

Grape chores

Bud break is upon us in many, but not all, bunch wine grape vineyards here in northern Georgia; we are seeing 1.0-1.5" shoot growth in warmer regions. Earlier cultivars are likely also swollen or breaking in NC and TN, particularly in warmer regions. However, I have recently heard reports of bud break occurring in Chardonnay even in western NC. Virginia is likely at least three to four weeks out from seeing any bud break in bunch wine grape vineyards. Southern Georgia muscadine vineyards started bud break about two weeks ago (see picture from Still Pond Vineyard and Winery); bud break is fast approaching here in muscadine vineyards in the Georgia piedmont. Given the recent cold weather, many frost/freeze events have recently occurred here in the northern third of Georgia; two more are forecasted to occur over the weekend and into early/mid next week. While things might slow down a bit given our current weather patterns, the next consistent stretch of warm temperatures will likely get things moving in earnest in vineyards all over the southeastern US. The following grape chores will last through late June/early July, when the next Small Fruits newsletter will be released through the Southern Region Small Fruit Consortium website (www.smallfruits.org).



Muscadine bud break in Calhoun County, Georgia; courtesy of Charlie Cowart

1. **Service and check active frost protection machines/equipment and be prepared to avoid spring frost.** This is timely, as it may come in handy throughout April and early May. The most ubiquitous active frost protection method in eastern US vineyards is using a wind machine (photo, below) to mix air. Wind machines can protect 10-12 vineyard acres. Fiscal estimations suggest that wind machines can “pay for themselves” if they save the crop on only one acre if that crop is turned into wine and sold. If your site is frequently threatened by spring frost, such an investment may prove to be economically beneficial. Combining air movement with heaters or burning brush piles may offer additional protection when the 1-3 °F of protection offered by air mixing alone is anticipated to be ineffective at preventing frost damage. Other methods, such as delayed pruning, spray materials, and irrigation may help in some instances, but each of these methods has drawbacks. For example, highly variable results have been reported regarding the effectiveness of spray materials advertised to lower frost risk through bud break delay, cryoprotection, or preventing ice nucleating bacteria. Delayed pruning requires a final pass through the vineyard to prune to the desired final bud density; such a task may be too much for some enterprises to accomplish in a timely fashion given all that needs to be done in the vineyard during the bud break and early shoot growth stages.

2. **Weed management.** Depending on your own adapted program, you may be needing to apply herbicides before bud break. Wayne Mitchem, NC State/UGA/Clemson orchard and Vineyard Weed Management Specialist and UGA Viticulture Team member, recently spoke to grape growers at NC and GA meetings about best herbicide practices in vineyards. Wayne will also be speaking about herbicide calibration and application at our Effective Vineyard Spraying Conference on April 26th in Dahlonega, GA (announcement at end of this chores list). Wayne is also a great resource for all herbicide-related questions in the vineyard; his email is mitchem@ncsu.edu. Please also consult your local county agent and/or the Southern Region IPM guides for bunch grapes and muscadines at the Southern Region Small Fruits Consortium's website: <http://www.smallfruits.org/ipm-guides.html>.
3. **Disease management. This is perhaps the most important "chore" in this list across all southeastern US vineyards given our disease-intensive climate. It is not a question of *if* you should manage for fungal diseases, it is a question of *when and how* you should do it using *what* strategies.** Much of the *when and what* was covered by Phil Brannen, UGA Fruit Pathology Extension Specialist and UGA Viticulture Team member, at a recent workshop in Tiger, GA. Phil will also be speaking at a near-future workshop up in Surry County (contact Joanna Radford for more information; radfordj@co.surry.nc.us) as well as at the upcoming Effective Vineyard Spraying Conference on April 26th in Dahlonega. All major fungal diseases will need to be managed between now and the next edition of the Small Fruits newsletter, which will be near July. Before and during bud break, phomopsis is of primary concern, but powdery mildew needs to be managed at very early shoot growth (3"), and downy mildew and black rot need managed very shortly thereafter. The critical period for managing several diseases on clusters begins at bloom and lasts through bunch closure. There are several guides and templates out there for disease management in vineyards. Use these to guide and develop your own program and adjust your program based on weather patterns and growth stage at your own vineyard location. If weather is highly conducive to fungal disease development, then tighten intervals; do the opposite if weather is dry and little precipitation. I am not the expert in pathology. Phil Brannen (pbrannen@uga.edu) and Mizuho Nita (Grape Pathology Specialist at Virginia Tech; nita24@vt.edu) are both great resources for grape disease-related questions. Mizuho's web page is a great resource for regional grape growers (<http://grapepathology.blogspot.com/>). Please also consult your local county agent and/or the Southern Region IPM guides for bunch grapes and muscadines at the Southern Region Small Fruits Consortium's website: <http://www.smallfruits.org/ipm-guides.html>.
4. **Insect management.** Some insects will require management at an earlier calendar date / growth stage relative to others. Few insects are of concern right now (bud break) but climbing cutworms can cause severe shoot damage very early in the season if they are a preblem in your vineyard and they are left untreated. My general recommendation is to know the history of troublesome insects at your specific site and to scout before you implement control measures. Regional insect pests include, but are not limited to, *Drosophila* spp., Japanese beetles, mealy bugs, mites, and leafhoppers. Our regional entomology experts include Brett Blaauw (UGA Orchard and Vineyard Entomology Specialist; bblaauw@uga.edu) and Doug Pfeiffer (Virginia Tech Orchard and Vineyard Entomology Specialist; dgpfeiff@vt.edu). Please also consult your local county agent and/or the Southern Region IPM guides for bunch grapes

