Cornell University
Cooperative Extension

Eastern NY Commercial Horticulture Program

Vol. 1 Issue 4
June 26, 2014

Grapes News

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Phenology Updates

Hudson Valley Lab: Last week's rain combined with this week's sunshine and warmth has really advanced the vine growth. Depending on variety, vines at the Hudson Valley Lab are at full bloom to fruit set.

North Country: Grape vines are flowering in Willsboro ranging from flower caps still in place to about 80% flower caps off.

Pest Updates

Now is the time of year in the Hudson Valley where everything (diseases, insects) come together for a large picnic in the vineyard! The infection period for Black rot, Phomopsis and powdery mildew is still active, and right now (bloom, early post bloom) is a critical time to manage these diseases to prevent fruit infections. We are also still at the beginning infection period for downy mildew and need to continue fungicide applications to keep this disease in check. Added to all of that, now is also the time that susceptibility to Botrytis (gray mold, bunch rot) begins (see article on page 5). Oh, and let's not forget about the insects. Grape Berry Moth and Japanese beetles are two more pests to add to the mix (see articles on pages 2 and 6). *-JMO*

First bloom

Full bloom

Buckshot berries

Photos from Vineyard IPM Scouting Report, week of 5/3/10, Univ. of WI Ext. Door Co. and Peninsular Ag. Research Sta., Sturgeon Bay, WI

For important updates, and access to more grape information (fruit school talks, fact sheet links, etc.), check out Jim's blog.

http://blogs.cornell.edu/hudsonvalleygrapes/

Serving the educational and research needs of the commercial small fruit, vegetable and tree fruit industries in Albany, Clinton, Columbia, Dutchess, Essex, Fulton, Greene, Montgomery, Orange, Rensselaer, Saratoga, Schoharie, Schenectady, Ulster, Warren and Washington Counties

Vine Collapse Due to Trunk Injury

By Hans Walter-Peterson , from June 11, 2014 issue of Finger Lakes Vineyard Update (newsletter available online at http://nygpadmin.cce.cornell.edu/pdf/newsletter_update/pdf166_pdf.pdf)

As canopies continue to develop from primary and secondary shoots, the demands on the trunks' ability to supply water and nutrients also increase. If there is sufficient injury in the vascular system, portions of or entire vines will start to collapse. We have seen a few trunks doing so recently, and I expect we'll see some more as we get into and past bloom. The big unknown, obviously, is how many will actually collapse this year, and potentially next year as well. If you start to see vines collapsing, it is important to remember a couple of things:

1. Do start to keep records in some way, shape or form of where the vines are collapsing. Make a note of whether or not you will be able to retrain new trunks from suckers, or if you will need to replant a new vine. This will be important information for determining how many vines will need to be purchased as well as for crop insurance and FSA purposes, especially if you are considering using the Tree Assistance Program (TAP).
2. DO NOT start to remove vines until you have been in touch with your crop insurance and/or Farm Service Agency office. Crop insurance and FSA personnel may need to come to the vineyard to verify any claims that are made, and they can't do that if the old vines are already gone. You can locate your county's FSA office by going to the FSA's Office Locator and clicking on your county. A fact sheet with information on the TAP program is also available from FSA.

Japanese Beetle

By Greg Loeb, Dept. of Entomology, Cornell Univ. NYSAES published in May 2014 issue of Finger Lakes Vineyard Notes.

By and large, Japanese beetle populations have not been as bad as they were a few years ago. I don't really have an explanation. The adults (1/2 inch body, metallic green in color, Figure 1) seem to have a fondness for grape foliage, but also feed on a number of other plant species. Although the adults have broad diets, the larvae (Figure 2) feed principally on the roots of grasses. Hence, we often find the most significant problems with adult Japanese beetles in areas surrounded by an abundance of turf. The fact that most vineyards have sod row middles may exacerbate problems with adults. Indeed, we (myself, Tim Weigle, and Elson Shields) have been investigating the use of entomopathogenic nematodes (soil inhabiting, in-sect feeding) against Japanese beetle larvae in sod row middles as a way to reduce adult Japanese beetle populations and damage. Results are still being collected, but establishment of beneficial nematodes appears good and we are seeing a trend toward reduced numbers of adult Japanese Beetles in vineyard blocks where nematodes were released compared to control blocks.

