



BAKER WINE & GRAPE ANALYSIS



Welcome, Stephan!



We are happy to introduce our newest member of the BWGA team, Stephan Brown! Stephan joined us in August, just in time for harvest, and is a fantastic addition to the crew! With a degree in Biochemistry from Fresno State in 2021, his first job out of college was not in a winery but as an Analytical Chemist in the volatile chemical

department of a lab contracted by the US Department of Defense.

Stephan's hobbies include traveling and cooking. He's been to West Africa, Italy and South America and is looking forward to his next big trip to either Germany or Thailand, although he's not sure which country he'll visit first. He grew up cooking with his

Great-Grandmother and that is something he has not let go of; his most famous dishes include gnocchi, mac and cheese and baked ziti. Stephan grew up in Paso Robles and is excited to be back in his hometown and part of the prestigious wine industry it is known for. Please join us in welcoming Stephan!

VA Reporting

Industry standards have changed regarding volatile acidity and are now based on acetic acid rather than cash still distillation. While the cash still was the standard for many years (it's now viewed as a lab dinosaur!), enzymatic analysis of acetic acid is much more accurate. When comparing acetic acid to cash still results, the acetic acid results tend to be a little lower than a cash still VA because the cash still can pick up a few other volatile acids in addition to acetic acid. Acetic acid is responsible for over 93% of the volatile acids in wine.



What does this mean for your results?

The header on reports is different:
Old: VA g aa/100mL
New: VA (acetic) g/100mL
When you request a VA from us, we will report it this way.

RS or GF – Which Should I Request?

GF stands for **Glucose** and **Fructose**, which are the fermentable sugars. They are the only sugars that can be converted to ethanol; once GF is less than 0.1 g/100 mL, the wine is considered dry and will not produce any further ethanol by primary fermentation (but you can increase your alcohol concentration without adding spirits – that's another topic).

RS is **Residual Sugar**. This includes GF and also other nonfermentable sugars such as the pentoses (arabinose, xylose and ribose), sucrose, rhamnose, and under certain circumstances, galactose. These nonfermentable sugars will not convert to ethanol, but they do have a perception of sweetness (see chart). Fun fact: an acidic wine will have lower sweetness perception than a less acidic wine – even if they have the same RS. If you want to increase sweetness perception, lessen the acidity of the wine.

So... if you want to verify that your wine has completed primary fermentation and is "dry," then request GF.

If you are concerned about sweetness

Sugar	Sweetness Relative to Sucrose
Sucrose	1
Ribose	0
Arabinose	0.5
Xylose	0.7
Rhamnose	0.33
Galactose	0.65
Glucose	0.8
Fructose	1.8

perception, say for example, you are submitting your wines for a competition, then request RS (GF \$25; RS \$25).

But what about increasing alcohol in your wine without adding anything?

It has to do with barrel aging conditions. If barrels are stored in low humidity conditions, water will evaporate out of the barrel, thus concentrating the alcohol. Just make sure you stay on top of topping.



Lab Equipment

With each year that goes by, we are always doing our best to keep an eye out for new and improved lab equipment. When the lab first opened in 2002, much of our analysis was done with wet chemistry. While those are solid methods, they are time consuming, slow, laborious and expensive.

Over the years, we have been able to transition our analyses to using state-of-the-art equipment. This brings you accurate results in a very efficient manner.

During 2022 we purchased a second automatic enzymatic analyzer (say that 10 times fast!) so that we can handle the busier days in the same speed you have grown accustomed to. Instrument validation is a slow and thoughtful process here at BWGA, and in order to pass our entrance tests this new instrument ran over 400 samples. Those same samples were also run on our current



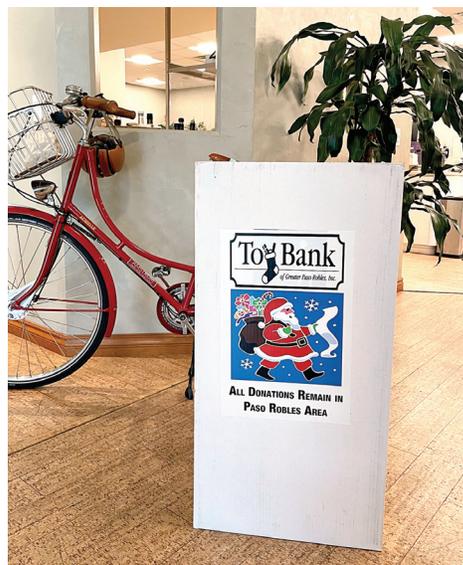
instrumentation, making over 800 data points to be reviewed before the new instrument was approved.

