

RESEARCHES ON THE BEHAVIOR OF SOME OLD GRAPEVINE VARIETIES AND BIOTYPES FROM MINIȘ-MĂDERAT AREA GROWN IN BIOLOGICAL SYSTEM

Ghiță Alina*, Dobrei Alin*, Mălăescu Mihaela*, Cristea Teodor*

Keywords: *local varieties and biotypes, qualitative and quantitative production*

ABSTRACT

Researches were conducted in 2008 and concerned the evolving of vegetation phenophases, the total and matured annual growth, and the quantitative and qualitative production of the varieties, in order to highlight the biological and technological characteristics of some grapevine varieties from the wine-growing area of Ineu, varieties cultivated in a biological system. 11 grape varieties were studied –out of which 2 have technological characteristics of table grape varieties (Pârgav, Ochiul Boului), 6 have the characteristics of wine grape varieties (Rujă Albă, Rujă Roșie, Negru Dulce, Galbenă, Rară Albă, Risling – biotype of the Riesling Italian variety), 2 varieties have mixed characteristics (Tămâios, Ceaslă Mare – biotype of the Chasselas Dore variety), and one is the variety Chasselas Dore, a cosmopolitan variety which is very popular and has mixed technological characteristics and was selected as witness variety .

INTRODUCTION

Viticulture has been over time a main occupation of many populations. Taking into account the specificity of grapevine culture, we consider that there is a close interdependence between the continuity of the viticultural activity and the settling of a population. The vineyard, source of wealth and charm, is one of the benefits offered by the generosity of nature. Vineyards steal and imprison feelings and sights, as this wonderful scenery of nature, represent an attraction hard to resist. The Miniș – Măderat vineyard has a temperate continental climate with Mediterranean influences, under the specific influences of Central European climate. The values of the climatic elements registered at the Meteorological Station of the Miniș Viticultural Research Resort exceed the restrictive limits of the grapevine.

MATERIAL AND METHODS

The studied materials are 11 grape varieties, out of which 2 have technological characteristics of table grape varieties (Pârgav, Ochiul Boului), 6 have characteristics of wine grape varieties (Rujă Albă, Rujă Roșie, Negru Dulce, Galbenă, Rară Albă, Risling – biotype of the Riesling Italian variety), 2 varieties have mixed characteristic (both for table and wine) (Tămâios, Ceaslă Mare – biotype of the Chasselas Dore variety), and one is the variety Chasselas Dore, a cosmopolitan variety which is very popular and has mixed technological characteristics and was selected as witness varieties.

* *Banat University of Agricultural Sciences and Veterinary Medicine, Timișoara*

Researches were conducted in 2007 and concerned the evolving of vegetation phenophases, the total and matured annual growth, and the quantitative and qualitative production of the varieties, in order to highlight the biological and technological characteristics of some grapevine varieties from the wine-growing area of Ineu, varieties cultivated in a biological system. Although these varieties have good or very good qualities, both in terms of quantity and quality of production, they haven't extended in the viticultural practice. Some of these varieties are practically local biotypes of some worldwide well-known varieties, but because of their age in cultivation in this area and also due to the selection of populations they have developed some unique characteristics as compared to the original varieties.

The vineyard in which the enumerated varieties may be found has about 120 years and is a family holding, having as planting distances 1m between rows and 1m between the logs on a row and the number of logs is approximately 2000. The used pruning system is multiple Guyot without trunk, and the fructification elements are represented by fruit links of 4-5/log.

RESULTS AND DISCUSSIONS

Table 1

The beginning of vegetation phases in 2008.

Nr.	Variety	Vegetation phases					
		Bleeding	Bud break	Flowering	Ripening	Grape maturation	Leaf falling
1.	Părgav	5.IV	9.IV	27.V	20.VII	14.VIII	10.X
2.	Ochiul Boului	7.IV	11.IV	2.VI	12.VIII	2.X	24.X
3.	Rujă Albă	6.IV	10.IV	29.V	4.VIII	14.IX	19.X
4.	Rujă Roșie	5.IV	9.IV	28.V	1.VIII	10.IX	17.X
5.	Negru Dulce	3.IV	8.IV	27.V	23.VII	7.IX	11.X
6.	Galbenă	9.IV	12.IV	4.VI	14.VIII	28.IX	23.X
7.	Rară Albă	8.IV	10.IV	3.VI	10.VIII	27.IX	20.X
8.	Risling	8.IV	11.IV	3.VI	12.VIII	23.IX	22.X
9.	Tămâios	6.IV	11.IV	2.VI	13.VIII	20.IX	19.X
10.	Ceaslă Mare	7.IV	11.IV	30.V	3.VIII	11.IX	18.X
11.	Ch. Doré	7.IV	10.IV	29.V	1.VIII	9.IX	15.X

Table 2

Annual growth (total and matured) in 2008.

