RESEARCH ON THE VT 92.01.10 HYBRID FOR THE AMELIORATION OF APRICOT IN DOBROGEA

CERCETĂRI ASUPRA HIBRIDULUI VT 92.01.10 IN VEDEREA ÎMBUNĂTĂȚIRII SORTIMENTULUI DE CAIS ÎN DOBROGEA

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Abstract. *The expansion of apricot consumption depends on the marketing, the quality of the fruit upon harvesting and on their cost. Market trends that have an impact upon apricot consumption are: globalization, the need for year round supplies of produce, the high cost labour, the diversification of the safety issues of pesticide use and bacterial contamination of fresh fruit. These pressures have renewed the interest in production systems in order to extend the harvest season, to reduce chemical inputs and to ensure a consistent fruit quality. Therefore, our efforts were focused on developing new varieties with high quality of fruit, higher levels of production, a greater diversity of fruit types to market and the adaptation to climate changes which have recently begun to occur. In this paper we studied the characteristics of the VT 92.01.10 hybrid, having as witness the variety CR 2-63. The experimental determination was conducted the at Research Station for Fruit Growing Constanta between 2008 and 2011. The hybrid VT 92.01.10 proved to be superior to the witness in terms of weight of the fruit, their firmness, the dry matter and the colour of the skin. According to the obtained results, we can recommend the hybrid for homologation, in order to extend the consumption period of apricots. Also, it has a high qualitative potential compared to the existent apricot varieties, which recommend it for cultivation.*
Key words: *Prunus armeniaca*, assortment, variety, promotion.

Rezumat. *Creşterea consumului de caise depinde de comercializarea, calitatea fructelor la recoltare cât şi de costul acestora. Tendinţele pieţei care au impact asupra consumului de caise sunt globalizarea şi necesitatea suplimentării cu produse proaspete tot timpul anului, costurile cu forţa de muncă, diversificarea pesticidelor folosite şi contaminarea bacteriană a produselor proaspete. Aceste presiuni au reînnoit interesul în sistemele de producţie pentru a extinde perioada de recoltare, pentru a reduce inputurile chimice, precum şi pentru a asigura o calitate superioară a fructelor. Prin urmare eforturile noastre s-au concentrat pe dezvoltarea de noi soiuri de cais cu calitate superioară a fructelor, niveluri de producţie ridicate, o diversitate mai mare de tipuri de fructe pe piaţă si adaptarea la schimbările climatice care au apărut în ultimul timp. In această lucrare am studiat caracteristicile calitative ale hibridului VT 92.01.10 având ca martor soiul CR 2-63. Determinările experimentale s-au efectuat la SCDP Constanţa în perioada 2008 – 2011. Hibridul VT 92.01.10 s-a evidenţiat faţă de martor prin greutatea fructelor, fermitate, substanţă uscată, culoarea fructelor.*

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Conform rezultatelor obținute putem susține introducerea hibridului pentru omologare în vederea extinderii perioadei de consum, deoarece potențialul calitativ mare pe care îl are față de soiurile deja existente îl recomandă.
Cuvinte cheie: *Prunus armeniaca,* sortiment, soi, promovare.

INTRODUCTION

Throughout the entire world the research carried out concerning the apricot trees have among its main objectives the relationship between the climatic conditions and the cultivation of apricot trees. In our country, this relationship has been studied by many authors, among which we should mention the results obtained (Botu and Botu, 1987).

The results obtained by all these studies corresponded to a certain period of time and to a certain assortment of varieties, thus creating the link between the biology of the apricot tree and the climatic conditions in the area where it is cultivated (Topor, 2009).

The purpose of this paper is to study the apricot tree hybrid VT 92.01.10 as concerns its phenological phases, its growth and productivity as well as the quality of the fruit, in order to improve the assortment of apricot trees in the climatic conditions of Dobrogea.

MATERIAL AND METHOD

The studies were carried out between 2008 and 2011 at the Research Station for Fruit Growing Constanta, within the Breeding Apricot Tree Laboratory. The biological material consisted of 12 apricot tree hybrids, with a blossoming period ranging from very early to very late, part of a contest crop planted in 2003. For the VT 95.03.49 hybrid the Umberto variety was used as witness. Each hybrid is represented by 10 trees, planted at a distance of 4/4, with the shape of the head being a free flat palm in the direction of the row. The applied culture technology is that specific to apricot trees, containing fructification cuts, phytosanitary treatments, soil works, irrigation, harvesting, conditioning and capitalisation of the fruit. In order to construe the data, observation were made concerning the triggering and the evolution of the vegetative and fructification stages, as well as the quantity and quality of the fruit production. The determination of physical and organoleptical characteristics was performed according to the regular methodology for the study of varieties, as follows: the weight of the fruit was determined by weighing all fruit within a sample (25 fruit) and the average weight was calculated in g/fruit; the colour of the fruit and of the pulp was established through direct visualizing, with the aid of colour codes (plastic tags with specific colours); the fruit's content of dry substance was determined by means of a digital refractometer, in Brix degrees.

