Portland Winemakers Club

June 2019

"Bill's Meanderings"

We recently took a day trip up the Columbia River Gorge in search of a short day hike. We found just the ticket at Horsetail Falls. After the short but steep hike into Ponytail Falls we ventured to Hood River to watch the wind surfing and then to wine tasting. We stopped at one of our favorites in the area, the Cascade Cliffs tasting room. Their vineyard and winery is just out of the Columbia Gorge AVA in the vast Columbia Valley AVA but is definitely part of the region. A short drive from Portland the Columbia Gorge AVA is home to over 40 vineyards and 30 plus wineries and tasting rooms. Being in the rain shadow of the Eastside of the Cascades you can find some luscious reds and whites and only one to one and a half hour drive from Portland. So with the nice weather it's time to venture out and explore. As always, drink and drive safely.

I should also mention that as of our last meeting in May a vote was taken and the Club has a new home. The historic Aloha Grange will be a good fit and I hope that the members will be comfortable there for the next year and beyond.

Bill and Marilyn

Out working in the vineyard this morning and I noticed my young Chardonnay is at about 70 to 80 percent bloom. Pinot is behind about a week, just starting. Within a day or two of last year.

Bill Brown, June 8th

Drink Responsibly. Drive Responsibly.

Scheduled Meetings

January 15, 2020 Crush Talk / Planning

January 18, 2020 Annual Gala – At Parrett Mountain Cellars

February 19, 2020 Bordeaux Tasting

March 20, 2019 Speaker: John Davidson, Walnut City

April 17, 2019 Barrel / Carboy Sample Tasting.

May 15, 2019 Speaker: Jeremiah Deines on cider production

June, 19, 2019 Best practices; member demonstrations of tips & tricks

July 20 2019 Annual Picnic

July 27 2019 Tour

August 21, 2019 All Whites Tasting

August 24, 2019 Tour

September 18, 2019 Other Reds Tasting

October 16, 2019 Pinot Noir Tasting

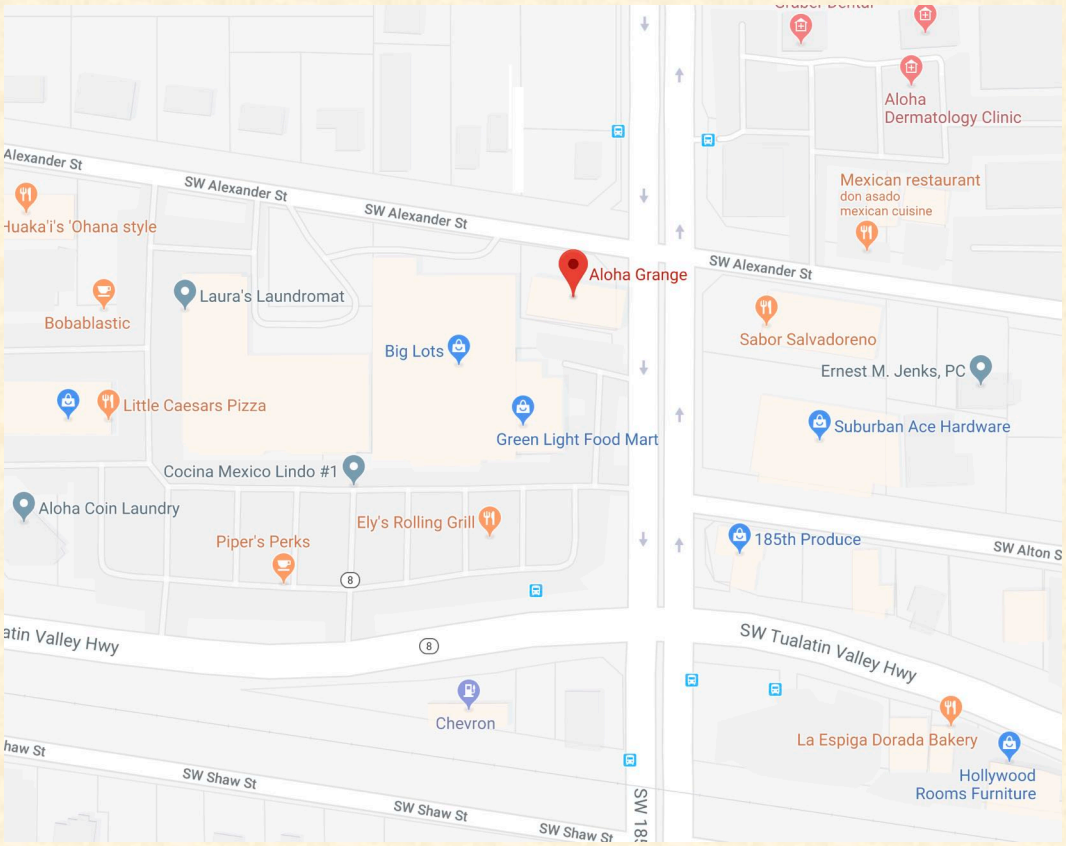
November 2019 Crush Talk

December 4, 2019 Planning, Tours, Speakers, Events, Elections

Note: The next regular meeting will be Wednesday, June 19th at 7:00 PM. The meeting will be held at the Aloha Grange #773, in Aloha. See the google map below or use your smart phone. We will be down stairs in the kitchen area.

