Fruit Growing Research, Vol. XXXIV, 2018 DOI 10.33045/fgr.v34.2018.06
http://publications.icdp.ro/index.php

‘MUŞATINI’ - UN NOU SOI DE CIREŞ CREAT LA S.C.D.P. IAŞI
‘MUŞATINI’ – A NEW CHERRY CULTIVAR CREATED IN S.C.D.P. IAŞI

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Abstract

The aim of this paper is to improve the autochthonous cherry assortment with productive cultivars that have a good adaptability and ecological plasticity, superior biological potential, with quality fruits and features superior to the existing cultivars. On the fresh fruit market, the preferred cultivars are the ones with fruits of shining red colour, resistant to cracking, transportation and temporary warehousing, with the weight above 7 g. Analyzing the main phenological stages for the two cultivars, it was noticed that the cherry cultivar ’Muşatini’ is average both concerning the beginning of flowering and of fruits’ maturation. Characterizing the two cultivars, it can be noticed that the ’Muşatini’ cultivar (21.5 kg/tree) recorded superior production differences in comparison with the witness cultivar ’Boambe de Cotnari’ (16.8 kg/tree). In terms of fruits’ weight and equatorial diameter, the ’Muşatini’ cultivar (8.1 g and 25.0 mm) recorded positive values in comparison with the witness cultivar ’Boambe de Cotnari’ (7.4 g and 24.5 mm).

Cuvinte cheie: cireş, soiuri, determinări, fruct, însuşiri
Keywords: cherry, cultivars, determinations, fruit, features

1. Introduction

In the NE area of Romania, the cherry crop represented the oldest preoccupation of the population, being proven by the local cultivars: ‘Boambe de Cotnari’, ‘Untoasă de Maxut’, ‘Crăieşti de Comarna’, ‘Scuturător Cotnari’, ‘Pietroase Costuleni’, some cropping centers being introduces in this area through the cultivars’ name.

The cherry tree represents through the fruits’ ripening epoch, quality and mostly appreciated savour by the consumers, as well as production constant, the first ring in the annual chain of fruits’ production (Budan & Grădinariu, 2000; Petre, 2006). The main objective of genetic breeding and controlled or natural selection that took place along the centuries was to obtain new cultivars with improved traits and features, superior to the existing cultivars (Cociu & Oprea, 1989; Branişte et. al., 2007; Sansavini and Lugli, 2008).

The research concerning the assortment improvement of cultivars quality in the cherry species is an objective that gathers increasing importance (Grădinariu & Istrate, 2004; Kazantzis et al., 2011; Lichev et al., 2004). Therefore, in this regard, in April 2018, a new cherry cultivar created at SCDP Iaşi was patented with the name ‘**Muşatini**’.

The aim of this paper is to improve the autochthonous cherry assortment with cultivars that have a good adaptability and ecological plasticity, with superior biological potential, productive, with quality fruits and traits superior to the existent cultivars.

2. Material and method

The studies were performed during 2015-2018 on the cherry cultivar 'Muşatini' (HC. 872509) and the comparison has been performed against the area witness 'Boambe de Cotnari'.

The trees are located in the experimental lots, grafted on mahaleb and planted at a distance of 5 x 4 m, with the shape of flattened free palmet crown on the direction of the row with trees, without sustaining and irrigation system. On the row with trees, the soil has been worked with the lateral disk with palpation mechanism and in between the rows, it has been grassed. The illnesses and pests combat have been performed once with the received warnings, phytosanitary treatments being applied.

During the experimental planting, observations and determinations have been taken: trees’ vigour, resistance to anthracnose and *Monilia* (Cociu & Oprea, 1989), the main growing and fructification phenophases (Fleckinger,1960); physical traits (fruit’s and stone’s weight (g) by weighting 10 fruits/stones in three repetitions with the electronical balance with sensitivity of 0.01G Radwag type; the fruit’s equatorial diameter (mm) has been determined with the digital callipers Luumytools for 10 fruits in three repetitions; % stone from the fruit’s weight, the epidermis colour has been determined according to the

UPOV TG/35/7 ([xxx], 2006) questionnaire); chemical and quality traits of the fruits (the soluble dry substance has been determined refractive, utilizing a Zeiss hand refractometer; pulp firmness, fruit's shape, stone's adherence to the pulp has been determined according to the UPOV TG/35/7 ([xxx], 2006) questionnaire, fruits' resistance to cracking has been determined by soaking 100 fruits of each cultivar in distilled water and counting the number of cracked fruits after six hours, determining the % of cracking per cultivar (Cociu & Oprea, 1989)); the productivity has been determined by weighting the fruits on the tree, variants and repetitions (Cociu & Oprea, 1989).

