

Drought and heat wave...

Advice for the treatment of white grapes

The exceptional heat wave and drought this summer has had quite a few consequences on the harvest.

As a consequence of water evaporation, grape berries are extremely concentrated in sugar and organic acids. A High brix, as a result of dehydration, can hide a lack of grape maturity. This phenomenon being particularly important when berry growth ceases due to a lack of water.

These specific conditions affect the structure and composition of skin and pulp cell walls. The thicker skin wall can be associated with a higher content of hemicelluloses (xyloglucans) and pectin polysaccharide.

The Pectin chemical structure and content is directly linked to the berry development. The main consequence of no growth or delay is a high degree of methyl-esterification of the main chain of pectin and a higher content in type I and II α -arabinans and β -arabinogalactans side chains.

This specific structure modifies the physical and chemical properties of pectins, increasing their gelifying and water retention properties, which negatively impact pre-ferment treatments.

Winemaker's first observations confirm that free run yields are low and pressing becomes an issue.

An early addition, on the grapes (at the vineyard or at the reception hopper), of pectolytic enzymes with an activity profile adapted to the specific structure of pectins is more than ever an essential tool.

Rapidase® X Press contains the complete pool of activities required for complete pectin hydrolysis, including β -arabinogalactanes side chains. Rapidase® X Press also breaks down the main chain of pectin whatever its degree of methyl-esterification. Rapidase® X-Press is produced in optimal conditions (selected *Aspergillus niger* strains for enological purposes and fermentation in immersed cultures) and therefore naturally contains negligible levels of cinnamyl-esterase. (lower levels than purified preparations!).

The Rapidase range is packed in doypack. The zip closure ensures easy handling and optimum conservation after opening.



Pre-ferment maceration to increase juice yields

Pre-ferment skin maceration is a technique that consists of maintaining de-stemmed grapes with pectolytic enzymes in a tank (or inactive press) for some time before pressing.

The goal of this technique is to increase juice yields and improve the aromatic qualities of wine. In order to obtain satisfactory results, the user must keep crushing to a minimum and limit oxidation with a light sulfiting and if possible protect with a bed of inert gases (CO₂, N₂).

After dilution in water, the macerating enzyme should be added as soon as possible (in the vineyard, at the hopper or when filling the pre-ferment tank). The use of a dosing pump to introduce the enzyme when filling the tank facilitates homogenization. If a pump is not available then a rotation of the press will give good results. As enzymes are soluble in liquids, it is important to wait as long as possible before draining, in order to allow the enzyme to work on the skins.

- *The dose of enzyme and maceration time will be adjusted to the specific conditions: moment of addition, maceration temperature and grape sanitary conditions.*
- *The three parameters (time, temperature and dose of enzyme) are inter-related. The higher the temperature, the shorter the requested maceration time can be. At a temperature between 10° and 20°C (50 to 68°F) the duration of maceration should be 2 to 6 hours.*

Pre-ferment skin maceration improves the ability to ferment must

Keeping the juice in contact with berry cell walls offers a number of advantages like:

- *Increase in must nitrogen content (organic: amino acids, peptides & mineral : ammonium) This increase allows for a faster fermentation but does by no mean guarantee a complete fermentation.*

- ▶ **First step: pre-ferment skin maceration**
The use of an enzymatic preparation that contains the right pool of activities required to promote a complete break down of pectic polysaccharides will increase juice yields and quality as well as improve pressing and clarification.

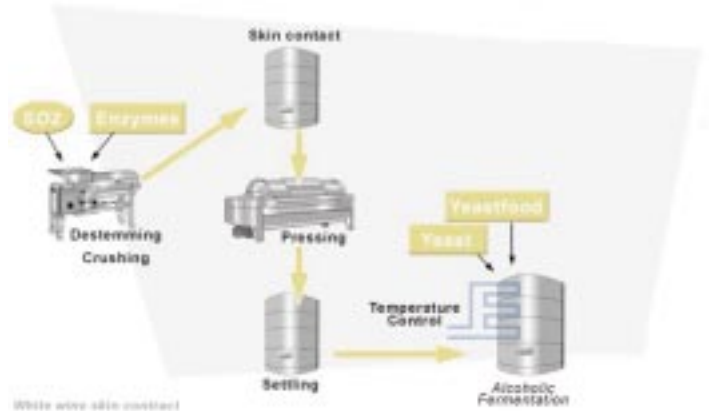
- *For a 4 hour maceration at 15°C (59°F), 20 grams of Rapidase® X-Press per metric ton of grape.*

Impact on post maceration clarification:

The use Rapidase® X Press allows to obtain clear drain juices after pre-ferment maceration; pectic polysaccharides are completely hydrolyzed.

- ▶ **Second step: Clarification**
Generally a second addition of pectolytic enzymes for clarification is not necessary. But some press juices contain an important quantity of polysaccharides extracted through pressing. These juices might need a second enzyme addition to achieve an acceptable turbidity for fermentation.

- *2 grams of Rapidase® CB per 100 liters of must will allow the clarification of these juices.*



- ▶ **Third step: yeasting**
Inoculate with specific yeast strains selected for their alcohol tolerance right after pressing in order to avoid wild yeast growth.

- *Fermicru® LS2, Fermicru® LVCB, Fermicru® AR2, Fermicru® 4F9 at 20 grams per 100 litres (2 lbs/1000G). Make sure to carefully follow the re-hydration steps listed at the back of each data sheet.*

- ▶ **Fourth step: fermentation**
Add a complete fermentation regulator at mid fermentation (d1040) to guarantee good yeast viability at the end of fermentation and complete sugar consumption.

- *30 grams of Maxaferm® per 100 litres of wine (2,5 lbs/1000G).*