Agenda: "Best Practices" meeting. Member demonstrations of tips, tricks, procedures. Tell us about the things you do that make a difference. Bring an appetizer and a bottle of your own cider or wine to share.

If you haven't already, be sure to renew your club membership and sign a new waiver.
The regular meeting will be a potluck, bring a small snack to share.
The club meeting will begin at 7 pm and end by 9 pm. If you can, get there a little early to help set up. Please help put away chairs and tables at the end of the meeting.



May Meeting Minutes

Present: 23

• Marilyn reported the July picnic will be held on July 20th at the home of Craig & Mindy Bush, 1:00 pm onward.

• Paul reminded everyone that the Oregon State Fair Amateur wine competition is coming up soon. So far, there is no information on line. Chemeketa will not be involved this year. Paul again offered to deliver entries when he takes his own wine down to Salem.

It was mentioned that the Washington State Fair entries will be due about August 5th.

• Someone stated that UPS & FedX will no longer deliver amateur made wine. Commercial only.

• Damon said that he has contacted a wine co-op in Portland for a possible tour. There has been no word from Day Wines for a tour. Craig recommended Barking frog.

• Bob said that grape purchase orders need to be into him by Memorial Day.

• After sampling four different possible club meeting sites, the club members voted to enter into a contract with the Aloha Grange to be our permanent meeting location.

Barb & Bill introduced member Jeremiah Deines as our speaker for the evening. Jeremiah gave a power point presentation on all aspects of cider making. Cider making is quite complicated involving multiple production path choices, probably as many or more than in winemaking. Quality depends greatly on apple selection. Turns out less sweet apples (think crab apples) make better quality cider than sweet apples (think store bought). Jeremiah said he would try to make his power point slides available to the membership.

What Makes Great Wine… Great?

What makes a great wine… great? By understanding the processes involved with making a great wine, you'll be able to identify a great wine based on your own tastes. It doesn't matter if you're experienced or a novice to the world of wine, a solid foundation provides the basis of how to find great quality (regardless of price).

Carlo Mondavi and I sat down to discuss the grape selection and winemaking processes for a presentation. The goal of the presentation was to point out the most important facets of what defines a great wine so attendees would know what to look for when seeking great wine. We decided it was a good idea to share the concepts within to all .
NOTE: Carlo Mondavi is the grandson of Robert Mondavi; partner in Continuum Estate on Pritchard Hill in Napa Valley; and founder of Raen Winery that specializes in Pinot Noir wines from the Sonoma Coast. By the way, the Mondavi family is no longer associated with the Mondavi wine brand, which is owned by Constellation.

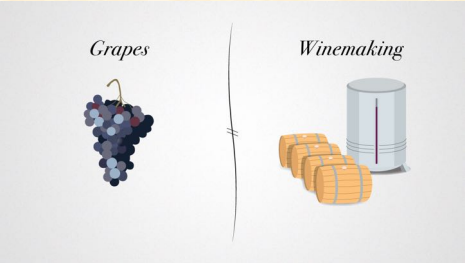
We came up with a list of 4 pillars that essentially summarize what makes a great wine:
1. Great grapes
2. Great winemaking
3. Long term vision
4. Art

"Making good wine is a skill, making fine wine is an art" -Robert Mondavi

Grapes and Winemaking: We can all agree that you need high quality ingredients and exceptional preparation skills to make outstanding sushi (imagine Sukiyabashi Jiro in Jiro Dreams of Sushi) so it's easy to accept that this same idea also applies to great wine.

Long term Vision: There are many intriguing new wineries and winemakers, but the great ones have one thing in common: they think big. As soon as the winery's founder considers that their winery may continue to exist after they're gone, they think differently about how they develop their brand and, ultimately, how they make wine.

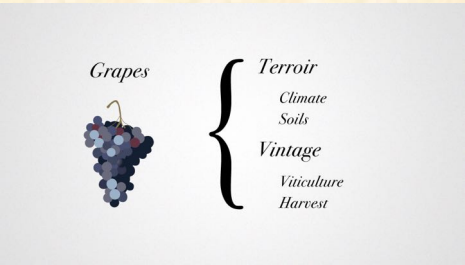
Art: There's this undefinable x-factor to great wine that's hard to quantify in a scientific manner. Art is also a very personal choice that really comes down to the eye of the beholder. Of course, the more educated you are at understanding the craft of art, the more sophisticated/nuanced your taste will become. Winemakers, like artists, follow different ideologies and these core competencies are indeed reflected in the wine.



Since art is a personal choice, we'll focus on the quantifiable aspects (Grapes and Winemaking) and leave the fun part of seeking the art-side of wine for you to explore.

