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Vineyard and Winery Information Series:

VITICULTURE NOTES

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I. Current situation: Pre-harvest considerations:

August is normally our slowest summer month in vineyard management, but the advanced 2010 season means that for many, the pre-harvest activity will be heating up earlier than normal. At this writing, early Pinot noir and Chardonnay for sparkling wine, and Pinot gris for still wine is close to harvest in central Virginia. The two-week (±) advanced vine development early in the season has been sustained and barring significant rains and/or cooling trends, most of us will see an approximately two-week advance of harvest. Let's review some of the management decisions for this season:

Pest management: Dr. Nita has a separate section on late-season disease management that follows. A significant consideration at this point is to review the Pre-Harvest Intervals (PHIs) on all pesticides that you have used, or anticipate using between now and harvest. The PHI is the period prior to harvest during which the pesticide may not be applied. Mancozeb products (e.g., Dithane M45, Manzate 200) and products that include mancozeb, such as Gavel and Ridomil Gold MZ, all carry a 66-day PHI. While most seasoned growers will be familiar with the long PHI for mancozeb, the PHI of other products might catch you by surprise, particularly in a year with an advanced harvest. Watch the insecticides and acracides (miticides) in particular. Admire, Applaud, Brigade, Intrepid, and Sniper all carry 30-day PHIs. The fungicide Tanos also has a 30-day PHI. Several miticides (Agri-Mek, Onager, and Vendex) and the insecticide Diazinon all carry 28-day PHIs. Many of the newer fungicides have 14-day PHIs, but a few (Presidio, Rubigan, Vintage, and Ziram) carry a 21-day PHI. But don't take my word for it – read the pesticide label.

Foliar and fruit insect problems have been light this season, perhaps owing to the hot, dry weather. Some growers have gotten away with no insecticide sprays thus far in 2010. We are seeing a higher than normal incidence of grapevine yellows (GY) in 2010, but this likely relates more to the insect (leafhopper) pressure in 2009. From past experience, hot, dry years usually result in reduced GY incidence in the following year; so we might predict a lower GY disease occurrence in 2011.

Keep an eye out for bird and other wildlife depredation, even if it's not a normal occurrence in your vineyard. Hot dry seasons can increase the wildlife pressure. A few tips on birds and deer. While over-the-vine netting and electric fences are good, long-term solutions to chronic bird and deer pressure, some other options can also be implemented quickly and economically if you suddenly realize that you've got a novel problem. We've used round hay bale wrap netting (comes in 4- to 5-foot widths, in rolls of 5,000 or 7,000 foot length) for bird netting for the last 2 years and it has worked well on our VSP-trained canopies. It's relatively cheap and available at most farm supply stores. We use it once and dispose of it at harvest. The rolls are set vertically on a PVC spindle on a turntable in the back of a Gator and 2 people can quickly "wrap" a row using clothes pins to secure the opposing panels of the wrap to either side of the canopy. For deer, some growers have been "wrapping" the perimeter of their vineyards with plastic mesh netting (about 6-foot high), using the end-posts to secure the netting and extending along the border rows of the block. Rather than a permanent fixture, this netting is installed late in the summer in areas where the deer pressure is only noticed as fruit ripens. It's a temporary, imperfect "fix", but it does appear to cut down on the deer damage. The down-side of it is that you can't get a tractor or other equipment into the vineyard until you're ready to take it down.

Canopy management: Do a final check of the vine canopy. Prematurely senescing, yellowing leaves should be pulled from the fruit zone. They do not contribute carbohydrates to fruit maturity. Dead leaves retard the drying of clusters when they are in contact with clusters, and they can promote botrytis development on fruit in both direct and indirect ways. Keep the leaf layers in the fruit zone of the canopies down to 2 or less on average (a real or imagined probe run through the canopy should contact no more than 2 leaves on average as the probe passes from one side of the canopy to the other). There is still a chance of causing fruit sunburning by being too aggressive with leaf-pulling – don't pull any more healthy leaves than you really have to. A majority of the clusters should receive some direct sunlight for *some* portion of the day – we prefer to thin the east side of N/S-oriented rows, leaving somewhat more leaf area on the hotter western side of the canopy. Look for congestion at the tops of hedged VSP-trained canopies. If the hedging was not done in a timely fashion, the shoot tops might be growing horizontally along the top wires, giving rise to leafy laterals. Normal hedging can also produce several laterals where there was originally only one growing point. Collectively, this lateral growth can create very dense regions at the top of the canopy. It is often in these shaded, poorly ventilated regions that downy mildew and powdery mildew establish themselves on young, susceptible leaves.

