

Local Grapevine Biotypes and Varietis – a Source for Biodiversity, Specificity and Authenticity

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Abstract. The large number of local biotypes and cultivars that are found in the western part of Romania is a precious and inexhaustible source of obtaining valuable, specific, authentic wine products, that bear the original landmark. Obtaining these products creates the premises for a takeover on some niches on the world profile market in which competition is fierce.

Researches have been conducted in the western part of Romania, while field trips samples have been taken and identified from over 100 varieties and cultivars from the area of Arad, Caras-Severin and Timis counties. After taking samples and analyzing data regarding the ampelographic, physical, chemical and technological features , 92 local cultivars were identified as being interesting.

The goal of the research is to emphasize the biological and technological features of some grape varieties from the western part of Romania, that despite their good or very good qualities, both in what concerns the production quantity and quality, were not extended in culture.

Keywords: cultivars, production quantity and quality, technological features

INTRODUCTION

The number of grapevine varieties on the Globe is estimated to be 10-12 thousand. This multitude of variety shows that grapevine is a plant with high genetic variability and the presence of these varieties in different areas shows that grapevine plants can adapt to different ecological conditions.

Due to these qualities, grapevine is successfully cultivated in many countries, its cultivation is considered one of the most efficient agricultural activities.

The varieties that hold the largest share in the culture are few in number; they have expanded greatly in culture, because of their productive performances.

Besides these varieties there are other varieties that are less popular, usually local varieties with limited areas, which deserve more attention from the wine-growers and improvers, because they have many valuable features that have not been sufficiently exploited, they are an important source of variability and obtaining specific, authentic products, which bear the original landmark.

MATERIAL AND METHODS

Researches have been conducted in 2007 and 2008 on some local varieties and biotypes from the western part of Romania. During field trips there were identified and taken

samples from over 100 local varieties and cultivars from the area of Arad, Caras-Severin and Timis counties. After taking samples and analyzing data regarding the ampelographic, physical, chemical and technological features, 92 local cultivars were identified as being interesting.

For the ampelographic characterization of the cultivars references have been made to the most important ampelographic descriptors: leaf, grape and grape berry.

In order to establish the name of the local varieties and cultivars many criteria (the local popular denomination in case it exists, the initials of the localities in which they have been discovered, the initials of the streets on which they were discovered, the number of the households, the predominant technological and ampelographic characteristics, etc..) were employed.

Table 1

The distribution of the local varieties and biotypes on areas and localities

Area	Locality	Discovered local varieties and biotypes			Total
		Table	Wine	Both	
ARAD	Rosia	1	4	1	6
	Paulian	2	-	-	2
	Misca	2	-	-	2
	Maderat	2	2	2	6
	Ineu	2	2	-	4
TIMIS	Timisoara	1	1	-	2
	Sarlota	-	-	2	2
	Buzias	9	12	11	32
	Silagiu	5	6	6	17
	Izvin	1	-	-	1
	Ghiroda	-	1	2	3
	Recas	2	-	-	2
	Sacalaz	1	-	-	1
	Urseni	1	1	-	2
CARAS - SEVERIN	Liubcova	-	-	1	1
	Moldova Noua	-	1	-	1
ALBA	Alba Iulia	-	1	1	2
	Petresti	-	1	-	1
	Sebes	-	1	-	1
	Aiud	-	4	-	4
TOTAL		29	37	26	92

The 92 considered local cultivars are found in the localities listed in Table. 1. Out of these, 29 local biotypes present specific features of table grape varieties, 37 are ideal for winemaking and 26 present mixed features both for winemaking and fresh consumption.

RESULTS AND DISCUSSIONS

In what regards the ampelographic description of table grapes' local varieties and biotypes, they are characterized by large, branchy, lax grapes that have an average weight of 250 - 350 g and a length of 20-30 cm. The shape of the grapes was cylindrical, conical-cylindrical or branched. Grape berries are large, uniform sized, spherical, cylindrical or ovoid, with the pulp being pulpy and crispy. From this point of view, nowadays consumers' preference is oriented towards varieties with large berries, rarely displayed on the bunch.

