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EVALUATION OF SOME AUTOCHTHONOUS PEACH AND NECTARINE CULTIVARS AT RESEARCH STATION FOR FRUIT GROWING CONSTANȚA

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Abstract

The peach is one of the species for which runs a very active worldwide genetic improvement programme, both in public and in private. At Research Station for Fruit Growing Constanta (RSFG Constanta) an efforts have been made to identify, collect and preserve a rich germplasm found of this species. Currently, the national collection of peach, rejuvenated in the period 2011-2014 has a total of 505 genotypes of peaches and nectarines, of which 14 are old, native varieties. This paper describes these varieties in terms of morphological, biochemical, pathological by grouping according to their biological characteristics, in order to choose the initial material for hybridization schemes, the knowledge of the existing gene sources and promotes valuable varieties.

Key words: *Prunus persica, varieties, blooming, yields.*

INTRODUCTION

Collection, conservation and rational use of germplasm fund (Cociu V. and Oprea S., 1989) is an essential condition for the creation of new peach varieties with better qualities (Cepoiu N. and Manolache C., 2006) regarding productivity, diseases resistances, superior quality of the fruit and destination (Monet R., 1992). At Research Station for Fruit Growing (RSFG) Constanta peach germoplasm preservation was started in 1977 (Cociu V., 1993, 1999).

At RSFG Constanta the main objectives in peach breeding are the following:

- Creation of peach and nectarine varieties with superior quality, with early ripening (18-25 of June) and late ripening (25 September-5 Octomber), for a longer fresh fruit assortment consumption;
- Creation of peach and nectarine varieties with pest and diseases resistance;
- Obtaining of varieties with longer winter latency period and resistance to the return frosts and late hoar-frosts;
- Diversification of fruits in size, shape, color, firmness;
- Obtaining of peach and nectarine with reduced habit (full dwarf and semidwarf) (Dumitru, 2003);
- Obtaining of peach varieties for canning (clingstone);
- Creation of some oranamental varieties (red leaf and abundant flowers)

Currently, the national collection of peach, rejuvenated in the period 2011-2014 has a total of 505 genotypes of peaches and nectarines, of which 14 are old, native varieties that could be used as genitors for creation of new peach varieties.

MATERIALS AND METHODS

RSFG Constanta is located in the south-eastern part of Romania, in the area between the Danube River and the Black Sea, and has specific steppe climatic conditions, with a semi-arid character. Frosts return is a quite often phenomena in spring and affect fruit trees with early blooming as nectarine. Absolute temperature beyond the limits of resistance of peach and nectarine species, e.g. -25°C or above +40°C is rare (1/20 or 1/30 years). Rainfall is deficient to the requirements of the trees; the average amount

of rainfall is around 400 mm, with unequal time distribution in the active growing season (April 1 to September 30). Chernozem soil type is deep, well supplied with humus, showing proper conditions for water circulation.

The trees were observed from the phenological point of view.

There were made biometrical measurements on fruits and trees and physico-chemical analyses on fruit. The crown form was the improved vase. The orchard density was 833 trees/ha (4/3 m).

Phenological observations and measurements, and physical and chemical analyses on plants were done.

The trees and fruit characteristics were evaluated according to the Methodology for trying new varieties of fruit trees, shrubs and rootstock in order to approve the homologation and International Union for the Protection of New Varieties of Plants (UPOV) guidelines.

The peach yield was appreciated by weighing the tree crop (kg/tree) and reporting per hectare the average yield recorded in the years of study.

RESULTS AND DISCUSSIONS

All studied varieties have proved a superior quality and are suitable both for fresh consumption and for processing. Most of the peach varieties have medium vigor, except De Cândeşti variety that has high vigor (table 1).

The ripening time started with Nectarine superintensiv variety (5-20.07) and finished with Excelsior (20.09-5.10). Regarding the fruit ripening time one of the variety is early, two are medium, five are late and one extralate. The fruit shape is spherical, simetrical or slightly asymmetric; Băneasa 1 turtite genotype has flat fruit.

The fruit are attractive, colored, with white flesh (De Voineşti, Superbă de toamnă, De Cândeşti, Băneasa 1 turtite).

The average weight of the fruit (table 2) is between 70 g (Băneasa 1 turtite) and 180 g (Flacăra clon 1). Dry matter ranged between 9% (De Cândeşti) and 14% (Nectarin superintensiv). Acidity was between 0.41 mg % (Miorița) and 0.83 mg % (Nectarin superintensiv).

Table 2. Quality test of some genotypes of peach and nectarine (multiannual data) at the Research Station of Fruit Growing Constanta, Romania

No	Variety	Average weight of a fruit (g)	% of kernel	Dry matter (%)	Acidity (mg%)	Yield	
						kg/tree	t/ha**
1.	De Voineşti	105	9,2	11	0.6	37	23
2.	Superbă de toamnă	175	8,7	10	0.53	22	14
3.	Flacăra clon 1	180	7,2	11.5	0.53	27	17
4.	Nectarin superintensiv	80	7,7	14	0.83	25	15,7
5.	Miorița	130	8,5	11	0.41	30	18,8
6.	Cluj 1112	145	8,3	10	0.56		
7.	Băneasa 1 turtite	80	7,8	10	0.51	23,5	15,0
8.	De Cândeşti	100	9,1	9	0.54	30	18,75
9.	Superbă de vară	120	9,3	10	0.47	25	15,6

*Acidity: mg malic acid / 100 g flesh fruit

Table 1. Charactersitics of some autohtenous peach varieties from National Peach Collection of RSFG Constanta

No.	Variety/group	Vigour	Ripening time	Pollination	Fruit shape	Fruit skin and flesh colour	Use
1.	De Voineşti / peach	medium	late (10.08-23.08)	autofertile	Spherical, asymmetrical,	White greenish, white-cream flesh	Fresh consumption and proccesing
2.	Superbă de toamnă / peach	medium	late (25.08-15.09)	autofertile	Spherical, asymmetrical, slightly elongated	White greenish, white flesh	Fresh consumption and proccesing
3.	Flacăra clon 1 / peach	medium	late (01.09-20.09)	autofertile	Spherical, slightly asymmetric	Orange, red streaked on 10% of fruit; yellow	Fresh consumption and proccesing
4.	Nectarin superintensiv / nectarine	medium	early (5.07-20.07)	autofertile	Spherical, slightly asymmetric	Orange, yellow-orange flesh	Fresh consumption and proccesing
5.	Miorița / peach	medium	medium (12.07-27.07)	autofertile	Spherical, slightly asymmetric	Yellow -green, red streaked on 10% of fruit; white-cream flesh	Fresh consumption and proccesing
6.	Cluj 1112 / peach	medium	late (20.08-20.09)	autofertile	Spherical, slightly asymmetric	Yellow, red 30 % of the surface; yellow flesh	Fresh consumption and proccesing
7.	Băneasa 1 turtite / flat peach	medium	late (10.08-30.08)	autofertile	Flattened	Greenish white, pink streaked; greenish-white flesh	Fresh consumption and proccesing
8.	De Cândeşti / peach	high	late (01.08-20.08)	autofertile	Spherical, slightly asymmetric	Greenish white , pink streaked 5% of the fruit; greenish-white flesh	Fresh consumption and proccesing
9.	Superba de vară / peach	medium	medium (25.07-10.08)	autofertile	Spherical, slightly elongated	Yellow, red streaked 30% of the fruit; yellow	Fresh consumption and proccesing

CONCLUSIONS

The studied varieties, can be used in breeding programmes due to their qualities such as: rusticity, precocity of fruiting, annual high and constant productivity, superior fruit taste and flavour.

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