BIOTYPES AND LOCAL VARIETIES OF VINES IN WESTERN ROMANIA – SOURCE FOR OBTAINING OF SOME LOCAL, TYPICAL AND AUTHENTICAL WINES

BIOTIPOVI I LOKALNE VRSTE VINOVIH LOZA U ZAPADNOJ RUMUNJSKOJ – IZVORI ZA DOBIVANJE NEKIH LOKALNIH, TIPIČNIH I AUTENTIČNIH VINA

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Abstract: *Research has concerned the identifying of new wine local germoplasm sources from western region of Romania. As a result of research were identified 39 valuable biotypes and local grapes varieties which were analysed compared with the varieties Royal Feteasca and Cabernet Sauvignon, two of the most varieties grown in this area. During the research we conducted observations and measurements regarding: the ampelographic characters and physico-chemical characteristics of the grapes. Following research was highlighted as valuable and interesting for the science and practice of wine varieties: Ruginiu de Silagiu, Patrujarca, Fraga alba de Silagiu, Pintenat de Buzias and Vulpe.*

Keywords: *western Romania, the local germoplasm, quality*

Sažetak*:Istraživanje se bavi određivanjem novih vina lokalne germoplazme s područja zapadne Rumunjske. Rezultat istraživanja je 39 vrsta vrijednih biotipova i lokalnih sorti grožđa koje su analizirane u usporedbi sa sortama Royal Feteasca i Cabernet Sauvignon, dvije najčešće uzgajane vrste u ovom području. Istraživanja i mjerenja odnosila su se na ampelografske karakteristike i fizikalno-kemijske karakteristike grožđa. Istraživanje je zanimljivo i vrijedno za vinske sorte: Ruginiu de Silagiu, Patrujarca, Fraga alba de Silagiu, Pintenat de Buzias i Vulpe*

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Ključne riječi: *zapadna Rumunjska, lokalna germoplazma, kvaliteta*

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1. Introduction

European Community Council Directive no. 1467/94 of 20 June 1994 aims to coordinate the conservation, characterization and utilization of genetic resources in agriculture with particular attention to biotypes and varieties better adapted to local environmental conditions. For *Vitis* was drafted the EU-project GENRES CT96 No 81 (Genres081) „European network for grapevine genetic resources conservation and characterisation", which has as main objective to establish a database for each participating country, ampelographic description and agronomic characters evaluation for biotypes and local grapes varieties [1].
To meet the requirements of the European Community in Romania is necessary to fund a comprehensive study on indigenous vine germoplasm and taking advantage of it. Expanding scientific database on strategic reserve of germoplasm growing in Romania will be based on a unified description under EU rules. Interest in this subject is evidenced by the large number of research in recent years [2][3][4][5].
The aim of our concerns, evidenced by previously published articles is to restore and enhance the biotypes and local grape varieties in the western region of Romania. Western part of Romania represented by the counties Timis, Arad, Caras Severin, Alba and Hunedoara is an area with a climate favourable to vine culture, to add a great tradition and experience in this field [6][7].
Table 1 shows the distribution of the local grapes varieties and biotypes on areas and localities. Wines obtained in renowned wine growing areas from this geographical region (Recas, Minis-Maderat, Buzias-Silagiu) were known and appreciated in ancient times, including the royal courts of Europe [8][9].

Area	Locality	Discovered local wine varieties and biotypes
Timis	Buzias	12
	Recas	1
	Silagiu	9
	Ghiroda	1
Arad	Rosia	4
	Maderat	2
	Ineu	2
Caras-Severin	Moldova Noua	1
Alba	Alba Iulia	1
	Petresti	1
	Sebes	1
	Aiud	4
Total		39

Table 1. The distribution of the local varieties and biotypes on areas and localities

In the last years the viticulture in this region has encountered different economic, financial and social difficulties due to globalization of variety assortments. A number of specific local varieties have disappeared or are in small scale by local vineyards and gardens without being known [10].

Besides these difficulties add others, related research in viticulture sector, thereby increasing the danger erosion or even loss of very important sources of valuable vines germoplasma.

