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INFLUENCE OF VINEYARD PEACH SELECTIONS ON VIGOUR AND INITIAL YIELD IN PEACH AND NECTARINE

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Seedlings (progenies) of eight selected vineyard peach genotypes obtained by self and open pollination were examined in this study during three consecutive years. Two progenies from unselected vineyard peach genotypes with different geographic origin were used as a standard. Peach cv. Autumn Glo and nectarine cv. Stark Red Gold were grafted on F_1 generation of eight vineyard peach selections and two standard progenies. Analysis of variance indicated statistically significant differences in vigour and fruit productivity between fruit trees grafted on different progenies of vineyard peach selections. A high correlation was found between rootstock vigour and fruit production of grafted cultivars. In addition, the principal component analysis made it possible to establish similar groups of rootstocks, depending on its influence to vigour, productivity and indexes of efficiency of grafted peach and nectarine cultivar. The most promising rootstocks for those two cultivars were PSK and 7S because grafted AG and SRG have high fruit weight, initial yields and very satisfactory rootstock, scion and canopy efficiency.

Key words: rootstocks, progeny, seedlings, vigour, initial yield

INTRODUCTION

Rootstocks provide a cultural tool for peach growers to increase productivity and improve efficiency *via* controlled tree vigour and increased fruit size, initial yield and quality (REIGHARD and LORETI, 2008) in order to allow the adaptation of peach cultivation to specific training systems (GIOVANINNI and MONASTRA, 1998) and different planting distance. It often

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happens that the choice of rootstock and the cultivar to be grown are equally important for growers (REIGHARD, 2000). It is well known that some traits of the grafted peach cultivars, such as vigour, ageing, ramification angle and cropping significantly depend on a rootstock influence, and it is, therefore, a factor of quality and profitability for the orchard (SALESSES *et al*., 1998).

The vineyard peach (*Prunus persica* L. Batch.) population in Serbia is rich and polymorphous (ZEC *et al.*, 2000) and an inexhaustible source of genetic variability (GAŠIĆ *et al*., 2001), but until recently insufficiently investigated. Vineyard peach seedlings are still a leading rootstock in many peach growing regions across the world (RUBIO-CABETAS, 2009). Because of its low-temperature resistance, drought tolerance and disease resistance e.g. to powdery mildew and leaf curl it is the most important rootstock in Serbia. Its also achieve satisfactory cumulative fruit production and medium tree growth rate. Non-uniformity of vegetative growth and its diverse influence on peach fruit trees and yield level in commercial orchards, where vineyard peach seedling is used as a rootstock, is the result of utilization of unselected seeds in nursery production (ZEC *et al*., 2008).

The aim of this manuscript was to investigate the influence of progeny of selected vineyard peach genotypes, as a generative rootstock, to grafted peach and nectarine cultivars. Also, the goal was to determine the correlation among the traits, to identify the most useful variables for discrimination among the genotypes and to detect relationships between the genotypes.

MATERIALS AND METHODS

By gathering a large number of vineyard peach genotypes from different regions of Serbia, a collection was made at the Experimental Station `Radmilovac` that belongs to the Faculty of Agriculture in Belgrade, Serbia. According to its seedlings` vigour, seed germination and seedling vitality, accessions 1, 2, 3, 5 and 9 were separated. Genotype 6S was obtained by self-crossing of genotype 2, 7S by self-pollination of genotype 5 and 8S as an offspring of self-pollinated genotype 3. Two progenies (JIS and PSK) derived from uncontrolled pollination of a great number of genotypes with different geographical origin that are mostly utilized for peach or nectarine rootstocks, were used as the references. The JIS is a progeny of unselected seedlings taken from south-east part of Serbia, while the PSK came from Belgrade's neighbouring rootstock nurseries.

The experimental orchard (½ ha) was designed as a high-density peach and nectarine orchard. The rootstocks were planted in the trial field in Padinska Skela (near Belgrade) in 2004. Containers with vineyard peach trees were planted at the fixed places, at the beginning of June, at a 3.5 x 1 m distance. Each progenies was represented with 30 plants, where 15 (three replication per five plants) were grafted with peach and the rest with the nectarine cultivar. The seedlings from all groups were grafted at the beginning of September with peach Autumn Glo (AG) and nectarine Stark Red Gold (SRG), at a 50 cm height. The fruit trees were trained as a sloping leader with an angle of 65° under non-irrigated standard cultural practices. Nine variables were recorded for ten progenies of vineyard peach, grafted with peach and nectarine cultivar, for three consecutive years (2006-2008).

