

# ALCOHOLIC FERMENTATION MANAGEMENT

**M**any studies show that temperatures are increasing in all the world's viticultural regions. This warming leads to climatic variations, which will lead to complications for the alcoholic fermentation.



## WHAT ARE THE ENOLOGICAL REPERCUSSIONS OF GLOBAL WARMING?

- **Greater proportion** of solid matter in the grape, leading to clarification complications,
- Sugar concentration in grapes, **increase alcohol content**,
- Assimilable **nitrogen deficiencies** leading to issues in creating biomass,
- Competition with indigenous microorganisms due to **increased pH**,
- Decreased rain on berries leading to increased phytosanitary product and copper residues which are **powerful fermentation inhibitors**.

Guiding the fermentation using precision practices and tools is crucial to avoid microbiological and/or faults.



## IMPROVING YEAST IMPLANTATION

**Correct yeast implantation is essential for a successful alcoholic fermentation and for reaching the winemaker's desired outcome.** Knowing the must's initial composition is therefore essential to ensure implantation and act on the limiting factors :

- ◆ Residues of phytosanitary products
- ◆ Low levels of assimilable nitrogen
- ◆ High or low levels of fermentable sugars
- ◆ Low pH

### 1. Correcting nitrogen deficiencies

Assimilable nitrogen is the principal nutritional substrate for yeasts. It helps to **increase their biomass** and **maintain an optimal physiological state** during fermentation. Assimilable nitrogen can be found in two forms: mineral (or ammonical) and organic (or amino).

The level of assimilable nitrogen must be **sufficient to ensure a good start to the alcoholic fermentation**, requiring the musts to be corrected beforehand. According to the type of must, the level of assimilable nitrogen should be between 140 and 230 mg/L Nass.

Correcting the levels of assimilable nitrogen is an important step that should be considered according to the level of deficiency.



### L.A SOLUTIONS

1. *Low nitrogen deficiency: Optiflore® 0® recommended*

- ◆ Organic nitrogen
- ◆ Adds complex elements

→ Nutrition that is sustained over time

2. *High nitrogen deficiency: Vitaferment / Vitaferment PH recommended*

- ◆ Mineral nitrogen
- ◆ Adds ammonium sulfate/phosphate and thiamin (essential nutrient)

→ Instantaneous action, immediately available to yeasts

## 2. Choice of yeast

Yeasts should be chosen according to the winemakers desired outcomes. Lamothe-Abiet has two distinct ranges of yeasts:

- ◆ **LA Range:** versatile yeasts that respond to precise needs.
- ◆ **EXCELLENCE® Range:** yeasts selected for their increased resistance to difficult conditions and adapted to specific requirements (aromatic, ageing, sparkling...).



### EXCELLENCE® XR

- ◆ Powerful wines, with structure and volume
- ◆ Deep respect for varietal typicity
- ◆ Adapted to high potential alcohol and naturally concentrated grapes
- ◆ Low production of volatile acidity and fatty acids that inhibit fermentations. Ideal for carrying on co-inoculated malolactic fermentation
- ◆ High production of polysaccharides: helps to stabilise colour and bring structure



It is highly appreciated for the **volume it adds on the palate**, making it a strain that is widely used for creating **top quality powerful red wines with structure and balance.**

## 3. Respecting the inoculation dosage

The recommended dosages are calculated to enable a large enough yeast population to ensure implantation. Respecting the dosage therefore helps to start the fermentation and to avoid any risks of contamination.

