

INFLUENCE OF DIFFERENT ROOTSTOKS ON THE PHYSICAL-CHEMICAL INDICES AND QUALITY OF WINEMATERIALS FOR SPARKLING WINE PRODUCTION

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Abstract: In the article obtained results regarding the influence of different rootstocks on physical-chemical indices, as well as on the quality of winematerials for sparkling wine production is presented. According to obtained results wines obtained on the rootstocks 101-14 are the highest quality.

Keywords: rootstock, quality, wine, sparkling wine, physical-chemical indices

Introduction

During the past years multiple changes in sparkling wines production technology were occurred. The changes refer to enlargement of the assortment of grape varieties used for the production of raw material wines for sparkling wines, emergence of different clones of European grape varieties, enlargement of the grapes cultivation area, use of dry active yeasts in primary and secondary fermentation, use of new adjuvants for treatment of raw material wines, giving up method of secondary fermentation in a continuous stream, widening assortment of sparkling wines produced by tank method, reducing the duration of sparkling wines aging in bottles et al. [1, 2, 3].

An important factor that determines the quality of the wine, presents optimal selection of the rootstocks variety. Rootstock varieties must ensure a high harvest rate and quality of the grapes, possess a good affinity with European varieties and be resistant to the increased content of active limestone in soil [4, 5].

Materials and methods

The influence of different varieties of rootstock on raw material wines quality for sparkling wine production was performed on the affinity sector of SPIHFT, in micro-winemaking sector and in the laboratory conditions in «Biotechnology and Microbiology of Wine», using grape varieties Chardonnay, Aligote and Riesling de Rhin grown on rootstocks SO-4, Rujerry-140, Kober 5 BB and 101-14.

Determination of specific indices for sparkling wines: the maximum height of foam, height of foam stabilization and foam stabilization time was performed using special installation "Mosalux» (France).

Results and discussion

From harvested grapes cultivated on different rootstock in micro-winemaking conditions have been prepared samples of raw material wine for sparkling white wines production. Basic physico-chemical indices of raw material for sparkling wines obtained from grapes grown on different rootstock are shown in Table 1.

According to the results presented in Tab. 1 raw material wines have different physico-chemical indices, basically differences depend of the used variety of grape and less depend of the rootstock. For the wines produced from Chardonnay variety alcohol

concentration in dependence of the rootstocks vary slightly: from 12.3 up to 12.6% vol, the same we can observe with titratable acids concentrations, ranging from 7.1 g / dm³ up to 7.5 g / dm³. Rootstock varieties have insignificant influence on the content of organic acids.

Physico-chemical indices of wines produced from grapes variety Aligote and Riesling grown on different rootstocks also varies in fairly insignificant intervals: alcohol concentration 11,2 to 11,7% vol., for Aligote variety from 11,1 to 11,6% vol, for Riesling variety titratable acids content varies only 3 g / dm³ for both grape varieties.

Table 1. Influence of rootstock on different physico-chemical indices of raw material wines for sparkling wines production (SPIHFT, h.y. 2014)

Variety	rootstock	Alcoholic concentration, % vol	Mass concentration of, g/dm ³ :				
			titratable acids	volatile acids	tartaric acid	malic acid	lactic acid
Chardonnay	SO4	12,5	7,5	0,59	3,5	3,2	0,18
	Rujerry-140	12,6	7,1	0,59	3,2	3,1	0,21
	101-14	12,4	7,4	0,46	3,4	3,2	0,16
	Kober-5BB	12,3	7,6	0,61	3,6	3,2	0,22
Aligote	SO4	11,2	7,5	0,40	3,4	3,3	0,28
	Rujerry-140	11,7	7,4	0,60	3,4	3,3	0,15
	101-14	11,2	7,6	0,38	3,5	3,4	0,16
	Kober-5BB	11,6	7,3	0,46	3,2	3,1	0,22
Rhine Riesling	SO4	11,6	8,9	0,42	4,4	3,9	0,18
	Rujerry-140	11,2	8,8	0,36	4,4	3,8	0,21
	101-14	11,6	9,1	0,38	4,6	4,0	0,16
	Kober-5BB	11,1	9,0	0,48	4,6	3,9	0,20

Organoleptic appreciation of raw material wines demonstrates higher quality of the studied wines produced from grapes grown on 101-14 rootstock compared to other rootstocks .

According to obtained results, the raw material wines produced from grapes grown on rootstock 101-14 were graded with maximum: 8.0 to 8.1 points followed by wines produced from grapes cultivated on different rootstock: Kober 5 BB, SO4 and Rujerry-140 (7.8-7.9 points). So raw material wines made from grapes grown on rootstock 101-14 after the note was highlighted with higher organoleptic quality for the white sparkling wines production.

Also, in raw material wines specific foaming parameters, which predict foaming quality of sparkling wines were determined. In Table 2 foaming indices of raw material wine produced from grapes grown on different rootstock are presented.

Table 2. Influence of different rootstock on foaming indices of raw material wines for white sparkling wine production (SPIHFT, h.y. 2014)

Nr.	Name of wines	Rootstock	Foaming indices		
			Maximum height of the foam, mm	Height of the foam stabilization, mm	Time of foam stabilization, sec
1	Chardonnay	SO4	85	58	37
2		Rujerry-140	92	68	43
3		101-14	114	82	52
4		Kober-5BB	103	78	48
5	Aligote	SO4	67	41	28
6		Rujerry-140	76	52	35
7		101-14	82	56	38
8		Kober-5BB	75	48	33
9	Rhine Riesling	SO4	58	31	24
10		Rujerry-140	64	38	29
11		101-14	74	51	36
12		Kober-5BB	69	43	32

According to data from Table 2, the highest indices of foaming were determined in Chardonnay, Riesling and Aligote varieties from grapes grown on rootstock 101-14 followed by rootstock Kober-5BB. The lower foaming indices were determined in wines produced from grapes grown on rootstock SO-4.

It is also necessary to highlight out, that the foaming indices in studied wines are higher in wines from Chardonnay followed by Aligote wines and more inferior are in wines from the Riesling variety. So, research allowed to establish a significant influence of the used of rootstock variety on the quality and foaming indices of raw material wines for sparkling wines. Among the studied rootstock is highlighted variety of rootstocks 101-14, which contributed to produce high quality raw material wines for sparkling wines with superior foaming indices wines.

Conclusions

The study of different varieties of rootstock allowed to highlighted 101-14 rootstock, which contribute for producing raw material wines for sparkling wines with higher organoleptic qualities compared to other rootstocks. According to foaming indices of the studied raw material wines, also highlights grapes cultivated on rootstock 101-14 for Chardonnay, Riesling and Aligote varieties, followed by rootstock Kober-5BB.

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