

The reception of the grapes in the cellar is a time of great activity in which it is necessary to quickly make a good amount of decisions. In addition to the chemical characteristics (total sugars, acidity and polyphenols) that determine the optimal harvest time, they are equally important for assessing the degree of maturity (potassium) and phytosanitary (gluconic) grapes. This inspection is fundamental, not only for the technical aspects but also for the economic repercussions that it has on the price paid for the grapes. For this reason, the analysis and classification procedure must provide truthful and reliable results. Similarly, since in most stores this process involves the movement of a good number of trailers (and, therefore, with potentially long waiting times), it must be carried out quickly and effectively.



The presence of pathogenic fungi of the genus *Botrytis* is one of the main indicators of grape deterioration. It appears during periods of high humidity and heat and produces berry necrosis. The fungus produces harmful yeast toxins (enzyme oxidase lactase capable of degrading phenolic compounds), so the process after fermentation can be complicated by the fungus's competition against yeasts as well as oxidize to existing polyphenols. For this reason, it is necessary to limit the presence of infected grapes, especially in those processes in which there is no manual selection of grapes (for example, in mechanized harvest). In particular, there is a strong correlation between the increase in the concentration of gluconic acid and glycerol due to the metabolism of glucose and fructose in the fungus, which makes it useful as an indicator of the health status of the grape.

Potassium is mobilized from the woody tissue to the berry once the ripening process is completed, making it an excellent indicator of over-maturation. Although potassium is a natural component of grapes, if excessive concentration does not cause the formation of insoluble salts with tartaric acid, there is a significant reduction in the acidity of the wine (increase in pH), which in turn promotes oxidative processes in the must.

Depending on the results obtained, the grapes are classified according to the type of wine to which they will be destined and mark the hopper in which the unloading proceeds. Once in the hopper, the grapes are balanced and the waste (and other elements dragged during harvest, such as leaves and branches) are removed. This process, called destemming, is important because scraping provides a higher content of potassium and tannins (increasing the sensation of astringency and herbaceous aromas).

The berries undergo a slight breakage of the skins and undergo low pressure on the pulp to release the must from the vacuoles without affecting the seeds and the husks, preventing the tannins from being released into the must. The reduction of the mechanical effect produces a must with a low content of colloids and polyphenol oxidase and reduces the presence of herbaceous aromas and essential oils. This fraction (wine yolk) is used to produce wines of the highest quality. The rest of the juice will be extracted by pressing the skins (wine press). The grinding and pressing process is not continuous, but is carried out in several phases for technical reasons (decompaction pressing, minimizing the extraction of essential oils, avoiding the obstruction of the filter channels, ...), so that a follow-up is interesting to separate the different fractions, taking into account that the lower the pressure applied, the higher the quality of the resulting must.

In a white wine, the squeezed to obtain the yolk must (without maceration, or done very briefly in cold (between 5 and 8 °C) continues with a soft pressing phase until all the juice is extracted. In a rosé wine Once crushed, the must is allowed to macerate in contact with the skin for a short time (between 8 and 24 hours, and typically at low temperature), so that a part of the polyphenols is extracted and then the wine is separated from the yolk (emptying) and proceed to pressing. The color index control in this phase will serve as an indicator of the necessary maceration time.

Finally, a red wine, after crushing, the maceration phase is much longer in time (from one to four weeks) and continues after the start of fermentation, since the contact of the must with the skin is maintained for the extraction of phenolic compounds intensified. During this time, the must is properly removed (by mounting and drilling) to ensure that the extraction is optimal. With this procedure, approximately 30-40% of the polyphenols in the grapes are passed to the must. Pressing, much more intense than in the case of whites and rosés, will be carried out after fermentation, even in cycles of different pressures that will give rise to wines of different quality.

The anthocyanins pass into the must from the first moment of maceration, since they are easily removable in the aqueous phase, reaching its maximum value after 6-8 days from its beginning. From that moment its concentration stabilizes. Flavonoid tannins, such as catechins, are extracted from must from the beginning of maceration, but their release occurs much more slowly than that of anthocyanins. During the first days they come from the skins, being more complex and polymerized tannins, with sensations of mild flavor, while, after more than a week, they have their origin in the external integuments of the seeds.

The intensity of color (C) evolves very similar to anthocyanins, reaching a maximum after 6-8 days of maceration. They remain stable during fermentation, to increase again once it is finished due to the polymerization of anthocyanins with tannins, which form stable and colored compounds.

The adequate control in all the phases of selection, crushing, pressing and maceration allows the separation of different must fractions according to their quality level and it is essential that the winemaker organizes the production according to the desired segment of wine, to obtain the maximum profitability of the operation.

KITS FOR GRAPES CONTROL AT RECEPTION

Health state	SY2405	Gluconic
Must quality	SY2404	Glucose+Fructose
	SY2428	Total Sugars
	SY2402	L-Malico
	SY2412	Tartaric
	SY2429	Total acidity (pH 7)
	SY2425	Potassium
Maceration	SY2419	Color
	SY2424	Polyphenols
	SY2414	Anthocyanins
	SY2416	Catechines

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