MĂGURA - NEW VARIETY OF VINE FOR RED WINES CREATED AT S.C.D.V.V. ODOBEŞTI

MĂGURA - SOI NOU PENTRU OBȚINEREA VINURILOR ROŞII DE CALITATE CREAT LA S.C.D.V.V. ODOBEŞTI

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Abstract. *The studying the long-term of vine germplasm, results in choosing the most valuable genitors and perform a variety of intra- and interspecific hybridisation with obtaining valuable new genotypes, tolerant to pests and diseases and resistance to stressors. Of the many elite hybrid obtained at S.C.D.V.V. Odobeşti, in 2014 was approved the elite hybrid 18-46 under the name 'Măgura'- variety for quality red wines obtained by hybridization sexual of variety Babească neagră with the hybrid combination (Merlot x Alicante Bouschet). The new creation is characterized by middle-sized grapes (175g), small to medium berry (3.3 g), colored in black-blue, rich in anthocyanins in both the skin and core. The average grape production is 4.5 kg/vine or 16.6 tons/ha. It has a good resistance to the main cryptogamic diseases. The grapes reach maturity in the epoch IV. The wines obtained are extractive, intensely colored, tinctorial.*
Key words: variety, hybridization, elite hybrid, biological resistance

Rezumat. *Studierea pe termen lung a germoplasmei viticole are ca rezultat alegerea celor mai valoroşi genitori şi efectuarea unei game largi de hibridări intra şi interspecifice cu obținerea de genotipuri noi valoroase, cu toleranță la boli şi rezistențe la factorii de stres. Dintre numeroasele elite hibride obținute la S.C.D.V.V. Odobeşti, în anul 2014 a fost omologată elita hibridă 18-46 sub denumirea 'Măgura' - soi pentru vinuri roşii de calitate, obținut prin hibridarea sexuată a soiului Băbească neagră cu combinația hibridă (Merlot x Alicante Bouschet). Noua creație se caracterizează prin struguri de mărime mijlocie (175 g), boabe mici spre mijlocii (3,3 g), colorate în negru - albăstrui, bogate în antociani, atât în pieliță cât şi în miez. Producția medie de struguri este de 4,5 kg/butuc, respectiv 16,6 tone/ha. Are rezistență bună la principalele boli criptogamice. Strugurii ajung la maturitate în epoca a IV-a. Vinurile obținute sunt extractive, intens colorate, tinctoriale.*
Cuvinte cheie: soi, hibridare sexuată, elită hibridă, rezistență biologică

INTRODUCTION

The value of the varieties for obtaining the red wines is show both to level and the constant of grape production, its quality, defined by the ability of accumulation of sugars and anthocyanins in beans, as well as their tolerance to diseases and stress conditions. Research conducted in the last four decades in

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Romania, led to valuable vine, with high tolerance to disease, resistant to drought and frost (Moldovan *et al.*, 1994, Oprea *et al.*, 2007 Calistru and Damian 1999, Culcea *et al.*, 2004).

The valorization of valuable hybrid combinations with genetic resistance, obtained over time in scientific research in the area of improving the vine, is one of the major objectives of Research and Development Station for Viticulture and Oenology Odobeşti. In this contex it has created a new variety called ”Măgura”, which completes the varietal range of the varieties for obtain red wines quality, adapted to climatic conditions in vineyards in southeastern of Moldova.

MATERIAL AND METHOD

The study was carried out between 2012 - 2013, on a plantation aged 25 years, planting on soil type levigated,, located in the biological field SCDVV Odobeşti. For comparison, as a witness was used Băbească neagră variety, that represents the parents maternal and is similar in direction of production and epidermis' color.

The varieties Măgura and Băbească neagră was grafted on Kobber 5 BB rootstock, the training system with trunk of hub to the ground, with Dr. Guyot cutting system. Fruit load was 44 eye/hub, distributed on the canes with 9 eye and the spur with 2 eye. Distance of planting by 2.2 m x 1.2 m is returning 3788 but/ha. Were studied the ampelographic main characters, were made measurements and determinations on elements of fertility and productivity, the amount and quality of grape production, disease resistance, physico-chemical characteristics of the wine. The main climatic conditions of during the study period and multiannual values are presented in table 1.

