

EVALUATION OF QUANTITY AND QUALITY OF TABLE GRAPE PRODUCTION TO I.N.C.D.B.H. STEFANESTI, AFTER APPLICATION OF GREEN OPERATIONS

Adriana Bădulescu*

*National Research & Development Institute for Biotechnology in Horticulture Stefanesti-Arges
Stefanesti City, Bucharest-Pitesti, no.37, County Arges
E-mail: cosadriana@yahoo.com

Abstract

Working in the green fill fruition cuts in order to regulate the processes of growth and fructification. The work is done and green operations ventilation and adequate lighting hub bodies, reducing the attack of diseases and improving production quality. The ampelographic collection of INCDBH Stefanesti four varieties were studied in the following works were applied green: desfrunzitul partial normalization (thinning) inflorescences, inflorescences and împungirea shortening grapes. After applying these operations varieties studied during the years 2013-2014, grape production increased compared to the control variety, as for quality, Aces seen in the commercial aspect of grapes. The varieties studied in this work were: Muscat Hamburg, Victoria, Augusta and has been studied as a control Muscat Adda.

Keywords: table grapes, consumer, quality, fertility, productivity.

1. INTRODUCTION

During the period 2013-2014 research has been made on certain varieties of table grapes and raisins, varieties having valuable agro biological qualities which can complete the demands of the Romanian market. It is true that these varieties have been obtained long time ago, but they are appreciated also nowadays, except that Romanian producers cannot afford to set seedless varieties surfaces due to the high cost (planting material, labour, support system, etc.) The varieties are in fruition, in an ampelographic collection at I.N.C.D.B.H. Ștefănești. The studied varieties are grafted on the parent stock Kober 5 BB and planted at the distance 2.5 m between rows and 1.2 m on the row. The applied cutting is the Guyot type on high semistocks. Under the conditions of the Ștefănești vineyard, the parent stock used at grafting gave the vines great culture vigour and also productivity. Green works and operations comprise a complex of phyto running during the growing vines. They complement fruition cuts in order to regulate growth and fruiting processes. The work is done in green operations and ventilation and adequate lighting hub organs, reducing the attack of diseases and improving production quality.

2. MATERIAL AND METHOD

Geographical coordinates of the viticultural centre, longitude and latitude. 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 Căndesti, 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 Stefanesti Institute, collected during the interval 2013 - 2014 (2 years). The average, climatic conditions over three years (2013-2014): thermal global balance, active and effective: thermal sum (°C) effective: 1.740; thermal sum (°C) active: 3.710. The absolute minimal temperature was -21,2 °C (21.01.2013); real solar heat gain: 1750 hours; rainfall: total viticultural year 561 l; total during the vegetation period 420 l. Number of days of bioactive period 195. Observations and determinations have been made on the culture vigour of vines, on the development of the main phenophases, the duration of the vegetation period, the absolute and relative fertility coefficients have been calculated, the productivity parameters, the quality and quantity of the production, the resistance to cold.

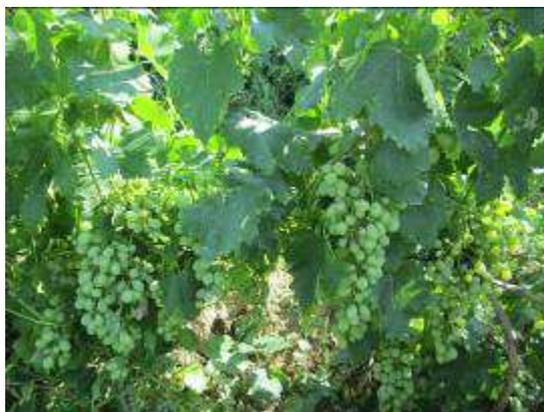


Figure 1 - Appearance of plantation table grape varieties

Experience has included varieties Muscat Hamburg, Victoria, Augusta, with the witness Muscat of Adda. It established four experimental versions of combining loads 10:15 eyes / m² with standardizing the blossom on the vine (20), and without this operation:

V₁ = 10 eyes load/m², keeping 20 inflorescences / hub;

V₂ = 10 eyes load/m² without standardizing the blossom;

V₃ = load of 15 buds/m², keeping inflorescence 20 per hub;

V₄ = load of 15 buds/m² without standardizing the blossom.

