

# QUALITATIVE ATTRIBUTES OF NEW RELEASE PEACH CULTIVARS GROWTH IN CONDITIONS OF RESEARCH STATION BANEASA

## CARACTERISTICILE CALITATIVE ALE UNOR SOIURI DE PIERSIC NOU OMOLOGATE CULTIVATE IN CONDIȚIILE STAȚIUNII DE CERCETARE BĂNEASA

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**Abstract.** *Expansion of peach consumption will depend on marketing, quality consistency, and the cost of the fruit. Market trends that are impacting peach consumption are the globalization and need for year round supplies of produce. These pressures have renewed interest in production systems to extend the harvest season, to reduce chemical inputs, and to ensure consistent fruit quality. Therefore our efforts were focused on developing new varieties with high quality of peach fruit, higher levels, a greater diversity of fruit types to market, and adaptation to climate changes occurring lately. We studied in this paper some characteristics of Dida and Triumf peaches with yellow flesh, Eugen and Congres peaches with white flesh. Dida and Eugen varieties emphasized over the check through fruit weight, firmness, soluble solid and dry matter. According to the results obtained we can support the extension of consumption period through introduction of new peach varieties Dida and Eugen which have higher potential quality over varieties already growth.*

**Key words:** peach, fruit quality, mineral nutrition

**Rezumat.** *Creșterea consumului de piersici depinde de comercializarea, calitatea la recoltare precum și costul fructelor. Tendințele pieței care au impact asupra consumului de piersici sunt globalizarea și necesitatea suplimentării cu produse proaspete tot timpul anului. Aceste presiuni au reînnoit interesul în sistemele de producție pentru a extinde perioada de recoltare, pentru a reduce inputurile chimice, precum și pentru a asigura o calitate superioară a fructelor. Prin urmare, eforturile noastre s-au concentrat pe obținerea de noi soiuri de piersic cu calitate superioară a fructelor, niveluri de producție ridicate, o diversitate mai mare de tipuri de fructe pe piață și adaptarea la schimbările climatice care au apărut în ultimul timp. În această lucrare am studiat caracteristicile calitative ale unor soiuri de piersic cu pulpă galbenă Dida și Triumf, și a unor soiuri de piersic cu pulpă albă Eugen și Congres. Soiurile noi de piersic Dida și Eugen s-au evidențiat față de martori prin greutatea fructelor, fermitate, substanță uscată totală și substanță uscată solubilă. Conform rezultatelor obținute putem susține extinderea perioadei de consum, prin introducerea soiurilor noi de piersic Dida și Eugen, care au potențial calitativ mai mare, față de soiurile deja cultivate.*

**Cuvinte cheie:** piersic, calitatea fructelor, nutriție minerală

## INTRODUCTION

Peach (*Prunus persica* L. Batsch) is one of the most important fruit species. Peach is ranked third for its production in the world. The relatively short time, as compared to other fruits, between early project and obtaining of marketable products, and the consistent interest in new cultivars makes it an interesting model fruit species for describing a quality oriented breeding approach (Byrne, 2003). The introduction of new varieties on the market is vital for fruit industry to get better products and to attract consumers with innovative fruit types. However, in an extremely competitive market as the present the path from field selection to commercial production is becoming always more uncertain and expensive. Breeding and marketing should find closer relationships to allow new released varieties to maintain long-term premium prices (Infante et al., 2008; Ivascu, 1993). Crisosto et al. (1997) suggest that varieties should be classified in organoleptic groups and promote and promote the development of a minimum quality index within different groups, rather than accepting the commonly used generic minimum quality index based on ripe soluble solids content. Mineral nutrition of peach trees and fruit quality characteristics depend upon plant mineral used, as well as the soil climatic factors prevailing in the area (Bertsch et al., 1996). For normal plant growth and development, peach trees require large amounts of nutrient elements.

The objective of this paper was study of quality attributes of new peach varieties and influence of main soil characteristics on fruit quality.

## MATERIALS AND METHODS

The biological material consist of four new peach varieties cultivated in the experimental: Dida and Triumf (Control) varieties peach with yellow flesh, Eugen and Congres (Control) peach with white flesh. The trees taken in study was planting at 3 x 4 row spacing, being grafted on peach franc and having the crown form vase, applied technology is a classic culture.

Study was developed in conditions of two years, being observed the following:

- fruits quality: weight, firmness, soluble solid, titratable acidity and dry matter;
- mineral nutrition: pH, content of humus, mineral nitrogen (N-NO<sub>3</sub> mg/100 g soil), mobile phosphorus (P<sub>2</sub>O<sub>5</sub> mg / 100 g soil), mobile potassium (K<sub>2</sub>O mg / 100 g soil). Weight of fruit was determined using a sample of 10-20 fruit per tree, determined by weight measurement with electronic balance making it an average weight fruit. It is expressed in grams. Firmness fruit (N) has been made measuring the force required insertion of a probe with diameter of 7.9 mm in the fruit which skin was removed, with certain depth and with a certain speed. The dry matter amount was estimated by water evaporation method, through drying as some quantity of fruit for some hours at 105 °C until constant weight.

Titratable acidity (TA) was determined by titration of juice obtained from 10-20 fruit with 0.01 N NaOH and expressed as percentage malic acid. The soluble solids content (SSC) were determined with a digital refractometer (Atago) and expressed in °Brix.