Table 1

The main climatic conditions of study period (Odobeşti, 2012-2013)

Climatic Indicator	Multiannual (1946 -2011)	Crop year		Average 2012 - 2013
		2011 -2012	2012 -2013	
Annual				
The average temp., ºC	10.5	11.8	11.2	11,.
Temp max. abs. ºC	39.4	39.2	36.8	38.0
Temp min. abs., ºC	-22.8	-22.4	-17.3	-19.9
Amount degrees usuful temp.(Σºtu) ºC	1604.0	1961.4	1879.2	1920.2
The amount heatstroke hours	2113.9	2585.1	2318.9	2452.0
Precipitation amount, mm	617.3	382.4	800.8	591.6
On the vegetation period				
The average temp., ºC	16.9	19.7	18.4	19.0
Temp max. abs. ºC	39.4	39.2	36.8	38.0
Temp min. abs., ºC	-8.2	-0.3	-7.5	-5.8
Amount degrees usuful temp.(Σºtu) ºC	1581.2	1938.0	1865.0	1901.5
The amount heatstroke hours	1629.7	1949.8	1842.9	1896.4
Precipitation amount, mm	431.2	327.2	561.8	444.5

RESULTS AND DISCUSSIONS

Research period was characterized by availability heliothermic large, but with very low rainfall in 2012 and very high in 2013, unevenly distributed during the growing season. Amount degrees useful temperature was 1920.2 compared to multiannual value of 1604.0 and the amount of annual rainfall was 591.6 mm, of which 444.5 mm during the growing season compared to multi annual value (617.3 mm), of which 431.2 mm during the growing season.

On the background of this weather conditions, Măgura variety has started its vegetation through disbudding between 19th - 23th of April, without significant differences in comparison with the witness. The flowering phenophase located between 23th–25th of May, and the veraision recorded between 25th - 30th of July. Grapes' ripenning was realized between 25th of August - 5th of September, with approximately two weeks earlier that the witness variety (tab. 2).

In regards as the phenological spectrum cover in Odobeşti ecosystem conditions, the new variety Măgura completed their vegetation period after 190 days. Is the variety with the half-erlier maturation, grapes reach to full maturity in the first decade of September (epoch IV -a).

Table 2

Phenological spectrum in the conditions of Odobeşti vineyard

Variety	Disbudding	Flowering	Veraison	Physiological maturity	Fall leaves
Măgura	19-23.04	22-25.05	25-30.07	25.08 -05.09	31.10-10.11
Băbească neagră (Mt.)	20-25.04	23-27.05	05 - 08.08	18.09- 18.09	04.11-15.11

Fertility and productivity of the new variety appreciated by the percentage of fertile shoots, fertility coefficients (absolute and relative) and productivity indices (absolute and relative) shows the superiority of the new creation for the elements analyzed in comparison with to the witness. The primary buds' viability had values close to witness (tab. 3).

Table 3

Viability and the fertility/ productivity elements of the Măgura variety

(Odobeşti, average data 2012 – 2013)

Variety	Viability (%)	Fertile shoots (%)	Fertility coefficients		Productivity indices	
			Relative	Absolute	Relative	Absolute
Măgura	89.12	72.0	1.04	1.44	197.6	274.4
Băbească neagră (Mt.)	91.30	63.3	0.77	1.21	168.7	266.3

The Măgura variety show a potential fertility of 72.0%, higher than the control (63.3%). The same hierarchy exists and in the case the absolute fertility coefficient (1.44 to Măgura variety, respectively 1.21 to Băbească neagră) and the absolute productivity index (274.4 – Măgura, respectively 266.3 - Băbească neagră.

The main characters ampelographic of Măgura variety (fig. 1 and fig. 2), according 2nd edition of the OIV Descriptor list for grape varieties and Vitis species, 2009.

- Young shoot
  - Opening of the shoot tip: half open;
  - Intensity of anthocyanin coloration: low;
  - Density of prostrate hairs on the shoot tip: low;
- Young leaf
  - Upper side color of blade: green areas anthocyanins;
- Shoot:
  - Attitude (before tying); semi-erect
  - Color of the dorsal side of internodes: green with red;
  - Color of the ventral side of internodes: green with red;
  - Length of tendrils: medium/long;
- Mature leaf
  - Size of blade: small;
  - Shape of blade: pentagonal;
  - Number of lobes: five;
  - Shape of teeth: both sides straight;
  - Degree of opening/overlapping of petiole sinus: overlapped;
  - Depth of upper lateral sinuses: deep;
  - Density of erect hairs on main veins on lower side of blade: medium;
  - length of petiole compared to length of middle vein: slightly shorter;

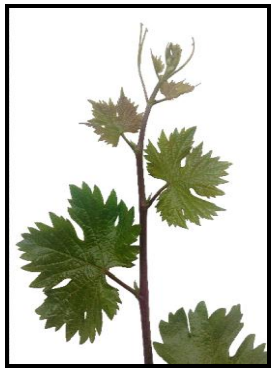

Fig. 1 Young shoot

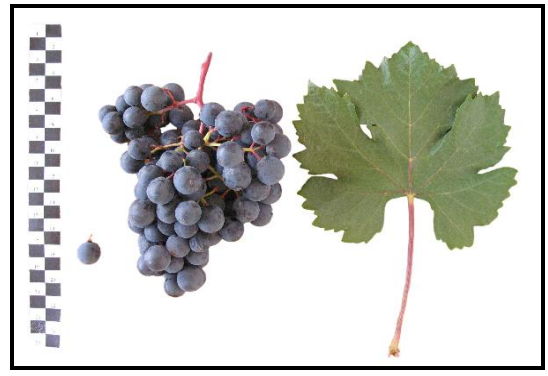

Fig. 2 Măgura variety (adult leaf, grape)

