

On the behaviour of some table grape cultivars cultivated on family vineyards

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Abstract Research was carried out on two private vineyards located in Paulian (Arad County) and Buzias (Timis County). They focused on the variety of conveyers on the two vineyards, on the period grapes are supposed to be eaten fresh, as well as on the aspects concerning frost-resistance, bud viability, and quantitative and qualitative production. The research areas ensure favourable conditions for the grape cultivars in the varietal conveyers meant to cover one's own consumption over a period of about 100 days in Paulian and 80 days in Buzias.

Key words

table grape cultivars, conveyers, family vineyards

Table grapes are very appreciated by the consumers due to both their pleasant aspect and to their organoleptic features.(2,3). Grapes are valuable foods necessary to the human body due to their complex composition: sugars (glucose, fructose) 12-25%, organic acids (tartric, citric, malic) 1-2 %, mineral salts (Ca, Fe, K, P, etc.) about 1%, nitrate compounds 0.15-0.2%, vitamins (C, B₁, B₂, PP, A, E), enzymes, polyphenols, etc.(1).

Material and Method

Research was carried out in the year 2010 on two private viticultural plantations located in Paulian (Arad County) and Buziaș (Timiș County). They focused on the behaviour of the table grape cultivars of the varietal conveyers of the two plantations, as follows: in Paulian, the grape cultivars Perlă de Csaba, Cardinal Cardinal ISV- VCR 24, Victoria, Muscat de Hamburg, Muscat de Adda, Italia, and Moldova, and in Buziaș, the grape cultivars Victoria, Muscat de Hamburg, Muscat de Adda, and Italia.

The vineyards in which we carried out our research are young, in their first years of production, and with a high biological potential. Planting density is 2.2 m/1 m in Buziaș and 2 m/1.2 m in Paulian. The types of pruning used are Single Guyot and Cazenave Belt.

We made measurements and carried out research concerning bud viability, wood maturation,

production per plant, production to be sold, mean weight of a cluster, and estimated production per ha. We have also monitored the supply of fresh fruit and the mean market price.

Results obtained

Tables 1 and 2 present data concerning bud viability and wood maturation in the studied grape cultivars. The winter 2009-2010 was frosty, without affecting bud viability and wood maturation of the vines.

In Paulian, the percentage of viable nodes varied between 78% in the grape cultivar Cardinal and 94% in the grape cultivar Perlă de Csaba. All grape cultivars, including frost-sensitive ones (Cardinal Cardinal ISV- VCR 24, Muscat de Hamburg, Muscat de Adda, Italia) have recorded satisfactory percentages of viable nodes, which eliminates the need for compensated fruiting charge. Nodes affected by frost were located in all grape cultivars towards the tip of the stem, portions that are usually pruned.

In Buziaș, the percentage of viable nodes varied between 72% in the grape cultivar Muscat de Adda and 84% in the grape cultivar Victoria. In this case, the grape cultivars Muscat de Hamburg and Muscat de Adda needed during pruning a compensated fruiting charge.

Table 1.

Bud viability and wood maturation in 2010 in Paulian (Arad County)

Grape cultivar	Bud viability (%)	Mature annual growths	
		m/plant	% of total growths
Perlă de Csaba	94	3.22	92
Cardinal	78	8.21	80
Cardinal ISV-VCR 24	80	6.55	75
Victoria	87	5.22	88
Muscat de Hamburg	83	5.48	83
Muscat de Adda	81	5.29	79
Italia	82	6.25	78
Moldova	88	9.53	84

Table 2.

Bud viability and wood maturation in 2010 in Buzias (Timis County)

Grape cultivar	Bud viability (%)	Mature annual growths	
		m/plant	% of total growths
Victoria	84	4.21	82
Muscat de Hamburg	75	3.78	71
Muscat de Adda	72	3.49	69
Italia	80	5.75	76

Percentages of annually matured wood of the total annual growths varied, in Paulian, between 75% in the grape cultivar Cardinal ISV-VCR24 and 92% in the grape cultivar Perlă de Csaba, the other grape cultivars having intermediary values. Annual matured growths expressed as m/plant had values corresponding to the grape cultivar vigour and genetic resistance, i.e. between 3.22 m in the grape cultivar Perlă de Csaba and 9.53 m in the grape cultivar Moldova. In all grape cultivars, the sections of not matured wood were at the

tips of annual stems, which did not affect at all normal fruiting pruning.

In Buzias, the percentage of annual matured wood varied between 69% in the grape cultivar Muscat de Adda and 82% in the grape cultivar Victoria. The sections of immature stem on this vineyard were at the tips of the plants of grape cultivars Victoria and Italia and at the middle of the stem in the grape cultivars Muscat de Hamburg and Muscat de Adda, in which fruiting pruning needed the preservation of supplementary stems.

Table 3.

