

Subject: New England Grape Notes, Vol. 6, No. 7 – revised
From: Sonia Schloemann <sgs@umext.umass.edu>
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To: Sonia Schloemann <sgs@umext.umass.edu>

New England Grape Notes

June 10, 2011, Vol. 6, No. 7

Note: this issue has been sent already but with an incorrect date and number.



**UMass
Extension**



Phenology: Bloom

See <http://fruit.cfans.umn.edu/grape/IPM/appendixa.htm> for good chart on growth stages

Grapevines Are In Bloom

Alice Wise, Cornell Cooperative Extension Suffolk County

Bloom is a great time of year in vineyards. The canopy is relatively pristine, flowering clusters have a beautiful scent and managers are hopeful for a good harvest. An early harvest would be nice too. Of course, there are a lot of challenges between now and then.

Consider these points during bloom:

Petiole sampling – Bloom is one of the recommended sampling times for nutrient analysis. The petiole on the leaf opposite the basal cluster is collected, usually between 40 and 60 depending on the size of the petioles. Labs will have sampling directions on their website. The advantage to doing it now – gross deficiencies can be corrected, especially with important nutrients such as potassium.

Prebloom to several weeks postbloom are periods of high susceptibility of clusters to powdery mildew and black rot. Powdery mildew in particular can become established and spread like wildfire at this time of year. Wayne Wilcox lays this scenario out nicely in his annual disease overview (<http://ccesuffolk.org/viticulture>), look in the current events section). This is worth reading – Wilcox and his colleagues have invested a lot of time in understanding PM biology and its sensitivity to UV and temperature.

As pointed out by Wilcox, inconspicuous powdery mildew infections may take place at this time of year. While not the direct cause of devastating crop loss, these low level but not visible infections render the clusters much more susceptible to late season cluster rots.

With rapid shoot growth, obscured cluster zones are often an issue around bloom. In the research vineyard, we have particular problems with Chardonnay, Gewürztraminer, Pinot Noir and Sauvignon Blanc. Both leaves and lateral shoots can really clog up the cluster zone, greatly reducing air flow and spray penetration at a time when it is the most important. This is how powdery mildew gets a foothold. We deal with this issue by, where needed, lightly leafing one side of the canopy especially in the head of the vine. After fruit set, we return for more substantial leaf pulling. On larger acreages, this is a daunting task but worth attempting on the most vulnerable blocks.

Grape berry moth – Larvae make their first appearance during bloom. High risk sites include blocks near woods especially the edge rows. The question – is this generation economically important and will treating now reduce later infestations? From his annual insect and mite overview (located on our website), entomologist Dr. Greg Loeb: '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.' If infestations are heavy, try treating only those areas.

Utility of a bloom botrytis treatment – According to Wilcox, a wet bloom period allows the establishment of latent Botrytis infections. Think of all the cluster debris that gets trapped inside the cluster at cluster closing, it is a worrisome scenario – but only if weather is wet veraison and beyond. It is the late season wet weather that causes the latent infections to wake up. This is a situation where vineyard managers really draw on their experience. That's because if bloom is relatively dry, a bloom botrycide provides little benefit. The best candidates for bloom treatment are those varieties/blocks with a history of cluster

rot. (**Source:** *Long Island Fruit & Vegetable Update, No. 13, June 9, 2011*)

Insect Management:

Grape Berry Moth

Tim Weigle, Cornell University

Grape berry moth trap counts spiked last week and we saw bloom in the wild grapes in Portland at the CLEREL lab last week on Thursday, June 2 and at the Vineyard Lab in Fredonia on Saturday, June 4. The date of wild grape bloom has been shown to vary across the belt so the best bet is to check out your wooded edges to see where your wild vines are. Wild grape bloom is the biofix, or starting point, we are currently using with the new Phenology-based Degree day model for grape berry moth. You can access the model on the NEWA website at <http://newa.cornell.edu/> and selecting Grape Forecast models under Pest Forecasts at the top of the page. We begin collecting degree days (base temperature 47.1) starting at the biofix date. The first insecticide application for grape berry moth using this model will not be until we have accumulated 810 DD. (**Source:** *Lake Erie Grape Program Update, June 9, 2011*)

Rose Chafer – ALERT!

Andy Muza, PA Cooperative Extension

I was informed by a grower this Tuesday (June 7) that rose chafer adults were just starting to emerge in his blocks along Rt.5 in North East, PA. Yesterday, while scouting blocks, I observed rose chafers feeding on grape flower clusters in vineyard blocks in Portland, NY and North East, PA.

