

THE AGROBIOLOGICAL AND TECHNOLOGICAL EVALUATION OF SOME TABLE GRAPE VARIETY WITH DIFFERENT MATURATION PERIODS IN VINEYARD OSTROV

EVALUAREA AGROBIOLOGICĂ ȘI TEHNOLOGICĂ A UNOR SOIURI DE STRUGURI PENTRU MASĂ, CU DIFERITE EPOCI DE MATURARE, ÎN CENTRUL VITICOL OSTROV

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Abstract Table grape varieties with their characteristics of quality, impressive variability, genetic diversity, offers new ways of study the ampelographic scientific research. This paper work is a comparative study aimed at the behavior of table grapes varieties with different maturation periods, cultivars are from global range, and also Romanian selection – Victoria, Muscat D'Adda, Afuz Ali, Xenia, raised in ecopedoclimatic conditions registred under the vineyard Ostrov, situated in viticultural region Danube Terraces. The experience has referred the application of different loads of buds/stock and have made detailed observations and determinations, the reaction agrobiological and technology, but in particular, the production was evaluated in terms of physical and chemical characteristics of grape harvest for marketing. The eco-climatic conditions of vine vineyard Ostrov has shown that is a zone with a very favorable growing grape varieties for table and define the achievement of a maximum of grape maturation earliness and adds organoleptic quality, conditions which are not found in other wine-growing region of our country.

Key words: table grape varieties, quality, quantity

Rezumat Caracteristicile calitative, variabilitatea impresionantă, diversitatea genetică și popularitatea de care se bucură soiurile de struguri de masă este foarte cunoscută, oferind noi căi de abordare în cercetarea științifică ampelografică. Lucrarea de față reprezintă un studiu comparativ ce vizează comportarea unor soiuri de struguri pentru masă, cu diferite epoci de maturare, din sortimentul mondial, dar și selecții românești - Victoria, Muscat D'Adda, Afuz ali, Xenia, în condițiile ecopedoclimatice înregistrate în centrul viticol Ostrov, din Regiunea Viticolă Terasale Dunării. Experiența a prevăzut aplicarea unor încărcături diferite de ochi/butuc și s-au efectuat observații și determinări detaliate, privind comportarea agrobiologică și tehnologică, dar în special s-a evaluat producția sub aspectul caracteristicilor fizico-chimice ale strugurilor în vederea comercializării recoltei. Condițiile eco-climatice ale centrului viticol Ostrov au demonstrat că sunt foarte favorabile pentru cultura soiurilor de struguri pentru masă și definesc realizarea unui maxim privind precocitatea maturării strugurilor și aduc un plus de calitate organoleptică, condiții care nu se regăsesc în altă regiune viticolă a țării noastre.

Cuvinte cheie: soiuri de struguri pentru masă, calitate, cantitate.

INTRODUCTION

Most times, the quality of table grapes is associated with grain size and color in reality is a complex term, only apparent, clearly seen from several perspectives: visual, taste, nutrition, health etc., measured by the consumer, according to his claims, and if it comes to favorability of a growing area, then it should provide an annual repetitivity regarding product quality. The popularity enjoyed by the species studied approach to determine new possibilities in ampelographic scientific research because they, by diverse quality wine production recorded every viticultural year, always surprising. Starting from this consideration, the present study was intended that the application of differential loads buds/vine results in an improvement both in terms of grape quality under carpometric characteristics and also under physique - chemical terms.

MATERIAL AND METHOD

To achieve the objective outlined above, the research was conducted in 2008/2009 wine growing year, in an experimental field in Ostrov Vineyard. Varieties subject to these investigations are varieties - Muscat d 'Adda, Afuz ali- from global range and Romanian selections - Victoria, Xenia - varieties highly valued by consumers in terms of visual and taste characteristics. During the experience has been applied a differential load of bud that led to obtaining the following experimental variants (Table 1) with the main aim of determining the optimal number of buds/vine that leads to some great commercial quality grapes.

Table 1

Experimental variant			
Varieties/ rostocks	Experimental variants	Distances in planting	Cutting type
Victoria/SO ₄	10 buds/m ² 13 buds /m ² 16 buds/m ²	2,5/1,4	Guyot periodically replaced with arms
Muscat d" Adda/ Kober 5 BB	10 buds/m ² 13 buds/m ² 16 buds/m ²	2,2/1,2	Guyot periodically replaced with arms
Afuz ali/41B	10 buds/m ² 13 buds/m ² 16 buds/m ²	2,2/1,4	Guyot periodically replaced with arms
Xenia/ SO ₄	10 buds/m ² 13 buds/m ² 16 buds/m ²	3,6/1,05	Double Cortina geneveza

Varieties were followed throughout the phenological spectrum and at harvest, were made the following carpometrical determinations and physico-chemical characteristics: no. grape/vine, the average weight of a grape, the average weight of a grain, production/vine (kg/vine), sugars (g/l), acidity (g/l tartaric acid). The obtained results were analyzed using one-dimensional indicators- arithmetic mean, maximum, minimum - indicators that can be applied for most quantitative characters, which have the property to be variable in time and space. Those, by their nature, characterized

these traits in terms of their level of development (size, number) and frequency of occurrence, trends in the values with typical character for the entire table of values under study.

