



## Viticulture Notes..... Vol 31, No. 4 (23-May-2016)

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<http://www.avec.vaes.vt.edu/alson-h-smith/grapes/viticulture/index.html>

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### 1. Current situation

It's the kind of weather that only a duck would like. I look at the current satellite image for cloud cover and just see a big low pressure system sitting on Virginia. While I wonder what we did to deserve this, I'm also wondering about our vineyard and how the vines are faring. Fungicides were applied last Friday – 4<sup>th</sup> application in a very wet spring – and the vines look good, but the cool, wet weather, combined with early season growth gives the vines a bit of a jaundiced appearance. Or maybe it's just that my view of the weather is jaundiced. The "long range" (one month) NOAA forecast for Virginia, released 19 May, suggests about normal precipitation and above-average temperatures for the mid-Atlantic. I read a quote recently that seems appropriate for the weather and, modified slightly: a pessimist complains about the weather, an optimist hopes for better weather, while a realistic adapts to the weather. I'm an optimist, but I also think I'm a realist. This is not a good time to take shortcuts with the disease management in the vineyard. You need to be on top of the canopy management all of the time in Virginia, but certainly with fungal disease-prone varieties in this wet weather. See my comments below on shoot-thinning. Although there is interest in pre-bloom leaf-thinning to loosen fruit clusters, I might go easy on the leafing this year if rains continue into the bloom/fruit-set period; fruit set can be depressed already by poor weather during this period and striving to reduce fruit set further might not be a wise strategy.

Take advantage of lulls in the rain to reapply protective fungicides and consider using rainfast materials that are locally systemic and won't be rapidly washed off the plant during rains. While I don't normally recommend sticker adjuvants, they might extend the persistence of fungicides during repeated rain events. And while it's wise to consider the cost of fungicides, the pre-bloom through post fruit set period is when you want to use the most effective (often the more expensive) materials available.

Be sure to take a look at Dr. Mizuho Nita's grape disease blog now and then (or set your email to automatically receive RSS feeds) <http://grapepathology.blogspot.com/> I've been looking at his notes from 11-12 May twilight meetings in consideration of the upcoming, extremely important bloom period and have revised a couple of my fungicides accordingly, particularly for downy mildew management in light of a forecast of increasingly warm temperatures.

The following topics and reminders are meant as reminders for seasoned growers as well as those just starting out. While most of the topics concern mature grapevines, there's something for everyone in the content. The topics (canopy management, nutrition, crop management) are covered more extensively in the Wine Grape Production Guide, available here: <http://palspublishing.cals.cornell.edu/>

#### *Canopy management: Shoot-thinning*

- Our goal with shoot-thinning is to promote a desirable canopy architecture for fruit ripening by limiting shoot density to about 3 to 4 shoots per foot of canopy. It is far easier to thin shoots in the pre-bloom period than waiting until you realize the canopy is too dense after fruit set. We finished shoot-thinning our relatively late-developing Cabernet Sauvignon last week; however, with cordon-trained vines, we'll need to cruise the vineyard again to rub off base buds that have popped since our first go around.
- Note: If you are in a windy location, or with high-trained vines, you might go a bit higher with this density goal, as shoot breakage may occur and further thin the canopy. We had high winds about a week ago (around 15 May) that did lead to some shoot breakage, but most shoots were through the first set of catch wires on these VSP-trained vines.
- Note: Shoot density for Smart-Dyson (or other divided canopy training systems) should be altered to reflect the upper and lower canopies. For S-D, or S-D Ballerina, we would aim for 3-4 shoots/foot of cordon going UP and 2-3 shoots/foot going DOWN on the two opposing planes of vertically-divided canopy
- Cannot over-emphasize the importance of shoot-thinning **now** for improved disease management and fruit ripening **later**.
- Goes a long way towards achieving desirable canopy architecture AND balanced crop load
- Try to retain shoots that are close to cordon (e.g., lower node of 2-node spur) if using cordon-training.
- More work required to shoot-thin cordon-trained vines (due to multiple base buds) than head-trained, cane-pruned vines; however, shoot development often more uniform along the cordon than along a cane (pros and cons to both systems)
- Did I say this already? Close attention to shoot density and shoot positioning now will *greatly* assist with disease management in the post-bloom period

#### *Canopy management: Selective leaf and lateral shoot removal*

- At fruit set or shortly thereafter, selectively removing 1 or 2 leaves per shoot around the fruit cluster(s) is an excellent means of assisting with disease management, especially for botrytis bunch rot and powdery mildew.

- Ideally, we want no more than about one leaf layer (on average) in the fruit zone or elsewhere in the canopy. I used to advocate 1.5 leaf layers. Work done by former PhD graduate student Cain Hickey has led me to nudge that figure down to 1.0 leaf layer (Cain might even go lower). This does not seem like a large difference, but his work with red Bordeaux varieties, at least, suggests that there might be added benefits to an even more exposed fruit zone. More on that in a subsequent newsletter.
- If your canopy exceeds 1.5 leaf layers, think about additional shoot-thinning or selective leaf pulling.