Software on instrumentation is also shifting and some equipment is now accessed via the cloud. While we still physically load the samples at the instrument, being able to view results and instrument status from anywhere has become a time saver. The other benefit of this advancement is that we no longer have to manage the version of software our

computers are running in relation to the instruments that are connected to them. This technological advancement for lab instrumentation is akin to when we transitioned to sending faxes digitally. Faxes?! Talk about dinosaurs...

Early next spring we will be reviewing an automatic pH analyzer. Some of you may be familiar with Mettler Toledo's pH/TA analyzer. It is top of the line in the industry, but this unit has not been one we want to use in our lab due to the sample volume required and because we do not need the TA portion of the instrument. We have come across a stand-alone robotic pH machine (often used in the Biotech industry) that requires as little as 0.50mL and will make us even more efficient. This unit will go through rigorous testing before it is approved for daily use and we are already getting excited about building the spreadsheet!

Holiday Toy Bank



It's time for the annual Toy Bank of Greater Paso Robles toy drive. Please bring in unwrapped gifts and help us fill our giant toy box in the lobby! Gifts must be donated before Wednesday, December 7, to ensure Santa has time to fill the sleigh. Thank you for continuing to support your youngest community members in this fun and joyful way!

Winery Wintertime Word Search

Find the word in the puzzle.

Words can go in any direction. Words can share letters as they cross over each other.

alcohol
coldstable
fermentation
heatstable
rain
spirits
beanie
cozy
filtration
holidays
rest
stuck
blending
dormant
frost
pruning
rubberboots
trials



Answer on next page

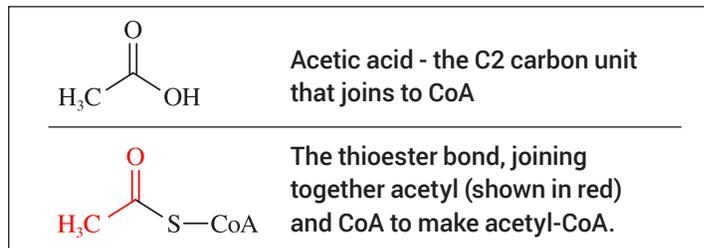


Quick Answers to Common Questions: Harvest Oddities

1. Why was my juice VA high but my wine VA normal?

Some high juice acetic acids do not translate into high wine acetic acids. Fun fact: some specific yeast strains can use acetic acid to produce acetyl-coA. Acetyl-coA can be utilized for lipid or steroid production which further aids in happy yeast

(and happy ferments). Again, this does not apply to all yeast strains, but if you see it happen in your winery, now you know! (VA \$13; Acetic Acid \$25)



2. Why was my alcohol lower (or higher) than expected?

Brix is a measurement of soluble solids, only an estimate of the actual sugar content. Also, only fermentable sugars (glucose and fructose) are converted into alcohol. Alcohol is dependent on fermentation conditions as well as yeast/grape/nutrient properties. (Potential Alcohol \$60, includes Alcohol, Glucose/Fructose and conversion calculation)

Lower Alcohol	Higher Alcohol
Sugar converted to energy for yeast growth instead of into alcohol	Hot years = higher solids to skin ratio (raisins) makes juice difficult to assess for true sugar content
Non-Saccharomyces yeast	Some strains of Saccharomyces yeast
High fermentation temperature	Low fermentation temperature
High surface to volume ratio tank	Low surface to volume ratio tank
Aeration	
Alcohol vapor lost to environment during fermentation	Closed-top tank traps alcohol vapors

3. When should I check my fructose?

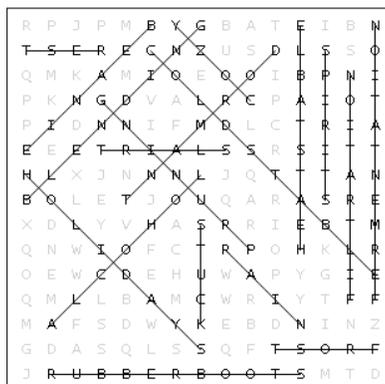
Sugars (hexoses, glucose, fructose) are in equal proportions in mature grapes. Higher levels of fructose are found in overripe fruit. During fermentation, most yeasts prefer glucose and use it up first; many stuck/sluggish fermentations have a high fructose to glucose ratio. If you are experiencing a stuck/sluggish fermentation, you may need to check for separate glucose and fructose levels. A fructophilic yeast may be needed to finish to sugar dryness. (Glucose \$30, Fructose \$30)

Congratulations to Rebecca!

After months of tasting and studying, Rebecca successfully sat for her Wine & Spirit Education Trust (WSET) Level 3 Award in Wines. The WSET Level 3 Award is designed for wine industry professionals and is an advanced level qualification covering many aspects of grape growing and winemaking. Join us in congratulating Rebecca for passing with distinction!



