

CONTRIBUTION OF SCDP IAȘI TO THE AMELIORATION OF THE SWEET CHERRY, SOUR CHERRY AND WALNUT ASSORTMENT

CONTRIBUȚIA S.C.D.P. IAȘI LA ÎMBUNĂȚĂȚIREA SORTIMENTULUI DE CIREȘ, VIȘIN ȘI NUC

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Abstract. *Between 1999-2007, to Iassy Fruit Growing Research Station they approved ten sweet cherry cultivars, namely: Cetățuia, an very early one; Cătălina, an early one; Golia, Maria, Bucium Tereza, Iașirom and Ștefan, from mid-season ripening; Marina and George, with late ripening dates. Among these, Maria is the first Romanian self-fertile cultivar.*

Of the bitter cherry biotypes which was found till now on this area, two new cultivars have approved, namely: Amar Maxut with black skin and Amar Galata with half yellow and half red skin, both of them with superior features of precocity, high yields, fruit qualities and good resistance to frost, drought and diseases.

The new tart cherry cultivars, happily complete the assortments with different ripening periods, from the early one till the late one (Timpuriu de Osoi, De Botoșani, Pitic) which assure a fresh fruits consumption and canning industry for almost 53 days.

The cultivars of walnut, Miroslava, known as a early one, Velnița known as a good fruit bearing tree also on the lateral offshoots, Anica and Ovidiu, knowns for the special qualities of the fruits, assure a diversified assortments for the new orchards of walnut tree.

Rezumat. *În anii 1999-2007, la SCDP Iași s-au omologat zece soiuri de cireș, unul extratimpuriu (Cetățuia), unul timpuriu, (Cătălina), șase cu maturarea mijlocie (Golia, Maria, Bucium, Tereza, Iașirom și Ștefan) și două cu maturare târzie (Marina și George). Soiul Maria este primul soi românesc autofertil.*

Din biotipurile de cireș amar depistate în zonă au fost omologate două soiuri noi, Amar Maxut cu fructe de culoare neagră și Amar Galata cu fructe bicolore, ambele cu însușiri superioare de precocitate, productivitate, calitatea fructelor, cu rezistență la ger, secetă și boli.

Soiurile noi de vișin, alcătuiesc un conveer varietal divers, cu epoci diferite de maturare de la timpurie la foarte târzie (Timpuriu de Osoi, De Botoșani, Pitic), care asigură un consum de fructe în stare proaspătă și industrializare pe o perioadă de 53 de zile.

Soiurile de nuc Miroslava, prin timpurietate, Velnița prin rodire și pe lăstarii laterali, Anica și Ovidiu prin calitățile deosebite ale fructelor, asigură un sortiment de soiuri diversificat pentru noile plantații de nuc

In the 30 years of existence of the Research-Development Station for Fruit growing of Iași, ameliorators had as their main preoccupation the replacing of the inferior cultivars by new superior cultivars created in the Station or introduced from the world assortment.

These modifications of the assortment suppose a thorough knowledge from the pomological, agro-biological and economic viewpoint as a result of the trial of the new cultures in contest cultures.

In the 4th and 7th volumes of the Romanian Pomology, an important section is destined to the main cultivars of cherry and sour cherry and the 6th and 8th volumes are destined to the walnut cultivars. In the 4th volume they present 27 cherry cultivars out of which 16 are autochthonous and 23 of sour cherry out of which 5 are autochthonous, in the 6th volume, 96 walnut cultivars and biotypes out of which 93 are autochthonous, and in the 8th volume, the last one, appeared in 1969, 11 cherry cultivars and hybrids, 6 of sour cherry and 3 of walnut.

In the interval 1978-2007 they homologated as new cultivars in Iași 19 creation out of which 12 of sweet cherry, 2 of bitter cherry, 3 of sour cherry and 4 of walnut.

By introducing them in the 9th volume of the Romanian Pomology and in culture, the cultivars described in this volume will contribute to the significant melioration of the existing assortment since they complete the gaps in the consumption season of the fruits of these species, prolong the consumption season (by an earlier or later maturation of fruits as compared to the present-day cultivars) and surpass, from the productive and quality viewpoint, many of the cultivars zoned with the same maturation epoch or satisfying the same necessity.

MATERIAL AND METHOD

The biological material obtained from cherry resulted from the hybridization of 6 cultivars used as maternal or paternal genitors (Van, Stella, Boambe de Cotnari, Fromm, Ebony, Cireșe de Octombrie) and two sweet cherry hybrids (23/31 and 21/1).

From the rich genetic fund existing in the influence area of the Station they found out numerous valuable biotypes of sour cherry, bitter cherry and walnut out of which, after verifications and comparative contest cultures, they promoted only two new bitter cherry cultivars (Amar Maxut and Amar Galata), three of sour cherry (Timpuriu de Osoi, De Botoșani and Pitic) and four of walnut (Anica, Ovidiu, Miroslava and Valnița).