The experimental data was interpreted statistically by analyzing the variance and the variation coefficient (S%) was calculated, for which the following arbitrary values are admitted: 0 – 10% - small variation coefficient; 10 - 20% - average variation coefficient; 20 - 30 % - large variation coefficient.

3. Results and discussions

The studied cultivars have middle vigour and, concerning resistance to diseases, 2016 and 2018 being rainy years (with a surplus of 173 mm in 2016 and 73.5 mm in 2018 till 31st of July), years favourable for pests evolution (monilia and anthracnose), they manifested an easy sensitivity both to anthracnose (frequency of the attack being between 1.8-2.6%) and *Monilia* (frequency of the attack being between 2.0-2.5%) (Table 1).

The flowering phenophase took place between 4th – 22nd of April, in a period between 7-10 days (table 2). In 2017, the flowering began earlier than in 2015, 2016 and 2018 with 1-13 days.

During the four years of study, the harvesting maturity was recorded in the first half of June and the number of days from the end of flowering to maturation was between 52-56 days, recording a small variation coefficient (5.2%) (Table 2). Analysing the main fructification phenophases for the two cultivars, it was noticed that for the new cherry cultivar 'Muşatini', the phenophases took place in the same period as for the witness cultivar 'Boambe de Cotnari' (Table 2).

Regarding productivity, it was noticed that the 'Muşatini' cultivar (21.5 kg/tree) recorded differences of superior production in comparison with the witness cultivar 'Boambe de Cotnari' (16.8 kg/tree) (Table 3).

The fruit's quality is determined by the fruit's size, the epidermis' colour, the stone's size and its easy detachment from the pulp.

The two studied cultivars recorded an average weight of the fruit between 7.4 g for the witness cultivar 'Boambe de Cotnari' and 8.1 g for the 'Muşatini' cultivar (Table 3). A continuous growth of the fruit's weight also determines a proper growth of its equatorial diameter (D), thus the 'Muşatini' cultivar (25.0 mm) recorded larger values in comparison with the witness cultivar (24.5 mm) (Table 3).

Regarding stone size, the cultivars recorded a weight (g) between 0.29-0.41 g, being categorised as middle size according to the UPOV questionnaire.

For the 'Muşatini' cultivar, the stone percent from the fruit's weight recorded statistically negative distinctly significant differences in comparison with the witness cultivar (3.6%) (Table 3).

Regarding the fruit's colour, on the fresh fruits market, the fruits with shiny red or double colour are preferred (Budan & Grădinariu, 2000; Sansavini and Lugli, 2008; Milatović, 2011).

For the 'Muşatini' cultivar, the fruit's colour is shining red, while for the witness cultivar 'Boambe de Cotnari' the fruit's colour is double coloured (Table 4)(Fig 1).

Both the new cherry cultivar 'Muşatini' and the witness cultivar 'Boambe de Cotnari' have a firm pulp and the stone does not present adherence to pulp. The pulp firmness is an important quality attribute, especially for the fruits intended for fresh consumption (Kappel et al., 2000).

The fruit's shape for the 'Muşatini' cultivar is kidney shaped and for 'Boambe de Cotnari' is heart-shaped.

The content in dry substance is extremely important for cherries, because the fruits' taste depends on it. The values of this parameter have been between 18.0 % (Boambe de Cotnari) and 18.6 % (Muşatini) (Table. 4).

Regarding the fruits' resistance to cracking, the 'Muşatini' cultivar presents a resistance (3.0%) superior to the witness cultivar 'Boambe de Cotnari' (20.7%) (Table 4).

It is extremely important for the cherry cultivars to be resistant to the cracking phenomenon because the economical efficiency of the cherries production gets reduced massively (Milatović et al, 2011).

4. Conclusions

1. For the new cherry cultivar 'Muşatini' created in SCDP Iaşi, all the studied parameters are superior to the witness cultivar 'Boambe de Cotnari' and correspond to the actual objectives regarding the

trees' vigour, productivity, fruits' quality, resistance to the fruits' cracking phenomenon, to the biotic and abiotic factors.

2. The cultivar can be recommended for trees plantations with big density per hectare.

3. The 'Muşatini' cultivar was patented in April 2018 and included in the Official Catalogue of Cultivars.

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Tables and figures

Table 1. Tree's vigour and resistance to diseases (SCDP Iaşi; average on 2015-2018)

Cultivar	Tree's vigour	Resistance to:					
		Leaves anthracnose* (*Coccomyces hiemalis* Higg.)			Fruits' monilia* (*Monilinia fructigena* Pers.)		
		F%	I%*	G.A.%	F%	I%*	G.A.%
Muşatini (HC. 872509)	middle	1.8	2	0.036	2.0	3	0.060
Boambe de Cotnari (Mt)	middle	2.6	3	0.078	2.5	4	0.100

*attack intensity mark on the scale 1-6: 1 = 1-3% attacked area; 2 = 4-10%; 3 = 11-25%; 4 = 26-50%; 5 = 51-75%; 6 = 76-100% (Cociu & Oprea, 1989).

