VALORISATION OF LOCAL RED VARIETIES IN DIVERSIFYING WINE ASSORTMENT

***Obadă Leonora, Mîndru Anatol, Rusu Emil, Golenco Lidia, Cibuc Mariana, Covalciuc Olga**

„Practical Scientific Institute of Horticulture and Food Technology" – Chişinău, Moldov

Obadă Leonora, oenologie_vdo@mail.ru

Abstract: The present range of moldovian black grain grape varieties is composed mostly of french classics, as well as clones of these varieties. On global wine market several countries with great diligence promote wines from local varieties. In order to diversify assortment of red wines research were subjected wines made from indigenous varieties of 11 grape year 2011 under micro winemaking according to classical technology. The wines were determined physicochemical indices covered, as well as some complementary indicators (phenolic substances, anthocyanins, glycerol, 2,3-butilenglicol, the main non-volatile organic acids, etc.), note organoleptic based on preliminary results obtained were shown perspective to produce local varieties of dry red wines.
Keywords: local varieties, assortment, phenolic substances, anthocyanins, glycerol.

Lately more and more countries highlights the basic assortment some varieties, so-called "national".

Currently moldovan assortment of grape varieties with black bean consists mostly of french classics as well as from clones of these varieties, such as Cabernet Sauvignon, Merlot, Pinot Noir.

It is difficult to create from existing assortment national symbol moldovan wine.

In the current tough competition on the world wine market several countries with great diligence promote wines from local varieties. An example Rkațiteli varieties and Saperavi Georgia, Bulgaria - Mavrud, Rubin and Melnik, Romania - Fetească Neagră and Tămâioasă românească, Azerbaijan - Ширваншах, Баян ширей. [1,2,3].

Stress climate change in recent years have led to the need to attract attention clones domestic varieties that are adapted to local conditions and ensures quality wines [4].

On the range of Moldova to remember that not too far from the historically consisted of local varieties Rară Neagră, Plăvaie, Galbenă, Zghihară, Bătută neagră, Fetească Neagră, Țîța caprei, Păsărească, Cabasmă and others.

Many local varieties such as Rară Neagră, Fetească Neagră, Busuioaca de Bohotin etc. had a mark on the history of the country and created typicity of wine vineyards.

To note that at the time ampelographic collection of PSIHFT comprises 41 varieties, „ancestors" , including 10 with black grain.

We currently some local red varieties, which are invaluable, but, unfortunately, they have not undergone thorough research regarding the potential of phenolic substances and coloring, grape processing technology efficiency.

The purpose of this research is to study the physico-chemical composition of red wines made from indigenous varieties for compliance with the requirements of normative documents submitted for red wines.

Materials and methods.

Research have undergone 10 experimental wines made from local red varieties, 2 varieties Codrinschi wines produced from grapes harvested in the Central region (Stăuceni) and South (Pleseni) wine season of 2011 in section Microvinificație Practical Scientific Institute of Horticulture and Food Technologies. Served as a witness Merlot wine. Samples of experimental wines were produced according to traditional technology: harvesting grapes → un bunch-crushing grapes → sulphite at a dose of 30 to 50 mg/dm3 → inoculate active dry yeast → fermentation maceration-pulp at a temperature of 25 to 28 ° C → pressing with liquid phase separation → postfermentation → drawing wine from wine yeast sediment → sulphite free sulfur dioxide content 15 -20 mg/dm3 → wine preservation and care.

Physical and chemical indexes were determined according to standard methods and OIV methods in laboratory Enologie şi VDO and laboratory Verificarea calității. Organoleptic assessment was performed in experimental wines tasting Commission within PSIHFT [5].

Results and discussion.

The results of physico-chemical investigations mainly dry red wines made from indigenous varieties of the crop of 2011 are presented in Table 1. The data in Table 1 it can be seen that the wines subject research is characterized by an alcohol concentration range from 12.0 up to 14.9% vol, except for only wines made from varieties Bătuta Neagră (9.5% vol) Negru de Akkerman (9.7% vol). With a higher degree alcohol wines are distinguished from varieties Codrinschi Pleseni (14.9% vol), Feteasca Neagră (14.4% vol) and Tămîioasa de Bohotin (14.1% vol).