The same charges and normalization of inflorescences were applied and the reference variety Muscat Hamburg:

M₁ = load of 10 buds/m², keeping 20 inflorescences / hub;

M₂ = 10 eyes load/m² without standardizing the blossom;

M₃ = load of 15 buds/m², keeping inflorescence 20 per hub;

M₄ = load of 15 buds/m² without inflorescences standardization.

3. RESULTS AND DISCUSSION

Standardization (thinning) is a work inflorescences the varieties of table grapes that have a high percentage of fertile shoots and more flowers on the vine. Reducing the number of inflorescences is done differently, depending on soil fertility and the agricultural technique utilized. On each shoot fertile 1-2 inflorescences are necessary, the rest is rupture by hand. Thinning is executed

immediately after tying flowers to be able to choose the most appropriate inflorescences, which will be preserved. Usually the flowers removes small undeveloped, located at the tip of the shoot.

Depending on the variety of fertility hub will eliminate 20-30% of inflorescences. The varieties for table grapes with large 300-500 g (Victoria, Augusta) will retain 14-16 per vine flowers, grape varieties 200-300 g (Muscat Hamburg, Muscat d'Adda) inflorescences 24-26 will leave the hub. and the Pearl of Csaba varieties, Chasselas doré, which have smaller grapes will leave the vine stock. Thinning 30-32 inflorescences hub has the effect of raising the average weight of a grape, global production growth, increasing the size of grains and sugar content, increasing the proportion of freight grapes.

Shortening inflorescences generally apply to table grape varieties with broad beans, favorably influencing the quality of the grapes by: improving their commercial appearance, more uniform ripening, color uniformity and grain size, increase the sugar content. This paper aims at removing the main shaft tip of the grapes and where grapes will remove branches and part of the lateral branches that have small grains and uneven in terms of maturation.

The optimal time for performing this operation is immediately after flowering. If you are running earlier may result in binding a profusion of flowers and grape berry obtain too often. If the operation is delayed weight gain will reduce the beans in proportion to the delay. Shortening inflorescences can be done with scissors stainless or even suppressing hand, depending on the variety, 1/2 or 2/3 of inflorescence (Figure 2, 3).



Figure 2, 3 – The inflorescence before shortening

Description of varieties

Muscat Hamburg (Figure 4) is a grape variety Muscat varieties resulting from crossing d'Alexandrie and Trollinger (also known as variety Frankenthal). Muscat Hamburg grape wine became popular in England since 1860. Are big branches with well developed side branches. The stalk is long and herbaceous, like the rest of the bunch. The berries are large, fleshy, crunchy, powerful bitten and covered with a thick bloom.

Victoria (Figure 5) is a hybrid obtained by crossing varieties: Cardinal x Afuz Ali White. Hybridization was carried out in the I.C.H.V. Bucharest by Victoria Lepadatu. Selection work continued on in Viticulture Research Station DRAGASANI variety was approved in 1978.'s One of the most valuable works of Romanian varieties for table grapes. Required by earliness, but especially the beautiful appearance of the grapes and productivity. Grapes are very large, conical or cylindrical-conical, with beans stacked compact cluster. Large and very large grain, ovoid yellow-amber (amber); semicrips pulp, balanced taste, unflavoured.



Figure 4- Muscat Hamburg



Figure 5 - Victoria

Augusta (Figure 6) - It was obtained by controlled sexual hybridization Italy x Queen variety of vineyards, the Agronomic Institute in Bucharest. Variety approval was made in 1984. Required by earliness (II era of aging), size and look to the grapes. At the rosette is starting in vegetation glabra leaf, green and brown shades, and young leaves are bronze. Adult leaf of medium size (16-18 cm long) and have fine grooves. Autumn chords acquires a brown color - brown. Grapes are high (average 325g), conical and cylindrical-Lacs. Berries large, oval, yellow-green, semicrisp flesh with pleasant flavor.