Figure 1. Adult Japanese beetle *Photo by Steve Hesler*

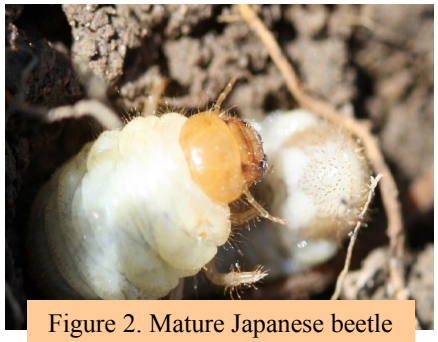

Figure 2. Mature Japanese beetle larva (grub). *Photo by Steve Hesler*

The adults emerge from the soil in mid-summer and begin feeding and then mating and egg-laying. The feeding damage caused by adults can be quite extensive, perhaps exceeding 10 or 20% of the foliage. Fortunately, grapes are fairly tolerant of this type of feeding at this time of the season. Research in Kentucky and also in Michigan examining the impact of foliar damage by Japanese beetle on grape productivity, fruit quality and yield indicate that both natives and *vinifera* grapes can tolerate some leaf damage. The exact amount is hard to nail down but it seems that up to 15 or 20% leaf damage has little impact. Note, though, that the actual impact of leaf feeding will depend on a number of factors including health and size of the vine and the cultivar. Moreover, if it is a high value cultivar then the economic injury level will be lower compared to a lower value cultivar. Young vines may be particularly vulnerable in that they have fewer reserves to draw upon to recover from damage. You should make a special effort to regularly monitor vines inside growth tubes for Japanese beetles and apply insecticides directly into the tubes if treatment is warranted. Grape cultivars do seem to vary in resistance to Japanese beetle. Thick leaved native cultivars are the most resistant followed by hybrids and then *V. vinifera*.

There are several insecticides labeled for use against Japanese beetles on grapevines. These all are roughly similar in efficacy but they do vary in impact of beneficial arthropods like predatory mites. I mention this because multiple applications of something like Sevin could depress predatory mite populations and promote spider mite outbreaks. Also keep in mind that the adults are very mobile and can recolonize a vineyard block after being treated with an insecticide. Regular monitoring of the situation is recommended.

Managing Winter-Injured Vines

By Tim Martinson, 5/30/14 Northern NY Grape Management Update, online: http://blogs.cornell.edu/nnygrapeupdate/

Shoots from secondary and tertiary buds. Primary bud (circled) did not push. Note there are no visible clusters.

The polar vortex brought record low winter temperatures to the Midwest and northeast early in 2014, along with multiple low temperature episodes over several weeks. Many vineyards suffered a wide range of bud injury, and an unknown amount of trunk injury – even with cold-hardy 'Minnesota' varieties. Now that budburst has occurred, growers have a better idea of what they are dealing with and how severe the damage is. It's time to deal with the injury. So what are the consequences, and what should growers do to manage injured vines?

Bud injury. A week or two after budburst, it's easy to assess how many shoots have 'pushed,' but those that have will be a mixture of primary (normally highly fruitful), secondary (much less fruitful, with fewer, smaller clusters) and tertiary (fruitless) buds. Often, latent buds from the trunks, cordons, and particularly the base of the vine (suckers) will push instead of 'count buds' – those intentionally left after pruning on one year canes.

Trunk injury. The phloem, vascular cambium, and xylem (tissues that conduct water and nutrients) are right below the bark, and also subject to winter injury. Damage is often hidden – and sometimes delayed. Buds may push and vines with trunk injury may suddenly collapse in mid-season or later – or next year. Trunk injury is hard to evaluate.

