Portland Winemakers Club

February 2021

"Bill's Meanderings"

Monthly Events

January, 2021
Annual Gala CANCELLED

January 20th, 2021
Speaker, Mike Smolak,
ZOOM VIRTUAL MEETING

February 17th, 2021
Speaker, Syncline, James Mantone, Rhone varietals
ZOOM VIRTUAL MEETING

March, 17th
Speaker, Tyson Crowley from Crowley Winery, Pinot & Chardonnay
ZOOM VIRTUAL MEETING

April 21st, 2021
Speaker
ZOOM VIRTUAL MEETING

May 19th, 2021
To be determined
ZOOM VIRTUAL MEETING

June 16th, 2021
To be determined

July, Annual Picnic
CANCELLED?

July 21st, 2021
To be determined

August 18th, 2021
To be determined

September, 15th, 2021
To be determined

October 20th, 2021
To be determined

November 17th, 2021
Crush Talk

December 15th, 2021
Elections, Planning for Next Year, More Crush Talk

Got a little bottling done the other night. 97 bottles of 2018 Estate Cab Franc

Greetings all,

We had another Zoom meeting and this time we actually had a presentation. Long time club member and fellow wine maker Mike Smolak gave a talk on Port wine making. If you missed it you missed a very entertaining talk on a type of fortified wine that was quite informative. We actually have presentations lined up for at least the next two, maybe three, meetings and we have Jon Kahrs to thank for working at putting that together. It was also announced that Jon will be this years recipient of the annual Marge Vuylsteke Member of the Year award. Jon was recognized for his work on organizing the Zoom meetings for almost a year so far and for his dedication for help to keep the club going in these times.

And in other news, there's talk getting started that there is a chance there will be a State Fair or some semblance thereof that may include a wine competition. We, the wine club, have an inside mole that is slipping us first hand info. So don't drink all of your best wines on these cold COVID nights, save some for the competition.

Like I said, we have some great presentations from esteemed wine makers coming up so tune in to our next Zoom meeting on Feb 17th.

Stay safe, … Bill Brown

Drink Responsibly. Drive Responsibly.

Upcoming events / Save the date

Club Meeting: The next meeting is scheduled for February 17th, "Zoom" sign in will be at 6:45 pm. This will be available on any device that can connect to the internet and has a camera and speaker capability such as a computer, iPad or smart phone etc. Jon Kahrs will again be the moderator. We will provide further sign in information and other details by e-mail prior to the meeting.

Agenda: Speaker: **James Mantone,** *Winemaker, Vineyard Manager, and Co-Founder of Syncline Wine Cellars.*

Website: http://portlandwinemakersclub.com/

January Zoom Meeting Minutes

Present: 16

- **Dues for 2021 will again be $25 for the calendar year. Ken will send and e-mail to all members to remind them they are due. Payment should be made to Treasurer Barb Thomson by check or by Pay-Pal.**
- Kyle Wilson has offered to pick up our website management responsibilities if needed. Some training may be required. Ken will talk with Alice to see if she wants to continue in that roll.
- Member **Mike Smolak** was our speaker for the evening. Mike makes Port along with his other still wines using the "Solara" style using various red grapes. Mikes' Power Point slides are attached to this e-mail.

Bill presented the newly coined **"Marj Vuylsteke Member of the Year Award"** to **Jon Kahrs** for club education and superior Zoom meeting management during our 2020 Coronavirus year.

Jon Kahrs & Mike Smolak recommend the site, "VinCalc", at https://www.musther.net/vinocalc for a whole list of plug in the numbers type calculators for just about everything to do with winemaking.

Our Treasurer, Barb Thomson reminds everyone that February is Dues paying time.

Our Treasurer Barb Thomson says It's that time for paying PWC yearly dues. Club members can either send a check to my home address, or pay by PayPal.
Dues is $25/person for the 2021 calendar year.