Following variables were studied:

1-2. Rootstock trunk diameter (RTD) and scion trunk diameter (STD) were measured just before vegetation started 10 cm below and 10 cm above the grafting place, respectively, and are presented by the scale in mm.

3-4. Tree height (H) and crown width (CW) were measured by the scale in cm.
5. Initial yield (Y) is presented as an average for three years; data are given in kg tree^{-1}
6. Fruit weight (FW) was measured by the scale in g.
7. Canopy efficiency (CEF) was established on the basis of relation between yield per tree and surface of canopy projection; data are given in kg m^{-2}.
8-9. Rootstock trunk efficiency (REF) and scion trunk efficiency (SEF) were established on the basis of relation between yield per tree and trunk cross-sectional area of rootstock or scion, respectively; data are given in g cm^{-2}.

Two-factorial analysis of variance (ANOVA) was executed with randomized complete block design. All ANOVAs were performed at a significance level of $P \leq 0.05$. The least significant difference (LSD 0.05 and 0.01), when necessary, was used to determine if the difference between rootstocks or cultivars was high enough to be considered real at a fixed level of confidence. Vineyard peach genotypes means were used to create a correlation matrix from which standardized principal component (PC) scores were extracted in order to determine the relationships among the accessions and among variables using statistic program 'Statistica' (StatSoft, Inc, Tulsa, Oklahoma, USA). Common components coefficients, eigenvalues, and relative and cumulative proportions of the total variance expressed by single traits were calculated. The first two components having maximum variance were selected for creating scatter plots for all accessions studied.

RESULTS

Scores for the nine variables in ten progenies of vineyard peach, grafted with AG and SRG are shown in Table 1. RTD and STD are amongst the basic indicators of peach tree vigour. The highest RTD and STD were demonstrated by the trees from group JIS (48.9 and 50.3 mm, respectively) and group 1 (48.5 and 48.8 mm, respectively), while the lowest were found in the trees from groups 2, 5, 3 and 6S (ranged from 43.0 to 45.1 mm). Groups of trees JIS, 7S and 1 stand out for the highest average H of the grafted cultivars (242.2, 235.5, and 235 cm, respectively), while the lowest trees are from groups 3 and 2 (208 and 211 cm, respectively). The highest CW average had group JIS (160 cm), and the lowest group 7S (129 cm). Similar to RTD and STD, groups JIS and 1 stand out for the highest average initial yield (15.7, 15.4 t/ha, respectively). Lower initial yields of groups 2, 3, 5 and 6S were influence by lower vigour of rootstocks. The highest average FW were found in group JIS (151.5 g), while the lowest was recorded in group 6S (134.5 g). Other characters to be taken into consideration were efficiency indexes (CEF, REF and SEF). When AG was grafted, CEF varied from 4.03 (group 5) up to 5.30 kg/m^2 (group 7S). The lowest values of REF and SEF had group 8S (0.287, 0.283 kg/cm^2, respectively), while the highest was recorded in group 2 (0.356, 0.346 kg/cm^2, respectively). In the case when SRG was a scion, CEF ranged from 3.61 (group 6S) to 4.44 kg/m^2 (group 8S). The highest REF and SEF were influenced by group 6S, while the lowest with the group PSK.

Correlations of interest both in determining how improvements in one trait may affect other traits and choosing candidates for indirect selection are presented in Tables 2 and 3. Correlation coefficients between tree attributes were significant and similar for peaches and nectarines. When AG was a scion, the RTD correlated highly significant and positive with the tree vigour of the grafted cultivars. There was a strong positive correlation between RTD and FW ($r = 0.92$). The STD correlated significant and positive with H, Y and FW ($r = 0.92$; $r = 0.92$; $r = 0.88$, respectively). Also, there was a highly significant positive correlation between Y and

FW (r = 0.83). Correlation analysis of parameters for SRG produced very similar results. There was statistically significantly positive correlation between RTD and STD, H and Y (r =0.99; r =0.86; r =0.83, respectively). The STD correlated positively with H, FW and Y (r =0.85; r =0.65; r =0.84, respectively), and there was significant positive correlation between nectarine's Y and FW (r =0.87).

