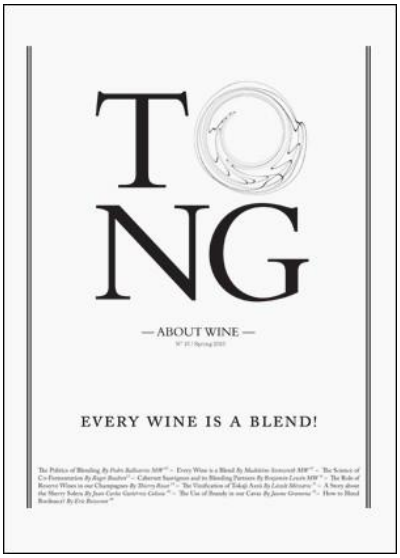
PENNSTATE

Cooperative Extension
College of Agricultural Sciences

Notes on Making Fine Wine from Eric Boissenot, and Visits to Black Ankle Vineyard and RdV Vineyard, Vintage Observations and Disease Management Notes from Cornell University

Tolerance Leads to Elegance, by Eric Boissenot



Monsieur Boissenot has followed in his father footsteps as one of the most respected wine making consultants in Bordeaux. He is a member of the wine making team at RdV Vineyards in Virginia. Here are some take home lessons from his article in Tong N^{o} 15.

- The winemaker's role is in service to the wine, as it is defined by its terroir, and to bring out all of its capacities
- One does not impose a personal philosophy or will upon a wine, like a recipe
- The element of choice is essential to this method of wine making, in this example, the greater the choices of base wines, the better the final wine will be
- Only by fully understanding the relationship between soil, vine and wine quality can great wine be made. Knowledge of each particular parcel is necessary.
- Technology has increased the ability to produce consistently fine wines, e.g. smaller fermentation vessels, horizontal presses, etc.
- Wine making is intuition and art, but it is necessary to seek a scientific understanding of the potential of each parcel that can be used in processing the wine
- Take account of every element of the wine and view the entire process in a holistic way
- Try to keep ego and personalities away from the wine
- The dominance of a certain method, or recipe, for wine making has led to a loss of genetic material (?)
- Over-ripeness destroys terroir expression and individuality.
- Every wine is influenced by the character of its owner or director, but being open-minded to the wine is essential
- It is not easy to make great wine from great terroirs because the danger of making mistakes is greater, any error will be obvious immediately
- If you understand the terroir, then you are less likely to take the wine in the wrong direction
- Wine making cannot be done by a recipe. Everything begins by tasting the wine and letting it tell you what to do.
- A major concern is if the correct variety is matched with the soil and how viticulture practices can help correct problems in the wine

- The best soils for Merlot are cool soils with a quite high water table, it does not dry soils
- Merlot loses its fresh aromatic profile easily when over-ripe
- Cabernet Sauvignon demands poorer and well-drained soils, gravel and clay are the best, although drainage is the key in both
- Some clay soils block the water and make it unavailable to the roots, which leads to shallow roots
- The best soils for Cabernet Franc are in between features for Merlot and Cabernet Sauvignon, but not too dry
- Petit Verdot likes cool soils
- Cabernet Franc and Petit Verdot lack high quality clones
- Do not use herbicides, they encourage shallow rooting
- 10,000 vines/ha = 4,050 vines/ac = 11 ft^2/vine = 3.3' x 3.3' or 4' x 2.75' or 5' x 2' or …
- On great terroir balance comes naturally
- 40-45 hl/ha = 2.75 to 3 t/a
- Wine quality will not increase with drastically lower yields
- If yields are too high the vine is unbalanced
- Leaf removal is important but not fundamental, use it as needed
- Green harvest should be avoided. If there are too many grapes, ask "why?" Adopt better pruning and canopy management
- Standard training is double guyot, 3 buds per cane, 6-9 clusters per vine
- Harvest by hand into small boxes
- Fresh, linear tannins with length of tasted and focused fruit is desirable in the cellar
- Before harvest measure tannins, this is one the parameters for determining harvest date
- If grapes are harvested too late, it is difficult to bring back finesse to the wine
- The result of more tolerance towards different points of view will automatically lead to more elegance in the wines (?)

Mr. Boissenot discusses his wine making practices, with special emphasis on blending, in the rest of the article.