Crop management and crop maturity: It's not too late to reduce crop levels on vines that are carrying a heavy crop. Clusters at 50% veraison weigh about 80% of their harvest weight and fruit at 15 to 17 ºBrix will essentially represent final weight, with some variation due to precipitation extremes. If you failed to collect mid-season cluster weight data you can still estimate crops and make downward adjustments to the crop if you feel the crop level is excessive. As I've used in previous communications, a good range of desired crop is about 1.5 to 2.0 pounds of crop per foot of canopy, irrespective of vine density in the vineyard (lower number for reds, higher number for whites). Also consider drought and the impacts of drought on crop maturation (please review my emailed note on Heat stress effects on grapes and grapevines that was issued on 7 July 2010). Extended drought that imposes severe stress on the vine will slow the ripening of grapes. This effect will be greater for heavily-cropped vines than for lightly cropped-vines. If you're seeing drought effects, and don't have irrigation, you might want to drop some crop and aim more towards 1.0 to 1.5 pounds of crop per foot of canopy.

While I just stated that drought can retard grape ripening, slight to moderate

drought, coupled with high temperatures can also *advance* compositional changes in grapes that might necessitate an earlier than normal harvest. In particular, dry conditions may cause berry dehydration (and increased sugar *concentration*, but not necessarily *content*), and increased heat can accelerate acid respiration, and potentially increase fruit pH. Increased sugar concentration will typically result in higher alcohol levels. Excessive alcohol can result in imbalanced wines that may be perceived as "hot" on the palate with masked aromatic volatiles. The increased pH can make wines more susceptible to microbial spoilage, affect color stability, and decrease aging potential. Some of these problems occurred in our last hot season, 2007, and Bruce Zoecklein's newsletter of December 2007 (http://www.fst.vt.edu/extension/enology/downloads/EnologyNotes137.pdf) offers a helpful review of how hot, dry harvests can both improve and potentially detract from the quality of the vintage.

Flagging/removing diseased vines: We've been harping about this for a couple of years. Late-summer is an excellent time of the year to scout the vineyard for symptoms of leafroll virus, esca, Eutypa dieback, and other chronic diseases. Flag and remove vines or vine parts that are affected by chronic fungal diseases. Affected trunks and/or cordons are best removed and burned. Continued cropping of diseased vines only drags down the quality of fruit harvested from healthy vines. The same prescription applies to vines affected by viral diseases (e.g., leafroll) and phytoplasmas (e.g., North American Grapevine Yellows). Unless you are confident that you can remove the affected portion of the vine, flag it now and pull it out this fall/winter when you have a bit more time. Scout the vineyard now with a roll of surveyor's tape. Flag old trunks that have cankers, Esca-like symptoms (Figure 1), or Eutypa symptoms (Figure 2). Flag entire vines that bear leafroll symptoms (Figure 3). Remove affected vine parts or entire vines either now or during dormancy. Retrain new trunks if renewal shoots/canes afford this option. This can be difficult with very old vines that are not as prone to produce renewal suckers – you may need to replace entire vines in these cases.

Figure 1. Esca-like symptoms on Cabernet Sauvignon.

Figure 2. Advanced Eutypa symptoms on shoots of old cordon.

Figure 3. Leafroll virus symptoms on Cabernet Sauvignon.

Late season disease management (Dr. Mizuho Nita, grape pathologist: The critical period for berry infection by downy mildew, powdery mildew, and black rot is between bloom and 4-5 weeks after bloom. We all experienced relatively early bloom (May 25th for Chardonnay in Winchester AREC), and at this point, the critical time has been passed. The next objective is to keep foliage clean from mostly downy mildew and powdery mildew. Late season infection on foliage may hinder the fruit development and also accumulation of carbohydrate to trunks, which will be used for winter survival. Often times, during this time of the season, you can extend a spray interval to 10-14 days, or even longer if you have managed diseases very well during earlier in the season *plus* if you do not receive many rain events. Mature leaves are more resistant than younger leaves, thus, you can use these young leaves as an indicator. You can decide whether a spray is needed or not based on your observations on these leaves on the upper part of the canopy.

The other diseases you may be concerned with at this time of the season are late season rots. These are sour rot, bitter rot, and Botrytis gray mold, caused by *Aspergillus niger*, *Alternaria tenuis*, *Melanconium fuligineum*, *Botrytis cinerea*, *Cladosporium herbarum*, *Rhizopus arrhizus*, *Penicillium sp*., and others microorganisms. These late season rots come in when fruit sugar content accumulates around 8%, and often times, white varieties with a tight cluster such as Vignoles and Chardonnay, tend to get these diseases because of their fair skin and clusters that can hold water inside due to the shape.

The sour rot pathogens, including Botrytis, are opportunistic in nature, and often time they require wounds to invade grape tissues. For instance, at bloom powdery mildew management is a key for Botrytis and other rot management because once these young berries are infected by powdery, even only to the point that you don't really see symptoms, it will damage grape berry skin. These damaged skins will erupt as berries increase their size, and create wounds later in the season to invite these rot pathogens in. With the same logic, the management of grape berry moth, wasps, and birds can lower the risk of infections.

The cultural practices play a very important role on late-season rot management. Proper shoot positioning and canopy management will decrease the risk of Botrytis infection by lower humidity of the fruiting zone. Leaf removal around fruit set has been recommended for some varieties to increase the air movement around clusters. Leaf removal around veraison can help thickening of skins. Therefore, some people perform leaf removal around fruit set to open up the eastern-side of canopy and do it again after veraison, and with cooler weather, to open the western side. However, it may also increase the risk of sun damage on the berries. Thus, check to see if the leaf

removal is a good tactic for your varieties. Bunch thinning can also be done at veraison to reduce the risk of having berries with high sugar lying around the vineyard to invite insect pests.