Table 1. Mean values for nine characters of 10 (groups of trees) vineyard peach rootstocks grafted with peach cv. Autumn Glo (AG) and nectarine cv. Stark Red Gold (SRG)

Characters	RTD		STD		H		CW		FW		Y		CEF		REF		SEF	
Group of trees	AG	SRG	AG	SRG	AG	SRG	AG	SRG	AG	SRG	AG	SRG	AG	SRG	AG	SRG	AG	SRG
JIS	49.3	48.6	50.3	49.0	246	239	165	155	166	137	16.8	14.6	4.28	3.95	0.308	0.276	0.296	0.271
PSK	47.0	45.6	48.3	46.6	237	232	159	146	164	136	16.5	14.1	4.37	4.06	0.333	0.302	0.315	0.289
1	49.0	48.0	49.3	48.3	235	235	154	143	166	134	16.4	14.5	4.47	4.25	0.305	0.281	0.301	0.277
2	42.0	44.0	42.6	44.6	214	208	145	130	146	124	14.1	12.4	4.09	4.02	0.356	0.286	0.346	0.278
3	43.3	44.6	44.3	45.6	206	210	141	127	152	125	13.9	12.5	4.13	4.12	0.331	0.280	0.316	0.268
5	44.0	43.6	44.3	44.3	210	211	137	139	146	134	13.1	12.6	4.03	3.81	0.302	0.296	0.298	0.286
6 S	44.0	45.0	44.6	45.6	210	220	134	135	147	122	13.2	11.7	4.13	3.61	0.304	0.258	0.296	0.251
7 S	47.6	46.6	48.3	47.0	241	230	130	128	164	134	16.3	13.7	5.30	4.48	0.321	0.281	0.312	0.277
8 S	46.3	47.6	46.6	48.3	222	224	137	130	164	135	13.8	13.7	4.25	4.44	0.287	0.270	0.283	0.262
9	47.0	46.6	47.6	47.6	236	222	135	137	165	135	15.8	13.8	4.94	4.24	0.319	0.283	0.311	0.272
Mx	45.9	46.0	46.6	46.7	225.7	223.1	143.7	137	158	132	15.0	13.4	4.40	4.10	0.317	0.281	0.307	0.273
$LSD_{C\ 0.05}$								6.64		4.01		0.56		0.44		0.008		0.010
$LSD_{C\ 0.01}$								8.88		5.37		0.75		0.59		0.011		0.013
$LSD_{R\ 0.05}$		1.17		1.29		8.59		14.85		8.97		1.26		0.97		0.020		
$LSD_{R\ 0.01}$		1.57		1.73		11.50		19.87		12.01		1.68		1.29		0.027		

Table 2. Correlation coefficients between parameters of tree vigour and fruit productivity in AG grafted on different groups of vineyard peach seedlings

	RTD	STD	H	CW	FW	Y	CEF	REF	SEF
RTD		0.99**	0.91**	0.45	0.92**	0.84*	0.54	-0.43	-0.47
STD			0.92**	0.51	0.92**	0.88**	0.53	-0.35	-0.42
H				0.46	0.88**	0.95**	0.67*	-0.08	-0.13
CW					0.37	0.57	-0.30	0.14	0.04
FW						0.83*	0.61	-0.28	-0.34
Y							0.61	0.13	0.06
CEF								0.03	0.04
REF									0.98**
SEF									

*p<0.05 - significant

**p<0.01 – very significant

Table 3. Correlation coefficients between parameters of tree vigour and fruit productivity in SRG grafted on different groups of vineyard peach seedlings