The main chemical components were determined within the Chemistry Laboratory of ICDP Pitesti, as follows: the total quantity of sugar through the Fehling volumetric method; the total acidity through the titrimetric method, using phenolphthalein as indicator.

The results were statistically processed by means of variance.

RESULTS AND DISCUSSIONS

In order for the blossoming phenophase to begin in the pedoclimatic conditions of SCDP Constanta, the VT 92.01.10 hybrid required 237 – 261ºC and a period of 9 to 13 days, enough for the pollination and the fertilization. For the VT 92.01.10, the blossoming took place in 2009 on the 04th of April, two days earlier that the witness variety CR 2-63, and in 2011 on the 12th of April (tab.1). The date when the fruit become ripen is a biological characteristic for the VT 92.01.10; this stage took place in 2010 on the 20th of June, seven and eight days respectively earlier than the witness variety CR 2-63, proving that it belongs in the category containing varieties with extra-early ripening of the fruit (until the 30th of June) (tab. 1).

Table 1

Main fructification phenophases (2009-2011)

Variety	Year	Beginning of blossoming		Ending of blossoming		Duration of the bloss. (days)	Ripening of the fruit		Dura-tion of ripen. (days)
		Date	∑ºC	Date	∑ºC		Date	∑ºC	
VT 92.01. 10	2009	04.04	237	14.04	321	11	19.06	1411	77
	2010	03.04	260	11.04	342	9	20.06	1515	79
	2011	12.04	261	24.04	331	13	24.06	1424	73
CR2-63 mt.	2009	06.04	256	15.04	332	10	23.06	1499	79
	2010	05.04	280	14.04	369	10	26.06	1628	83
	2011	13.04	232	26.04	354	14	26.06	1461	75

The vigour of the trees' growth, represented by the growth in thickness of the trunk and the total growth of the annual sprouts between 2009 and 2011 (vegetative years V - VII) reveal a lower vigour for the VT 92.01.10, as compared to the witness variety CR 2-63, this hybrid being considered as having a medium vigour (tab. 2).

Table 2

Surface of the trunk section and the total growth of annual sprouts Years V-VII since cultivation (2009-2011)

Variety	Surface of the trunk section cm²				Growth rate 2009 - 2011			Ave-rage gro wth rate	Average number of sprouts/tree			Total growth of annual sprouts linear meters		
	2008	2009	2010	2011	2009	2010	2011		2009	2010	2011	2009	2010	2011
VT 92.01. 10	87	108	133	141	21	25	8	18	70	40	79	18,3	17,3	21,9
CR2-63mt	70	98	119	129	18	21	10	16	58	60	93	21,2	31,7	34,8

Considering the tree as a whole and judging by the surface of the trunk section, the rate of the growth in thickness and the sum of the annual vegetative growth, it is revealed that the VT 92.01.10 has the tendency of having a moderate

habitat, the fructification occurring mostly on branches that are 1 year old – mixed branches and May bouquets.

Analysing the average fruit production over the three years, we can state that the VT 92.01.10 fits in the category of productive varieties, its production ranging from 13 to 15 t/ha. Thus, it proves that it is worth being taken into account due to this quality (tab. 3).

Table 3

Fruit production over the period 2009-2011

Variety	Year`	Average prod. 2009-2011		Diff. comp. to the witn. +-	Signif.	Production dex kg/cm trunk sect.
		Kg/tree	t/ha			
VT 92.01.10	2009	27,1	15,04	+4,94	x	0,250
	2010	25,2	13,98	+9,82	xx	0,189
	2011	26,3	14,59	+6,05	x	0,186
	Average	26,2	14,54	+6,94	x	
CR 2-63	2009	18,2	10,10	-	-	
	2010	7,5	4,16	-	-	
	2011	15,4	8,54	-	-	
	Average	13,7	7,60			

LSD. 5% = 4,81; LSD.1% = 7,10; LSD. 0.1% = ,98

From the determinations that were carried out, the conclusion was the fruit's loss of weight was a consequence of the draught in 2010. This hybrid managed to accumulate an average quantity of 13.7g/100g S.P. total sugar and 15.9% S.U.T., (tab. 4) which is a predominant characteristic of chosen genitors.