2. Matherials and methods

Investigations were carried out during the three years (2007, 2008, 2009) of research in various areas vines and localities in the counties Timis, Arad, Caras Severin, Alba and Hunedoara (Table 1) and have targeted identification, analysis, conservation and enhancement of some local vine varieties and biotypes grown mainly in courts and gardens population.
Observations and determinations were performed on ampelographic attributes, sugar content, acidity, glucose-acidimetric index and alcoholic potential of grape.
Each chosen biotypes and local grapes varieties was ampelographical described according to the standard description of the cultivar (ampelographic database of the Faculty of Horticulture, Banat' University of Agricultural Sciences and Veterinary Medicine from Timisoara) using Office International de la Vigne et du Vin descriptors [11] modified by the European Union Project GENRES 081.
Name of local varieties and cultivars was given according to local popular name if any, places where initials were discovered, the initials that were discovered street, house number householders, technologic and ampelographic prevalent features. To characterize in ampelographic terms the variety and biotypes have made reference to the most important ampelographic descriptors: leaves, grapes and berries.
Chemical characteristics of investigated grapes were determined according to AOAC Official Method [12].

3. Results and discutions

The results obtained after evaluation of ampelographic characteristics of grapes varieties for white wines are shown in the Table 2 and in the Table 3 are characterized the of grapes varieties for red wines.
Data obtained by physico-chemical analysis of local grapes varieties and biotypes for white wines are represented in the Table 4, respectively in the Table 5 for local grapes varieties and biotypes for red wines.

Variety	Leaf	Cluster	Berry
Alb aromat de Rosia	Large, cuneiform, palmate	Small, cylindrical	Small, spherical, green-yellowish skin
Aripat roz de Rosia	Medium, round, trilobate	Small - medium, cylindrical, wing	Medium, spherical, pink skin
Mustoasa de Maderat	Medium, cordiform, pentalobate	Large, cylindrical-conical	Small to medium, spherical, green-yellowish skin
Mustoasa de Maderat-selectie	Medium, round, almost palmate	Conical, very large	Medium, spherical, green skin

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Ineu 1	Medium, pentalobate	Medium, conical-cylindro-conical	Medium to small, spherical, pink skin
Roz de Buzias	Medium, cuneiform, palmate	Medium, conical	Small, spherical, thin, pink skin
Galben lax	Small, almost cuneiform, pentalobate	Branches, very lax, wing	Uneven in size, ovoid, golden-yellow skin
Aramiu de Silagiu	Large, cuneiform, pentalobate	Large, conical	Small, round, yellow gold skin
Patrujarca	Small to medium, slightly orbicular, pentalobate	East, conical tip slightly bent	Small to medium, inversely ovoid shape with a skin yellowish green
Fraga alba de Silagiu	Medium, cuneiform, trilobate	Small to very small, cylindrical	Small, spherical, thick, green-yellowish skin
Ruginiu de Silagiu	Medium to large, cuneiform, palmate	Medium, sometimes winged	Medium, spherical, yellow-gold skin
Roz marunt de Buzias	Medium, cuneiform, palmate	Medium, conical	Small, spherical, thin, pink skin
Roz batut de Silagiu	Medium, round, palmate	Medium, cylindrical	Small or medium, elongate, pink-reddish skin
Roz batut de Buzias	Small, almost kidney-shaped, trilobate, superficial indentation	Small, cylindrical-conical,	Small, spherical-flattened, pink-greenish skin
Roze de Silagiu	Small, cuneiform, palmate	Medium, cylindrical, dense berries	Small to medium, spherical, pink-greenish skin
Roz cu aripioara	Large, cuneiform, palmate, largely indented	Small to medium, cylindrical-conical	Small, oval-elongated, pink skin
Compact de Buzias	Small to medium, cordiform, palmate, small, slightly mucronate indentation	Small, cylindrical, dense	Small to medium, spherical, green-yellowish skin
Pintenat de Buzias	Small, round, palmate, rare, mucronate indentation	Small, cylindrical, dense berries	Medium, spherical, green-gold skin
Roz deformat de Buzias	Small, almost kidney-like, trilobite, superficial indentation	Small, cylindrical-conical	Small, spherical-flattened, pink-greenish skin
Roz de Ghiroda	Small, cuneiform, trilobate	Small, cylindrical, sparse berries	Small, spherical, pink skin
Roze Macui	Great, cordiform	Small, cylindrical-conical,	Spherical, pink skin
Verde Rar de Petresti	Middle, cordiform, with trilobare trending	Small, cylindrical	Small, spherical, green skins
Auriu batut de Aiud	Lower-middle cuneiform, pentalobat	East, cylindrical-conical	Small, spherical, green and gold skins
Rar de Aiud	Small to medium, cuneiform, trilobate	Small, cylindrical	Spherical, small to medium, dark green skin
Ruginiu de Aiud	Small cuneiform, trilobite	Small to medium, cylindrical	Small, spherical, golden-rust color skin