Nr.	Variety	Log 1		Log 2		Log 3		Log 4		Log 5		Average		
		Shoot Nr.	Shoot length (cm)	Shoot Nr.	Shoot length (cm)	Shoot Nr.	Shoot length (cm)	Shoot Nr.	Shoot length (cm)	Shoot Nr.	Shoot length (cm)	The nr of shoots/l og	total growths (m/log)	7 total growths (m/log)
1.	Părgav	18	936	23	1125	12	598	18	952	20	1082	18.2	9.38	7.84
2.	Ochiul Boului	23	2814	22	2632	25	3012	24	2958	21	2646	23	28.12	24.72
3.	Rujă Albă	19	1885	20	1998	22	2063	17	1740	19	1921	19.4	19.21	17.18
4.	Rujă Rosie	21	1982	22	2021	23	2079	18	1815	20	1932	20.8	19.65	17.32
5.	Negru Dulce	19	1312	18	1225	17	1154	20	1421	21	1462	19	13.14	11.05
6.	Galbenă	23	2794	24	2898	25	3054	20	2012	21	2114	22.6	25.74	22.14
7.	Rară Albă	24	2896	25	2994	27	3258	21	1998	23	2328	24	26.94	23.81
8.	Rising	24	2798	26	3011	21	1871	28	3214	23	2285	24.4	26.35	23.12
9.	Tămâios	16	1782	13	1597	15	1698	19	1912	17	1869	16	17.71	15.08
10.	Ceaslă Mare	23	2274	19	1878	25	2371	21	2076	22	2175	22	21.54	18.29
11.	^C h. Doré	17	1652	16	1554	19	1846	15	1452	16	1512	16.6	16.03	14.12

The studied grapevine varieties belong to (in terms of grape maturation), different ages, so we have: a 2nd age variety (Pârgav), 5 varieties of 4th age (Rujă Albă, Rujă Roșie, Negru Dulce, Ceaslă Mare, Chasselas Dore), 4 varieties of 5th age (Galbenă, Rară Albă, Risling, Tămâios), a 6th age variety (Ochiul Boului).

Regarding the leaf falling, this phenophase starts first at the Pârgav variety, and the variety that keeps its leaves on the log the longest is the Ochiul Boului variety.

The vigor of a grapevine is generally given by the annual vegetative growth. This vigor is synthetically expressed by a number of indicators, out of which the most important are total and matured annual growth. Their value is shown in Table 2. The largest total growths were observed at the Ochiul Boului variety, while the smallest are observed at the Pârgav variety.

The production of the studied varieties is presented in quantitative terms in Table 3 and in terms of quality in Table 4.

Quantitatively, production is outlined in the above mentioned tables through the following indicators: total number of grape bunches, total weight of the grape bunches, the average weight of a grape bunch and the average weight of a grape berry. The variety with the largest number of bunches/log is the Risling variety, which has a 24.4 average of bunches/log. The smallest number of bunches per log is in the Ochiul Boului variety.

This indicator (number of bunches per log) is not sufficient to express the production's quantitative level of a variety, because a variety may have as main feature the presence of a large number of bunches on the log, but the bunches taken individually may have a reduced weight and thus the total weight of the bunches is small.

Regarding the average weight of a bunch is notable the Ochiul Boului variety with a weight of approximately 600 g.

The most important indicator for determining the productive capacity of a variety is the total weight of bunches on the log. Given this fact and considering the data in the table below you can observe that the Rară Albă variety is the most productive, this variety can produce, in some favorable years, a bucket of grapes per log (10-11kg of grapes).

Out of all the substances that are contained in the chemical composition of the grape berries, the greatest importance for the formation of taste qualities of the grapes and their technical processing is given by sugars and organic acids. Therefore, the quality of grapes is frequently assessed by the content in sugars and organic acids, however narrow and unilateral this scaling may be.

From a viticultural point of view 2008 was a favorable year for the accumulation of sugars in grape berries. The sugar content in the must (g/l) of the studied varieties was between 236 g/l at Negru Dulce variety and 168 g/l at Ochiul Boului variety.

