



**MERLOTTA**  
VIGNAIOLI DAL 1962

LESSON 6

**STABILISATION,  
MATURATION, AGEING,  
BOTTLING**

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# STABILISATION

By stabilisation we mean some practices used to render wine more stable from a microbiological point of view.

## FINING

Process of clarification of a wine by adding a substance which carries the particles in suspension to the bottom of the container and with a successive filtration clarify the wine. One can also add inorganic substances such as bentonite or silica or organic substances like casein, gelatine, albumen or tannin.

## FILTRATION

A mechanical operation which consists of passing the wine through plate filters, sheet filters, rotating drum filters or membrane filters) which are able to eliminate the larger suspended pieces (clarifying filtration) or the smaller pieces (rinse aid filtration) or capable of eliminating the microorganisms (sterilising filtration)

# MATURATION OR AGEING

After the alcoholic fermentation the wine undergoes a process of maturation. This process is different according to the type of wine and can simply be time spent in inert containers (steel, fibreglass, tested concrete, glass) in which the wine stabilises and becomes clearer or, in the case of longer lasting wines, a proper second fermentation known as malolactic fermentation (see biological processes in Lesson 4).

Technically this fermentation, common in red wines of a certain quality but also in some whites, consists of the breakdown of the malic acid into lactic acid, in other words the substitution of an acid more aggressive to the taste with a more rounded softer one.

Over and above this phenomenon, caused by bacteria, there are others that are just as important from a taste point of view that aromatically transform the wine and stabilise the microbe profile.

The malolactic fermentation can occur naturally in wine or induced through the addition of selected bacteria; the wine must have certain well defined characteristics before this can happen: a sufficiently high pH level (> 3.2), a temperature not less than 18°, low level of sulphur (total < 30-40 mg/l and free < 10mg/l, level of alcohol not more than < 14%.

The maturation phase, with or without malolactic fermentation, represents the oxidising phase of the evolution of the wine and this can happen with racking or

## PASTEURISATION

A physical process that uses temperatures at less than 100° for a period of time sufficient to deactivate the enzymes and destroy microorganisms.

Demetallization treatments

These treatments are necessary when the iron, copper or zinc content goes over a certain limit; ???? of alterations

## TARTARIC STABILISATION

Consists in acting in such a way as to eliminate the quantity of tartaric salts (potassium bitartrate, tartrate of Calcium, neutral potassium tartrate in order of importance) that can cause sedimentation of tartrate in the wine

with a period of time in wooden containers: barrels or barriques.

The wood, in as much a porous material, allows exposure to oxygen and hence makes the wine develop a more pleasant "complexity". This evolution depends on the characteristics of the wine, the characteristics of the wood but also the shape of the barrels.

**The wine:** must be suitable to be stored in wood ie. have a certain level of alcohol, a good number of polyphenols and a certain quantity of extract; these characteristics in turn depend on the grape variety, the geographic area, the cultivating and winemaking techniques.

**The wood:** is usually oak which can release into the wine different composites depending on where it comes from (Vosges, Allier, Nevers, Tronçais), the seasoning, the thickness of the staves, how the barrels are made and the level of kiln drying.

**The shape:** the relationship between the dimensions of the barrel and the amount of wine it contains plays an important role; the most common capacity of barrels is: 225 litres (Bordeaux), 228 litres (Borgogne), 300 litres (Languedoc and Australia) but also 350, 400 or 500 litres.

# AGEING

After the maturation phase of the wine, characterised by the oxygenisation, there is a period of ageing which is characterised by the absence of oxygen, or reduction, which takes place in bottles.

During this period, which can be more or less long, the wine undergoes ulterior slow modifications until it rea-

ches the highest point of its evolution: in the colour (gradually goes from purple to ruby red), the tannins, alcohol and acids; the aromas that distinguish the classic bouquet of mature wines are formed.

In some cases, a part of this period happens in the cellars of the winery whilst in the majority of cases it occurs in the private cellars of the buyer.

# BOTTLING

The final phase of the winemaking process. By bottling is generally meant the placing of the wine into a container suitable for commercialisation (not necessarily glass bottles).

It is an important phase which is very specialised with big wine producers and requires detailed knowledge in relation to the necessary mechanisation with the use of, often very sophisticated, bottling plants with a high level of automation.

**The wine to be bottled must be stable from every point of view:** for this reason it is filtered just before bottling and the sulphur content is adjusted if necessary.

**Bottling with heat:** this consists in the rapid pasteurisation of the wine at a temperature of 65-80°C and

a successive lowering of the temperature to 45-50°C and then immediately bottled. The process gives a biological stability to the wine but doesn't allow for the complete preservation of the tasting profile of the wine.

**Cold,sterilised bottling:** generally used with white and young wines; consists in sterilising all material that will contact with the wine (place, filters, bottles, corks, tubing, fillers)

**Bottling without air:** consists in avoiding the wine coming into contact with air by using an inert gas (nitrogen or carbon dioxide) in the various operations of racking, filtration and bottling.

## *Bibliographic references:*

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