*Crop control:* My general rule of thumb is to aim for about 1.5 to 2.0 pounds of crop per foot of canopy: the lower number for reds, the higher for whites. Again, this is a *general* rule and you may wish to further reduce those levels if your own situation and experience warrant the reductions. You'll need your average cluster weights from previous harvests to predict how much crop is (currently) hanging (at time of thinning). But, say, if you are counting 7 developing clusters per foot of canopy and that variety averaged 0.38-pound clusters at harvest in past years, then you might be headed towards 2.7 pounds of crop per foot of canopy – I'd suggest going back to no more than 5 clusters per foot—if you think that cluster weights for 2016 will be near long-term average.

*When to reduce crop, if needed:* With vigorous vines, wait until July (but well prior to veraison) to remove excessive crop. Thinned too early, and vines will compensate with larger berries and more compact clusters. Thinned at or after veraison, and you will gain very little if any benefit, unless you just like seeing clusters on the ground. With low-vigor and/or young vines, remove additional crop soon after fruit set, once you can see the extent of set. Remove all clusters from stunted shoots (e.g., those that appear to have aborted shoot tips and that are less than 18 inches long). Basal clusters are typically the larger(est) clusters on shoots that bear 2 or more clusters. Deciding which cluster(s) to remove on a shoot has more to do with proximity to other clusters than to position on the shoot though. We prefer to thin clusters with the strategy of minimizing cluster-to-cluster contact, or contact of the cluster with trellis hardware or cordons, rather than following a particular prescription for basal cluster versus more distal cluster removal. Clusters and berries that freely develop without contact with other objects tend to be freer of fruit rots and exhibit more uniform berry ripening than do clusters that are contacting trellis or grapevine parts.

*Nutrition:* Small rates (10 to 20 pounds actual N/acre) of nitrogen can be applied prior to bloom if petiole tests from previous year(s) indicate low, early season levels of N. Our vineyard work with nitrogen over the past 5 years has led me to have some reservations about the utility of bloom-time tissue sampling for nitrogen (N). I have seen low tissue (petiole) N levels (e.g., < 0.80 %) at bloom on vines that appear to have adequate N levels (e.g., 0.9 to 1.10%) in mid-summer or at veraison. I occasionally see the opposite: adequate N levels at bloom, followed by deficient levels at or before veraison. Using visual clues, coupled with plant tissue sampling and analysis can help pinpoint whether you need to adjust your N program.

With Wine Board support, we are continuing two field studies to look at tissue type for N assessment (petioles, vs. blades vs. whole leaves). For now, bloom-time sampling of petioles located opposite flower clusters still provides good information on most essential nutrients, but I am leaning towards a veraison sampling of petioles for follow-up assessment and to confirm potential physical evidence of nitrogen status (canopy color, vine size – cane pruning weights, and crop level declining). I'm not sold yet on whole leaf (petioles+blades). We did some of this last year but go no better resolution of our field N treatments than by doing petioles alone. We're repeating this work this summer though.

If nitrogen is needed, the trend with our nitrogen recommendations has been to delay N application until bloom, and then do a split application wherein 50% of total rate is applied between bloom and fruit set, and the other 50% applied about 6 weeks later. The latter application can help ensure adequate N availability during the critical ripening period of the grapes. It also helps ensure adequate Yeast-assimilable Nitrogen (YAN) levels in fruit at harvest (although foliar-applied urea appears to be a very effective way of increasing fruit YAN levels – more on that in a subsequent newsletter).

- Under-trellis cover crops for vigor control (or weeds) can aggravate N availability to vines (vines might need more N applied if intra-row cover crops are used than if under-trellis herbicides or other weed management techniques are used).
- Make sure that applied nutrients are incorporated, as by cultivation or rainfall. Soil-applied nutrients will be unavailable to the plant unless there's sufficient incorporation and soil moisture to get the nutrients to the roots (does not seem to be a problem thus far this spring).
- Don't apply what's not needed. Use plant tissue analysis, soil testing, and visual observation to determine nutrient needs. We continue to recommend either the Penn State plant analysis lab or Waypoint Analytical ([www.waypointanalytical.com](http://www.waypointanalytical.com)) for submission of plant tissue analyses. IMPORTANT: You can submit plant tissue samples directly to these labs with the appropriate submission forms: Penn State plant analysis forms are available at: <http://www.aasl.psu.edu/>. Click on "submitting samples" on the menu on the left-hand side of screen. Waypoint Analytical also has submittal forms for plant tissue samples at their website ([www.waypointanalytical.com](http://www.waypointanalytical.com)). We will provide feedback to you on tissue analysis results if desired, but you will need to contact us ([vitis@vt.edu](mailto:vitis@vt.edu)) and request the recommendation once you receive your lab results.