"You can make bad wine with great grapes but you can't make great wine with bad grapes." -Robert Mondavi

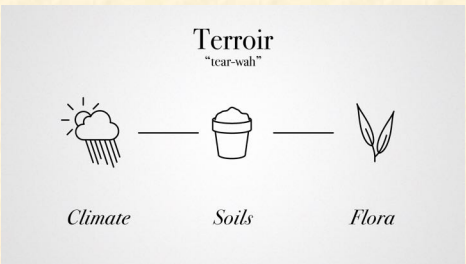
When you simmer down all the many processes involved in growing great grapes, there are essentially two areas of consideration:



Terroir: Terroir is essentially mother nature's influence on grape growing and includes the climate, soils and other aspects dealing with the natural world.

Vintage: This area involves the choices that humans make to facilitate grape growing throughout a single year/vintage (i.e. pruning, irrigation, soil treatments, pest management, harvest timing, etc.).

The word "terroir" can mean many things to different wine experts so, for the sake of simplicity, we've defined terroir to reference a region's climate, soils and flora.



People talk a lot about soils and climate when it comes to wine, but there's a third component that scientists are now beginning to understand more: Flora.

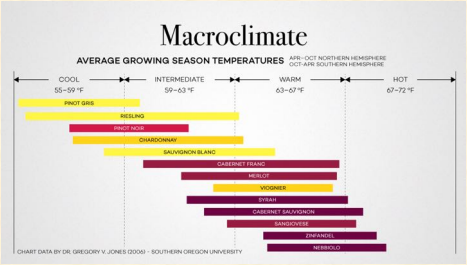
What is Flora? Flora includes all the living plants/funghi in a given area. This includes everything from trees, sagebrush, grasses, and flowers, all the way down to microbes like yeasts and bacteria.

"You can find 50,000 yeast particles on a single wine grape" -Carlo Mondavi

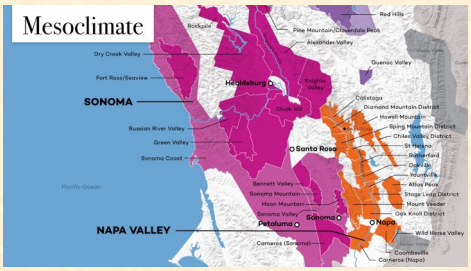
Climate

Climate not only includes what's happening with weather on a grand regional scale, but also references small differences from place to place. There are really 3 levels of detail that can be observed with climate:

1. Macroclimate
2. Mesoclimate
3. Microclimate



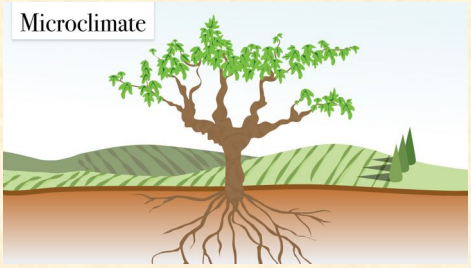
From the work done by Dr. Gregory Jones, an Environmental Scientist at Southern Oregon University, we've learned that different grape varieties are suited for different macroclimates. Very simply, a macroclimate includes the average temperature and degree days (sun irradiance) of a particular region during the growing season. Based on the chart above, we can very quickly see that certain grape varieties are better suited to certain climates (e.g. Pinot Gris in a cool climate or Sangiovese in a warm climate). From this information we can identify larger regions (such as Napa Valley) that are better suited for certain wine varieties based on their average seasonal climates.



Mesoclimate refers to climatic differences in an encompassing region such as distance to a river (where it may be cooler and foggy in the morning) or the location of a vineyard on an elevated slope. The influence of mesoclimates is partly why Napa Valley has been chopped up into 16 different sub-AVAs (American Viticultural Areas).

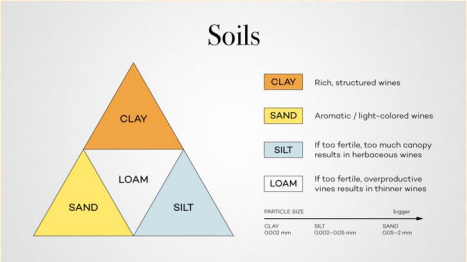
Here are some basic questions that pertain to a vineyard's mesoclimate:

- Is the vineyard on a slope?
- Is the vineyard in a valley?
- Is the vineyard close to a large body of water (lake, ocean, river)?
- Which direction does the vineyard face?



Finally, microclimate goes all the way down to the individual vine. Perhaps there is a part of a vineyard that is shady during certain parts of the day or there's airflow in one part of the vineyard and not another. Microclimates are what influence a single vine to produce quality grapes.

Technology: In Northern Italy a cooperative called Cavit in Trentino developed a region-wide monitoring system called PICA . The system monitors changes and gives growers (through iphone messaging) immediate vineyard management actions. For the time being, PICA is a proprietary tool, but as growers develop more advanced technology we'll see active farming based on microclimates.



Soils

Forget terms like Goldridge, Kimmeridgian, and Jory… what matters in soil is drainage, pH, soil depth and soil temperature.