Intact roots, few shoots, low crop. Winter injury leaves the vines with a largely intact root system, but fewer growing tips to channel spring and summer growth into. Even vines with close to an optimal number of shoots (5-7 shoots per linear foot of canopy, or about 30-40 shoots for a vine with 6 ft spacing), will have much less fruit than normal. The bottom line: Vines will have the same growth potential, but less crop and fewer shoots to 'hold them back'. Expect more vegetative growth, which can lead to more shading and less fruitful buds the following year.

Management issue 1: Leaving enough shoots. Growth potential can be channeled into a few, long, rapidly growing canes, or several moderately growing shoots. The challenge with winter-injured vines is to leave enough shoots to distribute the growth potential among many, rather than a few.

Management issue 2: Trunk renewal. Regardless of the severity of winter injury, growers need to be prepared to replace trunks following significant winter injury. Existing trunks that have only a few buds pushing on the top will fail to produce even growth of new vascular tissue around the trunk. Cambium activation and cell division to produce new xylem and phloem tissue is triggered by hormones that come from the shoot tips. No green shoots, no reactivation.

Here are a few scenarios with a range of injury severity.

1. **Normal shoot number on top, moderate sucker growth:** These TWC-trained Marquette vines have 30-50 shoots, and shoot growth is very even. There are a few suckers growing out of the base of the vine. Cluster number is reduced (many of the shoots that pushed were secondaries), but the trunks and cordons should be in good shape, and produce a normal complement of shoots next year. Prime management goal: Spurs for next year that are evenly spaced. Retain two to four suckers for potential trunk renewal.

2. Many shoots on top, but more sucker growth. On this TWC-trained Frontenac, more and longer suckers are present at the base of the vine. Even though there is ample shoot number on top, some of the shoots are weaker, and the potential for trunk injury is higher. Management goal: maintain top growth, retain 2-4 suckers for potential trunk replacement, observe vines for signs of trunk injury and crown gall in mid-season.

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Managing Winter-Injured Vines, continued from previous page

3. Few shoots on top, suckers: This VSP-trained Frontenac vine has less than 50% of target shoot number, and a high number of shootless or 'blank' nodes, so trunk renewal is a must. Management goal: Retain top shoots and suckers to have enough growing tips to produce 'right-sized' trunk renewals. Retain all suckers through mid-season; tie loosely together with twine to keep shoots from spreading over ground.

4. No top growth, vigorous suckers. Marquette at a different site: Trunks are dead, but vine can be renewed. Retain suckers. Trunks can be removed during season, or during dormant pruning. Draw suckers together loosely with twine to promote upward growth and keep them off the ground. Keep as many suckers as you can. Choose the best-positioned ones for trunk renewal the following season.

5. No top growth, no suckers or weak sucker growth. These La Crescent vines will probably need replacement. There is no visible growth on top, and no vigorous suckers at the base of the vine. Order replacement vines, or plan on 'layering in' long shoots from adjacent vines the following year.

Final thoughts:

- **Site and training**: Winter injury episodes can provide a good opportunity to take a hard look at your site and training systems. Patterns of shoot and bud survival can reveal issues with air drainage (frost pockets) or internal soil drainage. It is also a good time to re-evaluate your training system and make decisions about what should be done differently.
- **Nitrogen:** Without a full crop N requirements will lessen, and supplemental N fertilizer should be minimal or skipped.
- **Disease Management:** Even without a crop, it's important to keep the foliage healthy. Powdery mildew, downy mildew, phomopsis, and black rot can all be present on the foliage. Maintain appropriate shoot density (4-7 shoots per foot of canopy) and use shoot positioning ('combing' on high wire training systems; VSP will still need to be positioned) to maintain airflow through the canopy, minimize disease pressure, and produce quality, fruitful buds for next year.

Tumid Gallmaker

Injury in the form of galls (see photo) is caused by the larvae of a small fly known as the grape tumid gallmaker. For northeastern vineyards, injury by this insect pest is often spotty and of minor economic importance. Therefore, in most situations, a pesticide application is not necessary. However, in the event of severe infestation and injury to the vine, Movento is registered in New York State for this pest. For best results, Movento should be applied at the first appearance of galls. *-JMO*

Botrytis

In the berry world this fungus is commonly referred to as gray mold. Berries infected with this fungus develop a layer of gray "fuzz" over the surface of the flesh. Fruit rot and the spores produced from the fungus spread easily from one berry to the next. Its name changes to bunch rot in grapes and it does exactly what the name suggests. Similar to berries, infected fruit will develop the characteristic gray fuzz on the flesh and because grapes clusters are held together in a bunch, the fungus easily spreads to uninfected fruit, causing rot.