Grape production in 2010 on the vineyard in Paulian

Grape cultivar	Mean cluster weight (g)	Yield (kg/plant)	Estimated yield (kg/ha)	Production to be sold (% of the total)
Perlă de Csaba	125	2.1	8748.6	78
Cardinal	515	5.0	20830.0	81
Cardinal ISV-VCR 24	530	5.2	21663.2	83
Victoria	413	6.0	24996.0	88
Muscat de Hamburg	305	4.1	17080.6	75
Muscat de Adda	310	3.9	16247.4	70
Italia	425	4.1	17080.6	76
Moldova	360	4.9	20413.4	84

Yield per plant varied in Paulian between 2.1 kg in the grape cultivar Perlă de Csaba and 6 kg in the grape cultivar Victoria. There were high yields in all grape cultivars, with a particular mention for the grape cultivars Victoria, Cardinal ISV – VCR 24, Cardinal, and Moldova.

Yield per ha was calculated through estimates, by multiplying mean yield per plant with the number of

plants per ha calculated depending on plant density. All 8 grape cultivars studied yielded high to very high yields, close to the maximum potential of the grape cultivar.

The mean weight of a grape cluster varied between 125 g in the grape cultivar Perlă de Csaba and 530 g in the grape cultivar Cardinal ISV – VCR 24. All

experimental grape cultivars are remarkable for their large clusters with good commercial aspect.

Production to be sold expressed in percentage of the total yield varied between 70% in the grape

cultivar Muscat de Adda and 88% in the grape cultivar Victoria.

Table 4.

Grape production in 2010 on the vineyard in Buziaş

Grape cultivar	Mean cluster weight (g)	Yield (kg/plant)	Estimated yield (kg/ha)	Production to be sold (% of the total)
Victoria	375	4.1	18634.5	82
Muscat de Hamburg	278	3.2	14544.0	70
Muscat de Adda	282	3.0	13635.0	71
Italia	365	3.2	14544.0	72

In Buziaş, yield per plant ranged between 3 kg in the grape cultivar Muscat de Adda and 4.1 kg in the grape cultivar Victoria, while mean cluster weight ranged between 278 g in the grape cultivar Muscat de Hamburg and 375 g in the grape cultivar Victoria.

On both vineyards, the grape cultivars Muscat de Hamburg and Muscat de Adda yielded the least productions to be sold.

Table 5.

Varietal conveyer of table grape cultivars from the vineyard in Paulian in 2010

Grape cultivar	July			August			September			October		
	I	II	III	I	II	III	I	II	III	I	II	III
Perlă de Csaba			■	■								
Cardinal				■	■	■						
Cardinal ISV-VCR 24				■	■	■						
Victoria					■	■	■					
Muscat de Hamburg							■	■	■			
Muscat de Adda								■	■	■		
Italia									■	■	■	
Moldova									■	■	■	■
Mean market price (lei/kg)		6	6	6	5	5	4	4	4	5	6	6

As for the period of coverage with fresh table grapes, the varietal conveyer in Paulian covers a period of about 100 days starting from July 20 until October 30, an interval that benefited from good market prices at both the beginning and the end of the marketing period.

In Buziaş the small number of grape cultivars ensures a less extended varietal conveyer, spanning only on 60 days, so that good prices benefited from shorter periods.

Table 6.

Varietal conveyer of table grape cultivars from the vineyard in Buzias in 2010

Grape cultivar	July			August			September			October		
	I	II	III	I	II	III	I	II	III	I	II	III
Victoria				■	■	■						
Muscat de Hamburg						■	■	■				
Muscat de Adda							■	■	■			
Italia									■	■	■	
Mean market price (lei/kg)		6	6	6	5	5	4	4	4	5	6	6



Fig.1 Aspects of reference areas

Conclusions

Table grapes culture is profitable due to the high consumption of grapes and to the high market prices. The two reference areas benefit from soil and climate conditions favourable to these grape cultivars; the proof: high yields and high quality. On family grapevine plantations we recommend the cultivation of several grape cultivars with different times of ripening to ensure fresh grape consumption for as long periods of time as possible. Early maturation grape cultivars such as Perlă de Csaba, Cardinal, Victoria or late maturation grape cultivars such as Moldova and Italia, benefit from higher selling prices (extra-seasonal prices).

References

- 1.Dobrei A., Rotaru Liliana, Mustea M. - 2005 – Cultura viței de vie, Editura Solness, Timișoara.
- 2.Dobrei A., Liliana Rotaru, Morelli S. - 2008 – Ampelografie, Ed. Solness, Timisoara;
- 3.Dobrei A., Sala F., Ghiță Alina, Mălăescu Mihaela - 2009 - Researches concerning the influence of different fertilization systems on the quantity and quality of the production at some table grapes cultivars, Journal of Horticulture, Forestry and Biotechnology, vol 13, Ed. Agroprint Timișoara, pg. 454-457.