	RTD	STD	H	CW	FW	Y	CEF	REF	SEF
RTD		0.99**	0.86**	0.46	0.62	0.83*	0.50	-0.31	-0.18
STD			0.85	0.45	0.65*	0.84*	0.52	-0.27	-0.18
H				0.66*	0.67*	0.84*	0.29	-0.06	0.07
CW					0.55	0.59	-0.33	0.23	0.29
FW						0.87**	0.47	0.42	0.49
Y							0.56	0.27	0.38
CEF								0.10	0.16
REF									0.97**
SEF									

*p<0.05 - significant

**p<0.01 – very significant

Principal component analysis (PCA) was used to establish similar groups of vineyard peach seedlings, according to their characters, as well as to study relationships among its traits. The PCA carried out in this study showed more than 98% in peach and more than 96% in nectarine of the variability observed by the first three components (Tables 4 and 5). The PC1, PC2 and PC3 accounted for 59.71%, 23.77% and 14.53% respectively of the variability when AG was grafted, and 54.23%, 26.92% and 15.17% respectively of the variability when SRG was a scion.

Component scores for the accessions evaluated in peach are shown in Table 4. Negative values for PC1 indicate groups of rootstocks with higher RTD, STD, H and Y. Rootstocks such as JIS, PSK, 1, 7S and 9 belong to this group. The highest PC2 values correspond to groups with the highest REF and SEF (PSK and 2). The group of rootstocks (5, 6S and 8S) with the lowest negative PC2 values stands out especially due to their low FW, Y and all variables connected with the tree efficiency. The highest PC3 values point out the rootstocks with the highest CW. Rootstocks such as JIS, PSK and 1 are in this group. Negative values for PC3 have rootstocks from groups 9 and 7S, with the highest canopy efficiency. Component scores for the accessions estimated in nectarine (Table 4) show negative values for PC1 scores in rootstocks (2, 3, 5 and 6S) with the lowest H, Y and CEF. The highest PC1 values have rootstocks JIS, PSK and 1 that give the most vigour and the highest fruit weight to nectarine trees. The highest PC2 values correspond to rootstocks 6S and 8S with the lowest REF and SEF. Rootstocks with the highest crown width (7S and 8S) have the highest PC3 values. Negative values for PC3 indicate groups of rootstocks with the highest canopy efficiency (JIS, PSK, 5 and 6S), as shown in Table 4.

The scatter plots (Fig. 1) also show geometrical distances among rootstocks in the plot that reflect similarity among them in terms of variables measured. For peach, two groups of related accessions were separated. Group A included those accessions with negative values of PC1 and intermediate of PC2. Second, group B, consisted of two genotypes that corresponded with strong positive PC1 and highly negative PC2 value. For nectarine, only one group of related accessions was separated. This group (C) included those accessions with both positive values of

PC1 and PC2 scores. For further evaluation it is quite enough to take just one rootstock for each group, while the rest of them can be considered a unique item.

Table 4. Component loadings for variables for 10 vineyard peaches as rootstocks for peach AG and nectarine SRG

Variable	AG			SRG		
	PC 1	PC 2	PC 3	PC 1	PC 2	PC 3
RTD	-0.983	-0.148	0.046	0.901	0.422	0.026
STD	-0.990	-0.074	0.083	0.906	0.401	0.050
H	-0.958	0.206	-0.052	0.908	0.155	-0.216
CW	-0.460	0.290	0.839	0.619	-0.212	-0.750
FW	-0.949	-0.023	-0.072	0.864	-0.337	0.066
Y	-0.908	0.408	0.043	0.981	-0.142	0.070
CEF	-0.611	0.207	-0.761	0.513	0.031	0.856
REF	0.282	0.954	-0.005	0.117	-0.983	0.077
SEF	0.343	0.930	-0.082	0.233	-0.957	0.078
Eigenvalue	5.373	2.140	1.308	4.880	2.423	1.365
% Var.	59.705	23.773	14.533	54.225	26.922	15.170
% Cum.	59.705	83.478	98.011	54.225	81.147	96.317