Table 4

Main physical and chemical characteristics

Variety	Year	Average weight of the fruit g.	% core	S.U.T. %	Total sugar g/100gS.P.
VT 92.01.10	2009	51,7	5,2	14.5	10.8
	2010	53,2	4.8	16.0	14.5
	2011	49,6	5,0	17.3	15.8
	Average	51,5	5,0	15.9	13.7
CR 2-63	2009	55,6	5,3	14.5	10.3
	2010	52,8	6,4	14.2	12.5
	2011	50,1	6,5	14.5	12.9
	Average	52,8	6,1	14.4	11.9

The fruit which ripens early has a small to medium size, it is symmetrical and round (tab. 5). The main colour of the skin is orange with carmine on the sunny side. The pulp is light orange, with a smooth texture and a soft consistency and it does not adhere to the core.

Table 5

Shape and size of the fruit

Variety	D	d	H	Shape index (mm)
VT 92.01.10	48	40	55	1.1
CR 2-63	41	37	53	1.2

According to the value of the attack degree of the frequency, the VT 92.01.10 hybrid fits into the resistance group 1=easily attacked in the conditions of the performance of phytosanitary treatments.

Table 6

Appreciation of the resistance to *Stigmina carpophila* (2009-2011)

Variety	Frequency of attack %				Intensity of attack %			Resistance group			Degree of attack		
	2009	2010	2011	Average	2009	2010	2011	2009	2010	2011	2009	2010	2011
VT 92.01.10	4.8	4.8	1.5	3.7	+	+	+	1	1	1	0.1	0.4	0.01
Mt.	6.5	3.2	1.3	3.6	+	+	+	1	1	1	0.3	0.1	0.01

In order to establish the resistance to disease of the VT 92.01.10, the relative resistance index was calculated, R=0.8, which proves that its value is higher than 0.7, this being a resistant variety (tab 6).

Another criterion that influences that promotion of a variety into the assortment is the resistance to cold and temperature variations. Between 2009 and 2011, before the beginning of the vegetation, observations were carried out on over 800 blossoming buds pertaining to this hybrid. It can be stated that the VT 92.01.10 is fairly resistant to low temperatures and medium resistant to comeback colds, the average percentage of destroyed buds over a period of three years being of 4.3%, compared to 5.1% for the witness variety (fig. 1).

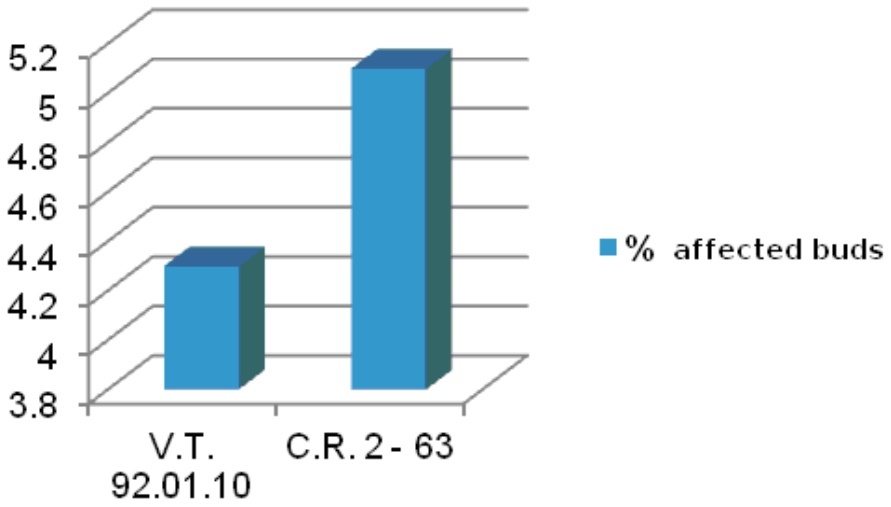

Fig. 1 – Resistance to cold of the blossoming buds

Thus, we can appreciate that according to the ripening fit for harvesting in the period between 2009 and 2011, this elite fits into the group of varieties with late ripening of the fruit (up to the 30th of June), the ripening occurring with 7 to 8 days earlier compared to the witness variety CR 2-63, in the pedoclimatic conditions of SCDP Constanta.

CONCLUSIONS

1. The VT 92.01.10 hybrid can be considered a variety with early ripening and it can improve the structure of the current assortment which still lacks in early varieties (in the area). In the district of Constanta, with the aid of the VT 92.01.10, the apricot season between the 19th and the 24rd of June become more diverse as concerns the consumption of fresh fruit, this variety being considered a perspective one.

2. This hybrid offers for the first time in this area the possibility of extending the consumption of early fresh fruit, given the fact that the fruit become ripen until the 24th of June (beginning with the second decade of the month of June) compared to the witness variety CR 2-63. Thus, the hybrid is superior in terms of elements such as: the ripening precocity, the productivity, the commercial aspect, the resistance to diseases, organoleptical traits.

3. The guarantee for this variety's value is its adaptability to local conditions of climate and soil, expressed through its increased resistance to extreme temperatures in the area, to diseases and pests, which recommends its homologation as variety and its extension in cultivation.

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