The skin of the berries is thicker, adherent to pulp, elastic, of different colors, from golden yellow to red violaceous or black, generally covered with pruin, which gives them a pleasant commercial look. Berries contain few seeds or they may even be missing in the case of seedless varieties and they have a pleasant, refreshing taste.

At some varieties the berries had a specific flavor due to the flavored substances accumulated in the skin. The aroma was "muscadine" or "scented".

Knowing the fact that table grapes are fruits that "are consumed first with the eyes" we can distinguish, according to the appearance of the grape, the cultivars: Alb de Paulian, Negru de Paulian, Alba de Masca, Frumoasa alba de Maderat, Ineu 4, Ineu 6, Buzias U-21, Auriu de Buzias.

Local varieties and biotypes with mixed features are generally characterized by medium-sized grapes, with branched bunches of cylindrical or conical-cylindrical shape, with the berries placed appropriately on the bunch. Berries are medium sized, with elastic or rigid skin, colored green-yellowish, golden-yellow or rust-colored, red or black, covered with a medium layer of pruin. The pulp of the berries was pulpous, crispy or even juicy, with a pleasant taste, slightly flavored, with 3-4 medium sized seeds. The berries were properly elastic, they resisted quite well to cleaving during maturation, and the must productivity has been quite high.

The grapes of these varieties are suitable both for fresh consumption, and they can also be used for winemaking, resulting light, pleasant wines, but with a slightly reduced alcoholic degree. According to researches we noticed the mixed varieties Buzias TH, Negru mic de Silagiu, Buzias U 21.

Local varieties and biotypes of grapes for wine, as compared to the table grape varieties were characterized by small or medium (80-250 g) sized grapes; berries placed densely on the bunch (compact grapes, "beaten"); the pulp of the berry was juicy and allowed the accumulation of large quantities of sugar, the berry skin being thin. In this respect there were noticed the varieties: Patrujarca de Buzias, Fraga alba de Silagiu, Ruginiu de Silagiu, Ineu 2, Negru mic de Buzias.

The technological, physical and chemical characteristics of the cultivars are presented separately depending on the directions of production: grape varieties for fresh consumption, grape varieties with mixed features for fresh consumption and winemaking and grape varieties for winemaking (Tables 2, 3.4).

For edification the results are presented as compared with the varieties Chasselas dore, Feteasca regala and Cabernet Sauvignon.

Table 2

Technological, physical and chemical features of the local biotypes and varieties of grapes for fresh consumption

Variety Biotype	Locality	Sugar (g/l)	Acidity (g/l H ₂ SO ₄)	gluco- acidimetric index	Yeld %	Sugar (difference next to the control)
White 2007						
Alb rezistent de Maderat 606	Maderat 606	190	3,02	62,91	78	+ 15
Frumoasa Alba de Maderat	Maderat 606	198	2,98	66,44	82	+23
Alba de Masca	Masca	132	4,2	31,42	76	-43
Alb de Paulian	Paulian	143	3,8	37,63	79	-32

Ramuros de Buzias	Buzias	186	4,2	44,28	83	+11
Frumoasa alba de Buzias	Buzias	116	4,55	25,49	84	-59
Auriu de Buzias	Buzias	175	3,2	54,68	73	0
Alb aripat de Silagiu	Silagiu	147	3,62	40,60	68	-28
Raschirata alba de Silagiu	Silagiu	116	4,5	25,77	72	-59
Alb de Timisoara	Timisoara	175	3,4	51,47	81	-
Ineu 4	Ineu	168	4,2	40,0	76	-7
Ineu 6	Ineu	134	5,0	26,8	75	-41
Aromat roz	Rosia	173	3,1	55,8	68	-2
Roz indesat de Silagiu	Silagiu	129	3,75	34,4	65	-46
Red 2007						
Negru de Masca	Masca	131	3,84	34,11	92	-44
Aripat de Buzias	Buzias	158	3,25	48,61	71	-17
Negru de Paulian	Paulian	128	3,6	35,55	94	-47
Chasselas dore/Mt	Timisoara	175	3,15	55,55	72	-
Varieties and biotypes for fresh consumption identified in 2008						
Variety Biotype	Locality		Sugar (g/l)	Acidity (g/l H ₂ SO ₄)	Gluco- acidimetric index	
Marele alb de Izvin	Izvin		184	4,2	43,80	
Coada de vulpe	Buzias		190	3,6	52,77	
Alb de Buzias	Buzias		172	4,8	35,83	
Mare roz de Buzias	Buzias		160	5,2	30,77	
Moldovel	Buzias		171	4,8	35,62	
Victorita de Silagiu	Silagiu		150	6,1	24,59	
Negru vinetiu de Silagiu	Silagiu		161	5,2	30,96	
Bulgare alb	Timisoara		175	4,5	38,89	
Coarna visinie	Recas		142	6,8	20,88	
Mare aripat de Urseni	Urseni		173	4,6	37,60	