For sour cherry and sweet cherry, the trees were grafted on franc or mahaleb and for the walnut on selected walnut. The plantation distances were 5 x 4 m for sweet cherry and sour cherry and 10/10 m for walnut with a number of 3-10 trees in the variant (cultivar). The farm techniques applied was the one specific to each species and the trees were guided after the free fan-shaped espalier without a sustaining system for sweet cherry and sour cherry and globular canopies with axle for the walnut.

In the experimental fields they effectuated a series of measurements and observations regarding the tree vigor, the passing through the fructification phonological phases, precocity, self-fertilization, behavior towards the limitative factors of production (frost, drought and diseases specific to the three species), the fruit production and its quality, the main physical-chemical features of fruits and the way of use of fruits (fresh consumption and processing).

RESULTS AND DISCUSSIONS

Among the 12 new sweet cherry cultivars one has little vigor (*Golia*), three have a small towards medium vigor (*Tereza*, *Ștefan* and *Amar Galata*) the remainder of cultivars having medium vigor (*table 1*).

As for blossom, four cultivars have an early blossom (*Cetățuia*, *Cătălina*, *Maria* and *Amar Maxut*), two have a late blossom (*Golia* and *George*) the remainder of cultivars having medium blossom.

The maturity of harvesting of the fruits under study starts with the cultivar *Cetățuia* (21 May) and ends on 25 July with the most recent and belated creation (cultivar *George*), (*fig. 1*). By completing the zone assortment with the cultivars mentioned they insure the prolongation of the fruit consumption from 40-45 days in 1985 to 64 days in 2007.

Cultivar *Maria* is the only and single cultivar from Romania, that may be catalogues as self-fertile (48 %), the other cultivars registering small percentages (0-6,1 %).

The main physical-chemical features of fruits highlight a diversity of forms (kidney shape, heart shape), sizes (from small, 4,5 g at *Amar Maxut* to very big, 8,5 g at *Bucium*), colours (from black at *Amar Maxut* to bicolor, *Marina* and *Amar Galata*) and with a percentage of dry substance between 16 and 21 %.

In *table 2* there are the features of 3 sour cherry cultivars created at SCDP Iași in the interval 1978-1994. As for vigor, the cultivar *Pitic* registers the smallest vigor as compared to the cultivars *Timpurii de Osoi* and *De Botoșani* manifesting a medium vigor. As for the blossom period, the cultivar *Pitic* blossoms the latest (8.04-5.05), in this interval protecting it from the late hoar-frosts and frosts of spring. The phasing of fruit maturation for the three cultivars is also very interesting during a period of 53 days starting with the cultivar *Timpurii de Osoi* (10-16.06), continuing with the cultivar *De Botoșani* (27.06-7.07) and ending with the cultivar *Pitic* (22.07-2.08) that is the most belated cultivar from the present-day sour cherry assortment. Cultivar *Pitic* stands out for its self-fertility.

The three cultivars present a diversity of shapes from a flattened sphere to an elongated sphere having weights from small (4,5-4,8 g at *Pitic* cultivar) to big at *De Botoșani* cultivar (6,9-7,8 g) and colours from crimson red to dark red.

Table 1

New sweet cherry cultivars created to S.C.D.P. IAȘI

Cultivar	Tree vigor	Blossom	Ripening maturity	Self fertility %	Fruit				Observations
		8 years average			Shape	Average weight -g-	Colour	Dry subst. %	
CETĂȚUIA	Medium	31.03-20.04	21-29.05	1,6	Flattened kidney shape	5,9-6,1	Red blakish	16,1	Very earlier maturity
CĂTĂLINA	Medium	1.04-21.04	07-15.06	2,6	Heart shape oblong	6,8-7,8	Purple red	16,2	Early maturity
MARIA	Medium	2.04-23.04	15-23.06	48,0	Heart shape	7,4-8,3	Purple red	17,0	Self fertility
GOLIA	Small	19.04-30.04	20-28.06	5,9	Heart shape oblong	7,5-8,0	Red blakish	17,5	Very good qualities
MARINA	Medium	13.04-30.04	05-13.07	-	Heart shape oblong	7,6-7,9	Half red half yellow	17,7	Late maturity
BUCIUM	Medium	9.04-25.04	16-24.06	3,7	Heart shape oblong	7,8-8,5	Red blakish	17,8	Good yields
IAȘIROM	Medium	10.04-22.04	14-22.06	4,2	Heart shape oblong	7,7-8,1	Brown redish	17,9	Good yields and good qualities
TEREZA	Small to medium	15.04-25.04	15-23.06	5,1	Heart shape oblong	7,5-7,8	Red blakish	17,4	Small vigor and good yields

Cultivar	Maturity															
	May					June						July				
	20	25	31	5	10	15	20	25	30	5	10	15	20	25		
CETĂŢUIA																
CĂTĂLINA																
IAŞIROM																
MARIA																
TEREZA																
ŞTEFAN																
BUCIUM																
GOLIA																
AMAR MAXUT																
AMAR GALATA																
MARINA																
GEORGE																

Fig. 1 - Fruit maturity division from current and expectant assortment to sweet cherry tree in Iaşi area

