

Alternatives to the barrel : friend or foe ?

« The usage of pieces of wood is authorised for the ageing of wine since the ruling of 20th December 2005 (except for certain official associations known as ODGs in France who expressly forbid their use). Since the 10th July 2009 and the CEE ruling 606/2009, it is also possible to use pieces of wood in winemaking ». (Source : IFV-V'innopôle Sud-Ouest).

The liberalisation of the use of wood pieces has been enthusiastically greeted by wine producers, consultants and distributors alike.

But in opting to use these products, from chips to staves, there are certain rules that must be respected :

- The wood must always be oak
- 95% of the mass of wood chips must be of a size that will not pass through a 2mm sieve
- Any ulterior reference to barrel or use of the mention barrel aged is prohibited

Let us begin by considering the properties inherent in these winemaking tools, and some of their actions :

- Enhancement of texture

Certain uses of wood pieces can make a wine rounder and smoother in the mouth. This is generally the case when the wine is in contact with fresh chips during alcoholic fermentation. This can also be an objective during the maturing phase; a result achievable by choice of the appropriate product.

- Protection

Wood pieces liberate tannins, amongst other things. These have antioxidant qualities that act on the must and the wine. Equally, they are able to limit the appearance of reductive notes during fermentation and maturing. We can therefore consider that they contribute to the preservation of fruit characters of a wine.

- Improvement of Structure

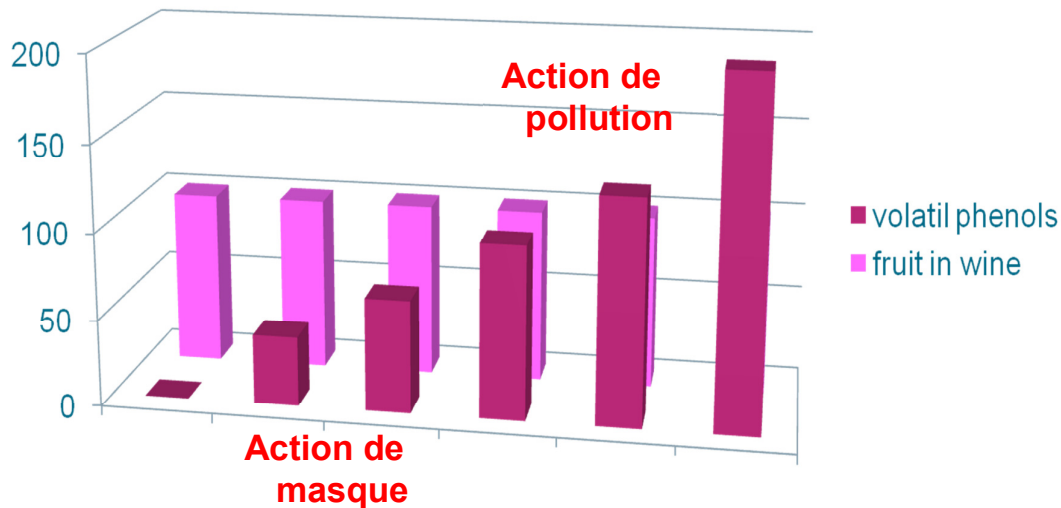
Due to their tannin content, wood pieces may be used to improve a wine's structure. The quality of their tannins will depend on certain parameters such as origin, size and toast level.

- Addition of Flavour

The use of oak is often synonymous with a desire to add oak aromas to a wine. This is almost always the case in maturing, however, it can also be the objective desired during fermentation. Once again, the intensity and type of aromas will vary according to origin, size, toast levels and the skills of the manufacturer.

- Masking undesirable aromas

When an undesirable molecule appears in wine in high concentrations it will begin by masking the intrinsic aromatic qualities of the wine before reaching a level beyond which its own organoleptic characteristics become identifiable.



Polluting Action

Masking Action

Volatile Phenols

Fruit characters

Figure 1 : The masking effect of molecules

In exactly the same way, wood pieces can be used in their turn to mask a fault caused by an undesirable molecule. It goes without saying, of course, that it is preferable to avoid the appearance of olfactory faults rather than to mask them.

So what alternatives to the barrel are available ?

- Oak chips :

These are the smallest of the wood pieces. They are used either loose in the grape marc during the fermentation of red wines, or contained in sachets for infusion during the liquid phase. Their characteristics are extremely variable depending on their origin and toast levels. Contrary to those with a high toast, 'fresh' chips have little aromatic impact.

During maturing their effect is rapid and it is normally considered that the totality of their compounds will have been liberated and diffused into the wine after two months.