It sounds simple enough, later in the season when you see the gray fuzz; you know you have botrytis and need to treat for it. Not quite! Botrytis infects grape clusters during bloom, commonly during wet weather (like we had here recently in the Hudson Valley) and can remain dormant until the berries begin to ripen. That translates to a potential latent period of weeks or months. Many of these latent infections will not develop into actual infections. Wayne Wilcox describes the perfect recipe for botrytis as "a wet bloom period to establish latent infections, followed by a wet pre-harvest period to active them and provide conditions for further spread."

Because this fungus thrives in high humidity conditions, cultural practices such as leaf pulling and canopy management that increase air movement in the canopy will help to minimize the spread of Botrytis. Tight clustered grapes also provide an ideal environment for the development and spread of this fungus. Removing some berries by hand after fruit set can further help to reduce botrytis's development. While this practice may work on a small scale, it is difficult to implement on a large scale. Some research on chemically thinning the clusters has shown limited success. Further research is needed before a commercial recommendation can be made.

There are several fungicides labeled for botrytis. Early fungicide sprays (bloom, early postbloom) limit the establishment of primary infections. Later sprays limit the spread of the infection to healthy uninfected berries. Switch, Elevate, and Pristine are well known among the berry world and are also available for grapes. Other products labeled for Botrytis include Flint and Inspire Super, which can offer protection against other fungal infections as well (read the labels for specifics). It is important to note that fungicides alone will not provide total success for managing Botrytis and therefore, are meant to be used in conjunction with cultural practices. When choosing a product, make sure to read the label for proper rates, as some that are multifunctioning products require a higher rate for Botrytis. For additional products and rates, please consult the 2014 New York and Pennsylvania Pest Management Guidelines for Grapes. Please remember to check the label to make sure the product is labeled in New York. Some products listed are labeled for use in Pennsylvania, but not New York. *-JMO*

What Fungicides to Spray and When?

Below is an excerpt from Wayne Wilcox's 2013 disease recommendations. It describes in detail the numerous fungicide options available for vineyard disease management. This excerpt includes immediate pre-bloom to second post bloom spray options. -JMO

IMMEDIATE PREBLOOM TO EARLY BLOOM. **A critical time to control PM, BR, DM, and Ph on the fruit! Just starting to enter Bot season, too. This and the first postbloom spray are the most critical sprays of the entire season--DON'T CHEAT ON MATERIALS, RATES, SPRAY INTERVALS, OR COVERAGE!!**

Option A: Quintec or Vivando for PM control, plus mancozeb (for BR, DM, and Ph). Effective and no known resistance problems in the real world, but let's keep it that way by avoiding over-use (no more than 2 applications per year of each one).

Option B. Pristine (PM, DM, BR, Bot at higher rates, some Ph). We'd like to keep this one down to 2 applications per season, too, especially with the increasing risk of DM resistance the longer that we keep using it. The 12.5-oz rate of Pristine will also provide significant protection against Bot, I wouldn't spend the extra money on the higher "Botrytis control" rate (18.5-23 oz/A) this early unless Botrytis pressure was really high and/or I was really worried. On highly susceptible cultivars, where DMI resistance is usually an issue to at least some extent and strobie resistance has occurred or is deemed risky, Quintec, Vivando, or Pristine would be the materials of choice for PM, but don't forget about DM and BR. With Pristine especially, I'd toss in some sulfur, particularly in blocks where PM has already developed strobie resistance, just for additional insurance at this critical time.

