HARVEST NEWSLETTER

BAKER WINE & GRAPE ANALYSIS

Great new things coming to you from BWGA :

Good Sampling Practices

Things can get hectic once harvest starts, so it's important to have your game plan set ahead of time for what analysis you'll need and when. Avoid wasting time and money by following our Good Sampling Practices for the best way and time to collect samples. For all analysis, please fill sample tubes to the top!

See Keys to Sampling and Critical Points of Analysis on the following page...

Keys to good sampling

In the Vineyard: Don't just pick the pretty clusters when sampling. Clusters should be picked on both sides of the vine, throughout the whole vineyard, in order to get a representative sample for picking decisions. Avoid sampling in the heat of the day or during rain or fog to prevent artificial lows or highs in sugar.

White Must Sampling: Juice sampling should be collected after the grapes have been pressed into tank or vessel (not from the press pan).

Red Must Sampling: Juice sampling should be collected 1-2 days after crushing and after a pump-over or good mix. This allows for raisins to soak (if present), and eliminates pockets of water in the tank.

Barrel Sampling: If testing for a Micro Scan such as *Brettanomyces sp.*, pull from the bottom of the barrel where yeast settles.

Post-Addition Sample: Make sure that the wine was properly mixed before pulling the sample. We often get very high Free-SO_2 numbers, panicking winemakers; only to find out that the SO_2 was not mixed in properly. This can lead to a false high result.

Dissolved Oxygen: Use a clean 750mL bottle. Displace the oxygen in the bottle using nitrogen, argon, or CO_2 before filling full of wine.

Free and Total SO_2: Fill sample container full to avoid any headspace. If there is oxygen present, your analysis could be a false low.

Critical Points of Analysis

Timing	Analysis	Price
Vineyard samples	Brix, pH, and TA (Short Juice Pack)	$27
Juice/Must- harvest	Brix, pH, TA, MA, YAN, K, GF, and VA (Full Juice Pack)	$105
Mid Fermentation	EtOH and GF for potential alcohol	$44
Post Primary Fermentation	Whites: pH, TA, GF, RS, MA, LA, VA, and EtOH (Wine Pack) Reds: EtOH, GF, and MA	$80 $66
During MLF	MA and VA	$33
Post Malo-Lactic	pH, TA, GF, RS, MA, LA, VA, and EtOH (Wine Pack)	$80
Aging	VA and FSO_2	$27
White and Rose	Protein (Heat) and Cold Stability Bentonite Trial (includes two post-add heat stability tests)	$75 Bentonite Trial $22 Heat Stability $33 Cold Stability
Pre-Bottling Post-Bottling	EtOH, VA, Micro Scan, and F/T SO_2 Dissolved O_2 Bottling Sterility	$85 $28 $22

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Welcome Rebecca Chapman!

Trading the rolling hills of West Virginia for those of Paso Robles, Rebecca Chapman joined us this summer as a Lab Chemist at BWGA. Rebecca graduated from West Virginia University with a degree in Biology then went to work in a Molecular Biology lab for the Centers for Disease Control. After developing an allergy--to rats!-- she switched over to public health and clinical research, missing the days of laboratory bench work.

Getting ready to switch to a corporate research position, she took a few months off to do something out of the box and answered an ad for a Harvest Lab Tech at Left Coast Cellars in Rickreall, OR. From that moment on, Rebecca was hooked; instead of heading to the cubicle life, she enrolled in the UC Davis Winemaking Program and headed to New Zealand! The next few years she traveled between hemispheres for harvest and completed her Winemaking Certification as well as WSET Level 2. During a road trip through SLO County last summer, Rebecca discovered the beauty of Paso Robles and is now happy to call it home! We are excited to welcome Rebecca to the Central Coast and look forward to introducing all of you to our newest team member.

Fermentation Tips from Laffort

By Marcy Mallette

The topic I hear the most about in wine research and innovation around the world the past few years is using non-*saccharomyces* strains of yeast for bio-protection and bio-diversity.

LAFFORT
l'œnologie par nature
U.S.A.

EGIDE = Bio-Protection

Known non-*saccharomyces* strains of indigenous vineyard microflora strains that colonize the grape must and out-compete native yeasts that can cause high VA and off-aromas without the risk of fermentation starting. Bio-Protection decreases your use of SO_2, and decreases VA and off-aromas. Use Bio-Protection during cold-soak or anytime there is a delay between harvest and the onset of fermentation.

Alpha = Bio-Diversity

Using a known strain of *T. delbrueckii* yeast to start the fermentation followed by inoculation with *saccharomyces* yeast to mimic the aromatic complexity and mouthfeel of "native" fermentations. Essentially taking the "wild" out of the native ferment while still having the benefits of complexity, and decreasing the VA and off-aromas that often come with native fermentations.

The Laffort Paso Robles Store – located at BWGA – is fully stocked with all your winemaking needs. Call me to set up an appointment to discuss your fermentation goals for this harvest.

M-F 8:30am – 6pm (Saturday 10am-4pm during peak of harvest)

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Measuring Grape Juice Sugars

At the lab we get a lot of questions about sugar and potential alcohol. We would like to take this opportunity to discuss this important concept.