Sugar content, despite the high alcohol level does not exceed 2.1 g/dm^3 and under the maximum allowable dry wines.

Titratable acidity reaches values between 6.1 and 9.4 g/dm^3, the lowest value recorded into wine variety Seină and the highest values in wines from varieties Kopceak (9.2 g/dm^3) and Negru de Cauşeni (9.4g/dm^3). PH values are 3.20 to 3.62.

Volatile acidity in red wines is investigated within the 0.20 to 0.40 g/dm^3, denoting compliance technology to produce experimental wines.

Fairly wide limits vary glycerol content - from 7.4 up to 9.5 g/dm^3 except Bătuta Neagră and Negru de Akkerman, characterized by a low glycerol content of only 4.6 and 6 , 5 g/dm^3 properly.

Most wines glycerol contained in Codrinschi (Pleseni) - 9.5 g/dm^3 and Tămîioasă de Bohotin - 9.3 g/dm^3.

In Ciorcuță neagră, Fetească Neagră, Rară Neagră, Codrinschi (Stăuceni) wines, glycerol contained in an amount of 8.6 to 8.8 g/dm^{3}and is close to the witness Merlot wine (8.9 g/dm^3).

Table 1 Physicochemical indices mainly in dry red wines made from indigenous varieties, crop of 2011

Nr. d/o	Denumirea vinului (soiului de struguri)	Alcohol,% vol.	Sugar, g/dm^3	Titratable acidity, g/ dm^3	Volatile acidity, g/dm^3	pH	Glycerol, g/dm^3	2,3 – buthilen-glycol, mg/dm^3	unreducible dry extract, g/dm^3	organoleptic note, point
1	Bătută Neagră	9,5	0,8	7,4	0,26	3,54	4,6	215	17,2	7,71
2	Brează,	12,0	1,0	6,4	0,26	3,20	7,4	478	20,1	7,80
3	Ciorcuţă Neagră	13,0	1,4	7,0	0,26	3,45	8,6	441	22,1	7,88
4	Fetească Neagră	14,4	1,7	7,6	0,26	3,62	8,8	520	24,6	7,94
5	Rară Neagră	13,5	1,8	7,7	0,33	3,45	8,7	848	25,0	7,80
6	Kopceak	13,8	1,6	9,2	0,26	3,37	8,2	511	25,8	7,92
7	Negru de Akkerman	9,7	0,8	7,3	0,20	3,23	6,5	319	19,5	7,81
8	Negru de Căuşeni	13,7	1,3	9,4	0,26	3,14	7,8	576	27,4	7,96
9	Seină	12,7	1,4	6,1	0,40	3,59	7,9	454	21,3	7,84
10	Tămîioasă de Bohotin	14,1	1,6	7,7	0,26	3,46	9,3	634	25,5	8,09
11	Codrinschi (Stăuceni)	13,0	1,5	7,3	0,26	3,44	8,6	428	24,0	7,91
12	Codrinschi (Pleşeni)	14,9	2,1	7,5	0,26	3,43	9,5	633	27,1	8,02
13	Merlot (martor)	12,8	1,0	6,5	0,26	3,47	8,9	511	23,2	7,98

2,3 - Buthilenglycol ranging from 398 up to 848 m g/dm^3, registering lower values only vinuril Bătuta Neagră (215 mg/dm^3), which has the lowest content in glycerol.

Unreducible extract reaches record 22.1 and 27.5 g/dm^3 except varietal wines Bătută Neagră, Negru de Akkerman and Seină, where this indicator is only 17.2, 20.3 and 21.3 g/dm^3 corresponding, which is not enough for a young red wine.

In Black wines Fetească Neagră, Rară Neagră, Kopceak, Negru de Căuşeni, Busuioacă de Bohotin, Codrinschi Pleşeni unreducible dry extract exceeds 24.6 g/dm^3.

