme zrenja u drugoj (Early Bigi, Early Lory, Burlat, Early Star), trećoj (Junska Rana, Merchant, Newstar) i četvrtoj nedelji zrenja trešnje (Sunburst, Vega). Najbolje rezultate u pogledu krupnoće i biohemijskog sastava ploda pokazala je srednje-pozna samooplodna sorta Sunburst. Značajnu pažnju zaslužuje i Early Star, zbog ranijeg vremena sazrevanja i odličnih pomoloških karakteristika u odnosu na vreme zrenja. Označena kao sorta lokalnog značaja uglavnom zbog nešto manje čvrstine ploda, Merchant se odlikuje izuzetnim kvalitetom ploda i povoljnim vremenom sazrevanja, pa bi u manjem obimu mogao biti zastupljen u sortimentu trešnje, na lokalitetima gde daje dobre rezultate. Ispitivanja na različitim lokalitetima mogla bi da daju odgovor da li sorta Early Bigi, ranijeg sazrevanja u odnosu na sortu Burlat, može konkurisati ovoj sorti u pogledu kvaliteta ploda i drugih proizvodnih osobina.

Unapređenje strukture sortimenta, uz korišćenje savremenog koncepta gajenja ove vrste, može značajno poboljšati kako ukupno stanje proizvodnje trešnje u Republici Srbiji, tako i voćarsku proizvodnju uopšte.

Ključne reči: *Prunus avium* L., sorte, vreme cvetanja, vreme zrenja, pomološke karakteristike