If you have had problems with rose chafers in the past or have areas in your blocks with sandy soil then scout now for these insects. Vineyards in PA with sandy soils along Rt. 5 have a perennial problem with this pest. High numbers of beetles seem to appear over night and a large number of flower clusters can be consumed in the infested areas. A fact sheet on Rose Chafer from Ohio State (http://www.oardc.ohio-state.edu/grapeipm/rose_chafer.htm) recommends an insecticide application if a threshold of 2 beetles per vine is reached. Insecticides listed as effective for rose chafer are listed on pages 47–48 of the 2011 New York and Pennsylvania Pest Management Guidelines for Grapes and at <http://www.oardc.ohio-state.edu/grapeipm/Pesticide.htm>. (**Source:** *Lake Erie Grape Program Update, June 9, 2011*)

Disease Management:

Fungicides and Weather

Annemiek Schilder, Michigan State University

Fungicides can be divided into two broad groups: **protectant** and **systemic** fungicides. Protectant fungicides are contact materials that remain on the outside of the plant surface and kill fungal spores and hyphae upon contact, thereby preventing infection from occurring. Systemic fungicides are absorbed by the plant cuticle and underlying tissues and can act by killing spores as well as hyphae that have penetrated the plant surface. When they stop incipient infections and prevent symptoms from developing they are called “**curative**” and may be described as having “**post-infection activity**” or “**back action**”. However, symptoms that are already present will not be removed by the fungicide in question. After symptoms appear, some fungicides can reduce or inhibit fungal sporulation: these are called “**anti-sporulants**”. The term “**eradicator**” is often used for products that kill overwintering spores and fungal structures on woody plant tissues (e.g., lime sulfur) or for fungicides that seem to eradicate the disease from a vineyard (e.g., Ridomil Gold, which is very effective at stopping downy mildew in its tracks). The term “**translaminal**” refers to the movement of a fungicide from one side of the leaf to the other, providing disease control on both sides of the leaf. Some fungicides have “**vapor action**”, that is, they are present in a (partially) gaseous phase around leaves and other plant parts. The way a fungicide behaves on or in a plant is determined by its chemical affinity for the wax layer on the plant surface and underlying cell layers. Low temperatures may decrease the mobility of systemic fungicides.

Systemicity. Both systemic and protectant fungicides are effective when applied before infection occurs, but only systemic fungicides have efficacy after the fungus has penetrated the plant surface (for a limited time, e.g., 24–96 hours, depending on the fungicide and the disease). Systemic fungicides are not all the same, with some fungicides being locally systemic (they move only a short distance away from the

droplet, e.g., Elevate), others moving to the tip of the leaf (e.g., Elite, Abound) or new leaves (e.g., Ridomil), and yet others being able to move throughout the plant including the roots (e.g., ProPhyt). Most systemic fungicides are highly effective against their target pathogens regardless if they are locally systemic or systemic. However, products that are more systemic tend to have longer post-infection activity. When relying on post-infection activity, use the highest labeled rate.

Wash-off by rain. The main way in which fungicides are lost from plant surfaces is through wash-off by rain. Fog or dew usually are not sufficient to remove fungicide residue and may actually help to redistribute fungicide residue over plant surfaces. Since systemic fungicides are absorbed by plant tissues and get redistributed in/on the plant, they tend to be less susceptible to wash-off by rain compared to protectant fungicides which remain on the outside of the plant. However, this depends on the type of fungicide and our research has shown that even systemic fungicides are affected by rainfall. A general rule of thumb that is often used is that 1 inch of rain removes about 50% of the protectant fungicide residue and over 2 inches of rain will remove most of the spray residue. Newer “sticky” formulations (e.g., Dithane Rainshield) and fungicides applied with spreader-stickers may be less susceptible to wash-off by rain. Most systemic fungicides are rainfast after 2 hours (Revus Top even after 1 hour), but a longer period (up to 24–48 hours) will help the fungicide fully penetrate the plant surface. During rainy periods, it is better to rely on systemic than protectant fungicides. In addition, spreader-stickers can improve adherence of protectant fungicides, while penetrants (e.g., oils) may speed up penetration of systemic fungicides. Care must be taken to use appropriate adjuvants or phytotoxicity may result. For instance, copper should not be applied with penetrants, as copper is toxic to plant cells when inside the leaf. Advances in fungicide formulation technology ensure that many newer fungicide products have excellent adhesive or absorption properties and may therefore not need any adjuvants. Read the fungicide label to see whether and what type of adjuvant is recommended. Sometimes adjuvants are prohibited.

