

KNOWLEDGE OF QUALITY PERFORMANCE OF SOME TABLE GRAPE VARIETIES GROWN AND OBTAINED IN THE EXPERIMENTAL FIELD FROM U.A.S.V.M. BUCHAREST

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Abstract

In our country, the first varieties of grape-vines with known genetic origin, have been created since the sixth decade of the last century, and the outstanding achievements obtained in improving varieties were presented and published over the years, through many treatises. In general, the main objectives of the unitary genetic improvement of grapevine program were sought in obtaining varieties (table grapes, wine, seedless), that would be characterized by a higher production potential than the genitors and that would show greater resistance to pests and diseases specific to grapevines. Unfortunately, these new obtained varieties mostly are known neither nationally nor externally, only a few managed to get in and pass through this transition period, the border of the area where they were created. Although some of these are very valuable, both in terms of productivity and quality, in these circumstances, they will be doomed to anonymity. In this paper, we will refer to the five varieties of table grapes produced in our university - Muscat Timpuriu de Bucuresti, Augusta, Chasselas de Băneasa, Triumf and Select varieties classified in three different eras of maturation (early, middle, tardive). The productive and qualitative performances achieved by these varieties, expressed through carpometric values and organoleptic perspectives (yield, gluco-acidometric index, shape, color of skin, firmness of flesh, particular flavor), can become attractive for vineyard in the south of Romania and can effectively contribute to fill the conveyor varietal of grape varieties for table grapes. Therefore, the promotion of these local creations, through various means, would be a win for both wine growers (producers) and consumers due to very high production potential, but also because of the particular organoleptic qualities that they possess.

Key words: capacity, grape table, performance, quality, varieties

INTRODUCTION

In our country, the first varieties of grape-vines with known genetic origin, they have been created since the sixth decade of the last century, and outstanding achievements obtained in improving varieties were presented and published over the years, through many speciality papers, over the years (Constantinescu et al., 1959, 1960, 1962, 1965, 1966; Constantinescu, 1975; Constantinescu and Negreanu, 1960; Dvornic, 1960, 1974; Gorodea et al., 1976; Gorodea, 1983; Neagu et al., 1968; Negreanu and Lepădatu, 1971; Oprea and Gorodea, 1980; Oprea et al., 1983, 1986; Ioniță et al., 1981; Lepădatu, 1979; Toma and Ispas, 2008). The main objectives of the unit program of genetic improvement of grapevines, coordinated by the Research Institute for Winegrowing and Winemaking Valea Calugareasca, sought and is still sought in

particular at creating varieties with higher potential of productivity and quality, with installment periods of maturation at table grapes varieties, with increased resistance to diseases and pests, but also with higher resistance to weather and extreme phenomena (Stroe et al., 2013). Therefore, in our country in the period 1970-2000 were approved 22 varieties of table grapes and three seedless, and after 2000, six more varieties of table grapes. Given these goals, mentioned above, creating a new varieties of grapevines and improving the main varieties of table grapes from the range which makes up the conveyor varietal of our country were the main concerns of the research under taken in within our institution – U.A.S.V.M. Bucharest beginning with the year 1957. Among the achievements obtained in our institution, we mention the creation and approval of two early varieties of table grapes: Muscat Timpuriu de București and Augusta,

two varieties of table grapes with middle maturity - Chasselas de Baneasa and Triumf and a variety with late maturity- variety Select (Table 1). The main data about these varieties can be found in Vitis International Variety Catalogue (www.vivc.de).

This study aimed to follow the elements that define the quality of the five new varieties in the south area of Romania in order to popularise them.

Varieties come basically from the same wine area where they imposed, but in Romania,

except the first two, were rarely investigated and even much less cultivated.

The first two and last two varieties are distinguished by a slight degree of similarity between them, having in common some genetic lineage (Variety Queen Vineyards as paternal variety, in the first case and the variety Afuz ali in the second case).

This study was addressed on the need to know the quantitative and qualitative performance of these varieties in order to promote them at least at national level.

Table 1. Genetic origin of studied varieties

Prime name	Muscat Timpuriu de Bucuresti	Augusta	Chasselas de Baneasa	Triumf	Select
Variety number VIVC	8256	14781	2480	12655	11471
Country of origin of the variety	Romania	Romania	Romania	Romania	Romania
Species	<i>Vitis vinifera</i> L.	<i>Vitis vinifera</i> L.	<i>Vitis vinifera</i> L.	<i>Vitis vinifera</i> L.	<i>Vitis vinifera</i> L.
Pedigree as given by breeder/bibliography	Coarna albă x Queen vineyards	Italia x Queen vineyards	Chasselas dorè	Lignan x Afuz li	Bicane x Afuz ali
Pedigree confirmed by markers	-	Italia x Queen vineyards	-	-	-
Prime name of pedigree parent 1	Coarna albă	Italia	Chasselas blanc	White Luglienga	Bicane
Prime name of pedigree parent 2	Queen vineyards	Queen vineyards	-	-	Afuz ali
Year of crossing	1970	1984	1978	1970	1970
Last update	15.01.2016	22.12.2015	22.12.2015	22.12.2015	22.12.2015