The sample were taken at each site lands from experiment field Research Station Baneasa. The basic characteristics of soil sample were determined by standard methods. pH of the soil solution in water extract (ratio 1:25) was determined potentiometrically. Humus was determined by wet oxidation according to Walkely – Black modified by Gogoasa. Available Potassium has been determined through extraction with AL solution (method by Engner – Riehm) and their quantification was realized by flame photometry. The phosphates

slightly soluble was determined in AL solution extract by Egner- Riehm method and quantified by colorimetry.

## RESULTS AND DISCUSSIONS

Data in table 1, show that variety Triumpf has lowest fruit weight (112 g), and Dida has the highest fruit weight (148 g). It is evident from data in table 1, that variety Eugen has the highest fruit weight (180 g) compared with the control Congres (157.5 g). To look at yield variety Dida recorded 22 kg/tree was higher, compared with the control Triumpf (20.5 kg/tree). The variety Dida about yield (to/ha) have the higher value registered 13.75 to/ha.

Table 1

Variation of biometric and yield attributes of varieties studied			
Variety	Mean fruit weight ( g )	Yield	
		Kg /tree	To/ha
Triumpf- control	112	20.5	<b>10.33</b>
Dida	148	22	<b>13.75</b>
Congres- control	157.5	12	<b>9.08</b>
<b>Eugen</b>	<b>180</b>	<b>19.5</b>	<b>12.06</b>

Fruit firmness data on two seasons, show that variety Eugen had the highest mean value of 2.84 kg f/cm<sup>2</sup>, was better than control Triumpf and Congres (tab.2). Results obtained for content of dry matter (g%) in a fruit variety studied looks that variety Eugen (14.9 %) and Dida (15.3 g%) registered the highest content in dry matter. The lowest content in dry matter was at the control Triumpf (13.79 g %) and Congres (12.63 g %).

Table 2

Physico chemical characteristics of peach varieties studied				
Variety	Firmness (Kg/cm <sup>2</sup> )	Dry matter g%	Soluble solid (SSC ° Brix	Titrateable acidity (TA) mg malic acid/100mL extract
Triumpf- control	1.82	13.79	11.05	<b>0.86</b>
Dida	2.79	15.3	11.9	<b>0.94</b>
Congres- control	1.88	12.63	10.5	<b>1.05</b>
<b>Eugen</b>	<b>2.84</b>	<b>14.9</b>	<b>11.6</b>	<b>1.15</b>

\* The results presented are average of two years

Content in soluble solid do not differ significantly among the varieties and control evaluated except is the control Congres which has a lower content in soluble solid. Results obtained for titrateable acidity (TA) in a fruit peach, look like this time, variety Eugen stand out with the highest value (11.9) than other varieties taken in study. Analytical results presented in table 3, emphasize the fact that the soil of plots cultivated with peach variety studied, show that pH values is situated within the optimal range claim by peach species (7-8), variety Dida present a pH value by 7.55 over control Triumpf with the value of 6.4. Humus content resulting in analysis of soil samples, are included in the fertile middle class. We can observe in the table 3, that the value is framed between 2.04 % (Dida) to 4.38 % (Eugen).

Table 3

**Analytical results of soil samples from the varieties studied**

Variety	Depth ( cm )	pH	Humus ( % )	N-NO <sub>3</sub> ppm	P <sub>2</sub> O <sub>5</sub> ppm	K <sub>2</sub> O ppm
Triumpf- control	0-20	6.4	2.04	1.5	3.23	<b>19.46</b>
	20-40	6.35		1.27	3.91	<b>21.76</b>
Dida	0-20	7.55	3.18	0.35	14.58	<b>40.15</b>
	20-40	7.5		0.12	12.04	<b>45.52</b>
Congres- control	0-20	5.9		13.42	4.59	<b>27.89</b>
	20-40	5.9		0.81	4.08	<b>24.21</b>
Eugen	0-20	7.35		0.35	14.44	<b>43.99</b>
	<b>20-40</b>	<b>7.55</b>	<b>4.38</b>	<b>0.12</b>	<b>6.96</b>	<b>40.15</b>

Insurance status with mineral nitrogen is medium, to good, a low content in this element are registered at the depth of 20-40 cm, which means that the plant were used largely nitrogen from the deep, this is a consequence of the fact that most species have fruit roots developed soil profile since the depth. From point of view of mobile phosphorus content, soil the supply situation of the mid to variety Eugen- 6.96 and very weak to variety Triumpf-3.23. Average values (in depth 0-40 cm) of cell potassium content demonstrate that all analyzed soil samples show values highlight a good insurance with this item.

## CONCLUSIONS

1. The highest yield and content in dry matter, soluble solid and a low content of titratable acidity, had the variety Dida, the highest fruit weight – Eugen, the highest firmness had the variety Eugen. Variability of yield and fruit quality were influenced by cultivar. In addition, variability of those characteristics was significantly conditioned by pedoclimatical factors and interaction between genotype and environmental factors.

2. Regarded mineral nutrition, the variety Dida and Eugen, registered highest value of pH, humus, mobile phosphorus, mobile potassium.

3. According to the results obtained we can support the extension of consumption period through introduction of new peach varieties Dida and Eugen which have higher potential quality over varieties already growth.

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