Ed Boyce at Black Ankle Vineyard

I recently enjoyed a vineyard walk around with Ed, during which we discussed all manner of the fine details of wine growing. Ed is passionate about wine, and his soils. He believes that the gravelly soils in middle Maryland to southcentral Pennsylvania may be the best in the region for wine. The climate? It's troublesome. It's the rain that makes the soil so important. BAV works with Lucien Guillemet from Chateau Boyd-Cantenac. The vineyard is on rolling hill terrain with moderately steep slopes and

varied expositions. One oddity (and this applies to RdV and Linden, too) is that higher capacity soils may occupy higher elevation areas among the vineyard. This is why proper site evaluation in the East is so important, these areas must be teased out in vineyard design.

- Site selection is more important here than in any other wine region in the world because of the rain during growing season
- Soil that limit plant available moisture and nitrogen – organic matter in the 1-2% range
- Shallow and rocky soils are the best to push red wine ripeness, at BAV it is 60% rock on top and up to 100% below
- Canopies are small (1-1.5 leaf layers) but quite even shoot growth, leaves are small to medium size with some downy and Japanese beetle damage, shoots are showing advanced lignifications, shoot tips have mostly ceased growing with few upper laterals
- YAN is the best measure of actual impact of nitrogen on vine growth (size and balance), BAV YANs can be under 100ppm, as low as 60, adjust in the winery for fermentation.
- YAN helps to control vine vigor, but maintain a healthy vine
- On white grapes fish emulsion is used to boost nitrogen and help aroma development
- Malic acid is another key constituent at harvest, he wants malates less than 120 and as low as 65. It is a key indicator of quality and future balance of the wine.
- In wet season like 2012 the cover crop is essential, and they let the canopy grow tall, anything to transpire soil moisture. 1+ hedging passes this season.

- Whereas I expressed recent doubts about Gladstones' dirurnal temperature change concepts, Ed believe that a low DTR is an important physiological advantage for continental climate regions (Europe, Eastern US, etc.)
- Ed's simple answer to the endless debate about vine spacing is a single vine growing in a field, and what are conditions that will allow it to be in balance? A great site will grow a small vine with adequate shoots and leaves to properly ripen the fruit. Each site has its natural comfort zone. Let the soil and vine define the spacing, not our principles, philosophy and biases.
- I recently was reminded in discussion with Ed Lazzerini at Octoraro Cellars of a discussion with Jeff Newton and Andy Erickson at Ovid Vineyards in Napa – he said that Rolland and Abreu like too much (but not a lot) trellis per vine than too little, even at 3' spacing. Crowding is the enemy of fine wine quality.
- Frost is an increasing problem in the Eastern US. BAV got frost in mid-May.
- BAV has blended organic and biodynamic practices in the past. Downy mildew and weeds are the biggest disease and pest problems. The philosophy is now to make the best wine possible with the lowest environmental impact. They try not to use any plastic products in the vineyard.
- Kubota rear-track tractors are used to reduce soil compaction

- Slate Quarry Riparia is seriously devigorating rootstock, in this case compared side by side with 101-14. This is a true test on low capacity soils.

New World vs. Old World Terroir as represented by vine size and spacing. Small to medium sized, balanced vines with low yields per vine (1-2 kg), < 20 ft^2 per vine for highest red wine quality – Bordeaux and Burgundy, 4000 vines/ac, 1m x 1m, ½ kg; New World/Mid-Atlantic, 2500 vines/ac, 6 x 3, 1 kg. Analyze soil capacity (or lack of) to support this size of vine. Visualize a 3-dimensional box for each vine.

<u>Observations at RdV Vineyard in Virginia</u>

The vineyard is so impressive, located on steep slopes with varied expositions.

- It's all about working hard to place the vineyard in a position to make fine wine in a difficult vintage. It's a hard fought battle but the vines are ready if Mother Nature cooperates.
- Soils are also working hard to keep vine vigor in check. Steep slopes are aiding in the battle.
- How much to thin (if any at all) is a very difficult decision in this vintage which has been cool and wet
- Shoot tips have mostly stopped growing, minimal top lateral development. Leaf color is still shaded towards green.
- Cover crop is helping to pull back vines. This is a pull vs. a push vintage.
- Field budding has had 90% success. A professional grafting crew was brought in and a lot of follow up work was necessary.
- As usual Petit Verdot is way behind but it often makes an interesting wine in lesser vintages

These are two amazing vineyards, and their owners are just as remarkable. Anyone who wishes to make fine red wine in the East should use these as our current reference points (there are others, of course).