Table 2. The main fructification phases for the cherry cultivars (SCDP Iaşi; average on 2015-2018)

Cultivar/Pheno phase	Flowering beginning (phase E)	Flowering end (phase G)	Flowering duration (days)	Fruits' maturation date	No. of days from the flowering end till maturation
Limit dates (earliest - latest):					
Muşatini (HC. 872509)	05 - 13.04	14 - 21.04	9 - 10	04 - 11.06	52
Boambe de Cotnari (Mt)	04 - 17.04	12 - 22.04	7 - 9	06 – 16.06	56
Variation coefficient (%)	15.7 – 18.8	10.8 – 3.2	17.6 – 7.4	28.2 – 26.1	5.2

DOI 10.33045/fgr.v34.2018.06

Table 3. Fruits' production and physical traits for the studied cherry cultivars (SCDP Iaşi; average on 2015-2018)

Cultivar	Average fruits' production (kg/tree)	Average fruit weight (g)	Average stone weight (g)	Stone from the fruit's weight (%)	Fruit's equatorial diameter (mm)
Muşatini (HC. 872509)	21.5	8.1	0.29	3.6^{00}	25.0
Boambe de Cotnari (Mt)	16.8	7.4	0.41	5.5	24.5
DL 5% DL 1% DL 0.1%	8.7 16.0 35.5	1.8 3.3 7.3	0.14 0.26 0.57	0.8 1.5 3.2	3.3 6.2 13.7

Table 4. Physico-chemical traits and quality traits of the fruits (SCDP Iaşi; average on 2015-2018)

Cultivar	Epidermis colour	Pulp firmness	Fruit's shape	SUS -%-	Stone adherence to pulp	% of cracked fruits after 6 hours
Muşatini (HC. 872509)	Shining red	Firm	Kidney-shaped	18.6	Non-adherent	3.0
Boambe de Cotnari (Mt)	Double coloured	Firm	Heart-shaped	18.0	Non-adherent	20.7

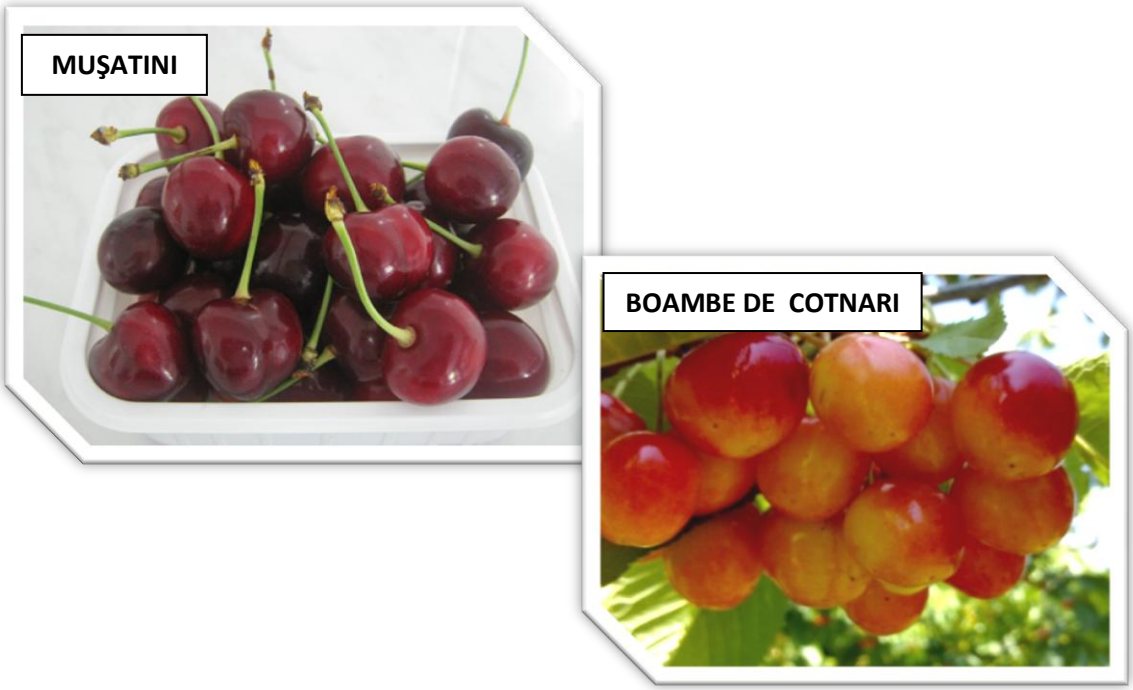

Fig. 1. 'Muşatini' and 'Boambe de Cotnari' cherry cultivars