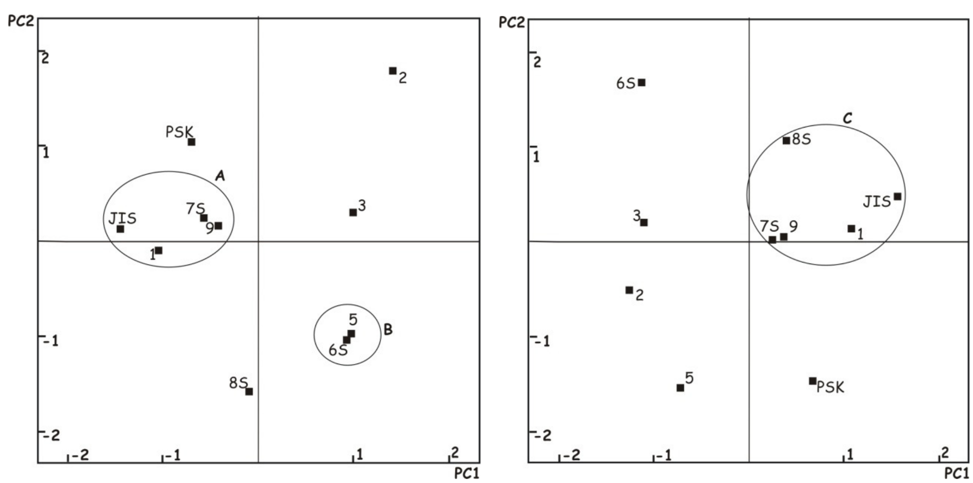

Fig. 1. Segregation of 10 vineyard peach rootstocks grafted by peach cultivar AG (left) and by nectarine cultivar SRG (right) according to their characteristics determined by (PCA)

DISCUSSION

The data presented herein were gathered from a portion of vineyard genotypes used as generative rootstocks for peach cultivar Autumn Glo and nectarine cultivar Stark Red Gold in a specific high-density planting system. This is quite satisfactory population from which to study the behaviour of various vineyard peach genotypes as rootstocks, mainly because the genotypes were collected from different country regions.

According to the RTD value, during initial production, the groups of trees can be divided into the sections as follows: JIS and 1 can be described as moderate vigour, PSK, 7S, 8S and 9 moderately-low vigour, and 2, 3, 5 and 6S low vigour. Statistically significant differences between RTD and STD emerged because of the large divergence of various vineyard peach genotypes whose progenies were used as rootstocks. In addition, low vigour could be the result of a reduced space for root system development in a high-density planting system that was confirmed by CARUSO *et al*. (1999) who obtained significant differences in trunk cross-section in cv. Flordaprins grown at different distances, which was explained by reduced space for tree growth. Differences in H occurred due to influence imparted by rootstocks of various vigour levels, but also due to effects of winter and summer pruning. Numerous studies have found that some peach rootstocks increase yield and fruit size in commercial peach cultivars (MASSAI and LORETI, 2004, REIGHARD and LORETI, 2008). Regardless the fact that fruit weight can sometimes be significantly influenced by rootstock, cultural practices (pruning and thinning) and environmental factors (water and sunlight) often obscure or negate those effects, especially when vineyard peach seedlings are used.

One of the important factors determining CW is the training system. High-density planting system applied in the experiment required the corresponding pruning. CW was formed by pruning and did not correlate with other parameters. No matter the fact that the Y is initial it must be considered as valid since experimental orchard peach entered the full maturity in the second year of the investigation. This is in accordance with the results GRAPPADELLI and MARINI (2008) who cited that training systems with small trees are better suited to high densities and in general they tend to have high early yields. The results obtained in our experiment indicate that Y and FW of AG are significantly influenced by RTD and STD. Fruit trees grafted on groups JIS, 1, PSK, 7S and 9 had significantly higher RTD, Y and FW than other. The highest efficiencies indexes had rootstocks from groups 2, 6S, 7S and 8S. It is obvious that the highest CEF, REF and SEF were determined in the lower vigour rootstocks. This situation confirms the suitability of using efficiency of rootstock, scion and canopy of grafted cultivars as a basis for selecting suitable rootstock for peach production.

