

THE EVALUATION OF THE FREEZING RESISTANCE OF THE WINTER SHOOTS AT CERTAIN GRAPEVINE VARIETIES FOR TABLE GRAPES UNDER THE CONDITIONS OF THE WINTER 2011-2012

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Abstract

In order to achieve this paper we have studied the freezing resistance and the effect of low temperatures over the viability of the winter shoots at certain grapevine varieties for the tablegrapes cultivated in the Stefanesti vineyard, Arges. The studied varieties were: Canner, Auriu of Stefanesti, Perlette 10 St. from the white tablegrape variety; Muscat Adda 22 St, Argessis, Moldova from the red tablegrape variety. As a result of the study, we have noticed the sensitivity of Perlette and Augusta varieties at the low temperatures of the respective winter. We have presented data concerning the determining procedure of the percentage of viable shoots.

Keywords: fertility, productivity, table grapes

1. INTRODUCTION

Vineyard area is characterized by the following elements Ștefănești ecoclimatic: length of the growing season for grape-vines, on average 177 days; The annual average temperature 9.8 °C, global heat balance of vegetation period 3530°C, 1350°C useful heat balance; average temperatures of the warmest months (July, August 34,7°C and 34,9°C) insolation duration of vegetation period on average 1430 hours; real heliothermic index of 1.86 during the growing season. Therefore fits well studied varieties in demand environmental and showed good behavior even at lower temperatures.

2. MATERIAL AND METHOD

The study was conducted on genotypes vinifera grapes intended for the table: Argessis, Golden Ștefănești, Canner, Muscat Adda 22 St., Perlette 10 St., Moldova. Sampling was conducted in a germplasm collection INCDBH Ștefănești Arges, where planting distance between rows is 2.2 m / 1 m between plants (4545 but. / Ha). Determinations were made up of 5 string medium samples immediately after their collection.

To determine the viability of buds, the material was kept with the water 24-36 hours at temperatures of 25-30 ° C and buds were sectioned longitudinally, noting primary and secondary buds viable and necrotic.

In the wine-growing practice on one hand and the grapevine varieties amelioration operations on the other hand, it has been observed that, the heredity of the characters and features of new varieties obtained by sexual hybridization are more obvious, as the genitors are genetically further and have distant origins. In the characters of the first variety prevails.

Following the manifestation and the degree of hereditary variability for one or more characters, in the wine-growing practice, the research analyzes a series of characters including: the growing force, the number of grapes on a grapevine, the production per grapevine, the sugar quantity, the acidity of the grape must, various maturation age, the resistance to diseases and pests, the resistance to drought and frost, etc.

In the present paper there have been tested four varieties of table grapes with different maturation ages under the aspect of their resistance to the low temperatures in the winter 2011-2012.

Experimental variants:

Argessis - variety homologated in 2002 at SCDVV Ștefănești. The first variety of tablegrapes obtained in the pedoclimatic conditions specific to the Ștefănești-Argeș vineyard. Pleasant commercial aspect, large berry (7,5-8,0 g), globular, bluish-black. Large cluster (450-480 g), uniaxial. Good tolerance to cryptogamic diseases (mildew, blight, rot) . High vigour vines, suitable for arbor culture. Average production reaches over 15 t/ht (figure 1).

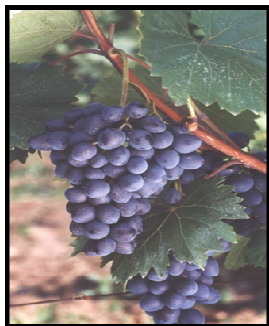


Figure 1. Variety Argessis

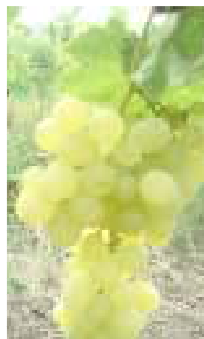


Figure 2. Variety Golden Stefanesti

Auriu de Stefanesti - the first grapevine variety for white tablegrapes, having a very early maturation, obtained under the pedoclimatic conditions specific to the vineyard Ștefănești-Argeș, homologated in 2007 at INCDBH Ștefănești. Pleasant commercial aspect, large berry (5,5-6,8 g), globular, golden-yellow colour. Large grape (400-450 g), winged. Good tolerance to cryptogamic diseases (mildew, blight, rot). The maturation of grapes in phase I (28.07-05.08). Suitable for ecological cultures. Extension in culture of the variety ensures an average production of 14 t/ha (figure 2).