Impact of the inoculation dosage on capacity to finish the alcoholic fermentation  
(Lamothe-Abiet data)

	Non implanted ADY (%)	Unfinished AF
Indigenous	-	2/3
ADY 10 g/hl	20%	5/15
ADY 20 g/hl (recommended dosage)	0%	0/16



## YEAST'S REQUIREMENTS

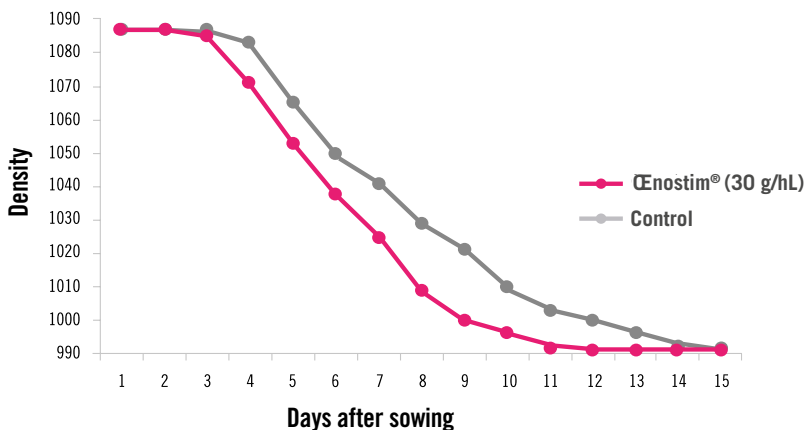
The optimal performance of the yeast's metabolism is guaranteed by the **building of a functional membrane** and the **maintenance of viability thanks to nutrients supplies**. These two points are reached through the rehydration and nitrogen nutrition management stages.

### 1. Rehydration

This is a key step that optimises the start of the fermentation, ensuring the **implantation of viable yeast**. Rehydration products help the yeasts to be in the best conditions to start the alcoholic fermentation.

**Enostim®** is a nutrient made of inactivated yeasts, rich in growth and survival factors. These elements are directly used by the yeasts during rehydration. They help to improve their overall metabolism, including the synthesis of sterols and fatty acids which play a role in maintaining the structural and functional integrity of the cell membrane.

#### ◆ The effect of using Enostim®:



#### ◆ Optimisation of the fermentation kinetics:

- Implantation guaranteed
- Regular and complete AF

#### ◆ Trial characteristics:

Sauvignon Blanc, 2006 ; ABV 13,4 % ;  
TA 4,9 g/L (H<sub>2</sub>SO<sub>4</sub>) ; pH = 3,42

### 2. Managing nitrogen nutrition

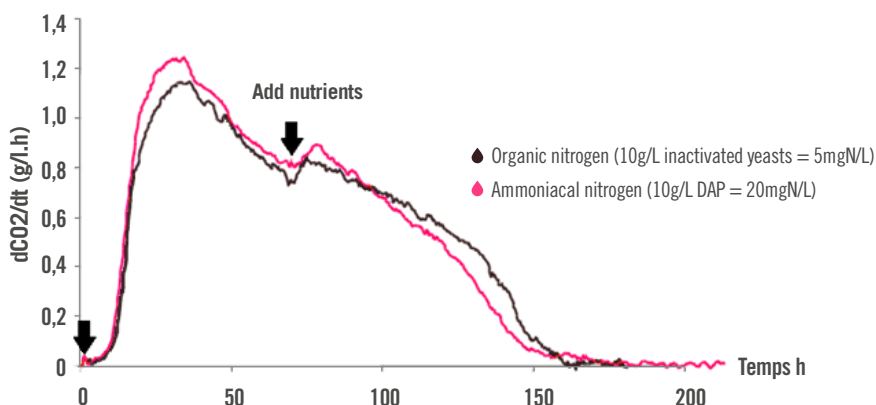
Nitrogen nutrition guarantees correct yeast implantation, complete and regular fermentation kinetics and prevents the formation of undesirable aromatic compounds (volatile acidity, sulfurous off-notes).

#### // To correct a deficiency

**Vitaferment PH®** and **Vitaferment®** are recommended when there is a large deficiency (> 40 mg/L), helping to give a source of mineral nitrogen that is directly assimilable by the yeasts at the beginning of the fermentation. These products also contain thiamin, a cofactor in the pentose phosphate essential for yeast development. At small doses, it helps to prevent the appearance of reductive notes.