MATERIALS AND METHODS

They were studied five varieties of table grapes, obtained in U.A.S.V.M. Bucharest-Muscat Timpuriu de Bucuresti, Augusta, Chasselas de Baneasa, Triumf and Select. The varieties were conducted on semi-stem type of pruning Guyot on semi-stem with a load of 42 buds/vine. Were watched mainly the elements of fertility and productivity, currently used in studying varieties of grape-vines, in special on those who have shown interest in the appreciation of carpometric and organoleptic elements covered by this study: average weight of a grape, weight of 100 berries, production/vine (kg/vine), sugars (g/l), total acidity (g/l tartaric acid), gluco-acidometric index, shape, color of skin, firmnes of flesh, particular flavor. Grape harvesting was performed at full maturity of each variety. This study was approached from two perspective: knowledge of these varieties to promote and popularize them at least at national level. For

this, were used data sheets of each individually variety, from speciality literature and for updating the variety data were pursued the viticultural year 2014-2015 being known that the variety must provide a high intrinsec quality given by the constant productions obtained year after year, regardless of the direction of production (for table, for wine, a raw material for distilled products etc.).



Figure 1. Variety Muscat Timpuriu de Bucuresti

Variety Muscat Timpuriu de Bucuresti - Short presentation. Vigorous variety with a short growing period between 155-165 days, which is well suited to the lead half stem form. Presents poor tolerance to cold (-16°C ... -18°C), medium drought tolerance, manifesting a high sensitivity to mildew and powdery mildew. The variety is characterized by abundant fruitfulness even on secondary shoots.



Figure 2. Variety Augusta

Variety Augusta - Short presentation. Variety of medium vigor which obtain good results in 20 buds/m^2 , divided on long elements. Presents middle frost tolerance (-18°C ... 20°C), powdery mildew and gray mold of grapes and manifest greater sensitivity to mildew.



Figure 3. Variety Chasselas de Băneasa

Variety Chasselas de Băneasa - Short presentation. The variety is characterized by a medium growth vigor of the variety from which it was obtained. But it is more sensitive to cold than Chasselas doré and shows good disease resistance.

The best results were obtained at a load of 12 to 16 buds/m^2 spread over long strings with 12-14 buds, (Țârdea and Rotaru, 2003).



Figure 4. Variety Triumph

Variety Triumph - Short presentation. The variety is very vigorous and the author (Dvornic, 1974; Indreas and Visan, 2000; Stroe, 2012), recommends Guyot type of pruning on semi-stem with a load of 14 to 15 buds/m^2 . Presents good tolerance to cold (-18°C ... -20°C), drought and oidium, especially susceptible to powdery mildew and gray rot of grapes. It is not attacked by moths. It yields the same as Muscat Timpuriu de Bucuresti on the secondary shoots and most often, they can be used to recover the production of grapes climate accidents.



Figure 5. Variety Select

Variety Select - Short presentation. Select varieties are distinguished by great vigor, with strong growth and a middle period growth. It manifests a good resistance to frost and oidium and tolerance to powdery mildew and gray mold. Select doesn't make small berry and doesn't make small grains. In plantations, the author recommends between $18-20 \text{ buds/m}^2$.

RESULTS AND DISCUSSIONS

The analysis of climatic elements for the wine year 2014-2015 and the values of the four synthetic indexes (Table 2) shows that when the thermal resources are high, the water resources are low and the most fluctuating indicator is the bioclimatic one, whose spectrum is within the 9.9 - 12.76. The observations made show that the area in which the didactic-experimental field of U.A.S.V.M. Bucharest is found is favorable for growing varieties of grape-vines studied (registered in the south of Romania), and the elements of microclimate positively put their mark on the behavior of the studied varieties.