What really matters about a soil is how the fertility of the soils affect the vines throughout the growing season. There are 4 fundamental soil compositions based on particle size:

Clay: Known for producing rich, structured wines

Sand: Known for producing wines with higher aromatics and slightly lighter color intensity

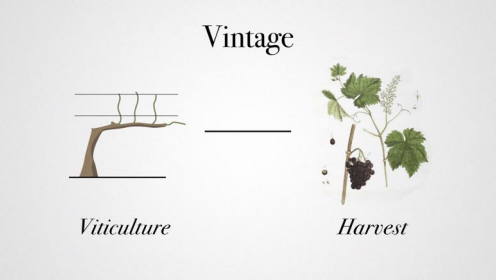
Silt: A harder to manage (viticulturaly speaking) soil that can produce highly vigorous vines which deliver more herbaceous flavors, but when managed it can produce wines in a style very similar to clay.

Loam: Typically found in valley floors and is not typically associated with fine winemaking due to high productivity (unless blended with higher levels of clay/sand).

What's interesting about the soil types listed above is that if you look at all the finest, most structured, age-worthy red wines, they almost all grow on clay-dominant soils (Rioja, Pomerol, Napa Valley, Paso Robles, Tuscany, Coonawarra, Burgundy). Beyond this, the most highly appreciated aromatic wines (like German Riesling and Beaujolais) grow in sandy/rocky soils.

Complexity in soils = complexity in wine When managed properly, vineyards with diverse soil types tend to produce wines with more complexity.

Shallow and/or Infertile soils A controversial topic of soil quality has to do with soil depth. Carlo Mondavi observed how Pinot Noir vines with shallow soils (on hillside vineyards) spend more energy during the growing season on fruit development and less towards vigor (making green leaves). The reduction on energy spent in leaf development resulted in wines with less herbaceous character. And, while some may argue that herbaceous notes in some wines adds complexity, many of the finest wines do grow on infertile soils.



Each vintage starts the moment you pick grapes until the next harvest in the fall.

All the processes and preparations made throughout the year leading up to, and including, harvest define the job of viticulture or "wine growing." *"great wine is grown, not made"*

Harvest

Brix is the measure of sweetness in grapes.

pH, in this image, shows an estimated level of acidity in a resulting wine made with these grapes. pH is logarithmic and inversely related to acidity so, a wine with 3.5 pH has an acidity level 5 times higher than a wine with a pH of 4.

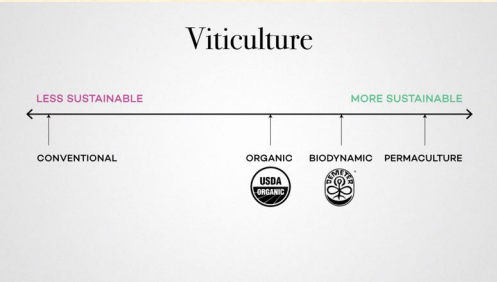
Timing is the most important consideration for harvest. Once grapes are picked, they do not continue to ripen. In cooler regions, winemakers need to consider weather changes and pick before heavy rains. In warm climate regions, timing the harvest improperly (even by a few days) can mean the difference between a fresh and fruity wine and a flabby, overripe wine.

Ripeness involves more than just sweetness of grapes.

It's important that sugar levels are high enough for harvest, but then there's also phenolic ripeness. Phenolic ripeness pertains to the condition of the tannin in the seeds (catechin) and skins (epicatechin) of the grape. We talk about this style of ripeness often when describing a wine as having "sweet tannins." Grapes with less ripe seeds and skins result in more astringency and bitterness in a wine.

Some grape varieties have lower tannin naturally and winemakers may pick them a little more green to add texture and acidity to a wine (this is commonly practiced with Pinot Noir). Other grape cultivars have high tannin (such as Cabernet Sauvignon and Nebbiolo) and are better to be picked when the phenolic ripeness in the seeds and skins is higher.

Wine Growing Practices

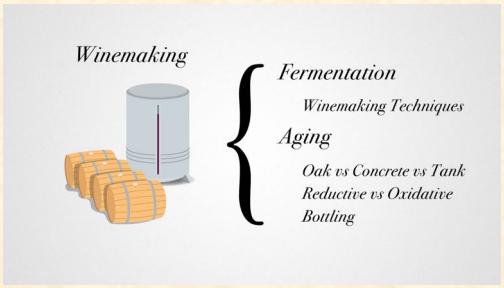


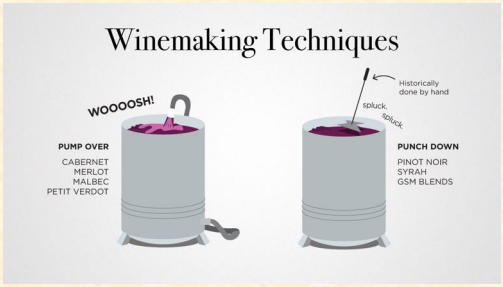
Great vineyards lean towards the sustainability side of the spectrum.