#### // For regular fermentations

**Optiflore® 0** is a formulation of inactivated and autolysed yeasts, rich in organic nitrogen. It adds the nutrients necessary to develop yeast biomass and to maintain cell viability throughout, whilst detoxifying the environment.



#### Optiflore® 0 nutrition

#### ◆ Trial characteristics:

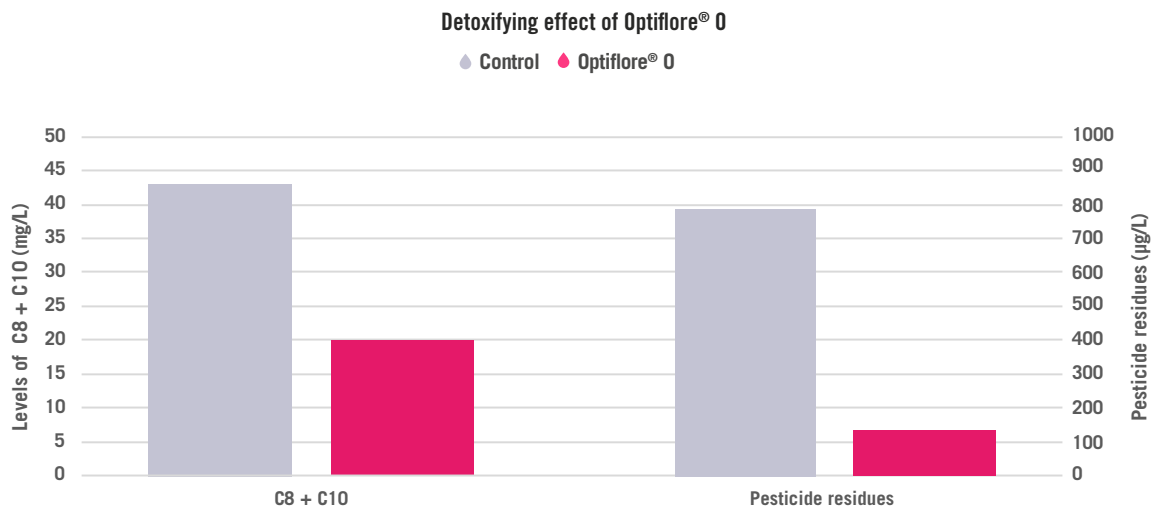
Chardonnay, 220 g/L sugar

◆ An addition of 10 g/hL of OptiFlore® 0 adds 5 mg N/L in organic nitrogen (equivalent to 20 mg/L of assimilable nitrogen).

◆ The amount of CO<sub>2</sub> release is lower than when DAP is added. The end of the fermentation is clearer and less sluggish. Amino nitrogen provides better fermentation efficiency.

## // For detoxification

**Optiflore® 0** has a great capacity to decrease the concentrations of powerful fermentation inhibitors such as inhibitory fatty acids and pesticide residues.



Lamothe-Abiet also offers **Flor'Protect®**, a preparation of yeast hulls specifically produced for eliminating medium chain fatty acids produced by the yeasts in stressful conditions. Their removal helps to avoid sluggish or stuck fermentations.

## **la** GIVE THE BEST CONDITIONS POSSIBLE FOR THE FERMENTATION

Thanks to precise must analyses and Lamothe-Abiet's expertise on fermentation management, you can carry out your vinifications without problems and produce wines that meet your objectives.

It is a priority for Lamothe-Abiet to personalize the technical processes according to your raw material and your specifications. Our technical experts in the field are there to help you.

With its 140 years of experience, Lamothe-Abiet has developed a **decision making app** available on the internet and for smartphones. Using different indicators (assimilable nitrogen levels, yeast nutritional needs, potential alcohol...), this tool helps to precisely calculate the right dosage of nutrients to add.



Download our **CEnoSolutions** app on the AppStore and Google Play Store.