Muscat d' Adda (Figure 7) 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 6- Augusta



Figure 7- Muscat Adda

Table grape varieties are generally high-growth varieties force, with high yield potential and a capacity for accumulation of sugars in the berries. This quality indicator of importance in that, in the case of grapes for fresh consumption, palatability are given by a balance between sugar content and acidity of the grape.

By groups of varieties there is greater accumulation of sugars in varieties with medium production potential. Late ripening varieties, those with high yield potential and high growth force accumulate

smaller amounts of sugars. In 2013, a year rich in resources heliothermic, studied varieties have accumulated large amounts of sugars. In 2014, normal in terms of climate, accumulation of sugars were lower, thanks in higher yields of grapes obtained (Table 1).

The varieties Muscat Hamburg, Augusta minimum sugar content is recorded in V_4 version, maximum load and without standardizing the blossom. In reference variety, the lowest sugar content presented variant V_2 , with a load of fruit less, but without standardizing the blossom.

Table 1. Sugar content of musts from table grape cultivars studied in Ștefănești vineyard (2013-2014)

Variety	Experimental version	2013	2014
Muscat de Hamburg	$V_1 = 10$ eyes load/m ² , keeping 20 inflorescences / hub;	165,0	164,0
	$V_2 = 10$ eyes load/m ² without standardizing the blossom;	154,5	158,8
	$V_3 =$ load of 15 buds/m ² , keeping inflorescence 20 per hub	167,1	176,4
	$V_4 =$ load of 15 buds/m ² without standardizing the blossom.	160,2	170,0
	Average	161,7	167,3
Victoria	$V_1 = 10$ eyes load/m ² , keeping 20 inflorescences / hub;	147,0	150,7
	$V_2 = 10$ eyes load/m ² without standardizing the blossom;	140,5	142,6
	$V_3 =$ load of 15 buds/m ² , keeping inflorescence 20 per hub	146,4	150,2
	$V_4 =$ load of 15 buds/m ² without standardizing the blossom.	136,6	140,9
	Average	142,6	146,1
Augusta	$V_1 = 10$ eyes load/m ² , keeping 20 inflorescences / hub;	152,3	160,1
	$V_2 = 10$ eyes load/m ² without standardizing the blossom;	146,8	148,1
	$V_3 =$ load of 15 buds/m ² , keeping inflorescence 20 per hub	151,4	155,2
	$V_4 =$ load of 15 buds/m ² without standardizing the blossom.	144,6	160,4
	Average	148,7	156,0
Muscat de Adda (Mt)	$V_1 = 10$ eyes load/m ² , keeping 20 inflorescences / hub;	148,7	152,2
	$V_2 = 10$ eyes load/m ² without standardizing the blossom;	138,8	141,0
	$V_3 =$ load of 15 buds/m ² , keeping inflorescence 20 per hub	140,2	145,8
	$V_4 =$ load of 15 buds/m ² without standardizing the blossom.	134,9	140,0
	Average	140,6	144,7

Table 2. Titratable acidity of musts from table grape cultivars studied in Ștefănești vineyard (2013-2014)

Variety	Experimental version	2013	2014
Muscat de Hamburg	$V_1 = 10$ eyes load/m ² , keeping 20 inflorescences / hub;	3,74	3,64
	$V_2 = 10$ eyes load/m ² without standardizing the blossom;	3,81	3,68
	$V_3 =$ load of 15 buds/m ² , keeping inflorescence 20 per hub	4,09	3,95
	$V_4 =$ load of 15 buds/m ² without standardizing the blossom.	4,50	4,04
	Average	4,03	3,82
Victoria	$V_1 = 10$ eyes load/m ² , keeping 20 inflorescences / hub;	4,31	3,92
	$V_2 = 10$ eyes load/m ² without standardizing the blossom;	4,35	3,91
	$V_3 =$ load of 15 buds/m ² , keeping inflorescence 20 per hub	5,34	5,02
	$V_4 =$ load of 15 buds/m ² without standardizing the blossom.	4,77	4,29
	Average	4,69	4,28
Augusta	$V_1 = 10$ eyes load/m ² , keeping 20 inflorescences / hub;	3,46	3,29
	$V_2 = 10$ eyes load/m ² without standardizing the blossom;	3,69	3,28
	$V_3 =$ load of 15 buds/m ² , keeping inflorescence 20 per hub	3,98	3,68
	$V_4 =$ load of 15 buds/m ² without standardizing the blossom.	4,87	4,32
	Average	4,00	3,64
Muscat de Adda (Mt)	$V_1 = 10$ eyes load/m ² , keeping 20 inflorescences / hub;	3,86	3,31
	$V_2 = 10$ eyes load/m ² without standardizing the blossom;	3,93	3,41
	$V_3 =$ load of 15 buds/m ² , keeping inflorescence 20 per hub	5,03	4,24
	$V_4 =$ load of 15 buds/m ² without standardizing the blossom.	4,53	4,31
	Average	4,33	3,81