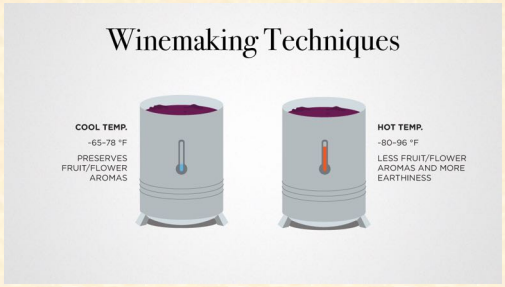
If you step back and look at a winery's vineyard as a whole, you'll see their growing practices are somewhere on the scale of sustainability. The very best wineries with long term vision are sustainable. And while most of us think of sustainability as an environmental consideration, it also involves social and economic aspects. Each of these 3 aspects of sustainability (Environmental Responsibility, Social Equity and Economic Viability) work together and produce a slow increase of profitability to maintain the winery, land and community.

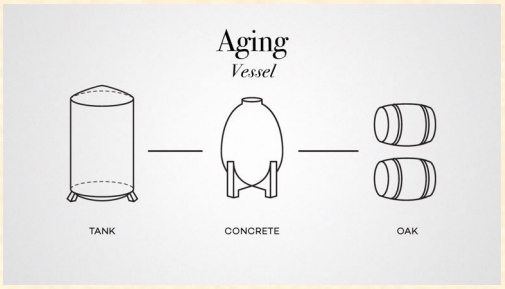
What is Permaculture? Permaculture is an agricultural system that is sustainable and self-sufficient. It involves planning for ecological and environmental design so that the resources available on a plot of land can be stored and used to sustain the land. This type of farming practice involves observing and working with natural conditions to fight obstacles in farming (pests, rot, etc). It is the ultimate goal of sustainability to be self-sufficient, but it's not always possible. This is why different types of sustainability certifications exist so that we may understand what protocols a winery follows.

Winemaking









Even after the fermentation is complete, a wine continues to change as it ages.

After the grapes are harvested, the process of making wine begins. This is where the winemaker has several choices which can affect the resulting style of wine.

The first choice is perhaps the most important and least talked about: Yeast. Yeast adds its own set of flavors to wine. Yeast aromas are referred to as Secondary Aromas and can range from yeasty, beer-like aromas to buttermilk, and even earthiness (mushroom). While most wine is produced with commercially controlled and manufactured yeast, many of the finest wines in the world are made with natural yeast (from the region and winery's natural flora). Natural yeast fermentations can be much more difficult to manage but, if the vineyards and winery have a healthy yeast population, the end result is a complexity in the wine.

Punchdowns and Pumpovers

Grape skins rise to the surface of the fermentation chamber and a few techniques have been developed to reintegrate them into the wine.

The process of punch downs and pump overs is to reintegrate grape skins and seeds into the fermenting juice so that the proper levels of phenolic extraction can be made. You could relate this process to stirring the grinds in your French press. Of course, different grape varieties need different levels of extraction to develop positive flavor characteristics (and not the bitter, astringent or sulfur-like aromas). Generally speaking, the Bordeaux varieties of Cabernet Sauvignon, Merlot, Malbec and Petit Verdot do better with higher intensity extraction (e.g. pump overs) and lighter varieties (such as Pinot Noir, Syrah and GSM blends) do better with more delicate extraction.

Fermentation Temperature

Just as making a proper cup of tea requires the proper temperature (maybe between 160–175º F / 70–80º C), wine needs to be fermented at the right temperature too.

As yeasts eat the grape sugars and metabolize them into alcohol, the temperature of the fermentation increases. This increase in temperature causes volatile aromas to burn off and this isn't necessarily a good thing. You can assume, for the most part, that red wines with more floral notes are often fermented at lower temperatures (flower aromas are usually the first to go), which means the winemaker was trying their best to preserve these volatile aromas in the fermentation. When temperatures get too high, wines will exhibit less fruit flavors and more earthy or baked flavors. And, while this is not necessarily a bad thing (a chocolaty Malbec anyone?), it suggests that not all the original aromas in the wine were preserved.

NOTE: You'll note a few winemakers using whole clusters of grapes in their fermentation. The inclusions of stems will naturally decrease the temperature of the fermentation.

When the wine is finished fermenting it spends time in a vessel to settle and/or age. Certain aging vessels introduce oxygen which alters the chemical state of the wine and changes the flavors.

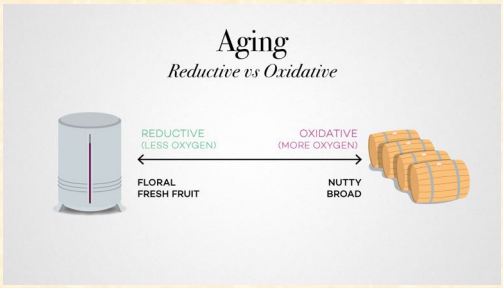
After the fermentation is complete, the winemaking still has a ways to go. The choice of aging vessel plays a crucial role in the development of a wine.