Table 2

New sour cherry cultivars created at S.C.D.P. Iași

Cultivar name	Tree vigor	Blossom period	Fruit maturation	Self-fertility %	Fruit			D.S. %	Observations
		Average for 10 years			Form	Average weight -g-	Colour		
Timburlu de Osoi	Medium	4.04-25.04	10-16.06	4,9	Flattened sphere	6,0-6,5	Dark red	16,4	Precociousness, quality and productivity
De Botoșani	Medium	6.04-29.04	27.06-7.07	3,7	Flattened sphere	6,9-7,8	Dark red	16,5	High quality fruit. It cultivars by root suckers
Pitic	Little to very little	8.04-5.05	22.07-2.08	45,3	Elongated sphere	4,5-4,8	Crimson red	15,1	Little vigor, late maturation

Table 3

New walnut cultivars created at S.C.D.P. Iași

New material obtained and created at Ghidighiu Plant									
Cultivar name	Tree vigor	Fruit maturation	Blossom period	Self-fertility %	Fruit			% core	Observations
			Average for 10 years	Form	Average weight -g-	Colour			
Miroslava	Medium	Protogynous	21.04-12.05	8-12.09	Round ellipsoidal	14,2-15,2	White yellowish	51,5	Precocious cultivar, productive with very big fruits.
Anica	Medium	Protogynous	21.04-22.05	18-27.09	Round ovoid	13,5-14,1	Yellowish brownish	50,6	Cultivar bearing fruits also on the lateral copse.
Ovidiu	Medium towards little	Protandrous	21.04-22.05	11-20.09	Ovoid round	11,9-13,8	Yellowish	57,3	Precocious bred, productive with high percentage of core.
Velnița	Medium	Protandrous	28.04-22.05	16-25.09	Ovoid elongated	13,2-14,0	Brownish yellowish	53,2	Low vigor cultivar, productive, pleasant aspect

As for walnut, they homologated four new cultivars in Iasi, their characterization being given in table 3. All cultivars have a medium vigor, the cultivar *Ovidiu* registering a lower vigor as compared to the other cultivars.

As for the fructification mode, two cultivars are of the protogineus type (*Miroslava* and *Velnița*) and two of the protandros type (*Anica* and *Ovidiu*). The earliest blossom is registered at the cultivar *Miroslava* and the latest at the cultivar *Anica*, the cultivar *Miroslava* also having the most belated fruit maturation (8-12.09) unlike the cultivar *Velnița* that registers the most belated fruit maturation (18-27.09).

The fruits of the four cultivars have shapes, colors of endocarp and core, weights of fruit and percentage of core different from one cultivar to another and from one year to the other.

Each cultivar is different from the other by the fruit shape. Thus we register the round-ellipsoidal shape at the *Miroslava* cultivar, round-ovoid at the *Velnița* cultivar, ovoid-round at *Anica* cultivar and ovoid-elongated at *Ovidiu* cultivar.

The biggest weight of fruit was registered at the cultivar *Miroslava* (14,2-15,2 g) followed by *Velnița*, *Ovidiu* and *Anica* with weights of fruit between 11,9 and 14,1 g.

All the cultivars had a white-yellowish towards brown colour of endocarp, pleasant to sight with rounded ends, well closed peduncle orifice, regular fruit surface with little wrinkles and hollows.

The core percentage at all four cultivars surpasses 50% from the fruit weight, the most valuable cultivar under this aspect being *Anica* (57,3 %), followed by *Ovidiu* (53,2 %), *Miroslava* (51,5 %) and *Velnița* (50,6 %).

CONCLUSIONS

1. From the hybrid combinations of the years 1982-1989 they selected 10 hybrid elites of cherry, out of which they homologated 10 new cultivars in the years 1999-2007 (*Cetățuia*, *Cătălina*, *Golia*, *Maria*, *Bucium*, *Ștefan*, *Iașirom*, *Tereza*, *Marina* and *George*).

2. From the genetic fund of the NE area of Romania they found out two valuable biotypes of bitter cherry that were promoted as new cultivars bearing the denomination of *Amar Galata* and *Amar Maxut*.

3. The cherry cultivars stood out by precociousness (*Cetățuia* and *Cătălina*), self-fertility (*Maria*), productivity and special fruit quality (*Golia*, *Tereza*, *Bucium*; *Iașirom*, *Ștefan*), belatedness (*Marina* and *George*) and availability for industrialization (*Amar Maxut* and *Amar Galata*). We must mention that the variety assortment is prolonged by 19-24 days as compared to the present one.

4. The new cultivars of sour cherry make up a diverse variety assortment from early (*Timpuriu de Osoi*) to very late (*Pitic*), with an intermediate cultivar

(*De Botoșani*), insuring a fruit consumption in fresh state especially for industrialization for a period of 53 days.

5. The new walnut cultivars created at SCDP Iași, the first cultivars homologated in Moldavia, are qualitatively superior to the ones coming from other areas of the country and even Europe, insuring a diversified assortment with a high resistance to frost, drought and the diseases specific to walnut.

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