Option C: Revus Top (PM, BR, DM), Inspire Super (PM, BR, Bot), or Quadris Top (PM, BR, DM). If using Inspire Super, you'll need to add something for DM. I can't overemphasize the fact that the excellent PM control we've seen with difenoconazole is due to its high "intrinsic" activity, and that this is rate dependent so you'll start losing it--especially on the clusters!--if you get spotty spray coverage (i.e., only put a partial rate on your spray target).

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Grape Berry Moth

Excerpts from article by Greg Loeb, Cornell Dept. of Entomology, NYSAES in May 2014 issue of Finger Lakes Vineyard Notes, revised by JMO; full article online http://nygpadmin.cce.cornell.edu/pdf/newsletter_notes/pdf39_pdf.pdf

Grape berry moth is familiar to most grape growers in the eastern US. See our fact sheet on grape berry moth at http://nysipm.cornell.edu/factsheets/grapes/pests/gbm/gbm.asp. It is considered our most important arthropod pest and much of our current IPM strategy centers around its control. Grape berry moth (GBM) overwinters as a pupa in the leaf litter, emerging as adults in May and June to initiate the first generation of larvae that feed directly on young fruit clusters of wild and cultivated grapes. Depending on temperature, there can be one to three additional generations produced during the season. The larvae cause damage in three ways. First, they can reduce yield by 1) directly feeding on the flower clusters, 2) hollowing out the grape berry and 3) causing premature berry drop. Second, they contaminate the juice that can lead to rejection of entire loads at the processing plant. This is mainly a serious problem for native grapes grown for sweet juice. Third, their feeding activity on flowers/young berries (first generation) and green or ripe fruit (later generations) create good conditions for the development of bunch rots. This is particularly a serious problem for wine grapes, especially those with tight clusters.

A good place to start in your managing program for GBM is by categorizing vineyard blocks according to risk. High Risk vineyard blocks are characterized by having at least one side bordered by woods, being prone to heavy snow accumulation, and a history of GBM problems. Also, high value grapes are considered high risk. In the past we have recommended treating these high risk sites shortly after bloom (first generation larvae) and in late July/early August (second generation) and then scouting for damage in mid to late August to see if a third insecticide application is required. Our recent research indicates that the first postbloom spray has little impact on end of season damage by GBM and can probably be skipped for low to moderate-value varieties. Extremely high risk sites, regardless of crop value, may still benefit from the postbloom spray.

Determining the exact timing of the later insecticide applications (July and August) has proven tricky. However, we are making good progress toward developing a temperature-based phenology model to aid in timing management decisions. Currently we are using the bloom time of wild grape Vitis riparia as the starting point for the model (called the biofix), but we are researching other approaches including using estimates of emergence of adults from overwintering pupa and using bloom date of cultivated grapes such as Concord.

We have sufficient confidence in the phenology model to make it available to growers via a web -based system (Network for Environment and Weather Applications) system. The forecast model can be found at the following web site as part of NEWA (http://newa.cornell.edu/and look under pest forecasts). To use the model, you need to provide a starting point to begin accumulating degree days. We have found bloom date of the wild grape V. riparia is a pretty good indicator or biofix. The program asks that you provide a date for 50% bloom time of V. riparia. If this is hard to come by, the program will estimate it based on historical records. Using this date, the model accumulates degree days using the nearest NEWA weather station (you choose the weather station on the website; several new weather stations in New York and surrounding states have been added to the system since 2012). At any given date, the model will provide the degree day accumulations from the biofix, a forecast of accumulation over the next several days, and pest management advice based on current accumulations. For example, as accumulation gets close to 810 degree days, the program notes that this is approaching the peak of the second GBM generation eggs and you are advised to apply an insecticide at near 810 for a high risk site and to scout for damage for low or intermediate risk sites. The NEWA forecast makes a distinction between insecticides that need to be consumed (e.g. Altacor [chlorantraniliprole], Belt [flubendiamide], Intrepid [methoxyfenozide, not allowed NY on grapes) and those that work mostly through contact (e.g. Brigade, Danitol, Baythroid, Sevin). Note that this model is still being worked on and should be used as a guide for making pest management decisions. However, it's an improvement over the calendar-based practice. If you try using the model this season, please forward feedback (good and bad) to me (gme1@cornell.edu), Juliet Carroll (jec3@cornell.edu), or Tim Weigle (thw4@cornell.edu) to help us improve future versions.