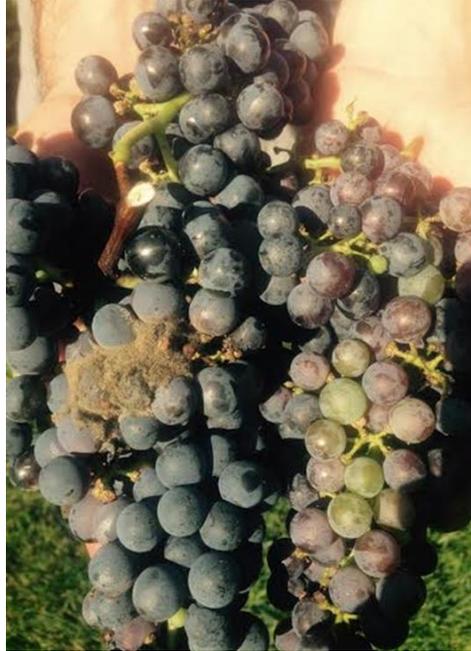
and muscadines at the Southern Region Small Fruits Consortium's website:
<http://www.smallfruits.org/ipm-guides.html>.

5. **Shoot thinning.** Shoot thinning is the first “canopy management” practice of the growing season. To optimize efficiency, shoots should be thinned by manually by hand removal. This is best accomplished when shoots are roughly 5” long. Inflorescences are clearly visible at this stage, making it easy to retain fruitful, and thin unfruitful, shoots. It is NOT advised to wait on this practice, as it becomes much more difficult to efficiently thin shoots when shoots are approaching a foot in length, and the junction between the spur and shoot becomes lignified. If you need to use pruners to thin shoots you have waited too long. Optimal shoot density is around three to five shoots per linear foot of row for single-fruiting zone systems, such as VSP systems. It is impossible to count to this number throughout commercial vineyards. Thus, it is advised to thin a panel to roughly four shoots per linear foot of row and get crew members to get a mental image of what this looks like (below); they can then implement in the rest of the vineyard with good precision.