Perlette 10 St. - has been obtained through clone selection from the variety Perlette at INCDBH Ștefănești and homologated in 2008; It can be noticed through early maturation and the commercial value of the grapes. The grapes are uniaxial, taper, medium-sized (240 – 380 g, average), compacted. The berry is medium-sized (2,65 – 5,39 g), globular, white-greenish due to the thick layer of bloom; the pulp is fleshy, crisp, not flavoured. The stem and the cob are herbaceous (nonlignified). Biological resistances: sensitive to cold (-16°C . . . -18°C): very sensitive to mildew; splits the matured berries very easily, even at reduced rainfall; is attacked by wasps (figure 3).



Figure 3. Variety Perlette

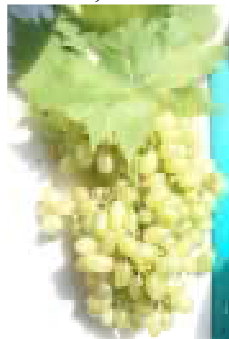


Figure 4. Variety Canner

Canner is a variety obtained by OLMO in 1969, by cross-breeding the varieties Hunisa and Sultanina. It is a variety with white, large, oval, seedless grapes which can be used mainly in obtaining raisins, jam and compote (figure 4).

Muscat Adda 22 St. – has been obtained through clone selection from the variety Muscat d'Adda at INCDBH Ștefănești and homologated in 2008; it is a variety destined for fresh consumption; the leaf is green; the grapes are medium sized, towards large (270-340 g); the berries are disposed equally on the cluster, being medium to large size; semicrisp pulp with specific taste and flavour; the skin is thick, black-aubergine coloured, highly bloomed; the vigour of the vines medium to large; it has good resistance to drought and diseases (mildew, blight and grey rot); the maturation of the grapes in September; a production of 4,9-5,3 kg/vine; it accumulates 187 g/l sugars and 3,9 g/l acidity; it has an increased resistance to handling, transport and storage (figure 5).



Figure 5. Variety Muscat Adda



Figure 6. Variety Moldova

Moldova - is a table grape variety with a late ripening period (end of September). It has large leaves, rounded, with five lobes, with almost full margin or not too large incisions. On the lower surface of the leaf language hairs notice. The cluster is cylindrical or conical, with an average density of grains and weighing about 385 g. The largest weigh up to 1 kg. Grains are high (2,5 x1, 9 cm), oval, dark violet coated pronounced bloom. The peel is usually thick, dense and hard, meaty and crispy pulp consistency, taste is simple. Moldova is a variety with vigorous growth (figure 6).

3. RESULTS AND DISCUSSIONS

As regards the geographical location, the Ștefănești vineyard is located between 44°42' and 44°55' northern latitude, at the southern limit of the platform Căndești, in the contact zone with Câmpia Română. The viticultural plantations are located at altitudes between 200 and 415m, the maximal altitudes being the Izvorani Hill (415m) and the Pietroasa Hill (325m). The meteorological data have been extracted from the database of the Ștefănești Institute, collected during the interval 2010 – 2012 (table 1).

Table 1. The synthesis of climate elements

DAY NUMBER	DECEMBER		JANUARY		FEBRURY	
	Air temperature		Air temperature		Air temperature	
	Minimum	Maximum	Minimum	maximum	Minimum	Maximum
01	-4,3	9,1	-5,1	5,9	-17,7	-8,9
02	-4,9	8,8	-6,0	8,6	-17,6	-7,8
03	-4,7	14,7	-2,9	13,4	-11,4	-3,0
04	-0,2	16,3	-1,4	12,5	-3,2	1,8
05	2,3	11,3	-1,3	9,7	-6,1	1,9

06	3,9	8,6	1,4	7,0	-8,6	-6,1
07	-2,5	7,9	0,9	7,0	-11,2	-6,5
08	-3,3	6,0	-2,4	5,8	-17,4	-7,8
09	-2,7	7,7	-4,0	5,7	-20,9	-8,6
10	-3,1	7,5	-1,3	7,2	-17,1	-8,0
11	-0,5	15,3	-3,4	6,7	-19,0	-10,0
12	3,2	6,1	-2,3	1,4	-10,9	-3,2
13	0,4	9,9	-6,3	9,7	-7,4	-1,6
14	-0,3	12,5	-3,0	6,2	-10,9	-0,9
15	-2,0	9,6	-7,1	4,2	-14,5	-5,0
16	0,1	6,6	-6,9	2,0	-8,9	1,2
17	-2,8	8,4	-7,2	0,9	-9,2	1,4
18	-3,8	3,7	-10,9	-1,1	-9,2	1,9
19	-1,0	4,5	-10,9	0,2	-9,9	2,8
20	-1,6	2,8	-2,9	5,8	-5,3	7,5
21	-0,4	2,9	-2,5	2,4	-2,6	0,7
22	-1,0	4,6	-5,8	3,6	-4,7	7,8
23	-1,6	1,6	-1,3	10,6	-6,2	8,0
24	-6,4	0,1	-2,0	4,5	2,1	11,0
25	-7,3	3,4	0,1	1,7	-0,6	13,4
26	-3,4	8,5	-5,4	1,5	-2,9	8,9
27	-5,9	7,4	-10,3	-8,9	-4,9	4,3
28	-2,9	6,8	-13,5	-7,4	-9,4	2,4
29	2,7	3,4	-16,5	-4,4	-5,4	0,9
30	-2,0	3,2	-15,2	-10,0	-	-
31	-2,4	3,1	-18,5	-5,3	-	-
AVERAGE	-1,5	7,5	-5,6	3,5	-9,1	0,0