There are several options available for chemical control of GBM. See the guidelines for a full listing. The most commonly used products are the pyrethroid Danitol and the carbamate Sevin. Other broad-spectrum pyrethroids (e.g. Brigade, Baythroid and Mustang Max) are also effective. Leverage and Brigadier include both a pyrethroid that would provide control of GBM and a neonicotinoid that would provide good control of sucking insects like leafhoppers. Imidan is also an effective broad-spectrum material but it is not quite as effective against leafhoppers as the pyrethroids. Moreover, the new label for Imidan has a 14 REI, which makes its use problematic. There has been some evidence of control failures with Sevin in the Lake Erie area due to resistance. Although such problems have not been documented in the Finger Lakes or Long Island, it

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Grape Berry Moth, continued from previous page

is something to pay attention to and rotation among pesticides with different modes of action is a good idea when possible. The pyrethoids are effective materials as noted above, but I have concerns about their overuse leading to spider mite problems.

There are some additional, more narrow-spectrum, materials registered for use against GBM. Dipel is an organic option that has been around for a number of years. The toxin produced by the Bacillis thuringiensis (Bt) bacteria is specific to Lepidoptera. We have found that 2 applications of Bt per GBM generation, improves efficacy. Use sufficient water to achieve good coverage of fruit since the larvae must consume the Bt as they enter the berry for it to be effective. Good coverage is an issue for all the GBM materials. Another selective material from Dow AgroSciences, Delegate, has been effective in our trials. Finally several new anthranilic diamide insecticides have been labeled for use on grapes in the last several years (Belt SC, Altacor WG , Voliam Flexi WG [chlorantraniliprole + thiamethoxam], Tourismo SC [flubendiamide + buporfezin]). These materials are pretty selective for Lepidoptera such as grape berry moth and are reported to have pretty good residual activity. Altacor is also labeled for use against Japanese beetle. Similar to Intrepid, Delegate, and Bt, they work best when ingested by the first instar (recently hatched) larvae as they try to move into the fruit. Note that the diamides are not allowed on Long Island. Mating disruption, using large releases of the GBM sex pheromone, is another control option to consider. The idea is to prevent mating by artificially releasing so much sex pheromone that males have difficulty locating the real female moths. This technique has been around for a number of years and is being used by a small percentage of growers. It is probably most effective for intermediate and low risk vineyards or in years where berry moth densities are low. However, these are the areas that often times do not require an insecticide application for GBM every year. Plastic twist ties impregnated with sex pheromone (Isomate GBM Plus) is the main method for releasing pheromone, but the product is hard to find. Dr. Rufus Isaacs at Michigan State University has been working with a new method of application of a sex pheromone called SPLAT GBM™. Basically the pheromone is mixed into a wax material that is sprayed on the foliage as small droplets. Each droplet acts like a small twist tie, releasing sex pheromone over an extended time period. Dr. Isaacs has had some success with this technique, however, it is not yet labeled in New York.

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Option D: **Abound***or Sovran [plus sulfur, on cultivars where it can be used] (PM, BR, DM [only moderate DM for Sovran]). Still an effective option in some plantings, particularly on native and certain hybrid cultivars that have seen limited use over the years.

***Please note**: Abound fungicide is extremely phytoxic to apples. Although labeled for grapes, it is the advice of Steve Hoying for growers outside of the Finger Lakes region to use a different fungicide (e.g. Sovran).*

Option E: Flint plus sulfur (PM, BR, Botrytis at the 3-oz rate) plus one of the many options for DM.