There are only a few options with the chemical management against these late season rots, and none of them will provide a complete control. Botrytis materials such as Rovral, Elevate, Pristine, etc., and captan is often recommended to spray at or around veraison. (For varieties with tight clusters, application prior to cluster closure is ideal to ensure the penetration of chemicals into clusters.) In addition, the use of a copper fungicide (Bordeaux mixture, etc.) has been recommended as a tank mix with a Botrytis material because in addition to its fungicidal activities, some study showed that copper helps grape berry skins to become thick.

For your information: We will have a vineyard meeting at our Winchester AREC on August 4th (see Upcoming Meetings, below). If you have a time, please join us. As for the grape disease management, there is not much to say at this late in the season; however, you can take a look at our fungicide performance trials, where you can observe what will happen if you don't spray fungicides under our growing conditions. In addition, I can show you how mealybugs (a vector for grape leaf roll disease) look like. Speaking of mealybugs, I have been conducting a survey study of leaf roll disease and mealybugs (a vector of leaf roll viruses). If you suspect any of your vines are showing symptoms of leaf roll and/or seeing mealybugs, please contact me so that I can sample from your place. The diagnostics of leaf roll disease will be free of charge because the VA Wine Board and Viticulture Consortium East have been supporting this project.

I wish all a nice remaining season.

II. Other news/reminders:

Grapes for sale: We have provided a listing of Virginia-grown grapes for sale and updated and distributed that listing bi-weekly in recent seasons on our listserv electronic newsletter. As mentioned in the May-June Viticulture Notes, Virginia Vineyards Association has agreed to provide this service in 2010 and we will therefore not be posting a "Grapes for Sale" service in 2010. The VVA website is http://www.virginiavineyardsassociation.com/ (go to the "Exchange" link in the left-hand navigation pane).

Wanted

Owners of 140-acre historical farm south of Thurmont MD seek an experienced wine-maker to start/operate a commercial farm winery, and to manage an existing 3-acre vineyard in Middletown MD. Great opportunity for the right candidate. Please call Amie 301-370-4905 or email thestonemanor@AOL.com.

VI. Upcoming meetings:

Aug 4th **Virginia Tech viticulture research review**
AHS AREC (http://www.arec.vaes.vt.edu/alson-h-smith/index.html**)**
11:00 am to 2:00 pm (bring a lunch; soft-drinks and water will be provided)
This is the final Virginia Cooperative Extension vineyard field meeting of the 2010 season. Speakers include Tony Wolf, Mizuho Nita and Cain Hickey.

Topics: A review of viticulture research projects underway at AREC, including vine size regulation of Cabernet Sauvignon to optimize wine quality potential, and Dr. Nita's fungicide trials and grape leafroll research.

Directions: From Interstate 81: Virginia Tech's AHS Jr. Agricultural Research and Extension Center is located approximately 7 miles southwest of Winchester, VA in Frederick County. From Interstate 81, take the Stephens City exit on the south side of Winchester. Go west into Stephens City (200 yards off of I-81) and proceed straight through traffic light onto Rt. 631. Continue west on Rt. 631 approximately 3.5 miles. Turn right (north) onto Rt. 628 at the "T" intersection. Go 1.5 miles north on Rt. 628 and turn left (west) onto Rt. 629. Go 0.8 miles. The center is on the left side of the road.
Contact: Tony Wolf, Virginia Tech (vitis@vt.edu) or (540) 869-2560 x18

Aug 10th **Virginia Vineyards Association Summer Technical program**
Vineyard soil assessment and review of vineyard management approaches used at Linden Vineyards
Location: Linden Vineyards, Linden VA **(http://www.lindenvineyards.com/)**

Topics: Meeting will feature soil scientist Dr. Alfred Cass (Alfred Cass and Associates of Calistoga,CA) and Jim Law, owner of Linden Vineyards. Meeting program and registration details are at the VVA website (http://www.virginiavineyardsassociation.com/events.php). This will be a great educational event. Soil pits will be dug at 4 locations in Linden Vineyards and attendees will be shown how the soil profiles are evaluated in terms of their physical and chemical properties, and the bearing this has on potential vine performance. Jim Law will review how he has adapated his wine growing over the years to improve wine quality potential.
Registration required: See the VVA website for registration information.

Aug 5: (Pennsylvania meeting) "Chardonnay – beyond the norm"
The Pennsylvania Quality Assurance Group is hosting this meeting at the new site of Blair Vineyards and Winery, 99 Dietrich Valley Road, Kutztown PA. [Just south of I-78 and west of the Krumsville Rd (Rte 737)]. The meeting starts at 9:00 am and requires pre-registration. Speakers include John Weygandt, Catherine Peyrot des Gachons, Francois Servin (Domaine Servin), Sigrid Gertsen-Briand (Lallemand), and Arthur Harder.

For further information, contact John Weygandt at stargazers@kennett.net