The considered biotypes and varieties for fresh consumption are characterized by a different sugar content, varying between 198 g / l in the case of Frumoasa alba de Maderat variety and 116 g / l at the Frumoasa alba de Buzias and Raschirata alba de Silagiu varieties. In most cases the varieties present a balanced proportion between sugars and acidity as it is also revealed from the gluco-acidimetric index.

In Table 3 we present the local varieties and biotypes that show mixed features, as compared to the Chasselas dore variety, which is a variety of table grape but it can also be used in winemaking.

Almost all of these varieties present a pleasant commercial appearance, close to that of table grapes, and some of them a balanced chemical composition which recommend them for obtaining table wine, luscious, balanced but with a lower alcoholic degree, this representing one of the world trends in winemaking. From this group we noticed Buzias U 21, Negru mic de Silagiu and Nanasa de Maderat varieties.

Table 3

Technological, physical and chemical features of local biotypes and varieties with mixed features

Variety / Biotype	Locality	Sugar (g/l)	Acidity (g/l H ₂ SO ₄)	Gluko- acidimetric index	Alcoholic potential	Sugar (difference to the control)
White						
RB Alb	Rosia	153	5,1	30	9	-22
Buzias U 21	Buzias	217	3,2	67,81	12,76	+42
Buzias AS 33	Buzias	171	4,9	34,89	10,05	-4
Regina viei 21	Buzias	114	4,51	25,27	88	-61
Capsunica Alba de Sarlota	Sarlota	127	6,3	20,15	7,47	-48
Alb de Maderat 606	Maderat	149	5,2	28,65	8,76	26
Roz de Silagiu	Silagiu	155	4,9	31,63	9,11	-20
Chasselas dore Mt	Timisoara	175	3,15	55,55	10,29	-
Red						
Nanasa de Maderat	Maderat 606	178	4,6	38,69	10,47	+3
Lipovan	Liubcova	155	4,9	31,63	9,11	-20
Buzias TH	Buzias Str. Targului	191	4,2	45,47	11,23	+16
Negru rar de Buzias	Buzias	158	4,7	33,61	9,29	-17
Fraga neagra de Buzias	Buzias	127	6,5	19,53	7,47	-48
Buzias ASH	Buzias	140	5,8	24,13	8,23	-35
Negru de Buzias	Buzias	147	5,4	27,22	8,64	-28
Negru mic de Silagiu	Silagiu	204	3,8	53,68	12	+29
Negru vanat de Silagiu	Silagiu	166	4,5	36,88	9,76	-9
Negru ramuros de Silagiu	Silagiu	153	4,9	31,22	9	-22
Negru de Sarlota	Sarlota	168	4,4	38,18	9,88	-7
Chasselas dore (Mt)	Timisoara	175	3,15	55,55	10,29	-
Varieties and biotypes with mixed features						
Variety Biotype	Locality		Sugar (g/l)	Acidity (g/l H ₂ SO ₄)	Gluko- acidimetric index	
Negru de Alba	Alba-Iulia		178	5,4	32,96	