Pay by snail mail:
Make checks payable to Portland Winemakers Club
Send to:

PWC c/o Barb Thomson
14340 SW Lisa Lane
Beaverton, OR 97005

Pay by PayPal:
Use the PayPal Personal app to send money to my email address, which is: bt.grapevine@frontier.com

Thanks,
Barb Thomson -- PWC treasurer

Winemaking and Residual Sugar

Prepared and Presented by:
Frank Schieber, Amateur Winemaker MoundTop MicroVinification
Vermillion, SD www.moundtop.com schieber@usd.edu

Outline:

Residual Sugar

Verifying end of alcoholic fermentation.
Quick & reasonably accurate determination using *Clinitest* tablets.
Stabilization of "sweet" wines using potassium sorbate. (*Caveat emptor*: Friendly warning about commercial "wine conditioner")

Residual Sugar (RS)

•**Definition** The concentration of sugar remaining after fermentation is allowed to "finish".
•A "dry" table wine will finish with 0.1-0.3% RS
•It's considered to be "dry" because the residual sugars are non-fermentable (i.e., pentose sugars)

Categories of Wine Sweetness

Dry White	0.1 – 0.2%	1-2 g/L
Dry Red	0.2 – 0.3%	2-3 g/L ***
Off-Dry	1.0 – 3.0%	10-30 g/L
Sweet	> 3%	> 30 g/L
Port/Sherry	5-15%	50-150 g/L
Dessert/ Ice wines	10-20%	100-200 g/L

Risk of Refermentation in the Bottle

•If fermentable sugars (~0.5% or greater) and yeast remain in your wine, a second fermentation is likely to occur (Unexpected fizzy, yeasty wine upon opening).
•Viable yeast populations in "finished" wine are highly variable and require careful microscopic analysis to quantify (Usually unavailable to the small winemaking operation).
•Filtration at 1 micron (or smaller; absolute) is necessary to remove 99% of viable yeast. This is difficult to achieve without expensive filtration equipment.

Accurate Measurement of Residual Sugar Level

•The estimates of sugar remaining at the end of fermentation obtained via hydrometer or refractometer are NOT ACCURATE ENOUGH for the determination of trace amounts of residual sugar that could lead to an unwanted refermentation.

•Clinitest Tablets

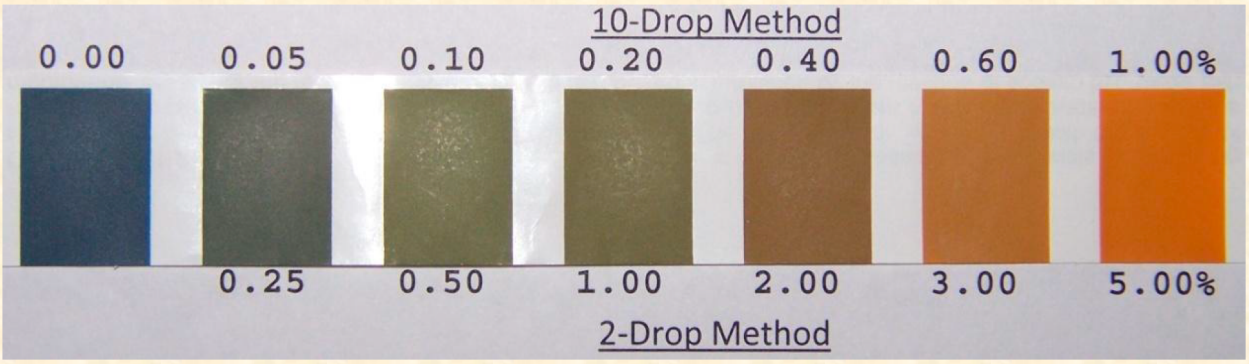
(developed for testing the sugar content of urine in diabetics) provide a fast, inexpensive and accurate means for measuring residual sugar levels of wine. The tablets contain copper and self-heating compounds that react with sugar. The color of the product produced by this reaction is related to the amount of sugar in the wine sample.
•Precision level = 0.1% RS

Clinitest Procedure

•**Apparatus**:
Clinitest tablets, large-format test tube, eye dropper, Clinitest color chart, distilled water.