Tank: Stainless steel is meant to preserve the original flavors as much as possible. This style of settling is most commonly used for white wines where floral and herbal aromatics are of utmost importance.

Concrete: Concrete storage vessels may breathe more than stainless while still maintaining a cool temperature. Wines aged in concrete have a higher level of preserved fruit characteristics, while still seeing the benefits of oxygen ingress (for red wines, this can include softening bold tannins). Some believe that concrete adds a textural sensation of minerality, but this hasn't yet been fully proven.

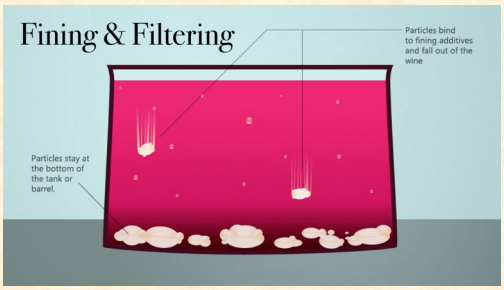
Oak: Oak aging not only increases oxygen interaction in the wine but, when barrels are new and toasted ("toasting" is essentially torching and caramelizing the inside of the barrel to create flavors), they add flavors too. The flavors created include vanilla, clove, smoke, sweet tobacco and cola and are caused by aroma compounds from the oak.

Aging: Reductive vs Oxidative



The choice of aging vessel is really where the winemaker makes a visionary/artistic choice about their wine. Some producers try to preserve the wine's natural character as much as possible by using neutral (used) barrels which do not add oak flavors or by aging wines for extended periods of time to soften the wine's characteristics (acidity, tannin, etc). The choices the winemaker makes during aging, might be the best place to start when developing your own preferences.

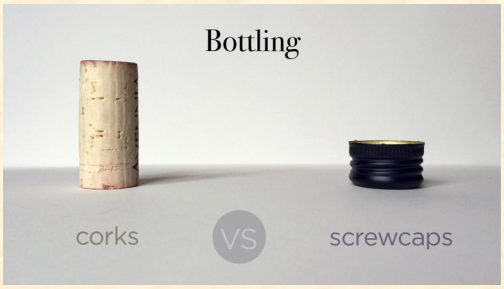
Fining and Filtering



Another choice in the winemaking process is whether or not wines are fined and filtered. Wines often have a little bit of a hazy color due to dissolved amino acids in the wine. Fining agents bind to these proteins and they drop out of the wine, leaving it clear. By the way, most fining agents are a protein of some kind (casein from milk, egg whites, fish bladders, etc). Nearly all white, rosé and sparkling wines are fined/filtered in some way but not all red wines. Filtering essentially does the same process of fining but with filters that have microscopic holes.

Proponents argue that fining/filtering clarifies and stabilizes wines and opponents believe that by not filtering their wines they provide them with added texture and structural elements for age-worthiness. The main issue with unfined and unfiltered wines is that consumers do not like cloudiness in their wines, particularly in white, rosé and sparkling wines.

Bottling



By now, winemakers have observed success for long term aging for both corks and screw caps.

When it comes to bottling, many believe that wines with screw cap closures are not as high quality as wines enclosed with corks. This isn't true. Many high-end producers choose natural corks, but there are many turning to screw caps as a more reliable method (screw caps do not cause cork taint). In fact, low quality agglomerated corks tend to be more problematic than screw caps. Our one takeaway is that both methods are suitable for fine winemaking.
Happy Searching and salut!

The Purpose of Foil at the Top of a Wine Bottle

If you pay just minimal attention to the foil when opening a wine bottle, you could conclude that the covering is just decorative. If you looked closer and noticed the small hole at the top, you might assume that the capsule had a function, maybe exposing the cork to a minute amount of air for some reason. In either case, you were probably surprised recently when you opened your monthly wine package and noticed that the bottles were without the capsule that normally covers the cork. I was surprised, too.

When I first tasted last month's Karah Estate wines, I failed to notice that the winery's most costly Reserve Pinot Noir did not have a foil. After we opened the cases that were delivered to the warehouse, I assumed that the winery had made an error and called Karah winemaker Jason Baker, who told me that he made a deliberate choice to omit the foil. Coincidently, all of the Hobo wines that followed this month were without capsules, and I was ready with questions when I interviewed owner Kenny Likitprakong.

At one time, capsules were placed on corks because they prevented rodents and cork weevils from enjoying the wine before the master of the house. Historically, these foils were made from lead that we eventually understood was poisonous and left traces especially at the top of the bottle, which then entered wine glasses during a pour. Lead was phased out by law in 1996, both in the US and the EU, and now capsules are made from tin, aluminum, or polyethylene.

But in our time of a growing consciousness of scarcity rather than abundance, some young winemakers, especially in California, are choosing to eliminate capsules altogether, since they now serve no purpose whatsoever, the rodent population having been thoroughly chastised for interfering with human activity. Capsules are made from materials that are mined from the earth, cost money, and end up in landfill. They also obscure the cork and fill in the bottle, which is important. If the fill is not close to the cork, the wine may be oxidized.