Aside from nitrogen, phosphorus, boron and magnesium are occasionally applied/needed in established vineyards. Materials and rates are in the Wine Grape Production Guide. A reminder too that we are reducing our recommendations for applied potassium on the basis of soil sampling. We spoke about this at the VVA winter meeting (January 2016) and will provide additional details in the coming weeks.

*Insects:* Scout for grape berry moth infestation in developing grape clusters. Insecticide options, if warranted, are in the current Pest Management Guide, which is available here: (<http://pubs.ext.vt.edu/456/456-017/456-017.html>).

We often see various galls on vines at this time of year – some are important and some are not: tomato tumid galls, which appear as pea- to marble-sized, often reddish galls on shoot stems, cluster rachises and sometimes leaf petioles may be present, but are generally inconsequential (<http://www.virginiafruit.ento.vt.edu/grapegalls.html>). These and similar galls, some more conical in appearance, are tissue overgrowths caused by egg-laying of small insects (midges). They are entirely benign and unless you have a very unusual situation, they do not warrant removal or other control measure. Enjoy them for the biotic diversity that they represent.

Aerial phylloxera becomes apparent at this time of year on some varieties (esp. some hybrids) and may warrant insecticidal control if historically severe in your vineyard (see the PMG).

Grape cane girdlers cause shoot damage by the sequence of egg-deposition in succulent shoots, and the subsequent breakage of those shoots. Generally, the shoot breakage occurs well above grape clusters and, despite the immediate appearance of the broken shoots, lateral development on the injured shoots will soon replace the leaf area necessary to ripen grapes on the affected shoots. If you believe that insecticidal control is warranted (>10% of shoot breakage has occurred in previous years), the insecticide (see PMG for current recommendations) should be applied when shoots are 4 to 6 inches long (now).

Virginia Cooperative Extension's Pest Management Guides: Just a reminder (the PMGs have been on-line for some time), **grape** chemical pest management guidelines are provided in the Pest Management Guide, updated annually, and found at: [http://pubs.ext.vt.edu/456/456-017/Section-3\\_Grapes-1.pdf](http://pubs.ext.vt.edu/456/456-017/Section-3_Grapes-1.pdf)

***Other threats:***

Hail: Hail hits at least one VA vineyard per year and injury can range from the occasional torn leaf and bruised berries (almost always on the exposed portion of the cluster) to dings on shoot stems and even defoliated vines. The minor symptoms may be difficult to trace to hail, while there is no mystery about the latter. There's not a lot you can do after a catastrophic hail storm. The vines will usually grow back out. Damage to fruit (bruises, sunken regions on the berry, exposed seeds, etc.) may lead to disease if the weather remains wet, but these injuries usually dry up with pre-veraison berries. A botrytis-specific fungicide might be warranted with botrytis-susceptible varieties that have been hit by hail.

2,4-D herbicide drift: Often associated with no-till corn production. Alert neighbors to the sensitivity of grapevines to phenoxy-type herbicides. Early season damage not quite as severe as late-season, provided it does not occur right at bloom or fruit-set. Communication is extremely important, but is not always entirely effective.

## II. Upcoming meeting:

### Clean Plant Material meeting

#### Veritas Vineyards

8 June 2016

Virginia Tech is teaming with the Virginia Vineyards Association to host a “Clean vines/keeping vines clean” seminar on 8 June 2016. Registration is being handled by the Virginia Vineyards Association ([www.virginiavineyardsassociation.com](http://www.virginiavineyardsassociation.com)). Speakers include James Stamp (Stamp Associates Viticulture), Joshua Puckett (Foundation Plant Services), Mizuho Nita (Virginia Tech grape pathologist), Dustin Hooper (Vintage Nursery), and Rick Dunst (Double-A Nursery). The meeting will be held at Veritas Vineyards and Winery near Charlottesville. The “clean plant” meeting concept is centered on questions related to the phytosanitary status of grape nursery stock, particularly in light of viruses, fungal canker pathogens, and crown gall bacteria, and what is currently being done nationally (e.g., National Clean Plant Network and Foundation Plant Services) and at the commercial nursery level to put “clean”, high quality plant material into the marketplace. The clean plant seminar will be followed by a “viticultural research needs assessment” open forum to provide an opportunity to discuss urgent viticultural research needs of the Virginia industry. The research could take the form of research organized and conducted by grape specialists and their students and support personnel, and it could take the form of “Citizen Science” in which industry members are active participants in the investigative process. The research needs forum will be moderated by members of the Virginia Vineyards Association’s Board of Directors. Finally, the day will conclude with a wine tasting from one of the most majestic viewpoints in Albemarle County, followed by dinner and socializing at Veritas Winery. You can see more about the meeting and register at the VVA website:

<http://www.virginiavineyardsassociation.com/2016/05/2016-summer-technical-meeting-clean-plants-keeping-them-clean/>