For this reason they possess the great advantage of offering the possibility of testing prior to treating the entire wine. In a small container it is possible to test different options with varying doses in order to establish the best combination for the wine in question.

- Staves

These are sawn planks of oak whose qualities will depend on their origin, their thickness and their toast level. Their insertion into the tank requires preparation and often not a little ingenuity....

Because of their size they liberate their compounds slowly, which is why it is important to allow at least 6 to 9 months contact time with the wine.

More expensive than chips, they offer oak characteristics which are judged to be closer to the barrel, notably in terms of complexity.

- The intermediate options

There exists a whole host of alternatives of intermediate sizes between chips and staves. Some have been designed for use inside barrels, often to reinforce oak characters that may be lacking in old barrels (a procedure which precludes however all possibility of mention of the barrel for commercial purposes). They can offer a good economic alternative to the expensive replacement of barrels, but in this case the barrels must obligatorily be subject to rigorous hygiene measures to avoid undesirable effects which would nullify the use of the alternatives.

Whatever type of oak pieces are used, they must be employed in a reasoned manner to respond appropriately to a commercial objective.

A word of caution :

Certain barrel makers possess highly developed Research and Development Units which undertake research on wood and its relationship with wine.

Andréi Prida, researcher for the barrel manufacturer Seguin-Moreau, has explained that around two thirds of the space in wood cells is comprised of air. When wine penetrates these areas the air, and therefore the 20% of oxygen that it represents, dissolves in the wine. This oxygen oxidises part of the free SO₂ which protects the wine (note: 1mg/L of dissolved oxygen lowers free SO₂ by 2.5mg/L). This explains why wines in contact with new wood are blacker in colour but also why it is more frequent to encounter accidents such as *Brettanomyces* in these wines.

It is therefore extremely important to previously adjust SO₂ levels in wines which are to be in contact with new wood; but also to not wrongly accuse new wood of being directly responsible for the phenolic character of wines.

Our experience:

We have tested, on a regular basis, a maximum number of wood chips that are available on the market in order to evaluate their intrinsic qualities. Our most recent test was carried out in 2012 by Clémentine Marçon, graduate student at Agro Paris Tech, who compared no less than 172 combinations on the same wine. As a result of these tests we have been able to establish 'families' of chips according to their effect on the wine, which has enabled us to adapt our advice according to the matrices and the objectives that we are set.

| Supplier | Name | Origin | Toast | Toasted aromas | Vanilla aromas | Smoothness | Richness | Structure | Quality of tannins |
|----------|------|--------|-------|----------------|----------------|------------|----------|-----------|--------------------|
| A | 1 | US | NC | 1,2 | 1,0 | 0,3 | 0,6 | 0,8 | 2,6 |
| B | 1 | FR | M+ | 2,4 | 1,9 | 0,5 | 0,8 | 0,9 | 2,4 |
| C | 1 | US | | 1,6 | 1,5 | 1,6 | 1,1 | 0,6 | 2,2 |
| D | 1 | US | M+ | 1,3 | 2,1 | 1,8 | 1,2 | 0,9 | 2,2 |
| C | 2 | US | | 4,3 | 1,8 | 1,6 | 1,5 | 2,1 | 2,2 |
| C | 3 | FR | | 2,8 | 2,4 | 1,3 | 1,3 | 0,8 | 2,1 |
| E | 1 | FR | F | 3,6 | 2,5 | 0,2 | 0,4 | 0,8 | 2,0 |
| F | 1 | FR | M+ | 4,9 | 2,3 | 7,2 | 1,2 | 2,0 | 2,0 |
| G | 1 | | | 0,8 | 1,6 | 1,0 | 0,8 | 0,8 | 2,0 |

Table 1 : extract from a comparative test of wood chips by Clémentine Marçon in 2012

Conclusion :

The employment of alternatives to the barrel has been widespread since their authorisation, and in just a few years the utilisation of these new tools has been mastered. It should always be borne in mind, however, that their function is to add an extra dimension to a wine compared to the result that would have been achieved without wood. Certain producers have adopted them in order to reduce the cost of an 'oaked' wine. Often they are used as a complement rather than a replacement to the barrel, and thus it is not unusual today for a wine to have been partly barrel aged, partly in vat with staves, partly in vat with chips and partly in vat with no wood.

All the same, let us never lose sight of the fact that behind our interrogations concerning the use of alternatives there is a customer to satisfy by producing a wine that he wishes to buy. If the various wood options do not fit naturally into the winemaking and ageing processes, then it is meaningless to persist in using them. The systematic use of any procedure can damage durable relations between wine and consumer.

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