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STUDY OF INFLUENCE OF OAK WOOD ON THE QUALITY OF DRY WHITE WINE OBTAINED FROM THE NEW SELECTION GRAPE VARIETY RITON

The influence of the contact of the must with oak wood, in the process of alcoholic fermentation, obtained under micro-winemaking conditions of Scientific-Practical Institute of Horticulture and Food Technologies, from the grape variety of the new selection varieties Riton, on the physico-chemical composition and organoleptic indicators of wine was studied. Two technological schemes for the production of dry white wines were studied: the classical scheme and the scheme providing contact of the must with oak wood (staves and chips) for 5 days. Depending on the results obtained, recommendations were given to improve the quality of dry white wines obtained from the grape variety of the new selection Riton.

Keywords: white wine, quality, oak chips, new selection varieties, staves.

INTRODUCTION

Due to climate change, in recent years, European grape varieties have been increasingly affected by various diseases, and winegrowers and winemakers are faced with damaged crops, low titratable acid mass concentrations and high mass concentrations of sugars in grapes [1]. These facts affect the quality of the product, resulting in wines that do not meet regulatory requirements, with a high alcohol concentration of ethyl alcohol and, often, with a mass concentration of residual sugars [2]. In this regard, further successful development of viticulture and winemaking in the Republic of Moldova, guaranteeing high-quality wines, can be ensured by planting vineyards refined with grape planting material of new grape varieties adapted to local biotic and abiotic factors.

In this context, studying the technological potential of new varieties and improving the quality of dry white wines through the use of these varieties is currently the main task of the viticulture industry in the Republic of Moldova [3]. Of particular interest are new varieties obtained by local researchers through interspecific hybridization of different varieties, such as Floricica, Viorica, Legenda and Riton [4].

New selected grape varieties have high biologic qualities and are available for cultivation in production on unprotected crops [4]. Newly selected varieties have increased resistance to various diseases and adverse climatic conditions, which allows them to be grown with less chemical treatment, having a fairly high potential for aromatic substances [5].

Compared with wines obtained from new selected grape varieties Floricica, Viorica and Legenda, dry white wine obtained from grapes variety Riton is characterized by a neutral aroma [3].

In this regard, to improve the organoleptic properties of wine obtained from grapes of the new selection variety Riton, the effect of contact of the must with oak wood (staves and chips) during alcoholic fermentation was studied.

MATERIALS AND METHODS

Dry white wine obtained from the grape variety of the new selection varietie Riton, harvest year 2021, was selected as object for the study. The raw material grapes were harvested from the vineyards of the "Base" category, free of viral diseases and bacterial cancer, of SPIHFT and processed under microvinification conditions. To process the grapes, 2 technological schemes for the production of dry white wines were used: the classic scheme and the scheme providing contact of the must with oak wood for 5 days (chips - 30 g/dal and staves – 0,6 pcs./hl) during fermentation of the must.

The process of crushing and de-stemming of the grapes was used with the sulphitation regime of 70-80 mg/dm³ Riton. After crushing, the must was subjected to the maceration process, with the use of pectolytic enzymes Zimopec PML (0,3 ml/dal). The obtained must was macerated for 4 h, at a temperature of 14-16 °C. Next, the must was pressed in a semi-automatic pneumatic press, followed by gravity clarification of the must for 12-14 h. The clarified must was decanted from the sediment and inoculated with the dry active yeasts Oenoferm Freddo (2-3 g/dal) with addition as feed of Actibiol (2-3 g/dal) and Ecobiol Pied de Cuve (1-2 g/dal). The fermentation temperature was 14-16 °C. At the completion of fermentation, the wines were removed from the lees and treated with Oxyless V (0,1 g/hl). After the post-fermentation process, the wines were treated and filtered.

The physico-chemical indices of the obtained wines were determined according to the standardized methods and the OIV methods, after which the wines were subjected to organoleptic evaluation by a tasting of Committee Sensory Analysis of Scientific-Practical Institute of Horticulture and Food Technologies. The research was carried out in the laboratory of "Oenology and Wine with Designation of Origin".

RESULTS AND DISCUSSION

Figure 1 shows the obtained results of the dynamics of the alcoholic fermentation process depending on the form of oak wood used (staves and chips).

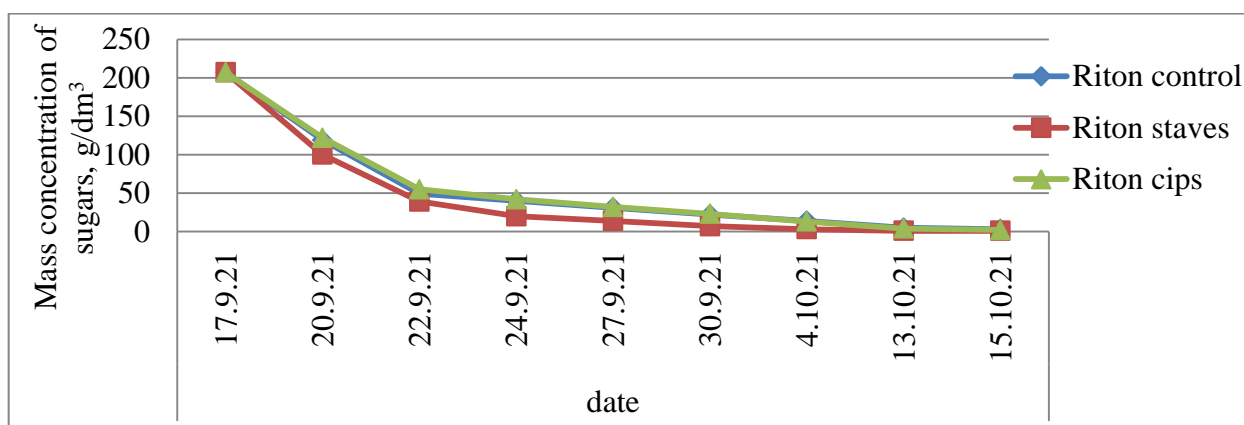


Figure 1. Dynamics of alcoholic fermentation of must obtained from the grape variety of the new selection Riton

