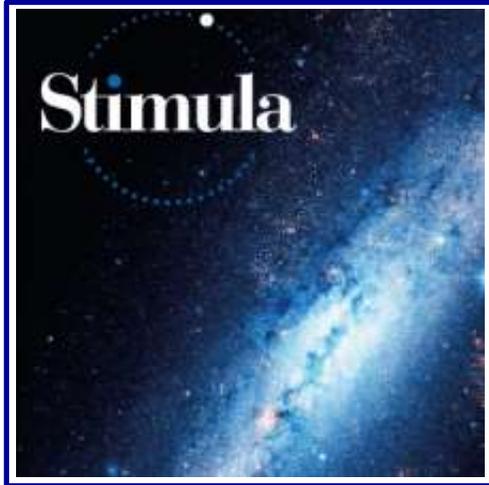


STIMULA™ : Discover new dimension of yeast nutrition

By Lallemand Oenologie



Innovations

Recent research has led to the emergence of new organic nutrients (STIMULA™ Sauvignon and STIMULA™ Chardonnay) which, added to specific moments of alcoholic fermentation, contribute to the sensory profiles of white and rosé wines.

A brief history of yeast nutrition

The [understanding of yeast metabolism](#) and its interactions with its environment has led to significant advances in [the management of alcoholic fermentation \(AF\)](#). A few decades ago, the demonstration of the importance of nitrogen and its moment of intake in case of deficiency marked a real evolution in the improvement of fermentation kinetics. Then understanding the role of certain vitamins, and especially thiamine, in yeast growth has further improved the management of AF. New [formulations of yeast nutrients](#), which are more effective than the mineral nitrogen alone were developed. This was achieved by combining nitrogen in ammoniacal form, thiamine and yeast derivatives. Although fermentation kinetics have been greatly improved due to these developments, there are still important issues, particularly concerning the survival of yeasts at the end of fermentation. Also the management of sulfur compounds associated with "reduction" defects. Thus, the importance of lipids in yeast survival and their physiological state, followed by amino acids and micronutrients (minerals and vitamins) in the yeast metabolic stress, at the origin of production of nauseating sulfur compounds. This new knowledge leads to the development of so-called "organic" nutrients, of 100% natural origin,

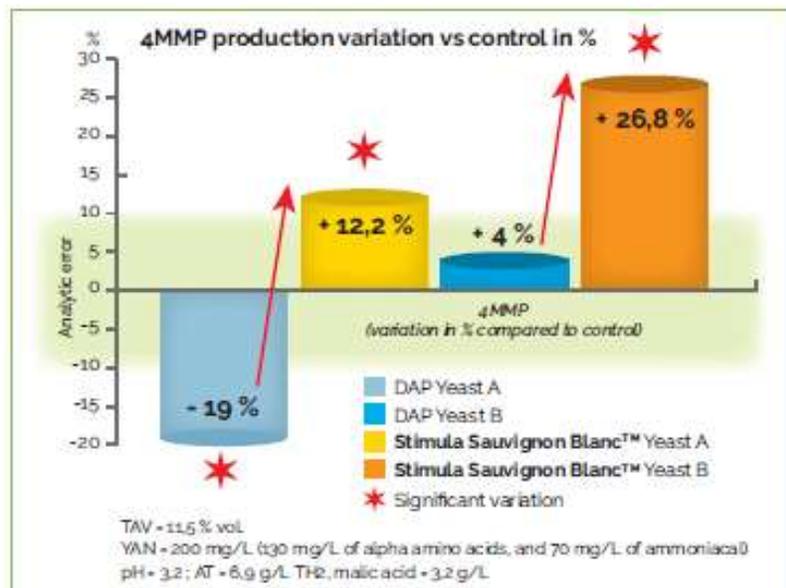
More recently, research in partnership with INRA Supagro Montpellier in particular has highlighted the role of the nutritional environment of yeast on its aromatic metabolism. Indeed, well beyond the simple role of growth, survival and primary metabolic activity related to alcoholic fermentation in the strict sense (transformation of sugar into ethanol), it has been shown that the type of nutrient provided to a yeast directs its secondary metabolism and especially the aromatic revelation.

It then becomes possible to optimize the capacity of a given yeast to integrate certain flavor precursors, then to convert them into varietal aromas and to biosynthesize fermentation aromas. Depending on the composition of these new generation nutrients and their timing of addition, any of these abilities can be stimulated.

Stimula™: a new aromatic dimension for white wines

The effect of adding mineral nitrogen (DAP) was therefore compared to that of these new specific nutrient formulations (Stimula™ Chardonnay and Stimula™ Sauvignon Blanc), at different times of addition during the alcoholic fermentation. The impact of the nitrogen source and the timing of addition were confirmed, resulting in two distinct organoleptic profiles.

- The addition of 40 g / hL of Stimula™ Chardonnay to 1/3 of FA proved particularly beneficial for the production of fermentative aromatic compounds (see Figure 1).
- The addition of 40 g / hL of Stimula™ Sauvignon Blanc at the beginning of AF, makes it possible to optimize the production of varietal thiols (see following figure).



This biosynthetic stimulation of fermentative esters or varietal thiols is correlated with the optimization of two key parameters (see following figure):

The combined action of a specific formulation and a precise addition moment for organoleptic impact optimization

	STIMULA™ CHARDONNAY	STIMULA™ SAUVIGNON BLANC
<i>Optimum moment of addition</i>	1/3 of the AF = end of the growth phase of the yeast: passage of an ester biosynthesis metabolism (secondary).	Beginning of the AF = growth phase of yeast: optimal moment of integration of precursors and their conversion to volatile thiols
<i>Organoleptic Impact</i>	Biosynthesis of fermentative esters.	Optimization of the production of varietal thiols

- a specific formulation, particularly rich in certain minerals and vitamins,
- an optimal addition moment corresponding to a precise stage of yeast metabolism.