Figure 1. Different stages of buds start

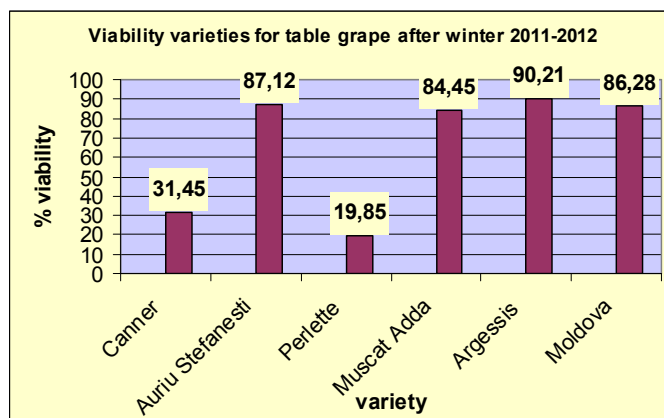


Figure 2. Synthesis regarding bud losses on the varieties including in the study

After determining the viability of buds as described, it was observed that viability was different from one variety to another. Thus, the variety Perlette 10 St. had the lowest viability (19,85%), compared with a variety Argessis viability over 90%.

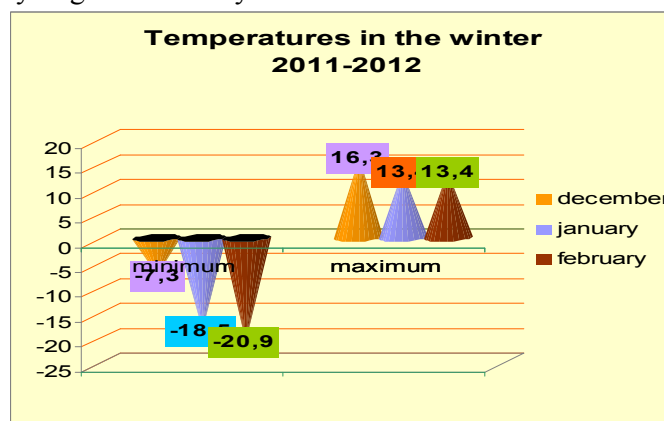


Figure 3 Average temperatures in winter 2011-2012

Average temperatures in the winter months was between -20.9°C and 16.3°C. Estimated production losses eyes after winter was between 10-85%.

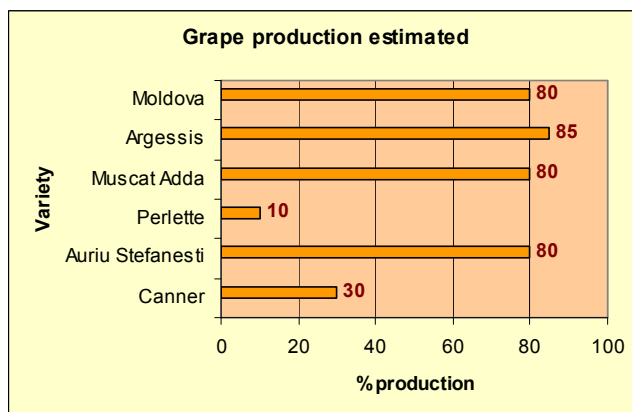


Figure 4 Estimating production varieties studied

4. CONCLUSIONS

Perlette variety, showed the lowest resistance to frost it in hate -18.5 ° C temperatures had a viability of 20% and variety Canner of 30%.

All other varieties studied had good behavior at temperatures in the winter of 2011-2012, so their viability ranged from 84 to 90 %.

Most resistant variety of the studied work was Argessis with a viability of over 90%, so again showed resistance to frost.

Estimated production in spring ranged from 10-90%, the lowest being the estimated Perlette variety and growing the varieties Argessis and Moldova.

5. ACKNOWLEDGEMENTS

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