Figure 1 shows that the addition of chips and staves does not affect the alcoholic fermentation process and about 90-96% of the total sugars are fermented during the first 13 days.

The results of the physico-chemical analyses, presented in table 1, showed that the use of oak wood in the experimental technological scheme for obtaining dry white wine obtained from the grape variety of the new selection Riton does not affect the mass concentration of titratable acids

and volatile acids. An increase in the mass concentration of the extract by 1,9 g/dm³ in the case of using oak chips and by 2,5 g/dm³ in the case of using staves is observed, compared to Riton wine obtained according to the classical scheme. Also, when using staves, the mass concentration of glycerin increased by 0,5 g/dm³ and 2,3-butylenglycol by 56 mg/dm³.

Table 1

The influence of oak wood use in the process of alcoholic fermentation on the physicochemical properties of dry white wine obtained from the grape variety of the new selection Riton

	Physico-chemical indices	Wine production scheme		
		control	cips	staves
1.	Alcoholic concentration, % vol.	12,4	12,5	12,5
	The mass concentration of:			
2.	residuals sugars, g/dm ³	3,4	3,3	3,3
3.	titratable acids, g/dm ³	8,5	8,5	8,4
4.	volatile acids, g/dm ³	0,59	0,59	0,53
5.	total/free sulfur dioxide, mg/dm ³	105/23	105/22	104/23
6.	totally soluble salts, mg/dm ³	588	600	611
7.	2,3-butylenglycol, mg/dm ³	267	295	323
8.	non-reducing dry extract, g/dm ³	20,1	22,0	22,6
9.	glycerin, g/dm ³	5,8	6,1	6,3
10.	pH	3,31	3,31	3,32
11.	Electrical conductivity, μS/cm	1175	1200	1225

The use of oak wood during must fermentation in the technological scheme for the production of dry white wine obtained from the grape variety of the new selection Riton, contributes to an increase in the mass concentration of total soluble salts and, accordingly, electrical conductivity compared to the classical scheme. Thus, the mass concentration of totally soluble salts increases by about 20 mg/dm³.

Next, the effect of using oak wood in the process of alcoholic fermentation on the organoleptic properties of dry white wine obtained from the grape variety of the new selection Riton was studied, the results are presented in table 3.

Table 3

The influence of oak wood use in the process of alcoholic fermentation on the organoleptic characteristics of dry white wines obtained from the grape variety of the new selection Riton

	scheme	Color	Clarity	Aroma	Taste	Note, points
1.	control	straw-green	clear	clean, complex, floral, with tones of melon	clean, fresh, floral	8,02
2.	cips	straw-green	clear	clean, with tones of melon, oak wood	clean, hard, excess oak	8,01
3.	staves	straw-green	clear	clean, floral, complex, with tones of melon, more expressive, fragrant	fuller, extractive, harmonious, typical	8,08

From Table 3 it is evident that the contact of the must during alcoholic fermentation with oak staves gives the resulting wine a more expressive aroma, a more extractive and harmonious taste, while the wine is rated higher than the control wine, with an average score of 8,08 points.

Compared to the use of staves, the use of chips leads to the appearance of excess tannin tones in the taste of the wine.

Thus, it can be concluded that the use of oak staves in the production of dry white wine obtained from the grape variety of the new selection Riton, contributes to the intensification of aromatic varietal characteristics, balancing and improving the taste of wine.

CONCLUSIONS

It has been established that the use of oak stevia in alcoholic fermentation increases the mass concentration of: reduced extract by 2.5 g / dm³, glycerin by 0.5 g / dm³ and 2,3-butylene glycol by 56 mg/ dm³ compared to the classical scheme and gives the resulting wine a more expressive aroma, a more extractive and harmonious taste.

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ДОСЛІДЖЕННЯ ВПЛИВУ ДЕРЕВИНИ ДУБА НА ЯКІСТЬ СУХОГО БІЛОГО ВИНА, ОТРИМАНОВОГО З НОВОГО СЕЛЕКЦІЙНОГО СОРТУ ВИНОГРАДУ РИТОН

Досліджено вплив контакту суслу з деревиною дуба в процесі спиртового бродіння, отриманого в умовах мікро-виноробства Науково-практичного інституту садівництва і харчових технологій з винограду нової селекції сорту Ритон, на фізико-хімічний склад та органолептичні показники вина. Досліджено дві технологічні схеми виробництва сухих білих вин: класична схема та схема, що передбачає контакт суслу з деревиною дуба (жердиною та тріскою) протягом 5 діб. Залежно від отриманих результатів надано рекомендації щодо підвищення якості сухих білих вин, отриманих із сорту винограду нової селекції Ритон.

Ключові слова: біле вино, якість, тріска дубова, сорти нової селекції, кілки.