Occasionally, reason triumphs over habit as it seems to be doing now among some young winemakers. We should drink to that.

Evaluation of South African Torulaspora delbrueckii wine yeasts

Neil Jolly, Valmary van Breda, Jessy van Wyk & Marieta van der Rijst
1 Nov, 2017

The aim of this study was to characterize and evaluate a selection of South African *T. delbrueckii* yeast isolates under laboratory conditions.[8]

Introduction

The yeast population found on grape and winery equipment surfaces usually consists of *Saccharomyces cerevisiae*, and other species broadly referred to as non-*Saccharomyces* yeasts.[1] While the wine yeast *S. cerevisiae* is the desired yeast for completion of alcoholic fermentation, the non-*Saccharomyces* yeasts also play a role.[1,2,3]

These yeasts typically include species from the *T. delbrueckii* yeast is found naturally in most wine producing regions of the world, and relatively recently commercial strains have become available. However, the use of *T. delbrueckii* yeast for winemaking has been suggested as far back as 1948 for musts low in sugar and acid, and for the production of red and rosé wines in Italy.[7] Recent studies showed that *T. delbrueckii* yeasts produce lower levels of volatile acidity (VA) and acetaldehyde in comparison to *S. cerevisiae*, and can contribute positively to the flavor of wines.[1,2,3,4] The changing taxonomic description of this species in the past, together with the natural genetic variation found amongst yeasts, means there is potential for strains with improved performance in comparison to the commercial strains.

Materials and methods

Forty-three *T. delbrueckii* yeast strains isolated from South African vineyards and wines were investigated. Reference yeasts included two commercial *T. delbrueckii* strains, the *T. delbrueckii* type strain and one commercial *S. cerevisiae* wine yeast.

The yeasts were characterized by various molecular, biochemical and physiological methods. Laboratory-scale fermentations were conducted at 22 and 15°C, respectively, in a clarified Chenin blanc/Chardonnay (1:1 ratio) grape must blend (21.5°B; total acidity: 7.0 g/ℓ; and pH: 3.69).

Results and discussion

In comparison to *S. cerevisiae*, the deliberate use of non-*Saccharomyces* yeast in wine production is new. While an estimated 200 commercial *S. cerevisiae* yeasts are available world-wide, only a limited number of *T. delbrueckii* commercial yeast strains are available to wine industries.[1] Although the number of commercial *T. delbrueckii* yeast strains will probably never reach that of *S. cerevisiae*, there is undoubtedly scope for more strains for commercial winemaking.

The various characterization methods used in this investigation made it possible to differentiate between, and to confirm the identity of the *T. delbrueckii* yeast strains. The South African strains could be divided into 13 groups. The groups contained 17, seven, six, three and two strains, respectively, while the remaining eight groups contained one strain each. None of the groups matched that of the profiles of the *T. delbrueckii* reference strains, underlining the wide genetic diversity amongst the strains.

The fermentation data of the 22°C trial showed that the *T. delbrueckii* yeasts fell into two distinct groups, a faster (18 strains) and a slower (25 strains) fermenting group. The two commercial *T. delbrueckii* strains and the *S. cerevisiae* reference yeast were part of the faster fermenting group. One South African strain finished the fermentation at a similar rate to that of the *S. cerevisiae* reference yeast, thus showing potential for use in further fermentation studies.

The fermentation data of the trial carried out at 15°C showed that the yeasts also fermented at different rates, 14 faster fermenting strains and 29 slower fermenting strains. However, the spread between the fermentation rates was greater than at 22°C. The best *T. delbrueckii* strain at 22°C, also performed well at 15°C. Overall, the *T. delbrueckii* yeasts took longer to ferment the must at 15°C (26 days) compared to 22°C (19 days). The fermentation abilities and the 13 biochemical and physiological groupings did not coincide. *T. delbrueckii* strains with rapid fermentation abilities were found in many of the 13 groups.

Chemical analyses performed on the resultant laboratory-scale wines showed that the VA values for most of the yeast strains were similar (0.3 – 0.5 g/ℓ) at 15°C and 22°C. One *T. delbrueckii* strain produced VA levels nearly double than that of the other yeasts (0.7 g/ℓ at 15°C and 1.0 g/ℓ at 22°C). Although still within the permissible limit (1.2 g/ℓ) for South African wines, the use of this particular strain would not be recommended for wine production.

The concentration of glycerol produced by most of the *T. delbrueckii* strains was generally higher than that of the *S. cerevisiae* reference yeast and ranged from 5.0 – 13 g/ℓ at 22°C, and from 5.0 – 7.9 g/ℓ at 15°C. Glycerol is one of the major products of alcoholic fermentation. It can have a notable effect on sweetness and mouth-feel in dry wines in concentrations above 5.2 g/ℓ, although it has no direct impact on the aromatic characteristics of wine.

