

Yeast Nutrients

The appropriate amount of nutrient is absolutely necessary, even critical, for a healthy and complete fermentation. Too little nutrient may result in stressed yeast, incomplete fermentation, residual sugar and spoilage of the wine. Too much nutrient, more than the yeast require, will result in over production of yeast and runaway fermentation which may result in too hot a fermentation temperature and loss of aromatics and flavors. Residual nitrogen may support spoilage organisms post fermentation.

How much nutrient to add to your must depends on how much nitrogen is initially present in the grapes. It is generally accepted that if the Brix is between 23% and 24% the juice would need to have about 250 ppm (mg/l) YAN for a healthy fermentation, and 300 ppm YAN if the Brix is between 24% and 25%. YAN stands for Yeast Assimilable Nitrogen, the form of nitrogen that the yeast can use for cell growth and is measured in parts per million. YAN can only be determined by having the juice tested by a certified lab. Eastern WA grapes often have very low YAN, sometimes less than 25 ppm. The club will be testing some of the vineyards and making the YAN information available to members.

So, if you have 100 pounds of grapes, how much nitrogen needs to be added to the crushed grapes? This depends on the nutrients you are using and the YAN of the juice. The following assumes you are using Fermaid-K nutrient (which is 13% nitrogen) and di-ammonium phosphate or DAP (21% nitrogen).

Let's say for an example the grapes are tested at 50 ppm YAN. You will then need to add 200 ppm Nitrogen (N) for a healthy fermentation at 250 ppm.

The calculation is $\text{YAN (in mg)} = \text{required YAN} \times \text{liters of wine}$

For 100 pounds of grapes (7.5 gallons or 28 liters of finished wine) it follows:

$$\text{YAN (mg)} = 200 \text{ ppm} \times 28 = 5600 \text{ mg} = 5.6 \text{ grams of YAN from nutrient additions}$$

Next, determine how much nutrient and DAP is needed to add to equal 5.6 g of YAN

Using the 80:20 ratio of Fermaid-K to DAP:

$$80\% \times 5.6 \text{ g} = 4.5 \text{ g of YAN coming from Fermaid-K}$$

$$20\% \times 5.6 \text{ g} = 1.1 \text{ g of YAN coming from DAP}$$

Fermaid-K is 13% nitrogen, DAP is 21% nitrogen

To calculate the amount for each, \div grams by %

$$4.5 \text{g YAN from Fermaid-K} = 4.5 \div 13\% = 34.6 \text{g of Fermaid-K}$$

$$1.1 \text{g YAN from DAP} = 1.1 \div 21\% = 5.2 \text{g of DAP}$$

1 teaspoon of Fermaid-K is approx. 4 g and 1 teaspoon of DAP is approx. 3.9 g

Therefore to bring your juice to 250 ppm YAN, you would add

$$34.6 \text{g Fermaid-K} = 8 \frac{2}{3} \text{ tea.}$$

$$5.2 \text{g DAP} = 1 \frac{1}{3} \text{ tea.}$$

Divide these quantities in half or thirds to distribute the dose to the fermenting must. Add nutrients after the lag period, typically 48 hours after yeast inoculation of the must.

It is important to remember that these additions are calculated assuming that 100 pounds of grapes yields 7.5 gallon or 28 liters of finished wine. All nutrient additions need to be added in the first half of fermentation. Below 12% Brix yeast cannot absorb the nutrients thus any residual will only benefit spoilage microbes later on. In addition, note that the higher the Brix of the juice, the more YAN is required. Keep the Brix less than 25% and preferably around 24% for a less stressful fermentation...for you and the yeast.

If you are using other nutrients, substitute these values: Superfood is 7.6% N, Fermaid-O is 6.5% N