Associations between traits emphasized by correlation method may correspond to genetic linkage between loci controlling traits or a pleiotropic effect (IEZZONI and PRITSS, 1991). Environment plays an important role in correlation. In some cases, ecologic conditions affect both the traits simultaneously in the same direction or sometimes in different directions. Correlation coefficients among vigour characteristics in this study are mostly high. Considering the established statistically very significant correlation, a strong influence of rootstock vigour to initial yield in the studied cultivars was found. Our results are in agreement with reports by OGNJANOV *et al*. (2008) who claimed that vineyard peach rootstocks highly influence tree diameter, height and shape of cv. Red Haven. LORETI and MASSAI (1998) studied in parallel cv. Springcrest grafted on GF 677 and rootstock Sirio that was 40% lower vigour and deduced that peach trees on the Sirio rootstock were less productive than trees on the GF 677 rootstock.

Surprisingly, among efficiency indexes only REF and SEF were closely correlated when rootstocks were grafted with both peach and nectarine cultivars (r = 0.98; r = 0.97, respectively). Between those indexes and the rest of the traits, significant correlation coefficient was established only between CEF and H (r = 0.67) if rootstocks were used for the peach cultivar. All of this can be explained by the fact that evaluation represented in this study was obtained from the young orchard (first three years of productivity), and that trees were not fully formed. It is expected that stronger correlation will appear in the following years.

Principal component analysis (Table 4) model was performed to provide an easy visualization of the complete data set in a reduced dimension plot. PCA has been previously used to establish genetic relationships among cultivars and to study correlations among traits within sets of peach genotypes (WU *et al*., 2003, CRISOSTO *et al*., 2006, NIKOLIĆ *et al*., 2010). On the basis of genotypes position at the scatter plot (Figure 1) can be concluded that the most desirable rootstocks for peach were those with low PC1 and PC3 scores and high PC2 (high FW, the highest CEF, REF and SEF). In nectarine, for the same reason, the most desirable ones were those with high PC1 and low PC2 and PC3 scores. According to the grower's preferences the most promising rootstocks for peach production were vineyard peach seedlings from group 2 that are characterized by the highest REF and SEF and smaller habit, so its can be intended for the very dense plantings. Also, rootstocks PSK and 7S seem to be quite satisfactory because when peach cultivar was grafted it has almost the highest FW and Y together with very satisfactory REF, SEF and CEF. For nectarine, rootstock PSK is the most valuable, because it gives the highest REF and SEF, and high FW and Y, so it can be intended for the nectarine table production. Also rootstock 7S can be recognized as promising because nectarine cultivars grafted on it have satisfactory FW and Y and the highest CEF.

CONCLUSION

The study revealed considerable diversity among vineyard peach genotypes used as a rootstock and its influence to grafted peach and nectarine cultivar. Fruit trees grafted on groups JIS, 1, PSK, 7S and 9 have significantly higher RTD, Y and FW than other. This means that vineyard peach genotypes from mentioned groups are well adapted to the applied high-density planting system. Trunk diameter of vineyard peach used as a rootstock can be employed as an indicator for grafted cultivar vigour and used as a basis for planning its optimal yield loadings.

Positive correlation confirmed the assumption that vigour and medium vigour vineyard peach seedlings used as a rootstock in high-density planting system, influence higher yield in SRG and higher yield and fruit weight in AG during initial fruit productivity period. No matter the fact that this trial demonstrated strong positive correlation between those traits, our conclusion needs to be proven in further trials set on grafted rootstocks with numerous commercial peach and nectarine cultivars and in several locations. Principal component analysis (PCA) was used to establish similar groups of vineyard peach seedlings, according to their characters, as well as to study relationships among its traits.

The most promising and especially interesting rootstocks for peach and nectarine were 2, PSK and 7S because peach and nectarine cultivars grafted on them have high fruit weight, yields and efficiency indexes. In this study, the vineyard peach seedlings from groups 2, 3, and PSK were found to be divergent from the rest of the genotypes, which can be used in hybridization programmes for the genetic improvement of peach and nectarine rootstocks. Further self-pollination of genotypes 6S, 7S and 8S could help us creating rootstock that influence higher efficiencies indexes but lower vigor of grafted cultivars. However, characterization and quantification of vineyard peach genotypes diversity has long been a major goal in germplasm conservation, as well.