•**Procedure**:
1) Add 10 drops (0.5 ml) of wine sample to a test tube 2) Drop 1 Clinitest tablet into the same test tube. 3) Observe heat-producing reaction and wait for it to finish. (Gently shaking in circular motion) (Caution: HOT) 4) Match final color of test tube contents to Clinitest color chart to determine % sugar level.
(If brownish "pass thru" occurs the % sugar exceeds 1% and you must retest using a 1:5 dilution)

Clinitest Procedure Clinitest Color Chart (Facsimile)



Warning:
Don't use photocopied, scanned or online copies of the Clinitest chart since the colors will probably not be accurately reproduced. An accurate chart is supplied with each bottle of Clinitest tablets.

Potassium Sorbate Stabilization of Sweet Wines

•If residual sugar exceeds the "dry" level, any viable yeast cells remaining in the wine can be inhibited using sorbic acid.
•Obviously, "back sweetened" wines will need to be stabilized with a yeast inhibitor also.
•Amateur winemakers can add sorbic acid to their wine via a granular white compound called potassium sorbate (aka K-Sorbate).
•Sorbic acid does NOT kill viable yeast cells. Instead, it INHIBITS their reproduction by interfering with their ability to "bud off" daughter cells.
•Sorbic acid does not kill most forms of bacteria. Hence, it is NOT A SUBSTITUTE FOR FREE SO2
•The amount of potassium sorbate needed to inhibit yeast reproduction depends upon several factors, including **pH** and **%alcohol** level.
•Increases in **pH** from 3.0 to 3.7 are accompanied by a reduction in the proportion of "molecular" sorbic acid from 98 to 93%, respectively.
•Hence, the role of **pH** can be ignored for wines with pH <= 3.7

The amount of molecular sorbic acid available for yeast inhibition increases significantly as **%alcohol** increases from 10 to 14%. Hence, the minimum required sorbate dosage is highly dependent upon the level of alcohol.

Alcohol (%)	**Sorbic Acid Req'd (mg/L)**
10	150
11	125
12	100
13	75
14	50

(Source: Peynaud, 1980)

Potassium Sorbate Dosage

•K-Sorbate contains **74% sorbic acid** (by weight) when dissolved in water.
•**K-Sorbate req'd (mg) = (Sorbic acid req'd (mg/L) * gallons of wine * 3.785 L/gal) / 0.74**
•The sensory threshold ("bubble gum") for sorbic acid is approximately 150 mg/L (Margalit, 1996).
•Legal max. = 300 mg/L.
•Caution: "Geranium leaf" fault if MLF occurs in a sorbated wine.
•Warning: Avoid the use of "**Wine Conditioner**" products (sugar confound; limited shelf-life)

What could cause the acid levels in my wine to rise as it ages?

Rodney Holder /Alison Crowe

Q I have been making wine from fresh grapes such as Chambourcin, Champanell, Mustang, Muscat Blanc and Blanc du Bois. My situation is that the total acidity (TA) rises during the aging process. For example, I start out with pH of 3.6 and TA of 6.5 and after eight months I will have a 3.1 and 11.0. I am not adding acid, only racking and adding SO_2. What could be causing this? Also, why does water have a pH of 7.0 but distilled water has a pH of 4.0 to 5.0 and a TA of 0?

A First, let's look at your question about the pH of water. We all learned in high school chemistry that water has a pH of 7.0, which is totally neutral, neither acidic nor basic, on the pH scale. When measuring the pH of water in the real world, say in streams, lakes or even distilled water, the pH can be anywhere in the neighborhood of 5.0–8.0, a far cry from "totally neutral."

