



ABCCORK PRESENTS

Nutrients and Wine Yeast: A Working Relationship

Yeast is a living organism and, as such, needs nutrients and energy in order to do the work of turning crushed grapes into the perfect wine. Nutrients are like food-substances that make certain the survival of yeast. Ensuring your wine has the right amount of nutrients helps prevent stuck fermentation and that dreaded rotten egg smell (Hydrogen Sulfide).

Yeast requires three major nutrients:

- **Nitrogen**
Responsible for the production of protein which makes new yeast cells.
- **Oxygen**
Required for fermentation, but especially at the beginning of the process to allow yeast cells to multiply quickly. Oxygen also helps to create lipids in yeast cell walls which protects against any alcohol toxicity that can occur near the end of fermentation.
- **Micronutrients**
These are the vitamins and minerals required by yeast such as: phosphorus, urea, amino acids, pantothenic acid, citric acid, biotin, and yeast hulls. These micronutrients are only needed in small doses.

Yeast nutrients are easily added to your wine. Winemakers can purchase these at their favourite winemaking boutique. Coming in various formats, the most common products/sources are listed below:

- **DAP (Diammonium Phosphate)**
 - Provides Nitrogen at 25g/HL = 50mg/L N
 - DAP addition of 1 g/L provides about 258 mg/L fermentable N.
 - In addition it contains phosphorus.
- **Fermax™**
 - A mix of micronutrients including:
 - diammonium phosphate
 - dipotassium phosphate
 - magnesium sulfate
 - autolyzed yeast.
- **Fermaid (Also known as Fermaid K)**
 - Another micronutrient mix with Nitrogen, Fermaid contains:
 - amino acids
 - sterols
 - yeast hulls
 - vitamins
 - fermentable nitrogen (25g/HL = 25 mg/L fermentable N)
- **Yeast Hulls:**
 - Assists fermentation by using its cell walls to absorb autotoxic yeast byproducts that can slow the process.



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How and When to Add Nutrients

Nutrients should be added slowly over the fermentation period. Here is the suggested usage:

- Before addition of yeast: Add 50% of DAP dose and 33% of Fermax™ dose
- During fermentation: Add the remaining 50% of DAP dose and 33% of Fermax™ dose
- At 12-8° Brix: Add the final 33% of the Fermax™ dose

This method of adding nutrients is recommended since adding a lot of DAP at the start of fermentation may slow the uptake of amino acids by the yeast cells. In addition, if nitrogen is introduced too late the cells cannot incorporate it because of the existence of alcohol. Introducing supplements like Fermax™ or Fermaid K simultaneously can result in too quick a fermentation and a disproportionate uptake and use of nitrogen compounds. Adding nutrients after fermentation is half over may be too late. Yeasts may not use these nutrients because alcohol inhibits their function. Doses should be spaced out over time in order to ensure that your wine receives the maximum benefits from the nutrients.

Proper Dosages

If you are making wine from a wine kit:

- 0.2 to 0.4 grams DAP per litre
- 0.1 to 0.2 grams Fermax™ per US gallon

For example, if you have 22.71 litres of grape juice in your carboy you will need in total 22.71 grams of Fermax and 6 grams of DAP.

Following the addition schedule you would add the nutrients in this manner:

- 11.35 grams of DAP and 2 grams of Fermax™ before adding yeast.
- 11.35 grams of DAP and 2 grams of Fermax™ once fermentation starts.
- 2 grams of Fermax™ at 12-8° Brix.

For a more precise nutrient addition recipe, measure the nitrogen in your must using Formol Titration.

Be sure to always stir your must during the first and last few days in order to ensure a complete fermentation and avoid problems such as stuck fermentation and the rotten egg smell by keeping the yeast high up in the mix.

While a somewhat complex task, the addition of nutrients to your must avoids problems. Your finished wine is more likely to be a true expression of your creativity as a winemaker if you can eliminate the little troubles that can get in your way.



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