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REFERENCES

CORELLI-GRAPPADELLI, L., R.P.MARINI (2008): Orchard Planting systems. In: The peach (Layne, D. R., Bassi, D., eds.). CAB International, Wallingford, Oxfordshire, UK, pp. 264-283.

CRISOSTO, C.H., G.M. CRISOSTO, G. ECHEVERRIA, J.PUY (2006): Segregation of peach and nectarine [*P. persica* (L.) Batsch] cultivars according to their organoleptic characteristics. Postharvest Biology and Technology, *39*, 10-18

GAŠIĆ, K., V. OGNJANOV, R. BOŠKOVIĆ, K. TOBUTT, C.JAMES (2001): Characterisation of vineyard peach biodiversity. Acta. Hortic., *546,* 119-125.

LORETI, F., R. MASSAI (1998): Sirio: New peach x almond hybrid rootstocks for peach. Acta. Hortic., *465*, 229-236.

MASSAI, R., F.LORETI (2004): Preliminary observations on nine peach rootstocks grown in a replant soil. Acta. Hortic., *658*, 185–192.

MRATINIĆ, E. (2012): The Peach (in Serbian). Partenon, Beograd, 1-655.

NIKOLIĆ, D., V. RAKONJAC, D. MILATOVIĆ, M. FOTIRIĆ (2010): Multivariate analysis of vineyard peach [*Prunus persica* (L.) Batsch.] germplasm collection. Euphytica, *171*, 227–234.

OGNJANOV, V., S. CEROVIĆ, Đ. BOŽOVIĆ, J. NINIĆ-TODOROVIĆ, B. GOLOŠIN (2008): Selection of vineyard peach and myrobalan seedling rootstocks. Voćarstvo, *42,* (161-162), 17-22.

REIGHARD, L.G. (2000): Peach rootstocks for the United States: Are foreign rootstocks the answer. HortTech., *10*, 714-718.

REIGHARD, L.G., F. LORETI (2008): Rootstock Development. In: The Peach, Botany, Production and Uses (Layne, D. R., Bassi, D., eds.). CAB International, Wallingford, Oxfordshire, UK, pp. 193-220.

RUBIO-CABETAS, M.J. (2009): Present and future trend in peach rootstock breeding worldwide. Book of abstracts 7th International Peach Symposium, Lieida, Spain, pp. 40.

SALESSES, G., E. DIRLEWANGER, A. BONNET, A.C. LECOULS, D.ESMENJAUD (1998): Interspecific hybridization and rootstock breeding for peach. Acta Hortic., *465*, 209-218.

WU, B., QUILOT, B., J. KERVELLA, M. GENARD, S.LI (2003): Analysis of genotypic variation of sugar and acid contents in peaches and nectarines through the principal component analysis. Euphytica, *132*,375-384.

ZEC, G., R.R. TODOROVIĆ, P.D. MIŠIĆ, S.ČOLIĆ (2000): Variability and correlation analysis of fruit traits of selected genotypes of vineyard peach (*Prunus persica* L. Batsch.). Genetika, 32(*1*): 31-36.

ZEC, G., S. ČOLIĆ, D., MARINKOVIĆ, D.NIKOLIĆ (2008): Variability of vineyard peach tree characteristics. Genetika, 40(*1*): 1-7.

UTICAJ SELEKCIJA VINOGRADSKE BRESKVE NA BUJNOST I POČETNU RODNOST BRESKVE I NEKTARINE

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Izvod

U radu su ispitivani sejanci (potomstvo) osam selekcionisanih genotipova vinogradske breskve nastali samooplođenjem i slobodnim oplođenjem. Dva potomstva neselekcionisane vinogradske breskve različitog geografskog porekla su predstavljala standard u ogledu. Breskva Autumn Glo i nektarina Stark Red Gold su okalemljene na F_1 generaciju osam selekcija vinogradske breskve i dva standardna potomstva. Srednje vrednosti parametara bujnosti i rodnosti stabala kalemljenih na različita potomstva selekcija vinogradske breskve, su se značajno razlikovale. Potvđeno je postojanje značajne korelacije između bujnosti podloge i rodnosti okalemljenih sorata. Okalemljene sorte su imale umerenu bujnost i najbolje proizvodne rezultate na podlogama selekcija PSK i 7S.

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