The titratable acidity of the must expressed in g / l H₂SO₄ was determined to full maturity of the grapes. Although specific weather conditions Ștefănești Vineyard, grape acidity of the varieties of grape-vines usually keep sharp, high temperatures in recent years this influence clearly indicate quality. Thus, in 2014, due to high temperatures, acidity showed lower values, especially in the early and middle-ripening varieties (period II and III) in 2013, when the temperature and insolation values were closer annual average, titratable acidity was the characteristic varieties tested.

The lowest values for the average weight of a grape variety were recorded Muscat Hamburg (average 200 g) (Table 3). Average dimensions of the grape variety had witnessed: Muscat Adda (264 g) large grapes were obtained varieties: Victoria (478 g) and Augusta (344 g).

Table 3. Average weight of the grape (g) of table grape cultivars studied in Ștefănești vineyard (2013-2014)

Variety	Experimental version	2013	2014
Muscat de Hamburg	V ₁ = 10 eyes load/m ² , keeping 20 inflorescences / hub;	225	205
	V ₂ = 10 eyes load/m ² without standardizing the blossom;	193	214
	V ₃ = load of 15 buds/m ² , keeping inflorescence 20 per hub	190	198
	V ₄ = load of 15 buds/m ² without standardizing the blossom.	209	188
	Average	204	201
Victoria	V ₁ = 10 eyes load/m ² , keeping 20 inflorescences / hub;	490	461
	V ₂ = 10 eyes load/m ² without standardizing the blossom;	527	529
	V ₃ = load of 15 buds/m ² , keeping inflorescence 20 per hub	462	482
	V ₄ = load of 15 buds/m ² without standardizing the blossom.	433	378
	Average	478	462
Augusta	V ₁ = 10 eyes load/m ² , keeping 20 inflorescences / hub;	414	371
	V ₂ = 10 eyes load/m ² without standardizing the blossom;	397	422
	V ₃ = load of 15 buds/m ² , keeping inflorescence 20 per hub	348	380
	V ₄ = load of 15 buds/m ² without standardizing the blossom.	352	294
	Average	377	366
Muscat de Adda (Mt)	V ₁ = 10 eyes load/m ² , keeping 20 inflorescences / hub;	263	236
	V ₂ = 10 eyes load/m ² without standardizing the blossom;	271	280
	V ₃ = load of 15 buds/m ² , keeping inflorescence 20 per hub	303	267
	V ₄ = load of 15 buds/m ² without standardizing the blossom.	219	247
	Average	264	257

4. CONCLUSIONS

1. The climatic conditions of the wine center Ștefănești-Arges variety Victoria had the best behavior, pointing out in particular by the size of grapes and production, that will be studied further in order to obtain a clone.
2. The varieties Muscat Hamburg, Augusta minimum sugar content is recorded in V₄ version, maximum load and without standardizing the blossom. In reference variety, the lowest sugar content presented variant V₂, with a load of fruit less, but without standardizing the blossom.
3. The lowest values for the average weight of a grape variety were recorded Muscat Hamburg (average 200 g). Average dimensions of the grape variety had witnessed: Muscat Adda (264 g) large grapes were obtained varieties: Victoria (478 g) and Augusta (344 g).

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