RESULTS AND DISCUSSIONS

To analyze the behavior of these varieties under the conditions of Vineyard Centre Ostrov, it is necessary to emphasize that the center enjoys a warm temperate climate, a large amount of solar radiation and high heliothermic resources in conditions of poor rainfall regime, providing conditions very favorable for growth and fructification, on one hand, and secondly, to obtain annual production with high commercial value, regardless of age maturing varieties grown here. Findings eco-climatic favorability of the area for growing grapes varieties is detailed in table 2 (Savu, 2004) as part of the Growing Region of the Danube Terraces, which no longer reflect these conditions in other regions of our country.

Table 2

The wine growing climates of the Growing Region of the Danube Terraces

IS1 IH4 IF4**	IS1 IH4 IF3	IS2 IH4 IF4	IS2 IH4 IF3
climate with moderate drought, warm temperate, with very cold nights, including Greek and Giurgiu centers	climate with moderate drought, warm temperate, with cold nights), wine center Zimnicea	pronounced drought climate, warm temperate, with very cold nights), includes 4 wine centers Island, Baneasa, Oltina, Fetesti	pronounced drought climate, warm temperate, with cold nights), includes wine center Aliman
Growing centers have resources in terms of a heliothermic warm temperate climate (IH4), enjoying a large amount of solar radiation and high heliothermic resources in conditions of poor rainfall regime.			
Today show IF3 and night cooling centers IF4s in all wine growing centers positively influence the region's wine quality attributes of grapes on aroma variety, accumulation of anthocyanic and tannin substances, pattern etc.			
**) rough index - IS heliothermic index - index HI and cooling of the night – RU and has been proposed by Tonietto J., Carbonneau, 2000.			

Application at cutting of a different load of buds/vine at the four varieties studied, results a difference of their behavior in terms of quality and quantity of production, and for being easier the evaluation of the results obtained, data analysis was done for each variety individually analyzing all the carpometric parameters:

In table 3, it is noted that the variety Victoria, get a load of 10 butts/m² (35 butts/vine), the largest number of grapes on the vine (39), the highest average weight of a grain, (6,0 g), the largest amount of sugar (155 g/l), with a maximum yield of 11,3kg/vine. At a load of 13 butts/m² (46 butts/vine), recorded a peak at the three repetitions, in terms of average weight of a grape (352 g) and glucose-acidimetry index (42,8) and a load of 16 butts/m² (56 butts/vine) has not been any maximum value for any of the repetitions, observing only the minimum values for most carpometrical parameters analyzed.

Table 3

Carpometrical analysis – Victoria variety

Load of buds	No. of grapes	Average weight of grape (g)	Prod. Kg/vine	Average weight of grain (g)	Sugars g/l	Acidity g/l	Glucose-acidimetry index
10 buds/m ² 35 buds/vine	26	300,0	7,8	5,4	155,0	4,3	36,0
	23	325,0	7,5	6,0	145,0	4,3	33,7
	39	290,0	11,3	4,5	137,0	4,0	34,0
13 buds/m ² 46 buds/vine	23	352,0	8,1	5,0	152,0	3,9	38,8
	25	320,3	8,0	4,8	150,0	3,8	39,5
	34	263,0	8,9	3,6	154,0	3,6	42,8
16 buds/m ² 56 buds/vine	38	250,0	9,5	2,9	137,0	4,0	34,1
	19	302,0	5,7	4,0	145,0	4,0	36,3
	34	204,5	7,0	2,8	135,0	4,2	31,9
averages	29,0	289,6	8,2	4,3	145,6	4,0	36,3
maximum	39,0	352,0	11,3	6,0	155,0	4,3	42,8
minimum	19,0	204,5	5,7	2,8	135,0	3,6	31,9

Table 4

Carpometrical analysis – Muscat d'Adda variety

Load of buds	No. of grapes	Average weight of grape (g)	Prod. Kg/vine	Average weight of grain (g)	Sugars g/l	Acidity g/l	Glucose-acidimetry index
10 buds/m ² 35 buds/vine	27	201,0	5,4	4,5	159,0	3,7	43,0
	23	289,0	6,6	4,0	162,2	3,8	42,2
13 buds/m ² 46 buds/vine	16	190,0	3,0	4,7	157,0	3,5	45,5
	35	209,0	7,3	4,8	174,0	4,3	40,9
16 buds/m ² 56 buds/vine	14	301,5	4,2	3,8	165,0	3,8	43,4
	24	257,0	6,2	4,0	180,0	4,1	43,9
averages	7	269,0	1,9	3,6	163,0	3,7	44,1
	16	300,0	4,8	3,8	164,0	4,0	41,5
maximum	25	252,0	6,3	2,8	162,0	3,8	42,6
	20,8	252,1	5,1	4,0	165,1	3,8	43,0
minimum	35,0	301,5	7,3	4,8	180,0	4,3	45,5
	7,0	190,0	1,9	2,8	157,0	3,5	40,9

In case of Muscat d'Adda (table 4) the analysis of the three repetitions of three loads of buds applied, indicates the maximum expression of carpometrical measurements at a load of 13 buds/m² (34 buds/vine) as follows: 35 grapes on the vine, with an average weight of a grape with a maximum of 301,5g, with a production of 7,3 kg/vine and a quantity of high sugars (180 g/l).

