TECHNICAL BOOKLETS

GOOD MANAGEMENT OF NUTRITION AND FERMENTATION AIDS

LAFFORT

l'œnologie par nature

1- Why use activators during winemaking?

For successful vinification the needs of the yeast must be met. Assimilable nitrogen, vitamins and mineral salts are growth factors which determine the fermentation kinetics. Additionally, sterols and long-chain fatty acids, as survival factors, are elements that are necessary for the successful completion of fermentation.

Amongst the various growth factors yeast assimilable nitrogen (YAN) is one of the most important.The amount of ammonium salts to be added is calculated according to the initial nitrogen concentration of the must and its potential alcohol concentration.
Supplementation to a level of 200 mg/L is mandatory for high potential alcohol musts
(> 13.5 % by volume for red wines and > 13.0 % by volume for white wines),
this amount may be exceeded. (See fig. 2.2)

When the must is markedly deficient in nitrogen (< 140 mg/L), it will also be lacking in lipids. In this case lipid supplements in the form of yeast enhancers (Superstart/ Dynastart) will be required.

2- How is activator supplementation managed during fermentation?

2-1 Properties of the **LAFFORT** activator range

Product Name	YAN delivered by 10 g/hL addition	Growth factors	Survival factors	Physical support
Ammonium phosphate/sulphate	21 mg/L	●●●●●		
Thiazote	21 mg/L	●●●●●		
Nutristart	12 mg/L	●●●	●●●	●
Superstart/ Dynastart	0	●●	●●●●●	
Bioactiv	0		●●●●	●●●

Current legislation allows the use of 100g/hl of ammonium sulphate or phosphate.

NB: The addition of 10g/hL of ammonium sulphate increases the sulphate concentration by 70mg/L. With a few exceptions, the maximum limit of sulphates in wine is 100mg/L (recommendation of the O.I.V.)

2-2 Recommendations for activator supplementation: amounts in g/hL to be added in relation to the following factors: initial yeast assimilable nitrogen (YAN), potential alcohol concentration (PAC) and must turbidity.

VINIFICATION OF RED WINES

Initial YAN	PAC < 13.5% v/v	PAC > 13.5% v/v
YAN < 180 mg/L	Nutristart 20	Superstart/Dynastart 30 + Thiazote 10-20
140 < YAN < 180 mg/L	Thiazote 10-20 + Nutristart 20	Superstart/Dynastart30 + Thiazote 20-30
40 < YAN < 140 mg/L	Superstart/Dynastart 20 + Thiazote 30-50 + DAP[3] 0-60	Superstart/Dynastart30 + Thiazote 40-50 + DAP[3] 0-70

VINIFICATION OF DRY WHITE AND ROSE WINES [2] - Alcohol ≤ 13 % v/v.

Initial YAN	Turbidity < 100 NTU	Turbidity > 100 NTU
YAN < 180 mg/L	Superstart/Dynastart30 + Thiazote[1]	Thiazote[1] + Bioactiv 20
140 < YAN < 180 mg/L	Superstart/Dynastart 30 + Thiazote 20-30	Thiazote 20-30 + Bioactiv 20
40 < YAN < 140 mg/L	Superstart/Dynastart 30 + Thiazote 40-50 + DAP[3] 0-60	Superstart/Dynastart 30 + Thiazote 40-50 + DAP[3] 0-60

[1] Thiazote: 10 to 20 g/hL supplementation depending on the sensitivity of the yeast strain to nitrogen deficiency.
[2] Effect of temperature: when fermentation is carried out at a low temperature (< 15°C) the use of Superstart/Dynastart from 30 g/hL is strongly recommended.
[3] DAP: Diammonium phosphate

VINIFICATION OF DRY WHITE AND ROSES WINES [2] - Alcohol > 13 % v/v.

Initial YAN	Turbidity < 100 NTU	Turbidity > 100 NTU
YAN < 180 mg/L	Superstart/Dynastart 30 + Thiazote[1]	Thiazote[1] + Bioactiv 20
140 < YAN < 180 mg/L	Superstart/Dynastart 30 + Thiazote 30-40	Superstart/Dynastart 30 Thiazote 30-40
40 < YAN < 140 mg/L	Superstart/Dynastart 30 + Thiazote 50-90 + DAP[3] 0-50	Superstart/Dynastart 30 + Thiazote 40-80 + DAP[3] 0-60

[1] Thiazote: 10 to 20 g/hL supplementation depending on the sensitivity of the yeast strain to nitrogen deficiency.
[2] Effect of temperature: when fermentation is carried out at a low temperature (< 15°C) the use of Superstart/Dynastart from 30 g/hL is strongly recommended.
[3] DAP: Diammonium phosphate

Timing of activator addition

Addition of ammonium salts (Thiazote, Nutristart, ammonium phosphate/sulphate)

Supplementation should be carried out in two stages: half should be added initially with the yeast and the other half should be added after a reduction in specific gravity of 20 points.
If the fermentation rate slows or reductive odours (H_2S) develop, further addition of ammonium phosphate is required. Additions should be made at a rate of 10 g/hL as required until reductive characters are no longer produced.

Supplementation with Superstart/Dynastart

Superstart/Dynastart should be dissolved in the water used to rehydrate the yeast prior to addition to the must.

3- How is assimilable nitrogen measured?

Many laboratories offer assimilable nitrogen measurement as a routine analysis. It can also easily be measured with the use of a pH meter (i.e. measurement by formoltitration).

3-1 Measurement by formoltitration

Reagents

- Formaldehyde solution at pH 8.5 (Note: pH must be checked before each YAN measurement)
- 1M NaOH,
- 0.1 M NaOH
- 30% hydrogen peroxide solution.

Appropriate caution must be exercised when handling these reagents. For more information see the relevant documentation at www.laffort.com

Instructions

1. Take 50 mL of clarified must.
(NB: If the must contains sulfites add several drops of 30% hydrogen peroxide solution.)
2. Adjust the solution pH to 8.5 using 1 M NaOH.
3. To the pH-adjusted must add 20 mL of the pH 8.5 formaldehyde solution. The pH of the must will fall in proportion to how much YAN it contains. (NB: The pH of formaldehyde solutions is variable, hence the pH of 8.5 must be confirmed for each analysis series).
4. Wait 2-3 minutes for the pH to stabilise.
5. Record the volume of 0.1 M NaOH solution required to adjust the pH of the must back to 8.5. Let this value = “n”.
6. Calculation

$$[\text{YAN}]\ \text{mg/L} = 28\ n$$

3-2 When to measure the amount of YAN?

Analysis of the amount of YAN allows the calculation of the amount of activator required. The analysis should be performed at inoculation. If the must undergoes pre-fermentation maceration the analysis should be performed at the end of this period.

4- The necessity of careful management of alcoholic fermentation

The alcoholic fermentation must be carefully managed in order to minimize the likelihood of microbial spoilage, particularly from Brettanomyces infection. Successful malolactic fermentations are usually the result of well-managed alcoholic fermentations (see the guide on malolactic fermentation management).

LAFFORT
l'œnologie par nature
B.P. 17 33015 Bordeaux Cedex
Tél : 05 56 86 53 04 / Fax : 05 56 86 30 50
www.laffort.com

SARCO
11 Rue A. Bergès - 33270 Floirac
Tél : 05 56 86 53 04 / Fax : 05 56 86 30 50
www.sarco.fr