Table 2. Ampelographical description of grapes varieties for white wines

Variety	Leaf	Cluster	Berry
Negru batut de Rosia	Large, cordiform, pentalobate	Medium size, cylindrical	Spherical to ovoid, small-medium. The skin is black
RD negru	Medium size, pentalobate	Small, cylindrical wing.	Medium to large, sferical. Black skin
Ineu 2	Medium size, tri-pentalobate	East, cylindrical-conical	Small, round, black skin
Cabasma neagra	Medium, round, almost full	Medium, cylindrical	Medium to large, spherical, black skin
Negru compact de Silagiu	Medium, cuneiform, trilobite	Medium, cylindro-conical	Small, spherical, black skin
Vulpe	Medium to small cuneiform, pentalobate	Large to very large, cylindrical, bifurcated ad tip	Medum, sferical, reddis skin
Negru mic de Silagiu	Medium, palmate, cuneiform	Small, cylindrical, rather dense berries	Medium, spherical, black-purplish, skin
Negru mic de Buzias	Large, cuneiform, palmate	Small, cylindrical, rare berries	Medium-small, spherical, black-bluish skin
Negru pruinat de Buzias	Kidney-like, medium, palmate	Small to medium, conical, rather dense berries	Small to medium, slightly ellipsoidal, black-purplish skin
Rosu compact	Medium to large, cuneiform, palmate	Medium, cylindrical-conical	Medium, spherical, green skin
Negru aripat de Silagiu	Large to very large, round, full, mucronate indentation	Medium, cylindrical-conical	Medium to large, spherical, black-bluish skin
Negru aromat de Moldova Noua	Medium to large, cuneiform, pentalobate	Small to medium, cylindro-conical	Small, spherical, black skin
Vinetiu de Sebes	Medium, round, palmate	Small, cylindrical	Medium, spherical, egg plant skin
Negru rar de Aiud	Medium , cuneiform, pentalobate	Small , conical	Spherical, black skin

Table 3. Ampelographical description of grapes varieties for red wines

Local grapes varieties and biotypes for white wines were analyzed in terms of sugar content, acidity and alcoholic potential of grape versus Royal Feteasca considered one of the most valuable Romanian varieties.

From this perspective grapes varieties behaved very differently, remarking some varieties which have a high sugar content (Ruginiu de Silagiu - 217 g/L, Patrujarca - 213 g/L, Fraga alba de Silagiu - 204 g/L, Pintenat de Buzias - 197 g/L si Compact de Buzias - 196 g/L). Remaining varieties and biotypes of this category showed lower values or close to blank.

Variety	Locality	Sugar (g/L)	Acidity (g/L H_2SO_4)	Gluco-acidimetric index	Alcoholic Potential (% vol.)	Difference to the control (Sugar)
Mustoasa de Maderat	Maderat	173	6,6	26,21	10,17	-15
Mustoasa de Maderat –clonal selection	Maderat	167	6,9	24,20	9,82	-21
Alb aromat de Rosia	Rosia	165	6,2	26,61	9,70	-23
Aripat roz de Rosia	Rosia	116	7,9	14,68	6,82	-72
Ineu 1	Ineu	160	4,3	37,2	9,41	-28
Roz de Buzias	Buzias	188	4,3	43,72	11.05	0
Galben lax	Recas	136	8,2	16,58		-52
Aramiu de Silagiu	Silagiu	187	4,2	43,57	10,7	-1
Patrujarca	Buzias	213	4,0	53,25	12,5	+25
Fraga alba de Silagiu	Silagiu	204	3,9	52,3	12	+16
Ruginiu de Silagiu	Silagiu	217	3,1	70	12,76	+29
Roz marunt de Buzias	Buzias	186	3,8	47,89	10,7	-2
Roz batut de Silagiu	Silagiu	125	7,5	16,66	7,35	-63
Roz batut de Buzias	Buzias	178	5,6	31,78	10,4	-10
Roze de Silagiu	Silagiu	175	5,8	31,89	10,2	-13
Roz cu aripioara	Buzias	129	8,1	15,92	7,5	-59
Compact de Buzias	Buzias	196	4,2	46,19	11,4	+8
Pintenat de Buzias	Buzias	197	4,1	48,04	11,58	+9
Roz deformat de Buzias	Buzias	156	6,1	25,57	9,1	-32
Roz de Ghiroda	Ghiroda	174	5,8	30,00	10,2	-14
Roze Macui	Alba-Iulia	126	9,8	12,85	7,41	-62
Verde Rar de Petresti	Petresti-Alba	163	8,1	20,41	9,58	-25
Auriu batut de Aiud	Aiud	179	6,4	27,97	10,52	-9
Rar de Aiud	Aiud	162	8,1	20,00	9,52	-26