Table 5

Carpometrical analysis – Afuz ali variety

Load of buds	No. of grapes	Average weight of grape (g)	Prod. Kg/vine	Average weight of grain (g)	Sugars g/l	Acidity g/l	Glucose-acidimetry index
10 buds/m ² 31 buds/vine	10	321	3,2	3,8	136	3,21	42,4
	11	387	4,3	4,0	145,1	3,57	40,6
	14	372	5,2	4,3	151	3,97	38,0
13 buds/m ² 40 buds/vine	24	289	6,9	3,0	137	3,65	37,5
	17	306	5,2	3,1	176	3,2	55,0
	28	400	11,2	4,7	168	3,01	55,8
16 buds/m ² 49 buds/vine	24	311	7,5	4,1	160	4,37	36,6
	36	287	10,33	3,2	158	3,9	40,5
	15	307	4,61	3,9	148	4,2	35,2
averages	19,9	331,1	6,5	3,8	153,2	3,7	42,4
maximum	36,0	400,0	11,2	4,7	176,0	4,4	55,8
minimum	10,0	287,0	3,2	3,0	136,0	3,0	35,2

Table 6

Carpometrical analysis – Xenia variety

Load of buds	No. of grapes	Average weight of grape (g)	Prod. Kg/vine	Average weight of grain (g)	Sugars g/l	Acidity g/l	Glucose-acidimetry index
10 buds/m ² 38 buds/vine	50	225	11,3	3,4	150,5	4,33	34,8
	36	236	8,5	3,6	170	3,5	48,6
	53	245	13,0	4,1	166	4,23	39,2
13 buds/m ² 49 buds/vine	42	255	10,7	5,0	163	3,2	50,9
	17	265	4,5	3,6	152,6	3,6	42,4
	56	258	14,4	5,0	150	3,89	38,6
16 buds/m ² 60 buds/vine	38	238	9,0	4,2	167	4,4	38,0
	36	289	10,4	5,2	144	3,1	46,5
	20	248	4,96	5,0	168	4,35	38,6
averages	38,7	251,0	9,6	4,3	159,0	3,8	41,9
maximum	56	289	14,4	5,2	170	4,4	50,9
minimum	17	225	4,5	3,37	144	3,1	34,8

For the other 2 loads, stands a maximum glucose acidimetry index 10 butts/m² (34 butts/vine) and a minimum value at a load of 16 butts/m² (42 butts/vine) in terms of average weight a grain. Going on the same principle of data analysis, at the variety Affuz ali (table 5), we can see that the vast majority of the maximum values are obtained at a load of 13 butts/m² (40 butts/vine), namely: the grapes have a average

weight of 400g, with an average weight of a grain of 4,7 g, a production of 11,2 kg/vine, which recorded a large quantity of sugars, even maximum for this variety (180 g/l). The lowest values of these parameters are at a load of 10 butts/m² (31 butts/vine), and if we analyze the behavior of variety when he was a load of 16 butts/m² (49 butts/vine), the values are framed in the limits of medium values of the three repetitions.

Xenia variety recorded maximum values in the number of grapes on the vine, (56) to a load of 13 butts/m² (49 butts/vine) and a maximum production (14,4 kg/vine) at the same load. Applying 10 butts/m² (38 butts/vine) maximum values are obtained from parameters - accumulated sugars in beans (170g/l) and glucose -acidimetry index (48.6). At a load of 16 butts/m² (60 butts/vine), recorded a maximum value, the average weight of a grape (289g) and average weight of a grain of 5,2 g, practically those parameters which mainly attracts consumers, even before any analysis and gustative appreciation.

CONCLUSIONS

1. For Victoria variety, best results are obtained at a load of 10 butts/m² (35 butts/vine) of the seven carpometric parameters (100%), maximum values occurred in five parameters, representing 71,4%.

2. For Muscat d'Adda variety, load 13 butts/m² (34 butts/vine), it seems optimal, thus forming large grapes, with large beans, with a great production and a balanced glucose-acidimetry index; in the seven carpometrical parameters (100%), maximum values occurred at six parameters representing 85,71%;

3. For Afuz ali-variety, load of 13 butts/m² (40 butts/vine), is the optimal load, the obtained data is significant, of the seven carpometrical parameters (100%), maximum values occurred in five parameters representing 71,4%;

4. For Xenia-variety, the analysis results can draw the conclusion that it is almost uniformly at three loads butts/m², specifying that a load of 16 butts/m² (60 butts/vine), have maximum three parameters, representing 42.85%, some of whom are most appreciated: the size of grape and grain size.

5. Applying a different load of but on the stock is a very important technological link to culture variety table grape varieties, and the results are always influenced by their vigor, of the mother plant used, the degree of favorability of the area in terms of repetition of the values of environmental factor.

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