The residual sugar levels of the must fermented at 22°C showed 10 *T. delbrueckii* yeasts that fermented to below 10 g/ℓ; three with residual sugars between 10 and 30 g/ℓ and the remainder with residual sugars above 30 g/ℓ. The isolate with the fastest fermentation rate was able to ferment the must to dryness (<5 g/ℓ RS) as defined by South African legislation. The residual sugar levels of the 15°C fermentation trials showed six *T. delbrueckii* yeasts that fermented to below 10 g/ℓ, nine with residual sugar between 10 and 30 g/ℓ and the remainder with residual sugar above 30 g/ℓ. The best performing strain at 22°C was also able to ferment the must to dryness at 15°C. The other strains would have to be co-inoculated with a *S. cerevisiae* to ensure dry wines.

Some of the wines had higher total SO_2 levels than the reference strains, but still within the permissible limits for South African wines. High levels of SO_2 are not desirable as this could negatively affect the wine quality, and inhibit sensitive co-inoculant wine yeasts and malolactic bacteria.

Conclusions

Characterization of the South African *T. delbrueckii* strains showed a large genetic diversity. None of them matched the biochemical profiles of the commercial strains or type strain. The laboratory-scale fermentations indicated that not all of the *T. delbrueckii* yeast strains were suitable for wine production. However, some showed potential for use as single inoculants, or as co-inoculants with a *S. cerevisiae* yeast strain. Therefore, depending on the fermentation temperature, different *T. delbrueckii* strains would be suitable for specific wine styles. These promising yeast strains would require further studies to evaluate their performance under industry conditions.

Abstract

Torulaspora delbrueckii yeast strains isolated from South African grapes and must, *T. delbrueckii* reference strains and a *S. cerevisiae* reference yeast were characterized using conventional and molecular microbiological techniques. Based on the characterization results the *T. delbrueckii* strains were divided into 13 groups. The performances of these yeasts were evaluated in grape must in laboratory-scale fermentations at 15 and 22°C. The fermentation data showed that the yeasts fell into two distinct groups, a fast and a slow fermenting group. Chemical analyses of the resultant laboratory-scale wines (alcohol, volatile acidity, glycerol, total SO_2 and residual sugar) showed some of the *T. delbrueckii* strains produced wines with acceptable chemical profiles at both temperatures. Therefore, depending on the fermentation temperature, different *T. delbrueckii* strains would be suitable for specific wine styles and some may be considered for single inoculations without the addition of *S. cerevisiae.*

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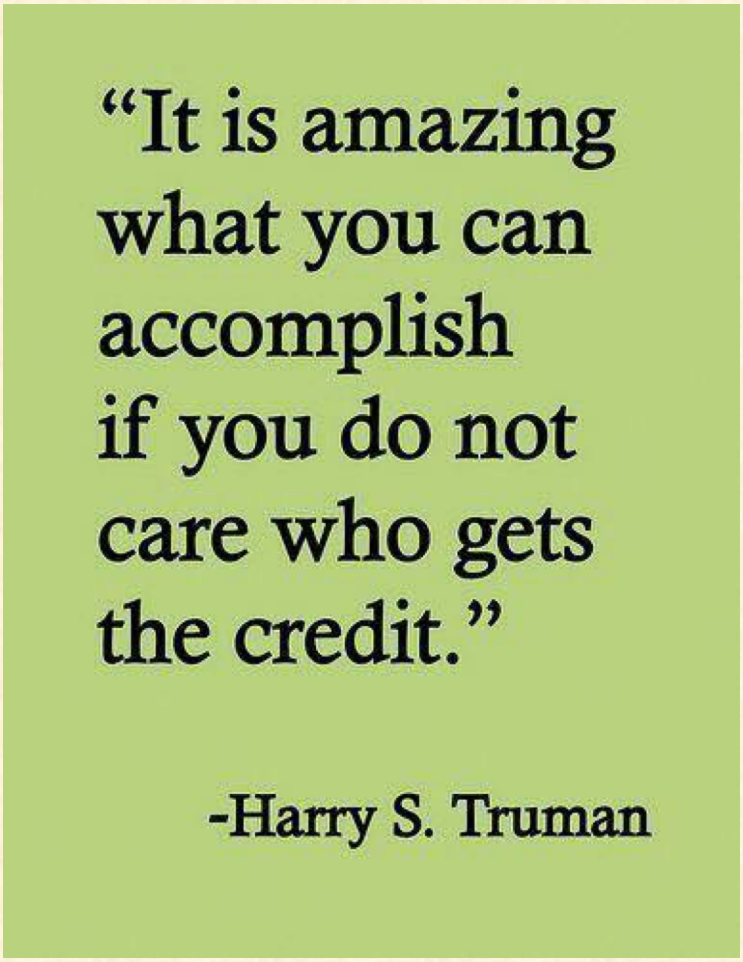

Portland Winemakers Club
Leadership Team – 2019

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** bt.grapevine@frontier.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: **Barb Stinger** kbstinger@frontier.com
- Arrange for speakers & educational content for our meetings

Chair for Tastings: **Paul Sowray & Barb Stinger** davids1898@aol.com
- Conduct club tastings kbstinger@frontier.com
- 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** bobhatt2000@yahoo.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** labmanpaul@hotmail.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
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