Answers to Word Search



Sensory Corner: The Tale of Two Harvests

The Harvest of 2022 was one of the most rewarding and challenging... depending on which wave of harvest you are referring to. Grapes picked before the record heat wave and grapes picked mid-season (that survived the heat wave) were fantastic. Grapes (or raisins) picked right after the heat wave or at the end of the season were not as fantastic. Challenging fermentations stress out yeast and can leave you with a stinky wine. The good news is that these are often easy to fix with a little copper and/or ascorbic acid.

Sulfide compounds can be classified into three main categories with different off-aromas:

- **Hydrogen Sulfide (H₂S):** rotten egg, gas
- **Mercaptans:** cabbage, garlic, onion, rubber
- **Disulfides:** onions, cooked cabbage, burnt rubber

Baker Wine & Grape Analysis can do an aroma diagnostic test to determine what type of reductive compounds are present and the appropriate course of action by conducting a Sulfide Detection Trial.

H₂S and mercaptans can be treated with copper sulfate alone, but disulfides first require an ascorbic acid addition to break the disulfide bond that can then be treated with copper.

The Sulfide Detection Trial determines if ascorbic acid is necessary, and the level of copper sulfate needed. Sample size is 750 mL — \$55.

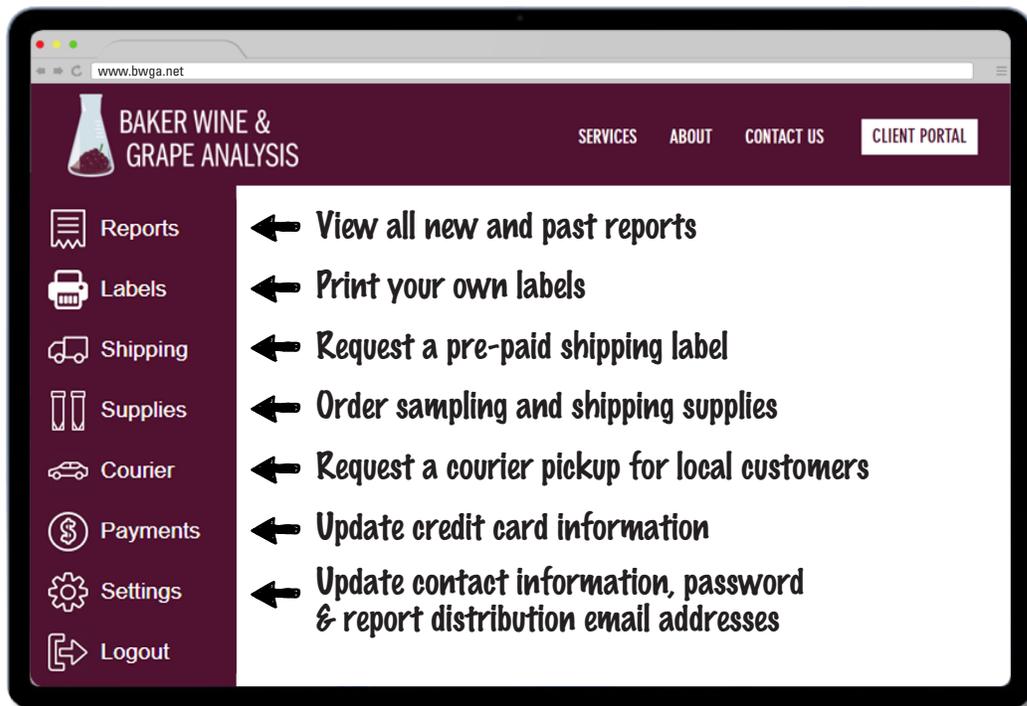
Have you added copper sulfate to your wine? BWGA can test for copper to ensure that you are under the 1.0 ppm copper legal limit for bottling. Sample size is 50 mL — \$30.



Running Early or Late?

Leave your samples in the **BWGA drop box** anytime outside of our normal business hours!
To access the drop box just open the utility closet at the left of the main doors.

Client Portal



The screenshot shows the Client Portal interface on a tablet. The top navigation bar includes 'SERVICES', 'ABOUT', 'CONTACT US', and 'CLIENT PORTAL'. A sidebar on the left lists various services: Reports, Labels, Shipping, Supplies, Courier, Payments, Settings, and Logout. The main content area lists several actions available to users:

- ← View all new and past reports
- ← Print your own labels
- ← Request a pre-paid shipping label
- ← Order sampling and shipping supplies
- ← Request a courier pickup for local customers
- ← Update credit card information
- ← Update contact information, password & report distribution email addresses

Referral Rewards



**Spread the word,
reap the rewards!**

Who do we love? You!

And you, our customers, are our most valuable referral source.

As a token of our appreciation, **any new customers that you refer to BWGA will earn you a reward of \$100** in lab analysis.

Just make sure we know you sent them.