Is it fair to compare a 2000 Chateau Latour to a 2009 RdV Rendezvous and a 2010 Bedell Musee? Probably not but it's fun to try anyway. They were vastly different vintages in each region. I thought that the wines demonstrated similar qualities in balance, harmony, elegance with firm structure and complexity. It is a good indication that efforts to produce outstanding red wines in the region are bearing very fine fruit. Thanks to my sister, Nadine, for providing the Latour.

Fruit thinning exists in number of renditions, although as we just learned from Eric, he doesn't like green harvest. I asked Barbara Shinn at Shinn Estate Vineyard on the North Fork of Long Island how she is handling thinning this year. She has thinned very little this year, but normally it would be done before veraison, and especially in a cool, wet year like this one. Another pass to remove delayed maturity fruit at 90% veraison and even a second pass later on if necessary.

Barbara's late season downy mildew management includes phosphorus acid mixed with seaweed and 1-2 copper sprays mixed with seaweed, and if it stays wet biodynamic preparation 508 (equicetum tea) is added every other spray (about 14-20 days apart).

It would be interesting to know what berry weight and size is this year, as a predictor of potential red wine quality.

Question: how does number of blue sky days vs. hazy, diffuse light days affect physiological processes necessary for fruit maturity - effects of light and temperature? Then toss relative humidity into the mix.

From Carl Helrich at Allegro Vineyards: good quality canes tell a grower A LOT about vine balance - he has noticed better balance in his vines after employing pruning suggestions from Nelson Stewart and Lucie Morton to visually prune each vine according to the previous season's growth. If there are a lot of short shoots, prune harder, and the opposite for vigorous vines. In general, he reduced buds/vine from 20 to 14 and got much more even shoot growth this year, and expects to have higher fruit quality. The concept is to prune according to the number of healthy shoots that grew in the current season, e.g. if you had 15 high quality canes (reached the top wire, with good diameter – not bull canes, and internode length) then leave 15 and maybe a few extra for insurance. If, for example, there are 10 good canes and 6 runty ones, prune to 12 nodes. It's a bit of guess work and instinct, and this method of pruning definitely comes with experience. Until you reach that point, it is helpful to balance prune vines to get an idea of where the balance point within a section of the vineyard.

I have noticed that growers and soils are working very hard to maintain canopy quality this season. I have hardly seen a messy vineyard so far this year. Given the amount of moisture in the air and soil, canopies are trim and foliar diseases at a minimum, mostly downy mildew, very little powdery mildew. As Ed suggests, seasons like this are where careful site selection really pays dividends, shedding water from the effective rooting zone of the vine is so important to maintaining physiological focus on the prize, which is mature fruit. A good site lessens the need for viticultural intervention. Just as wine makers seek good fruit that requires less manipulation in the cellar, wine growers should seek sites and vineyard design that minimizes all inputs, ideally a vineyard is pruned then left alone. The more you have to do (given the conditions of the season) means the site is not supporting your goals. Find a site that matches the goals for the wine. As Eric explained, the difference in site requirements for Merlot and Cabernet Sauvignon. Keeping vines and fruit clean greatly assists in achieving this goal, and making fine wines. Lots of spraying this year, it's expensive and tiring. I am very impressed with the effort that has gone into managing vineyards this year. Because of spring frost events and bumpy weather at bloom, veraison has been highly variable, and in some vineyards, completely turned on its head with Cabernet Sauvignon more advanced than Chardonnay. As we head into the end game, fruit rots,

especially in tight clustered varieties, but applicable to all varieties, is probably the biggest threat, along with downy mildew. Do your utmost to protect berry skin integrity and do not let clusters touch. If rain continues, open the fruit zone on both sides. I would recommend that growers, especially those with vinifera, read the recent management notes from Alice Wise on Long Island about late season disease management (see below).