Option F: Rally, or tebuconazole generics PLUS mancozeb (DM, BR, Ph) or captan (DM, Ph). IMHO, you'd choose this option only if you couldn't use difenoconazole as a DMI. One of the new DM-specific fungicides could also be used for DM control, but they may give more bang for the buck after bloom unless there's heavy DM pressure early (clusters are highly susceptible now, after all). Add sulfur on *vinifera* and PM-susceptible hybrids (unless "sulfur shy"). Like the difenoconazole products, Rally, and the tebuconazoles provide excellent postinfection activity against BR, which can make them especially valuable if significant unprotected infection periods occurred over the last week or 10 days. If wet, mancozeb (or captan) should be included for control of Ph fruit infections in blocks where this has been a historical problem (note some processor restrictions and poor BR control with captan).

Option G: Mancozeb + sulfur (PM, BR, Ph, DM). Used to be cheap and effective, particularly if used at shorter spray intervals; it's no less effective than before, but not the best option for control of PM on highly susceptible and valuable cultivars at this critical time. Neither material is as rainfast as the strobies or SI fungicides, so shorter spray intervals can be both necessary and difficult in wet years. Of course, this is precisely when their activity is needed the most. Potential mite problems, as this mixture is hard on mite predators.

80% (+/-) CAP FALL.

Vangard (or Inspire Super), Switch, Scala, Elevate, Flint (3 oz rate), Endura, or Pristine for Botrytis control will probably be beneficial sometime around now on susceptible varieties, particularly in wet years. It's certainly easier to use or include one of these materials for Botrytis purposes in the "immediate prebloom/early bloom" or "first postbloom" spray applied to control other diseases, and from what we know of these materials' activities, they should be effective when applied then, although we've never directly compared these timings with one at 80% cap fall (results would likely be different from year to year anyway, depending on if and when rains fall

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throughout the pre- to post-bloom period). One problem with tank-mixing Botrytis-specific materials like the AP's and Elevate is that you'll be distributing them throughout the entire canopy, whereas the only place they're effective is on the clusters. Also, if sulfur was the only PM material in the previous (immediate pre-bloom) spray, reapply about now on highly susceptible *viniferas*, especially if it's been raining since the last application or will soon.

FIRST POSTBLOOM (10-14 days after immediate prebloom/early bloom spray). **Still in the critical period for controlling PM, BR, DM, and Ph on the fruit. And we're well into the start of Bot season. This and the immediate prebloom/early bloom spray are the most critical applications of the entire season--DON'T CHEAT ON MATERIALS, RATES, SPRAY INTERVALS, OR COVERAGE!!**

Shorten the spray interval and/or jack up the rate and/or quality of the PM material on PM-susceptible varieties if weather is warm and cloudy. For Botrytis sensitive cultivars/blocks/seasons, make sure that this application has some Bot activity if you haven't used anything for it yet. Same considerations and options as detailed under IMMEDIATE PREBLOOM. Juice grape growers can substitute Ziram (very good BR and Ph, only fair DM) for mancozeb or captan if necessary, or just go with Abound or Sovran for everything if they're still working. Captan, mancozeb, or the strobies will protect against bitter rot and ripe rot, if/where those are concerns.

SECOND POSTBLOOM. **BR** control is still advisable under wet conditions and should be considered critical if infections are evident on the vine unless you're willing to bet part of your crop that it's not going to rain within the next few weeks; however, BR sprays can often be skipped from here on out on natives and hybrids if the vineyard's clean. Fruit are less susceptible to **PM** now, but those of *vinifera* varieties (and susceptible hybrids?) still need good PM protection, particularly to guard against later bunch rots and colonization by wine spoilage microorganisms. Of course, new foliage remains highly susceptible to PM throughout the season, and it behooves you to keep it clean for purposes of leaf function in addition to reducing primary inoculum for next year. Concords can withstand a fair amount of foliar PM unless the crop is very large and/or ripening conditions are marginal. Minimal programs on this cultivar can stop now if the preceding crop/ripening conditions don't apply, although one more PM spray now is often justified. Try to avoid DMI and, particularly, strobie fungicides if PM is easy to see now without trying very hard. **Ph** danger is basically over unless very wet and a problem block. Clusters are still susceptible to **DM** and should be protected on susceptible varieties if weather is wet, especially if disease already is established (take a look and see). Foliar DM is starting to crank up and will remain a potential threat throughout the rest of the season, depending on the weather. It can quickly turn into an epidemic on susceptible cultivars if we get into a prolonged set of summer rains or thundershowers, if you let it get started now you may be fighting it the rest of the year.