Negru batut de Rosia	Rosia nr.90 Salcu	185	3,7	50	10,88	-9
Negru aromat de Moldova Noua	Moldova Noua	175	5,8	30,17	10,29	-19
RD negru	Rosia	149	6,2	24,03	8,76	-45
Negru mic de Buzias	Buzias	213	3,1	68,70	12,52	+19
Ineu 2	Ineu	193	3,5	55,14	11,35	-1
Cabernet Sauvignon Mt	Timisoara	194	3,5	55,42	11,41	-
Varieties and biotypes for wine identified in 2008						
Variety Biotype	Locality	Sugar (g/l)		Acidity (g/l H ₂ SO ₄)	Guco-acidimetric index	
Roze Macui	Alba-Iulia	126		9,8	12,85	
Verde Rar de Petresti	Petresti-Alba	163		8,1	20,41	
Vinetiu de Sebes	Sebes	171		7,6	22,50	
Negru rar de Aiud	Aiud	198		5,4	36,67	
Auriu batut de Aiud	Aiud	179		6,4	27,97	
Rara de Aiud	Aiud	162		8,1	20,00	
Ruginiu de Aiud	Aiud	156		8,6	18,14	
Roz batut de Buzias	Buzias	178		5,6	31,78	
Roze de Silagiu	Silagiu	175		5,8	31,89	
Negru mic de Silagiu	Silagiu	186		4,6	40,43	
Roz cu aripioara	Buzias	129		8,1	15,92	
Patrujarca de Buzias	Buzias	236		3,8	62,10	
Negru pruinat de Buzias	Buzias	186		4,5	41,33	
Compact de Buzias	Buzias	194		4,2	46,19	
Pintenat de Buzias	Buzias	197		4,1	48,04	
Rosu compact	Buzias	151		6,4	23,59	
Negru aripat de Silagiu	Silagiu	152		6,3	24,12	
Roz deformat de Buzias	Buzias	156		6,1	25,57	
Roz de Ghiroda	Ghiroda	174		5,8	30,00	

Other varieties are distinguished by an extra acidity – either for obtaining sparkling and frothy wines or for being used as acidity correctors at varieties with a deficit in acidity or in the warm, droughty years. In the case of varieties used only in winemaking we noticed a differentiation of varieties depending on the area of origin. Varieties from the Alba Iulia, Aiud area, stand out with a pronounced acidity, while the sugar content is lower.

CONCLUSIONS

The local varieties and biotypes represent an important source of biodiversity and also a valuable source for obtaining authentic, specific products that are able to enter the wine market in which many consumers are looking for products with a local specificity.

Unfortunately most of these varieties, some of great value, are not known and thus they cannot be used at a higher level.

The technology of culture practiced in the case of these varieties is a simple one, it is reduced to pruning, 1-2 weedings, harvesting, while the phytosanitary treatments are missing or are limited to 1-2 spraying with bouillie bordelaise, which entitles us to claim that the grapes obtained can be considered ecological grapes, which in future will be very appreciated by a major segment of the market that is increasingly oriented towards ecological products, healthy for the human body.

Most of the varieties with mixed features present a pleasant commercial aspect close to that of table grapes and a balanced chemical composition that recommends them both for fresh consumption as well as for obtaining some tasty wine, balanced but with a lower alcoholic degree, this being one of the world trends in winemaking. Out of this remarkable group we have noticed the varieties: : Verde cu boabe rare, Aromat alb, Roz aromat de Buzias.

In the case of varieties used only in winemaking we noticed a differentiation of varieties depending on the area of origin. Varieties from the Alba Iulia, Aiud area, stand out with a pronounced acidity, while the sugar content is lower.

The varieties from the Buzias-Silagiu area have a higher sugar content and a lower content in acidity.

According to researches, we managed to identify and take under observation many local varieties and biotypes, but certainly, in the area of reference, there are many other varieties that we have not managed to identify and that will remain in our future projects.

REFERENCES

1. Dobrei A. și col. (2005). The behaviour of some local grape varieties cultivated in the west part of Romania in different climate conditions, Cercetări științifice, seria a IX-a, Horticultură, Ed. Agroprint, Timișoara. 9: 133-136.
2. Dobrei, A., L. Rotaru, S. Morelli (2008). Ampelografie. Ed. Solness. Timișoara.;
3. Dobrei A. și col., (2008). Researches regarding local viticultural germoplasm from Arad county, Buletin U.S.A.M.V.Cluj-Napoca, vol.65, Horticulture, Ed. AcademicPres. 65(1):374-379.
4. Mihalca A., (2007). Viticultura arădeană după anul 1944, Ed. Multimedia internațional, Arad.