The problem is, pure liquid water is extremely rare in the natural world. The pH of water in our daily lives is affected by many things from dissolved minerals and organic matter (like water-borne microorganisms) to dissolved gasses. This is, in fact, the main source of acidity in distilled water, which, as you correctly mention, can often have a pH of 5.0–6.0. Distilled water likes to react with carbon dioxide in the ambient environment at typical atmospheric pressure levels and will trap carbon dioxide molecules, dissolving them and essentially turning "pure" distilled water into a weak solution of carbonic acid.

"Doesn't that mean that when I run my TA analysis at home I will get an erroneous result because I'm actually adding acid in the form of my water?"

Before I cause you unnecessary panic by answering "Yes" (which is the technically correct response, by the way), I'll calm you down by telling you that boiling your distilled water helps drive out most of the dissolved carbon dioxide.

To be even more sure that you're starting your titration free of interference from acidified water, it's important to add a few drops of dilute NaOH (0.01 M) to the 100 mL or so of water that you use to run each TA analysis. If you're using a phenolphthalein indicator, add your indicator to the water and add the dilute NaOH until you barely see the water turn pink. This is now your endpoint — when you add the wine sample be sure to titrate back to that same pink color. **If you use a pH meter to indicate when your titration has reached the endpoint of 8.2 pH, (what I recommend, especially since red wine is almost impossible to test using the phenolphthalein method) again, add dilute NaOH to get your water to read 8.2 pH.** It's all right to over-run this endpoint in the water, as the solution at this juncture is unbuffered and a reading of 8.2–8.7 won't significantly affect the final answer. However, when you add the wine sample to the 100 mL of your adjusted water and then titrate it, it is critical to try to get back to 8.2 (or your colored endpoint) as accurately as possible. This is important because the solution is now buffered by acid and small errors in the amount of titrate added will greatly affect the final reading.

The above obviously bridges us into your larger concern — that of a wine's acidity seeming to increase over time. In my experience, it's not uncommon for a red must's TA to climb during fermentation. My viticulturist friends tell me that in some varieties, and especially in specific years, the grape tissues will selectively sequester and then release some compounds before others during fermentation. In fact, this year I had some Cabernet Sauvignons from California's Paso Robles area that came in with a TA of 0.40 g/L, but as the fermentation progressed the TA climbed up to 0.65 g/L, a more typical number. I have never seen, however, a wine's TA in-crease as drastically as you mention during the aging process — which leads me to think that the problem is analysis errors or that there is acid getting into your wine in a way that you are not aware of.

For starters, let's revisit the above information about properly performing a TA and point out things that can skew the result. Make sure that not only your distilled water but also your wine sample are thoroughly degassed as dissolved carbon dioxide in the wine sample will give an erroneously high TA. Wine samples are usually degassed using a vacuum aspirator – if you don't have access to a lab with this set up, the best way to degas at home is to let the sample come to room temperature (carbon dioxide is more soluble at cooler temperatures) and shake vigorously, "burping" your sample bottle repeatedly. If your wine is fermenting you must freeze the sample to knock down any yeast activity before you degas.

Another thing that often contributes to a bad TA result is an old chemical reagent. It's normal for the NaOH solution with which we titrate to weaken over time so for this reason, it's important to standardize the reagents yourself or buy fresh, pre-standardized ones from reputable laboratory supply companies. If you're using an NaOH solution that is weaker than you think it is, this could explain the apparently high TA — it will take more of a weak NaOH solution to titrate the same wine to achieve the target endpoint.

With respect to your pH, most errors come from the following few sources. A common culprit is failure to calibrate the pH meter often enough. **You really ought to calibrate your equipment daily or at least before each time you use it.** Another source of error is calibrating the pH meter with old, off-concentration buffers. **The pH 4.0 and 7.0 buffer solutions for calibration will chemically change and become unusable in two to three months,** so always make sure you have fresh buffer. Storing the buffers covered away from light and heat, as well as never pouring any buffer you've used to calibrate the pH meter back into the mother storage bottle, will go a long way towards keeping the buffers sound and contaminant-free. Another big source of pH meter fallacy is not following the specified use and storage instructions for your particular instrument. **pH probes are some of the most delicate pieces of equipment in the lab** and need exacting care and attention in order to function at their best.