Option A: Pristine, **Abound***, Sovran, or Flint. See previous discussions on all of these. They provide good residual control of the listed diseases if used now, but strictly limit their use to a maximum of two sprays per year of ANY of these Group 11 materials, in order to maintain viability. And if you think they might not be working against DM, don't wait for somebody from the university to confirm that before you switch to something else. Pristine and Flint will provide good Botrytis control when used at the appropriate rate as a pre-bunch closure spray.

***Please note**: Though labeled in NY, Abound is EXTREMELY PHYOTOXIC to apples.*

Option B: Quintec, Vivando, or Torino [not yet labeled in NY] for PM control + captan (DM, Ph) or mancozeb (BR, DM, PH, but 66-day preharvest restriction and mite issues) as needed for these other diseases. If DM is the only other issue, Ridomil (in a bad year), a phosphonate, copper, or one of the new DM-specific materials are additional options. Quintec, Vivando, and Pristine shouldn't be applied in more than two consecutive sprays. You may want to save one of your two Pristine shots for veraison or later, to pick up Botrytis and other rots.

Option C: Revus Top (PM, BR, DM), Inspire Super (PM, BR, Bot), or Quadris Top (PM, BR, DM). Inspire Super will provide Bot control when applied prebunch closure, the low cyprodinil (Vangard) rate that it provides might or might not be adequate, depending on pressure. If using this, you'll need to add something for DM on susceptible cultivars.

Option D: Rally, or tebuconazole generics (PM, BR) PLUS mancozeb if still within the 66-day PHI limit (DM, BR) or one of the many DM options (captan, phosphites, new DM-specific materials discussed previously). Like the difenoconazole products, all of these DMI products provide excellent postinfection activity against BR, although they're not as effective against PM.

Option E: Sulfur (PM) + the options listed above for BR and DM. In most years, lessening PM pressure makes this economical option increasingly practical as the season progresses.

Option F: Copper + lime (DM, some PM). This is a reasonable PM option at this time for Concord and other native varieties in blocks where a spray is justified, but generally not good enough for *vinifera* and susceptible hybrid cultivars.

2014 Weather Table—This chart is compiled using the data collected by Northeast Weather Association (NEWA) weather stations. For more information about NEWA and a list of sites, please visit http://newa.cornell.edu/. This site has information not only on weather, but insect and disease forecasting tools that are free to use.

2014 Weekly and Seasonal Weather Information						
	Growing Degree Information Base 50^{O} F			Rainfall Accumulations		
Site	2014 Weekly Total 6/16 –6/22	2014 Season Total 3/1 - 6/22	2013 Season Total 3/1 - 6/22	2014 Weekly Rainfall 6/16 –6/22 (inches)	2014 Season Rainfall 3/1 - 6/22 (inches)	2013 Total Rainfall 3/1 - 6/22 (inches)
Albany	137.6	767.3	697.5	0.30	9.21	16.46
Castleton	126.1	727.1	702.7	0.59	10.94	13.02
Clifton Park	124.1	692.2	643.5	0.41	9.67	19.62
Clintondale	N/A	N/A	787.5	N/A	N/A	12.85
Glens Falls	106.9	702.0	589.5	0.69	11.63	14.10
Guilderland	127.0	711.0	629.5	0.17	1.79	4.02
Highland	134.9	801.2	783.9	0.17	11.78	11.36
Hudson	134.9	789.8	723.5	0.29	10.12	13.20
Marlboro	141.6	749.8	744.6	0.31	13.09	13.68
Montgomery	134.0	768.3	721.0	0.43	14.89	13.88
Monticello	108.0	554.4	542.5	N/A	N/A	N/A
Peru	105.5	639.2	623.2	0.28	10.41	9.66
Shoreham, VT	109.6	658.1	652.6	0.27	9.49	11.62
Willsboro	99.6	599.0	594.8	0.01	4.27	12.57