

FERMENTATION MANAGEMENT

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A FOCUS ON NUTRITION AND AROMA OPTIMIZATION

In order to conduct a healthy and complete fermentation, yeast require minerals, vitamins, fatty acids, sterols and nitrogen. Minerals, vitamins, fatty acids and sterols are provided by Go-Ferm Protect Evolution™, whereas nitrogen is provided by Fermaid K™ and Fermaid O™. The Stimula range of nutrients can be incorporated into your program to optimize the yeasts ability to enhance thiols and esters in red, white and rosé wines.

To calculate your nutrient additions, based on sugar, yeast strain requirements and your fermentation goal, follow one of the programs below.

1. Choose your yeast strain. Yeast are classified as low, medium and high nitrogen requiring.
2. Determine the measurable YAN requirement of your yeast strain using the table below.

| °Brix | YEAST STRAIN NITROGEN REQUIREMENTS (PPM) | | |
|-------|--|--------|------|
| | Low | Medium | High |
| 20 | 150 | 180 | 250 |
| 22 | 165 | 200 | 275 |
| 24 | 180 | 220 | 300 |
| 26 | 195 | 240 | 325 |
| 28 | 210 | 260 | 250 |
| 30 | 225 | 280 | 375 |

3. Calculate the nitrogen required:
 - a. Nitrogen required (table 1)- Juice/Must YAN = **AMOUNT OF YAN REQUIRED TO SUPPLEMENT** (ppm)
4. Determine fermentation goal for red, white or rosé and followed the outlined program:
 - a. Fermentation security
 - b. Fermentation security and revelation of thiols
 - c. Fermentation security and optimization of esters

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GOAL - FERMENTATION SECURITY

| YAN REQUIRED TO SUPPLEMENT | YEAST REHYDRATION | AT 2 - 3 BRIX SUGAR DROP | AT 1/3 SUGAR DROP |
|----------------------------|---|---|--|
| 0-50 ppm | 30 g/hL (2.5 lb/1000 gal) Go-Ferm Protect Evolution™ | No addition | 30 g/hL (2.5 lb/1000 gal) Fermaid O™ |
| 51-100 ppm | | 20 g/hL (1.7 lb/1000 gal) Fermaid O™ | 20 g/hL (1.7 lb/1000 gal) Fermaid O™ + 12.5 g/hL (1.0 lb/1000 gal) Fermaid K™ |
| 101-150 ppm | | 40 g/hL (3.3 lb/1000 gal) Fermaid O™ | 40 g/hL (3.3 lb/1000 gal) Fermaid K™ |

GOAL - REVELATION OF THIOLS IN WHITES & ROSÉS

| YAN REQUIRED TO SUPPLEMENT | YEAST REHYDRATION | AT 2 - 3 BRIX SUGAR DROP | AT 1/3 SUGAR DROP |
|----------------------------|---|--|--|
| 0-50 ppm | 30 g/hL (2.5 lb/1000 gal) Go-Ferm Protect Evolution™ | 40 g/hL (3.3 lb/1000 gal) Stimula Sauvignon Blanc | 10 g/hL (0.83 lb/1000 gal) Fermaid O™ |
| 51-100 ppm | | | 20 g/hL (1.7 lb/1000 gal) Fermaid O™ |
| 101-150 ppm | | | 40 g/hL (3.3 lb/1000 gal) Fermaid O™ |

GOAL - OPTIMIZATION OF ESTERS IN WHITES & ROSÉS

| YAN REQUIRED TO SUPPLEMENT | YEAST REHYDRATION | AT 2 - 3 BRIX SUGAR DROP | AT 1/3 SUGAR DROP |
|----------------------------|---|---|--|
| 0-50 ppm | 30 g/hL (2.5 lb/1000 gal) Go-Ferm Protect Evolution™ | No addition | 40 g/hL (3.3 lb/1000 gal) Stimula Chardonnay™ |
| 51-100 ppm | | 20 g/hL (1.7 lb/1000 gal) Fermaid O™ | |
| 101-150 ppm | | 40 g/hL (3.3 lb/1000 gal) Fermaid O™ | |

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GOAL- REVELATION OF THIOLS IN REDS

| YAN REQUIRED TO SUPPLEMENT | YEAST REHYDRATION | AT 2 - 3 BRIX SUGAR DROP | AT 1/3 SUGAR DROP |
|----------------------------|---|---|--|
| 0-50 ppm | 30 g/hL (2.5 lb/1000 gal) Go-Ferm Protect Evolution™ | 40 g/hL (3.3 lb/1000 gal) Stimula Syrah™ | 10 g/hL (0.83 lb/1000 gal) Fermaid O™ |
| 51-100 ppm | | | 20 g/hL (1.7 lb/1000 gal) Fermaid O™ |
| 101-150 ppm | | | 40 g/hL (3.3 lb/1000 gal) Fermaid O™ |

GOAL- OPTIMIZATION OF ESTERS IN REDS

| YAN REQUIRED TO SUPPLEMENT | YEAST REHYDRATION | AT 2 - 3 BRIX SUGAR DROP | AT 1/3 SUGAR DROP |
|----------------------------|---|---|--|
| 0-50 ppm | 30 g/hL (2.5 lb/1000 gal) Go-Ferm Protect Evolution™ | No addition | 40 g/hL (3.3 lb/1000 gal) Stimula Cabernet™ |
| 51-100 ppm | | 20 g/hL (1.7 lb/1000 gal) Fermaid O™ | |
| 101-150 ppm | | 40 g/hL (3.3 lb/1000 gal) Fermaid O™ | |

Measurable YAN v. YAN Equivalent

Most academic recommendations for YAN supplementation have been based on measurable YAN, often supplemented in the form of DAP. Lallemand has demonstrated that organic forms of YAN are 4-6 times more efficient than inorganic YAN. This means that a 25 g/hL addition of Fermaid O has 10 ppm measurable YAN but a YAN efficiency or equivalence of 40-60 ppm. Throughout our recommendations this has been taken into account.