If you feel you've ironed out your lab bugs and still don't know where your higher acids are coming from, take a hard look at your winemaking practices post-fermentation and see if some rogue acid could be making its way into your wine through unforeseen avenues. Do you rinse your equipment with a strong citric acid and sulfur solution and then neglect to rinse out the containers adequately before filling them? Do you use an acidic storage solution for your barrels that could seep into the wine once they are filled for aging? Is there a possibility that the SO_2 solution you're adding to the wine when you rack has been mixed up with another solution you use for sanitizing? Many prepared SO_2 sanitizing mixes have ascorbic, citric or tartaric acid added to them to help the SO_2 be more effective (more antimicrobial molecular SO_2 is available at lower pH levels). Also, if you add SO_2 to your lots in tablet form, check the composition of your particular brand. Some tablets are a blend of sulfur dioxide and ascorbic acid (added to make the SO_2 more effective).

Lastly, take a close look at your wine's VA (volatile acidity levels). Post-fermentation, certain microbes can metabolize various compounds in wine (ethanol, for one) and turn it into acetic acid, or vinegar. Typical increases in VA during primary and secondary fermentation are anywhere from 0.02 g/L to 0.075 g/L and will be reflected in your total acidity (TA) analysis. Though it's unlikely to happen (as one would tend to throw wine out that becomes this bad), it's possible for a wine that is really high in VA to contribute as much as 2.0 g/L to a wine's total acidity. You've got quite a rare and interesting situation here and not one that I've ever encountered to such a degree in my winemaking career. I hope the comments above help you diagnose your problem. I wish you luck as you begin to rule out the possibilities.

Hard Apple Cider Ale Ready to Drink

Getting Hardcore with Apples

Written by Dave Green

A nice crisp hard cider is something that can be enjoyed year-round and there is a multitude of ways to craft them. Winemakers can create a lower- alcohol hard cider that roughly mirrors beer in strength. Alternatively, larger additions of sugar can be added to the juice to create apple wine, which should land up near grape-wine strength. While there is a great variety of spiced and fruited hard ciders and wines to choose from, today I want to talk about crafting a basic hard apple cider or wine.

Gettin' Juiced

While in some areas it may be called apple cider, what most cidermakers want to start with is the unfiltered, unpasteurized apple juice (UV-treated or pasteurized juice can be used but some argue that these treatments can be detrimental). You can buy this form of apple juice at roadside stands in apple growing regions during the fall season, or you can go to orchards to see if they sell fresh-pressed juice. For those more adventurous

types, going all-in and pressing juice from raw apples will often be well-rewarded.

Pressing your own juice requires you to source your own apples. Also you'll need two pieces of equipment as well as the time and effort. There are lots of apple varieties to choose from and while I will not go into them now, I do recommend that you source a wide array of apple types, including some bitter and sour varietals to round out the flavor profile. Getting a small team to help gather and process the juice is always a plus if you decide to go this route.

The first piece of equipment required to produce larger quantities of juice from whole apples is an apple grinder. A grinder (sometimes known as a scratter) will either crush or shred the apples to create an apple pulp. Often the grinder will be a larger-scale crusher like fresh grape winemakers might utilize. Another popular apple grinder is in-sink garbage disposal units. There are several designs for apple grinders/scratters you can find online.

The second piece of equipment is a press. If you already have one for pressing grapes . . . you can check this one off. But if not, a common homemade press utilizes a car jack in order to create the necessary pressure. Again, there are many designs to be found online.

Ferment Wisely

While you can just simply pitch yeast into the juice and let it ferment out, there are several additional ingredients you may want to utilize to create the best possible cider you can. To start with, if you are pressing your own or using untreated juice, you may consider an addition of metabisulfite (KMBS). Follow manufacturer's direction for treatment.

If you do plan on making an apple wine, be sure to choose a yeast tolerant of higher alcohol levels, typically a wine yeast.