According to the must acidity content (expressed in g/l H₂SO₄), the Rară Albă variety is on the first place with a value of approximately 5.3 g/l, and on the last place is Negru Dulce variety with a value of approximately 3, 2 g/l.

The weight of bunches and berries in 2008

Nr.	Variety	Log 1		Log 2		Log 3		Log 4		Log 5		Total number of bunches	Bunches total weight (kg)	Bunches average weight (g)	Berries average weight (g)
		Nr. of bunches	Bunches weight (g)	Nr. of bunches	Bunches weight (g)	Nr. of bunches	Bunches weight (g)	Nr. of bunches	Bunches weight (g)	Nr. of bunches	Bunches weight (g)				
1.	Părgav	17	2605	18	2862	15	2385	16	2544	17	2801	83	13,19	159	1,7
2.	Ochiul bouului	8	4752	7	4358	10	6214	9	5547	7	4158	41	25,02	610	6,2
3.	Rujă albă	15	4020	16	4288	17	4556	14	3698	14	3752	76	20,31	267	1,5
4.	Rujă roșie	16	4240	17	4505	17	4521	14	3710	15	3975	79	20,95	265	1,4
5.	Negru dulce	16	2448	15	2295	14	2142	20	3065	18	2754	83	12,70	153	1,2
6.	Galbenă	16	4496	17	4777	18	5058	15	4215	16	4489	82	23,03	281	3,1
7.	Rară albă	21	7985	23	8855	24	8920	20	7589	20	7365	108	40,71	377	3,4
8.	Rising	24	3624	25	3775	23	3281	27	4077	23	3665	122	18,42	151	1,2
9.	Tămăioș	15	3210	13	2782	14	2996	16	3549	16	3299	74	15,83	214	2,8
10.	Ceasă mare	21	5523	18	4734	22	5785	19	4997	20	5261	100	26,30	263	2,7
11.	Ch.dore	21	3309	20	3220	21	3453	18	2898	19	3059	99	15,93	161	2,1

Table 3

Table 4

Sugar and acidity content of grape must in 2008

Nr.	Variety	Sugar content of the must (g/l)	Acidity content of the must (g/l H ₂ SO ₄)
1.	Pârgav	172	3,7
2.	Ochiul Boului	168	4,3
3.	Rujă Albă	178	4,5
4.	Rujă Roșie	181	4,3
5.	Negru Dulce	236	3,2
6.	Galbenă	179	4,8
7.	Rară Albă	188	5,3
8.	Risling	210	4,4
9.	Tămâios	229	3,4
10.	Ceaslă Mare	183	4,1
11.	Chasselas Dore	187	3,9

CONCLUSIONS

Analyzing the obtained results from researches on the varieties we can draw the following conclusions:

- Pârgav, Ceaslă mare and Ochiul Boului variety have technological characteristics of table grape varieties. Pârgav variety is notable by precocity and a balanced taste similar to Chasselas Dore variety, and Ochiul Boului variety is a late grape variety with very appealing bunches, with large berries and very pleasant taste. The grapes of this variety are very well preserved over the winter. The taste of the Ceaslă mare variety grapes is similar to the variety from which it originates, but the appearance of its bunches is clearly superior to the Chasselas Dore variety.

- Rujă Albă, Rujă Roșie and Galbenă varieties have features that are characteristic to varieties cultivated to produce table wines,

- Negru Dulce, Risling and Tămâios varieties can be successfully used to obtain superior wines. Tămâios variety can also be used to obtain table grapes, the berries being semi-crunchy and having excellent taste,

- Rară Albă variety has very good features to obtain quality sparkling wines. Given the above mentioned features, the presented varieties deserve to be studied in detail in the context of comparative cultures, and if they prove to be suitable, widespread in production.

The researches which formed the basis of obtaining these results were funded by CNCISIS Bucharest project: Development of some models of advanced viticultural technologies in accordance with the pedoclimatic conditions, the varietal assortments and sustainable viticulture principles, ID-1128, 2007-2010.

REFERENCES

1. Dobrei A., Soiurile de struguri pentru masă, Editura Waldpress, Timișoara, 2003;
2. Dobrei A., și col., The behaviour of some local grape varieties under Minis-Maderat vineyard conditions, Buletin USAMV Cluj-Napoca, vol 63/2006, Horticulture, 2006;
3. Oșlobeanu M. și col., „Zonarea soiurilor de viță de vie în România”, Editura Ceres, București, 1991.