Week of August 19-22, East End of Long Island - Clusters are now immune to new infections of powdery and downy mildew as well as black rot. The big concern now is the suite of cluster rot organisms. Many blocks have a touch of Botrytis. It is mostly but not exclusively on shot berries, debris and GBM-damaged fruit. It seems likely that wet weather in the coming weeks will stimulate these infections. Vigilance, timing and good weather will keep infections in check. Botrycides (and materials such as Flint and Pristine with some efficacy vs. Botrytis) help but must be supplemented with other strategies. At this point in the season, many growers have their crews very carefully clean out clusters and/or snip off infected portions. Oxidate can be used to dry up sporulation. In a 2006 trial in the research vineyard Chardonnay clone 4 (big clustered), back to back (7d interval) applications of Oxidate burned out Botrytis sporulation; however, since the infection penetrated the flesh, sporulation reappeared within a week. Observations by vineyard managers suggest that Oxidate does hinder the spread of Botrytis. The challenges with Oxidate – the need for repeat applications (which can be expensive) and potential impacts on vineyard yeasts. Some growers have questioned the use of Oxidate in blocks designated for natural yeast fermentations. It is likely that Oxidate kills yeasts as well as other microorganisms. How quickly yeasts repopulate fruit or whether yeasts living in the winery are a factor, these are good questions. However, Oxidate is a contact material and given that yeasts are ubiquitous, it is possible that populations rebound quickly. (Thanks to Wayne Wilcox and enologist Chris Gerling for weighing in on this discussion - AW.)

Late Season Pest Management: *After veraison, pest management is focused on keeping the canopy free from downy and powdery mildew and keeping cluster rot to a minimum. When treating the canopy for the mildews, most Long Island growers turn off the nozzles in the cluster zone, easy to do with VSP training systems. Sprays for control of downy and powdery mildew should therefore have minimal contact with fruit. Nevertheless, there are some concerns with the impact of late season pest management on fermentation. Last week, the use of sulfur in the vineyard was discussed. Sulfur residues in sufficient quantity on berries may lead to stinky fermentations. This is not considered an issue for well clarified white musts. However, skin fermented reds may encounter problems.*

Besides sulfur, other end-of-season powdery mildew sprays include potassium bicarbonate (Kaligreen, Armicarb, Milstop), monopotassium phosphate (Nutrol), hydrogen peroxide (Oxidate), the biological products Serenade and Sonata and JMS Stylet Oil. The first two groups contain potassium, though there is no evidence that they raise must pH. It would be prudent, however to avoid a heavy application shortly before harvest. No issues come to mind with hydrogen peroxide, it dissipates rapidly after application.

JMS Stylet Oil, 0 days PHI (preharvest interval, the required interval between the last spray and harvest), is actually a very good late season PM spray. It has postinfection as well as forward activity (up to ~7 days). It will knock back European red mite as well. Several researchers have found that oil can depress Brix (sugar) accumulation. In a trial at LIHREC several years ago, two end of season app's did depress Brix slightly. Anecdotally, other aromas and flavors were not impacted. More and more growers are using Stylet Oil at this time of the season. As for fermentation, research conducted in California a few years ago indicated that Stylet Oil had no effect on fermentation. Read and understand the label thoroughly concerning compatibility of oil with other materials.

Primary choices for downy mildew control are copper, phosphorous acid products, Revus (14 days PHI – preharvest interval), Ranman (30), Presidio (21), captan (0) and Tanos (30). Copper can also be inhibitory to yeast and bacteria (i.e. ML) though only with very high residual copper concentrations, not likely if used prudently in the vineyard. Phosphorous acid products (0 days PHI) will keep infections in check but coverage must be excellent. PA products will not control a well established DM infection. For all PA products, avoid use

on raging infections due to resistance concerns. Captan has a zero day PHI and a 48 hr reentry interval. Captan is generally used early or mid-season; its use is less common post-veraison. In a recent newsletter, Finger Lakes Grape Specialist Hans Walter Peterson alluded to work done in the 80's that suggested that captan may be toxic to yeast (Finger Lakes Vineyard Notes, Aug. 2013). It appears however that this was a laboratory assay, not based on field trials.

Finally, for DM and PM, the strobilurins and sterol inhibitors are possibilities but not the optimum choice. Resistance to PM and/or DM has been documented with some of these products. Consequently, their best use is not on existing infections. If choosing to use these products late season, it is best to rotate with other materials that are not prone to resistance. From a fermentation standpoint, there appear to be no issues with either group of materials.

There are only a few materials sprayed directly on clusters post-veraison. There are no known issues with botrycides such as Elevate, Vangard and Scala and fermentation. In general botrycides are inactive against most fungi that are not closely related to Botrytis (yeasts are not closely related). Discussed in the previous article, Oxidate dissipates rapidly after application.

Bottom line – make pest management choices carefully at this time of year. It is complicated if disease exists or a major rain looms or if trying to maintain a canopy into October or November. (AW and WFW)

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