Cidermakers have been known to use wine, beer, and cider-specific yeast strains. Many cidermakers experiment with various yeast strains as some may leave the cider more sweet while others will ferment the juice to dryness. Some will bring fruity esters to the table, while others may provide a cleaner profile. If you do plan on making an apple wine, be sure to choose a yeast tolerant of higher alcohol levels, typically a wine yeast.

Since most apple juice will produce hard cider in the 5% alcohol by volume (ABV) range, many cidermakers will supplement the juice with a sugar addition.

There is a wide array of choices including corn sugar, table sugar, raw sugar, honey, and/or apple cider concentrate. If you are looking to simply boost the alcohol content and aid in drying the cider out, corn or table sugar are both good choices. Raw sugar will add a little molasses character to the cider while honey can add some floral notes depending on the type and level added. Frozen apple cider concentrate can be added to boost the apple aroma and character of the finished cider.

Post-Ferment Decisions

Back sweetening is fairly common to balance out the acidity caused by high levels of malic acid naturally found in apples. All the sugars that were mentioned in the previous paragraph can be used to back sweeten. Cidermakers will often add potassium sorbate and KMBS to prevent refermentation from occurring prior to back sweetening.

If you do want to carbonate your cider then you probably won't be able to backsweeten your cider (an exception is if you have a kegging system, allowing you to force carbonate the cider.) This is because it is the yeast that will re-activate and ferment the "priming sugar" that the cidermaker adds during bottling in order to create the carbonation.

Finally there is the decision of whether to perform a malolactic fermentation (MLF) or not. This is up to the cidermaker as some off flavors can be created (especially if the producer plans to introduce sorbate) by MLF. Also some of that crisp snap from the malic acid will be lost. But if a more rounded flavor profile is what the cidermaker is after, then co-inoculating with a malolactic bacteria culture during primary fermentation should be considered. You can split the difference by using Lalvin 71B-1122 because it will convert more malic acid than other white wine yeast.

Properly Adding Acid to a Barrel

Alison Crowe

Tartaric acid adjustments, especially big ones, can best be made in two steps. That way you can see if you like the result as you go along. However, if you do have a pH meter, as well as a pH target, you can do a little bench trial first. Take, say, a 100 mL sample of wine from your fermenter (barrel, I assume) and add 1 g/L to it by measuring out 0.1 g tartaric acid on your gram scale. (As an aside — every home winemaker should own a 500 g x 0.01 g scale so you can measure little amounts of additives for bench trials.) Stir the acid into your 100 mL sample and measure the pH. Give it a taste. Do you like it? Do you want to add more? Since you're starting at a pH of 3.9 and want to target around 3.6, depending on the buffering capacity of your wine, you'll most likely end up adding around 2 g/L.

I would say you're even better served just having a pH meter than the ability to titrate and measure TA. pH will give you a much better idea of the microbial stability (or instability) of your wine, meaning that bad spoilage bacteria love to live in a higher pH environment. By getting your pH down to around 3.65 or so (or even lower, if you still like the taste changes in your wine), you'll lessen the chance of high VA (volatile acidity) later on due to growth of species like *Acetobacter*. TA is of less importance in being able to predict microbial stability in a wine. You can actually have wines with high TA's and high pH's some years; controlling pH is much more important for microbial stability so it's great that you can measure that. But be careful with these wines, adding more TA in order to lower pH can raise TA to a point where it's unpleasantly acidic. Tasting and testing will be key in these situations to strike a balance between the two.

I would say you're even better served just having a pH meter than the ability to titrate and measure TA.

As far as how to add the acid so that it'll dissolve and distribute well into your containers: Dissolve first, then distribute. Measure out the total grams of acid you'd like to add to your wine. Dissolve it completely in a small amount of wine, then distribute that wine back into your container by pouring and stirring well. For a barrel, you could even do a preliminary dissolve in a one-gallon (3.8-L) container, then add that to a 5-gallon (19-L) bucket of wine removed from the barrel, stir that and then carefully pour the 5-gallon (19-L) bucket back into the barrel. After stirring the barrel, it's very likely the acid will be very well distributed into the wine.