Assessing organoleptic tasting samples from the Commission PSIHFT demonstrated that wine is healthy for their production have complied with the technological regimes. The highest organoleptic note 8.09 points (minimum grade being 7.80 points) was awarded the wine variety Tămîioasă de Bohotin (Busuioacă de Bohotin), which has a pale red to pink, an intense aroma with notes of basil, rose petals, fresh taste, with the same notes.

The lowest note organoleptic 7.71 points obtained Bătută Neagră wine variety, characterized by a dark pink, simple neutral flavor, taste simple, clean, acid, astringency typical red wines.

Brează varietal wines and Negru de Akkerman are characterized by open red to pink, clean aroma with floral and fruit nuances, but the taste is simple, aqueous (7.80 points). Sample of Ciorcuţa Neagră variety (7.88 points) has a red, clean flavor, rich, full flavor, harmonious.

After physico-chemical composition closer to witness the variety Merlot wine stands Fetească Neagră, who stands with a dark ruby red color, aroma with notes of fruit and flowers, taste soft, full and was appreciated by 7.94 points. With a bright red color, with shades of solan flavor, slightly, fresh wine characterized Rară Neagră (7.80 points). Sample obtained from the variety Negru de Cauşeni (7.96 points) has a dark red color, clean fruit flavor combined with slightly vegetal tones, full flavor, mining, acid, astringent phenolic potentially high. Codrinschi variety wine produced in the South was able to taste a touch higher (8.02 points) compared with that obtained in the Central region (7.91 points), because it highlights the rich aroma with notes of fruit, harmonious taste , mining, noble tannins. With a 7.92 grade point taste was appreciated Kopceak wine variety, characterized by a dark red, clean flavor, made with fruit tones, fresh taste fresh. Evidence - witness Merlot has a deep red color, rich aroma with notes of red fruit, taste extractive soft harmonious taste and obtained a grade of 7.98 points.

In red wines undergo major investigations were determined non-volatile organic acids, and the results of investigations are presented in Table 2.

The results show that the investigated red wines lactic acid shall not exceed 0.2 g/dm^3 except wine variety Seină, which contains 1.0 g/dm^3 lactic acid.

Succinic acid varies from 0.9 up to 1.2 g/dm^3 and is within the limits described in the literature. Malic acid content is observed within the 1.3 to 2.8 g/dm^3. Containing higher in malic acid (2.3 to 2.8 g/dm^3) stands Kopceak varietal wines, Codrinschi (Stăuceni), Fetească Neagră and Breză. With lower values of malic acid (1.3 to 1.8 g/dm^3) are distinguished varietal wines Bătută Neagră, Merlot, Codrinschi (Pleseni), Seină, Ciorcuță Neagră and Negru de Akkerman.

On tartaric acid can be seen that the values of wider varies from 1.5 to 3.4 g/dm^3 except wine Negru de Cauşeni where this index is 4.1 g/dm^3. It should be noted that the wines Bătută Neagra, Negru de Akkerman, Negru de Cauşeni and Codrinschi (Pleseni)

Table 2 **Main organic organic acids content of red wines made from indigenous varieties, crop of 2011**

Nr. d/o	Wine name	**Organic acids, g/dm^3**				
		Lactic	**Succinic**	**Malic**	**Tartric**	**Citric**
1	Bătută neagră	0,1	1,0	1,3	3,4	0,1
2	Breză	0,2	1,0	2,4	2,1	0,2
3	Ciorcuță neagră	0,1	1,2	1,8	2,3	0,2
4	Fetească neagră	0,2	1,1	2,8	2,6	0,2
5	Rară neagră	0,2	0,9	2,1	1,7	0,3
6	Kopceak	0,1	1,1	2,3	2,8	0,2
7	Negru de Akkerman	0,2	0,9	1,7	3,4	0,2
8	Negru de Căuşeni	0,1	1,0	2,1	4,1	0,3
9	Seină	1,0	1,1	1,7	2,4	0,3
10	Tămîioasă de Bohotin	0,2	1,1	2,2	1,4	0,3
11	Codrinschi (Stăuceni)	0,2	1,0	2,3	2,9	0,3
12	Codrinschi (Pleşeni)	0,2	1,2	1,4	3,1	0,3
13	Merlot (martor)	0,1	0,9	1,3	1,5	0,3