Table 2 Evolution of climatic elements (2001-2015)

Specification		Average	Year
		2001-2011	2014-2015
Indices agroclimatic	The hydrothermic coefficient CH)	0.75	0.73
	The real heliothermic index (IHr)	1.3	1.23
	The viticultural bioclimatic index (Ibcv)	9.9	12.76
	Index of the oenoclimatic aptitude (IAOe).	5231	5153
	Huglin index	2392	2548.9

In awarding the same charges of 42 buds/vine in the viticultural year 2014-2015 it observes, that there are differences in their behavior, given by the fertility of varieties and the obtained values keeps the varieties in standard limits, and in some cases, such as the variety Triumf the values recorded are even higher (Table 3). Their qualitative appreciation is based not only by analyzing the elements of

fertility (absolute fertility coefficient, absolute productivity index), which in general, are constant, but also in the accumulated sugar levels, amid a total acidities quite balanced. The data show a highlight from this stand point varieties Muscat Timpuriu de Bucuresti (171 g/l), Chasselas de Băneasa (178 g/l), but neither the other varieties are found in imbalance, the minimum being recorded by variety Select (145 g/l). Regarding the appreciation of organoleptic and carpometric elements which makes the subject of this study is observed and maintained a constant distinct, surpassing in terms the viticultural year analyzed average values found in the speciality literature (Dvornic, 1974; Gorodea et al., 1976; Oprea et al., 1983, 1986). The varieties of table grapes can be harvested before full maturity, practically at the maturity of consumption based on gluco-acidometric index. Normally this index is between 2.5 ÷ 4.5. At the tested varieties ranged from 2.2 - 3.06 (Table 4), the highest values recorded Muscat Timpuriu de Bucuresti and Chasselas de Băneasa (respectively 3.05, 3.06).

Although the variety Select, usually reach full maturity later belonging to maturing eras V-VI, in terms of the viticultural year 2015 it reached the optimal harvest in advance (mid-September). In the context of the results presented above, it can be appreciated that the viticultural area in which they were created and are current cultivated these varieties, leaves its mark on their quality potential, at the precocity maturing, as evidenced by productions obtained that are constant from quantity and quality point of view, year after year, no matter the variety and age of maturation.

Table 3. The synthesis of the main fertility elements of varieties study

Varieties	% fertile shoots	Absolute fertility coefficient	Relative fertility coefficient	Absolute productivity index (g/shoot)	Relative productivity index (g/shoot)
Muscat Timpuriu de Bucuresti	41	1.5	0.8	483	258
	51.9*	1.0*	0.6*	380*	228*
Augusta	61	1,7	1.1	552	356
	63	1.07	0.63	466	275
Chasselas de Baneasa	75	1,6	1.1	411	282
	65	1.4	0.8	327	187.2
Triumf	40	1,1	0.8	484	352
	53	1.2	0.9	547.2	410.4
Select	50	1.4	0.6	256	602
	40	1.1	0.4	451	164

*years 2014-2015

Table 4. Physical and chemical characteristics of the grapes belonging to the studied varieties

Varieties	Average weight of a grape (g)	Weight of 100 berries (g)	Production (kg /vine)	Sugar (g/kg)	Total acidity (g tartaric acid/l)	Glucoside index	Berry			
							Shape	Color of skin	Firmness of flesh	Particular flavor
Muscat Timpuriu de Bucuresti	322 380*	383 402*	3.0 2.6*	190 171*	5.9 5.6*	3.22 3.05*	ovoid	green yellow	very firm	muscat
Augusta	325 436	440 502	3.74 3.04	149 155	5,3 5,9	2.8 2.62	ovoid	green yellow	slightly firm	none
Chasselas de Baneasa	257 234	448 398	3.7 3.2	151 178	6,0 5.81	2.51 3.06	globose	green yellow	soft	none
Triumf	440 456	408 430	3.5 3.7	150 152	6.8 6.73	2.2 2.25	ovoid	green yellow	very firm	none
Select	430 410	470 492	3.1 2.6	135 145	6.42 6.57	2.10 2.2	ovoid	green yellow	slightly firm	none

*years 2014-2015

CONCLUSIONS

Muscat Timpuriu de Bucuresti is maturing immediately after variety Muscat Perla of Csaba and far exceeds the size of berries and flavored taste. In addition, grapes precocity, discreet flavor, pleasant taste and attractive appearance make this new variety to have a good potential for the viticulture from our country. It can be grown all over the country, especially in the southern regions, where ensure the early supply of the market.

Variety Augusta is also a sort of early, maturing in the second decade of August, with 5-6 days after Cardinal variety has large berries, but shows a gradual ripening of the grapes.

Variety Chasselas de Băneasa presents larger berries than those of the variety Chasselas doré, but has its lower organoleptic qualities. It impose with large enough production and can contribute to diversification of varietal conveyor of varieties with middle ripening maturity.

Triumph variety is distinguished by the attractive appearance of the grapes very pleasant taste, refreshing and good resistance to transport.

Select variety has a quite compact grape, very showy and doesn't makes small berry and doesn't makes small grains, it retains their organoleptic qualities even after 2-3 weeks if left on the vine, but accumulated modest sugars. Quantity and quality performance of the varieties analyzed, can become attractive for

the decision taking them in culture, at least for the viticulture in the south of Romania.

Therefore, the promotion of these local creations, through various means, would be a win for both wine growers (producers) and consumers due to very high production potential, but also because of the particular organoleptic qualities they hold.

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