Ruginiu de Aiud	Aiud	156	8,6	18,14	9,17	-32
Feteasca Regala Mt	Timisoara	188	4,3	43,72	11,05	-

Table 4. Physico-chemical characteristics of local grapes varieties and biotypes for white wines

The values of glucose-acidimetry index show a very balanced composition of the wort at most local varieties and biotypes, standing out from this point of view the varieties: Roz de Buzias, Aramiu de Silagiu, Patrujarca, Fraga alba de Silagiu, Roz marunt de Buzias, Compact de Buzias si Pintenat de Buzias. Balanced ratio between sugar and acidity recorded for these varieties offer the possibility to obtaining of quality wines, typical for culture areas which can be an alternative to wines made from varieties already devoted in this area.

Variety	Locality	Sugar (g/L)	Acidity (g/L H_2SO_4)	Gluco-Acidimetric index	Alcoholic Potential (% vol.)	Difference to the control (Sugar)
Negru batut de Rosia	Rosia	185	3,7	50	10,88	-5
RD negru	Rosia	149	6,2	24,03	8,76	-41
Ineu 2	Ineu	198	3,5	55,14	11,35	+8
Cabasma neagra	Buzias	160	4,2	38,09	9,4	-30
Negru compact de Silagiu	Silagiu	177	4,4	40,22	10,4	-13
Vulpe	Silagiu	190	4,3	42,32	10,7	-
Negru mic de Silagiu	Silagiu	198	4.6	40,43	10,9	+8
Negru mic de Buzias	Buzias	213	3,1	68,70	12,52	+23
Negru pruinat de Buzias	Buzias	186	4,5	41,33	10,9	-4
Rosu compact	Buzias	151	6,4	23,59	8,8	-39
Negru aripat de Silagiu	Silagiu	152	6,3	24,12	8,9	-38
Negru aromat de Moldova Noua	Moldova Noua	175	5,8	30,17	10,29	-15
Vinetiu de Sebes	Sebes	171	7,6	22,50	10,05	-19
Negru rar de Aiud	Aiud	198	5.4	36,67	11,64	+8
Cabernet Sauvignon Mt	Timisoara	190	3,5	55,42	11,41	-

Table 5. Physico-chemical characteristics of local grapes varieties and biotypes for red wines

In the situation of grape varieties and biotypes for red wines, the comparison was made with a variety of highly valued by many experts considered the "*king of red wine varieties*" - Cabernet Sauvignon. However, there local grapes varieties and biotypes were accumulated higher amounts of sugars compared with controls (Negru mic de Buzias - 213 g/L, Ineu - 219 g/L, Negru rar de Aiud - 198 g/L, Negru mic de Silagiu - 198 g/L).
Naturally, most local grapes varieties and biotypes for red wines had a lower sugar content then Cabernet Sauvignon.
In this category, the values of glucose-acidimetric index show that a number of local grapes varieties and biotypes must have a balanced composition that allows obtaining balanced wine quality (Negru batut de Rosia, Ineu 2, Vulpe and Negru pruinat de Buzias).

4. Conclusions

Reference area is distinguished by an abundance of local grapes varieties and biotypes, some really very valuable, which are mostly little known, perhaps only those in whose household is found. From the distribution of local varieties and biotypes identified and retained for research shows the suitability of areas for obtaining of certain types of wine. The areas from Alba country provide special conditions for white and aromatic biotypes, while the areas from Timis and Arad counties provide special conditions for both red and white varieties. Local grapes varieties and biotypes represent an important source of biodiversity and also a valuable source for obtaining of authentic and typically wines. If intended solely to obtain wine varieties have noticed a difference depending on the variety of origins. Varieties of the Alba Iulia, Aiud stands a pronounced acidity, while the sugar content is lower. Varieties of the Buzias-Silagiu have a higher sugar content and lower acid content. Positive qualities of local varieties and biotypes are more valuable as they are obtained by a minimal technology, the treatments against diseases and pests are missing or limited to 1-2 spraying with copper-calcium solution. Finally we can say that a rational culture technology can significantly improve the quality of grapes produced from local varieties and biotypes. The results of this study help to differentiation and identification of grapevine varieties and to assure the availability and exchange of germplasm. In addition they are an information platform for research, breeding and viticulture by providing grapevine variety specific data.

5. Acknowledgements

The research which formed the basis of obtaining results were funded by National Council for Scientific Research in Higher Education from Bucharest/Romania by project: *Development of some models of advanced viticultural technologies in accordance with the pedoclimatic conditions, the varietal assortments and*

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