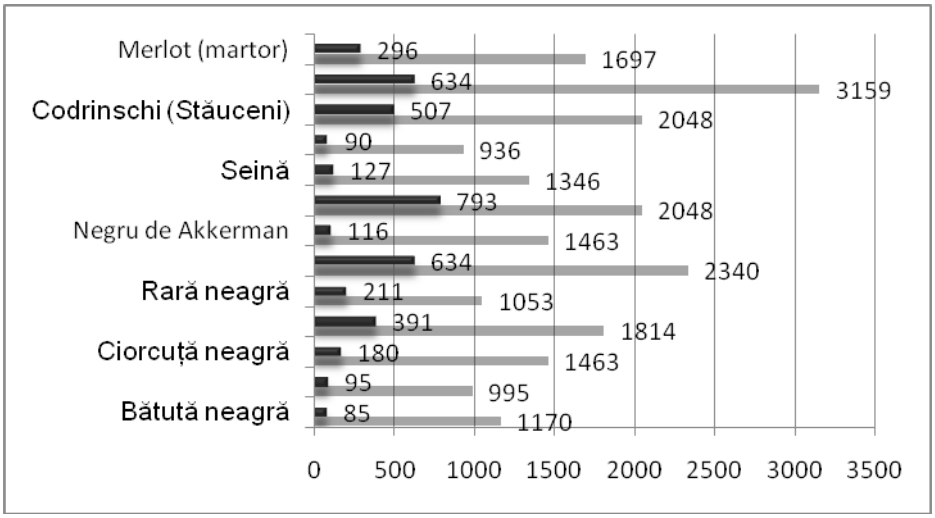

Fig. 1 phenolic substances and anthocyanin content of red wines from indigenous varieties, crop of 2011

■ - anthocyans, mg/dm^3

■ - Phenolic substances , mg/dm^3

content tartaric acid is 2 times higher than malic acid content, and wines Tămîioasă de Bohotin, Rară Neagră, Breză and Feteasca Neagră tartaric acid content is less than malic acid content.

Containing almost equal tartaric and malic acids witness stands Merlot wine (1.5 and 1.3 g/dm^{3}respectively).

Citric acid in wines under study does not exceed 0.3 g/dm^3.

Research in phenolic and anthocyanin content substances has shown that red wines from indigenous varieties are distinguished with different content in these compounds shown in Figure 1. It should be noted that the wine from Codrinschi Pleşeni is characterized by the highest potential of phenolic substances - 3159 mg/dm^3, followed by varieties Kopceak (2340 mg/dm^3) and Codrinschi from the Central region and Negru de Causeni (2048 mg/dm^3). The highest anthocyanin content of the varieties mentioned above are recorded in wine variety Negru de Causeni - 793 mg/dm^3. Feteasca Neagră wine variety has potential biological environment phenolic compounds - 1814 mg/dm^3 and 391 mg/dm^3 anthocyanin phenolic substances, hovering closer to wine - Merlot witness - in 1697 and 296mg/dm^3.

Conclusions

1. Investigated phenolic substances in wine anthocyanins varies very broad:

• phenolic substances - from 936 up to 3159 mg/dm^3;

• anthocyanins - from 90 up to 793 mg/dm^3

With a high content in phenolic substances in red wine anthocyanins differ native varieties:• Codrinschi (Pleseni);• Negru de Cauşeni;• Kopceak;• Codrinschi (Stăuceni);• Fetească Neagră; Rară Neagră and Busuioacă de Bohotin have a more modest phenolic compounds.

2. Wines Fetească Neagră, Codrinschi, South, Negru de Căuşeni, Rară Neagră are subject to investigations of physical and chemical composition that meets the requirements of normative documents submitted to this category of wines and can be recommended for production for widening assortment of moldovan wines.

3. Investigated the varieties currently can not be recommended for the production of red wines varieties: Bătută Neagră, Breză, Seină and Negru de Akkerman.

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