It's best to treat each storage vessel separately, as its own individual container. Let's say you have a 59-gallon (225-L) barrel and a 5-gallon (19-L) topping keg and you wish to take each down to a pH of 3.60. Measure out the acid addition needed for the barrel, dissolve, and add it to the barrel. Then measure out the acid needed for the keg, dissolve it, and then add to the keg. If you measure out the acid needed for 59 + 5 (i.e. 64 gallons/242 L), then dissolve it into a small amount of wine, then try to distribute that liquid proportionately among the two containers, unless you do your concentration and volume math perfectly, you might risk adding differing concentrations of acid to each vessel.

References

Here is a list of Hobby Winemaking Manuals and other materials in the Secretary's digital file available for downloading by e-mail or via an internet transfer service. All are PDF. E-mail Ken Stinger at kbstinger@frontier.com

Scott Labs 2020 Winemaking Handbook - 21 mb - 59 pages
Scott Labs 2018 Cider Handbook - 24 mb - 49 pages
Scott Labs 2018-2019 Sparkling Handbook - 8 mb - 58 pages
A guide to Fining Wine, WA State University - 314 kb - 10 pages
Barrel Care Procedures - 100 kb - 2 pages
Enartis Handbook - 4.8 mb - 108 pages
A Review Of Méthode Champenoise Production - 570 kb – 69 pages
Sacramento Winemakers Winemaking Manual - 300 kb - 34 pages
Sparkling Wine brief instructions - 20 kb - 3 pages
The Home Winemakers Manual - Lum Eisenman - 14 mb - 178 pages
MoreWine Guide to red winemaking - 1 mb - 74 pages
MoreWine Guide to white Winemaking - 985 kb - 92 pages
MoreWine Yeast and grape pairing - 258 kb - 9 pages
Wine Flavors, Faults & Taints – 600 kb, 11 pages

Portland Winemakers Club
Leadership Team – 2021

President: **Bill Brown** bbgoldieguy@gmail.com
- Establish leadership team
- Assure that objectives for the year are met
- Set up agenda and run meetings

Treasurer: **Barb Thomson / Jim Ourada** bt.grapevine@frontier.com
jmourada57@gmail.com
- Collect dues and fees, update membership list with secretary.
- Pay bills

Secretary: **Ken Stinger** kbstinger@frontier.com
- Communicate regularly about club activities and issues
- Monthly newsletter
- Keep updated list of members, name tags and other data

Chair of Education / Speakers: **Rufus Knapp** Rufus.Knapp@fei.com
- Arrange for speakers & educational content for our meetings

Chair for Tastings: **Paul Sowray / Barb Stinger** davids1898@aol.com
kbstinger@frontier.com
- Conduct club tastings
- Review and improve club tasting procedures

Chair of Winery / Vineyard Tours: **Damon Lopez.** dlopez5011@yahoo.com
- Select wineries, vineyards etc. to visit
- Arrange tours
- Cover logistics (food and money)

Chair of Group Purchases: **Bob Hatt / Al Glasby.** bobhatt2000@yahoo.com
alglasby@gmail.com
- Makes the arrangements to purchase, collect, and distribute
- Grape purchases
- Supplies – These should be passed to the President for distribution.

Chair of Competitions: **Paul Boyechko / Michael Harvey** labmanpaul@hotmail.com
mharvey767@gmail.com
- Encourage club participation in all amateur competitions available. Make information known through Newsletter, e-mail and Facebook.

Chairs for Social Events **: Marilyn Brown & Mindy Bush** brown.marilynjean@gmail.com
* Gala / Picnic / parties mindybush@hotmail.com

Web Design Editor: **Alice Bonham** alice@alicedesigns.org

Zoom Moderator: Jon Kahrs. jekahrs@aol.com