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Wine Maturation in Oak Barrels

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Abstract - The objective of the thesis - tracking the influence of oak wood on the maturation (aging) of wine, for to develop its quality attributes (color, taste, smell, limpidity). These attributes have an important influence about wine quality.

Keywords*:* wine, aging, oak, barrels, grape.

INTRODUCTION

Wine is defined as the natural product obtained by alcoholic fermentation of grape must (Tita, 2004). Once formed, the wine enters in stage of maturation.

Maturation is the process in which wine develops the quality attributes - clarity, color, stability and receives a new qualitative characteristic - bouquet of maturation. At this point, continue some physical and chemical processes during previous training and a very complex chemical transformations caused by the action of oxygen on wine (Popa, 2008).

Maturation can be done in stainless steel tanks, polyester tanks, in concrete tanks or oak barrels.

During aging of wine is the following:
- 4-6 months for consumption wines
- 8-12 months for high quality wines
- over 12 months for high quality wines (DOC) (Ţârdea C., 2000).

WINE MATURATION IN OAK BARRELS

• is an old practice in our country
• better quality - clarity, color, taste, smell
• 15-20% of annual production of wine in the world is done in oak barrels.

Wine maturation can be done in oak barrels of various capacities, but the most recommended barrels to obtain high quality wines are the oak barrels with capacity of 225 liters. These barrels are called barique.

The mention of "aged wine in the barrel" on the bottle label is possible only if the wine was kept in oak barrels at least 6 months (Tardea C., 2000).

THE ROLE OAK BARRELS

- oak is a porous material, permeable to oxygen from the air, providing microoxygenation wine, with favorable effects on quality. Penetration of oxygen from the air occurs through the pores in the wine tubs and manhole barrels.

- oak is a source of enrichment in chemical compounds extracted from staves - volatile compounds with aromatic character, phenolic acids (Tardea C., 2007).

TECHNICAL DATA OF A BARIQUE

Fig. 1. Bariques

Tab. 1

Technical data of barique

CAPACITY	HEIGHT	LARGE DIAMETER	SMALL DIAMETER	STAVES GAUGE	MANHOLE DIAMETER
225 l ± 2%	950 mm	690 mm	570 mm	27 mm	48 mm
BENDING STAVES FIRE	MANHOLE		GASKETS	WEIGHT	
	Silicon		Steel galvanized	45 kg	

THE CARE OF OAK BARRELS

It is very important to prevent degradation, as immediately after use, the barrels are well washed and when both are empty to be sulfite in every month, recommending to use 40g SO_2/500 liter capacity.

The barrels are kept with spaces between them for ventilation and at least 30 cm from the floor. At 2-3 years, circles and staves ends are painted. After treatment with hot water either, it always flows before complete cooling.

In situations when the barrels were used for wine, every 8/10/15 years away from the staves, after removal, stone wine.

Before use, especially when they were empty for a long time must beat drums for to check circles. Thus prepared, the barrels are ready to receive a new crop.

USE OF ″CHIPS" OAK

To fill the role of oak barrels in the maturation of wine, we started to introduce directly into barrels cubes or granules from oak wood, called "chips".

These result from heart of oak wood, which accumulates the highest amounts of specific aromatic compounds oak.

Chips are cooked (fried, but not charred), to form aromatic compounds similar to the ones of oak staves.

The intensity of the heat treatment contribute to the formation of aromatic characteristics:
- heat treated chips were weak aromatic character, vegetation type and give a slight sweetening wine
- cooked chips have a moderately pronounced aromatic character of oak and coconut and give a striking wine sweetening
- warm middle make to dominate the character aromatic by "fried" (cocoa, coffee), accompanied by a slight bitter and astringent taste of wine printed
- warm chips gives strong aromatic character of spices (vanilla, cinnamon) and a bitter taste.

Should be avoided chips carbonization, because it formed carcinogenic chemical compounds (Popa A., 2008).

Recommended dosage:
- 0.7-0.8 g/l to give wine an oak flavor which not mask the flavor variety
- 2-4 g/l for a pronounced aroma of oak.

THE FACTORS WHICH INFLUENCING THE WINE MATURATION IN OAK BARRELS

- barrel capacity - as the barrel capacity is lower, the more surface contact with oak wine is higher.

- oxygen - the oxygen is beneficial only when its penetration in the wine takes place slowly (0.3 mg/liter wine/day). Entering a large amount of oxygen in wine (10-20 mg/l), through wide wine contact with air has negative effects: disappear aroma variety, the wine loses freshness and gets oxidized taste and color is changing and grow microorganisms which caused diseases (vinegar and wine flower). To protect the wine by the negative influence of oxygen is used sulfur dioxide (SO2) (Pomohaci *et al*., 2000).

- storage temperature - a low temperature favors the dissolution of oxygen in wine, and a high temperature causes oxidation reactions.

CONCLUSIONS

Wine aroma is worsened while keeping in the barrel and becomes more complex, because the wood gives the wine its own numerous substances resulting from the warming open fire tubs barrel, during manufacturing.

During the maturation at a higher quality wines is done bright clarity, the specific color and after bottling is develop qualities of taste and flavor variety, place and year of production (Popa, 2008).

At the end of maturation, the wine is personalized and is individualized by its quality attributes.

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