Date	Sample	Brix	GF	Potential Alcohol by Brix	Potential Alcohol by GF
8/28/2018	Cab Sauv	19.2	17.1	10.6	9.4
10/20/2018	Cab Sauv	25.5	25.4	14.0	14.0
11/15/2018	Cab Sauv	30.7	31.9	16.9	17.5

The most common way to measure the sugar in grape juice is Brix, which is a scale developed by Adolf Brix in the late 1880s, originally for the beer brewing industry. The Brix scale, by definition, is an *estimate* of sugar as measured by density. The density measurements are all based on various concentrations of pure sucrose. Grape juice, on the other hand is mostly glucose and fructose sugars (GF), which you as a winemaker are most interested in as those are the only sugars that will ferment to ethanol.

One important fact to remember during the craziness of harvest is that Brix does not always equal GF sugar concentration. Depending on the amount of sugar in the grape juice, Brix can actually vary enough from actual GF to affect your final ethanol concentration.

In the chart above are values from the 2018 harvest for three different Cabernet Sauvignon samples. For these examples, the potential alcohol is calculated using a 55% conversion rate.

The examples above show that when Brix is low, the amount of GF present is overestimated. But when the Brix is high, the amount of GF present is underestimated. Both of these situations can lead to a big surprise at the end of fermentation. As seen above, measuring the GF of your must is often more reliable than relying on Brix for your potential alcohol calculations.

Speaking of Potential Alcohol . . . Potential Alcohol is the amount of alcohol one could theoretically get when all the GF sugar is converted to ethanol. The conversion rate ranges from 55-60%. For example: % sugar X 60% = % ethanol

Why theoretically? Here are some things that happen when predicting potential alcohol…

If you get higher alcohol than expected:

- Must was not fully mixed before the sample was pulled for pre-fermentation analysis
- Brix was relied on for calculating potential alcohol, rather than GF for high sugar grape juice
- You did not account for raisins that release sugar only after rehydrating

If you get lower alcohol than expected:

- Open top fermenters
- High temperature fermentations
- Poor nutrition for yeast

Harvest time can be a stressful, exhausting, exhilarating time. With a bit of knowledge in your toolbox, you can become a wizard at predicting your final alcohol and possibly dodge a stuck fermentation. Maybe you can win the office pool!

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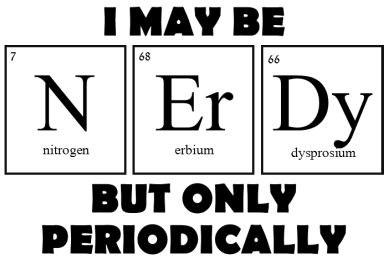
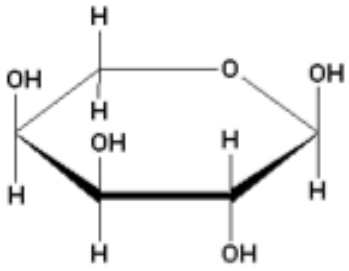


Back in July, Brenda gave a presentation hosted by the PRWCA which covered a variety of topics that we will briefly summarize here. For the full presentation, go to the Educational Resources section of pasowine.com. Be sure to put your Chemistry hat on for this one!

Residual Sugars

These are sugars that are left over at the end of primary fermentation and are composed of glucose+fructose and other non-fermenting sugars. Both glucose and fructose are 6 carbon sugars and ideally have a 1:1 ratio at harvest. According to the Sweetness Index, fructose is more than twice as sweet as glucose. It's possible to have two stuck wines with the same RS, but because of the amount of glucose or fructose present one will taste much sweeter than the other. In the example below, Chard 1 is going to taste sweeter because of the amount of fructose:

Sample ID	RS g/100mL	Glucose g/100mL	Fructose g/100mL
Chard 1	1.92	0.06	1.56
Chard2	1.92	0.79	0.83



Arabinose

Sucrose is normally found in grape juice in negligible quantities (approximately 0.2 g/100mL) and is a molecule with one glucose and one fructose bound together. Yeast have the enzymes to break sucrose into glucose + fructose which then ferments. There are un-fermentable sugars which are mostly 5 carbon pentoses such as Arabinose, Xylose, and Ribose which may serve as energy sources for bacteria, but not yeast. The non-fermenting sugars is why your RS% result can often be higher than your GF result.

Tartaric Acid + Malic Acid ≠ Titratable Acid

First it's important to recognize that your Total Acids are the sum concentration of ALL weak acid anions found in wine. Titratable Acidity (presented on BWGA reports as 'TA') is the total available hydrogen ions from weak acids and is a predictor of how the weak acids in wine impact flavor (sourness). Your total acids in wine does not change, but the titratable acidity does. A wine with a low pH will have lots of hydrogen ions to pull off the weak acids, and a wine with a high pH will not have as many hydrogen ions to pull off of the weak acids. Therefore, the available hydrogen ions to titrate depends on the starting pH.

If your brain doesn't hurt yet and you want to discuss any of these concepts further, come on in anytime to Shop Talk with the Doc!

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HARVEST
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Top 10 Must Haves for Harvest Season

10 *Al Pastor Tacos*

9 *A dry change of clothes*

8 *Caffeine and more caffeine*

7 *BWGA Harvest T-Shirt*

6 *Fructophilic friends (Go yeast!)*

5 *Interns that have no social life and require little sleep*

4 *A dog/child/spouse sitter*

3 *Four more hours of sleep*

2 *A psychiatrist on speed dial and/or a tub of Red Vines*

1 *Beer and more beer*

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