

## Clarifying Lab Samples Improves Results

Presqu'ile arose from a penchant for fine wines, an inclination for adventure, and the discovery of Santa Maria Valley's ideal terroir. The estate in Santa Maria includes 73 acres of certified sustainably farmed vineyards on 200 acres where they handcraft Santa Maria Pinot Noir, Chardonnay, Sauvignon Blanc and Syrah and Nebbiolo.

Anna Murphy, a member of the family that owns Presqu'ile, is passionate about the art of making fine wines and the science behind it. The closer the winemaking team gets to all aspects of the process, the more that passion blossoms in their wine. Anna is the lab manager on the winemaking team.



One of the pieces of lab equipment that Anna finds so useful is a horizontal centrifuge.

“Clarifying samples in a horizontal centrifuge prior to testing provides faster and more accurate results. I was referred to the manufacturer of this centrifuge, Raven Environmental Products, by another winemaker in the Santa Maria Valley.” Raven’s centrifuge is used in small wineries but also in the largest wineries throughout the world. To the right is an image of a centrifuge tube with 2014 Sauvignon Blanc after spinning in Raven’s centrifuge. The wine in this picture is in the pre-finishing and pre-filtering stage. Notice the 1.8% solids compacted in the bottom of the tube and the clarified wine on top. A horizontal centrifuge ensures that the compacted solids form a horizontal interface between the supernatant (clarified liquid) and the solids. There is no chance the solids will encroach into the clarified wine or must. Wine or must clarified in the centrifuge is used in many tests throughout the lab. The centrifuge also can be used as a process control to verify fining and filtering effectiveness.



Centrifuge tube marked from 0.2% to 100 % with wine solids in bottom.

These are some of the lab tests that are improved by clarifying samples.

### **BRIX:**

Prior to harvest, the sugar content is regularly checked to help determine ripeness for the perfect time to pick. First, a representative sample is gathered of each vineyard lot and sent back to the lab. In the lab, the grapes are crushed to extract enough juice for the centrifuge. The juice samples are spun for 5 minutes in the centrifuge to separate the solids from the juice. This provides a clarified sample for the density meter used to measure Brix. The meter only requires a couple milliliters of clarified juice to provide an accurate Brix reading. The centrifuge is crucial in this analysis because it is very important to have a clarified sample to avoid clogging or inaccurate readings caused by pulp or small pieces of grape skins from the berries.



Anna Murphy, wine laboratory manger, loads a sample into the centrifuge for clarifying.

### **TITRATABLE ACIDITY:**

Titratable acidity is measured in vineyard samples as well as finished wine using .1N sodium hydroxide, a pH meter and the centrifuge. Samples are collected and clarified in the centrifuge. 5mL of the clarified

sample is added to a sodium hydroxide and H<sub>2</sub>O solution that has been titrated using the pH meter to 8.2. An initial reading of mL of NaOH used is taken. After the clarified wine is added the pH drops and the solution is titrated back to a pH of 8.2. A second reading of mL of NaOH is taken and the difference between the two numbers is multiplied by 1.5 to provide g/L of titratable acidity.

#### **MALIC ACID:**

Malic acid is measured to monitor the conversion of malic acid to lactic acid during secondary fermentation. Samples are clarified in the centrifuge then used with a test kit developed specifically for measuring malic acid concentrations using a spectrophotometer. After a working reagent is prepared from the test kit, 50 microliters of the clarified sample is added and processed through the spectrophotometer to obtain an initial absorbency reading. A trigger enzyme is then added to the reagent and the sample is run through the spectrophotometer again. After 20 minutes a second absorbency reading is taken. Using a formula, these two absorbency readings report the g/L of malic acid in each sample.

#### **GLUCOSE AND FRUCTOSE:**

Glucose and Fructose are measured to determine the amount of residual sugar in the wine. The wine sample is clarified in the centrifuge for 5 minutes, added to a working reagent and then processed in the spectrophotometer. After both readings are taken the numbers are plugged into a formula to calculate g/L of residual sugar in the wine sample.

#### **AMMONIA AND AMINO NITROGEN:**

The goal of these two tests is to determine Yeast Assimilable Nitrogen (YAN) present in the juice pre-fermentation. YAN determines if the must needs any additional nutrients for a healthy wild fermentation. This is when the centrifuge is very helpful as the juice still contains a lot of solids. The centrifuge tube may show as much as 15% solids compacted in the tip. A trigger enzyme is added and a second reading is recorded. Using a formula they are able to accurately determine how much ammonia and amino nitrogen are present in the musts.



The winemaking team at Presqu'île includes Dieter Cronje, Michael Chase, Isaias Flores, Matt Murphy, and Anna Murphy. They all agree that getting real-time lab results has helped to focus their attention on all aspects of wine quality and the health of fermentations which has taken their passion for winemaking to a higher level.

“The additional knowledge gained from our lab is the scientific link between the vineyard and the cellar. And you know what they say, knowledge is power.”  
Anna Murphy.