6. **General canopy management.** After shoot thinning, shoots need positioned to accommodate the intended training system. This will require tucking and positioning shoots, which facilitates air movement and sunlight interception by the leaves and ultimately promotes healthier, less disease-prone vines. Fruit zone leaf removal has been shown to optimize wine quality potential and reduce rot incidence and severity. My recommendation is to conduct the “initial leaf pulling” by removing leaves opposite clusters immediately after fruit set and no later than peppercorn berry size. This promotes canopy spray penetration and fungicide coverage on fruit and also acclimates fruit to the ambient temperatures and radiation outside of the canopy, thereby reducing sunburn risk. In fact, over the last five years, I have rarely seen sunburn evidence on highly exposed grapes when I have removed fruit zone leaves immediately at, or before, fruit set; these observations come from all over the southeastern US - from northern Virginia, to North Carolina, and all the way down to northern Georgia. Hedging of primary and lateral shoots should occur as needed through several weeks post-veraison. Primary and lateral shoot hedging are necessary for the same reasons that shoot positioning and fruit zone leaf removal. Fruit zone leaves could be removed to optimal specifications, but if primary shoots and laterals shade the fruit zone then there really is no net benefit gained toward promoting a healthy fruit zone microclimate within the canopy. Once pea-berry size and/or bunch closure arrives, then leaf removal maintenance is good practice to maintain open fruit zones that are

quick-drying and therefore less hospitable to late season bunch rots such as *Botrytis*. Please see the photo, below, taken from a highly-shaded fruit zone. Nobody wants to make or drink wine from fruit like that – both because of the rot, but also due to the vegetal characteristics imparted to the finished wine product from such unripe fruit.



7. **Fertilization.** Use your soil reports, petiole sample results from current and previous seasons, and your own visual observations to determine where you need to fertilize and what you need to fertilize with. Fertilization should occur in split applications – one at/around bloom and one later in the season, perhaps at veraison. New root growth has been observed to occur primarily at bloom and immediately after harvest. It thus stands to reason that these periods are associated with optimal nutrient uptake efficiency from the soil. I am a bit reluctant, however, to recommend late season fertilization given all that is happening with harvest logistics as well as the potential for causing a flourish of growth when vines should be acclimating to cooler temperatures and approaching winter dormancy.
8. **Soil and plant tissue sampling for nutrition management.** Soil samples tell us what could be available for vine uptake. Sampling of vine tissues tells us the nutrient status of the grapevine itself. These are not necessarily related as nutrient uptake depends on physical, chemical, and biological properties. At bloom, petioles and/or blades should be sampled from the *primary* shoot at the position that is opposite a flowering cluster. At veraison, petioles and/or blades should be taken from one of the most recently and fully developed leaves on the *primary* shoot (be careful, as hedging will result in lateral shoots coming off at the apex of primary shoots, potentially resulting in difficulty in identifying primary and lateral shoot). There are sufficiency ranges for macro- and micro-nutrients in grapevines, which are dependent on the tissue sampled (leaf or petiole). A very well-written and thorough article on grapevine nutrition and nutrient sufficiency ranges, written by Paul Schreiner and Patty Skinkis, can be found here: <http://articles.extension.org/pages/31517/monitoring-grapevine-nutrition> . Please work with your local county extension agent to help you collect, submit, and interpret soil and plant tissue nutrient samples in order to optimize your vineyard nutrition program.

Events:

The Effective Vineyard Spraying Conference will take place from 9 AM to 5 PM on April 26th at Frogtown Cellars in Dahlonega, Georgia. This will feature Dr. Andrew Landers, who is greatly known for his workshops on sprayer calibration and spray coverage efficacy in vineyards. Dr. Phil Brannen, Mr. Wayne Mitchem, several sponsors/vendors, and myself (Cain) will also be participating in this one-day conference that is anticipated to be a great event to help owners and managers dial in their sprayers. While the “what and when” are important to know regarding pesticide application, this workshop will cover the “how to”, which is arguably of equal importance relative to the latter to considerations.

For more information, and to register for this conference, please visit this link:

<https://site.extension.uga.edu/viticulture/2018/03/mark-your-calendars-effective-vineyard-spraying-conference-april-26th-2018/>

That’s about it. We will likely be seeing some berry softening and coloration in more southerly-positioned vineyards across the southeastern US by the time the next “grape chores” list is published in the July edition of *Small Fruits*.

If you have not already done so, please subscribe to our extension viticulture blog update for updates on timely management, events, regional weather, etc.

<https://site.extension.uga.edu/viticulture/>