- Bunch - length (peduncle excluded): medium;
  - width: medium;
  - Density: middle;
  - Peduncle length: short;
- Berry - Length: short;
  - Width: narrow
  - Shape: globose;

- color of skin: blue black;
- thickness of skin: thick;
- intensity of flesh anthocyanin coloration: very strong;
- firmness of flesh: slightly firm;

Studying the technological characteristics of grape production was completed knowledge elements for the new grape variety (tab. 4).

Table 4

The technological properties of the Măgura variety
(Odobeşti, average data 2012 – 2013)

Variety	No. bunch/ vine	Average weight grapes (g)	Average weight 100 berry (g)	Production grape		Sugars g/l	Total acidity g/lH_2SO_4
				kg./vine	t/ha		
Măgura	24.0	190.0	185.0	4.5	16.6	212.0	4.2
Băbească neagră (Mt.)	19.1	220.0	215.0	4.2	15.9	208.0	5.3

Though the average weight of bunch at Măgura variety is smaller (190 g) than the reference variety (220 g), the higher number of grapes per vine to determined a higher production (4.5 kg/vine) compared to a reference variety - Băbească neagră (4.2 kg/vine). As regards the quality of grape production, sugar content in the juice at the variety Măgura was 212.0 g/L (with 4 g higher than the control) and total acidity of 4.2 g/L H_2SO_4 (lower 1.1 g/L H_2SO_4 than the control).

In the climatic conditions of the years 2012 - 2013, the Magura variety manifested high resistance to the main cryptogamic diseases compared to the control – Băbească neagră (tab. 5).

Table 5

The behavior at the main diseases of the vine
(OIV descriptor list for grape varieties and *Vitis* species, 2nd edition – 2009)

Variety	Downy mildew (*Plasmopara viticola*)		Powdery mildew (*Uncinula necator*)		Black rot (*Botrytis cinerea*)	
	Leaf OIV 452	Grape OIV 453	Leaf OIV 455	Grape OIV 456	Leaf OIV 458	Grape OIV 459
Măgura	7 - 9	7 - 9	7 - 9	7 - 9	7	5- 7
Băbească neagră (Mt.)	5 - 7	5	5	5	7	5

Main characteristics of the wines produced are shown in table 6.

Table 6

Physico-chemical characteristics of wines (average data 2012 – 2013)

Variety	Alcohol vol. %	Total acidity g/l H_2SO_4	Dry extract unreducible g/l	Anthocyanins mg/l
Măgura	13.38	4.83	22.24	442.8
Băbească neagră (Mt.)	13.25	5.31	18.49	358.7

The wine made from the variety Măgura had an alcoholic strength of 13.38% vol., upper the witness (Băbească neagră) with 0.13% vol. Total acidity was 4.83 g/L H_2SO_4, less with 0.48 g/L H_2SO_4 compared to the control (5.31 g/L H_2SO_4). Also anthocyanin content in wine (442.8 mg/L) is superior than the witness (358.7 mg/L). Higher values were obtained and for unreducible dry extract (3.75 mg/L greater than the witness).

The values of the technological indices resulted from the mechanical analysis of the grapes, complete the properties of the Măgura variety (tab. 7).

Table 7

Mechanical composition of grapes for Măgura variety (average data 2012 – 2013)

Elements determined		Măgura	Băbească neagră (Mt.)
1 kg grapes:	berry, g	959.5	960.5
	bunch, g	40.5	39.5
	no. berry normally developed	530	445
	must, g	796	780
	volume of must,cm_3	657	635
100 berry:	average weight, g	185	215
	skin weight, g	21	32.5
	core weight, g	157.8	175
	seeds weight, g	6.2	7.5
	number of seeds	165	167
	weight of 100 seeds, g	3.7	3.3
Technological indices:	berry index	53	45
	structure of the grape index	23.69	24.31
	composition of berry index	7.51	5.38

CONCLUSIONS

1. Variety Măgura stems from a hybridization of Băbească neagră variety with the hybrid combination (Merlot x Alicante Bouschet). During the study period it maintained qualities of distinctness, uniformity and stability.

2. In comparison with the control (Băbească neagră), the elite has shown potential for high productivity and constant throughout the study period.

3. The elite has proved superior than the witness in terms of grape production / vine and grape sugar content;

4. Being a variety with genetic tolerance is recommended introduction into the vineyards suitable for green technologies.

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