Other ways in which fungicides are lost. In addition to wash off by rain, protectant fungicide residues naturally decrease over time due to degradation by sunlight (UV radiation), heat or microbial activity, and redistribution over the plant surface. Fast plant growth may result in some plant surfaces not being protected if no new sprays are applied. In contrast, the concentration of systemic fungicides may be reduced due to redistribution and dilution in (growing) plant tissues as well as possible breakdown by the plant itself. A high pH of water used in the spray tank can result in alkaline hydrolysis (breakdown) of some fungicides, e.g., Captan, before they are even applied. However, most other fungicides are not affected by water pH to any great extent. Most

Rainfastness. Since fungicides and formulations differ a lot in their ability to stick to or penetrate plant surfaces, more research needs to be done to describe the effect of rainfall on wash-off of specific products. Recent research at MSU with fungicides against Phomopsis in grapes showed that 1-day-old residues of fungicides are removed from the plant surface by rainfall at different rates: for instance for Ziram, 0.1 inch of rain removed 25% of the residues, 0.5 inch of rain 30% of the residues, 1 inch of rain 65% of the residues, and 2 inches of rain 75% of the fungicide residues. However, fungicide activity remained moderate despite low residues remaining even after 2 inches of rain. In comparison, Captan tended to stick better, with a 50% reduction after 2 inches of rain. Efficacy was reduced slightly but was still good with whatever residue remained. Surprisingly, even residues of Abound and Pristine, which are systemic fungicides and considered rainfast, were reduced by rainfall, which suggests that a certain proportion remains on the outside of the plant, probably in/on the cuticle. However, disease control efficacy was barely reduced. Efficacy may be reduced more with older (e.g., 1-week-old) fungicide residues where less active ingredient remains.

The question sometimes comes up if it is better to apply a protectant fungicide before or after rain, since it can wash off during the rain event. As you can see from the grape study, fungicide efficacy was still decent even after 2 inches of rain in grapes. However, this only applies to “new” fungicide residues. Older residues may not be as robust. The other problem is that if extended wet weather or windy conditions prevent fungicide application soon after the rainfall event, it may be too late to obtain disease control. I would suggest that a fungicide should be applied before a rain event and re-applied if more than 2

inches of rain have occurred. A little bit of rain is not all bad, as it can help to distribute the fungicide residue over the plant surface. Be sure that the fungicide has dried well before rain occurs, otherwise it will be lost immediately. It may be best to apply fungicides a day before rain is predicted to allow for “bonding” to occur.

Protectant/Contact fungicides: Armicarb, Captan, Copper, Bordeaux mixture, Dithane, Penncozeb, Manzate, Ferbam, Fungastop, Gavel, JMS Stylet Oil, Kaligreen, Lime sulfur, ManKocide, MilStop, Prev-Am, Regalia*, Saf-T-Side (oil), Serenade, Silmatrix, Sonata, Sporan, Sulfur, Tenet, Trilogy, Vegol, and Ziram.

Systemic fungicides: Abound, Adament, Aliette, Bayleton, Elevate, Elite, Endura, Flint, Forum, Legion, Mettle, Inspire Super, Orius, Phostrol, Presidio, Pristine, Procure, Prophyt, Quadris Top, Rally, Reason, Revus, Revus Top, Ridomil Gold, Rovral, Rubigan, Scala, Switch, Thiophanate Methyl, Tanos, Topsin M, Vangard, Vintage, Vivando, and Viticure.

* Regalia and Silmatrix are not systemic, but the reaction of the plant to these products (induced resistance) is systemic within treated plant parts (*Source: Michigan Grape & Wine Newsletter, June 2, 2011 VOL 2, ISSUE 4*)

Weather data: (Source: [UMass Landscape IPM Message #14, June 3, 2011](#))

Region/Location	2011 Growing Degree Days (base 50° from March 1, 2011)		2010 Growing Degree Days (base 50° from March 1, 2010)
	1-week gain	total accumulation for 2011	total accumulation at comparable 2010 dates
Cape Cod	151	385	530
Southeast MA	159	397	535
East MA	148	389	575
Metro West MA	166	429	497
Central MA	166	388	505
Pioneer Valley MA	157	427	567
Berkshires MA	142	340	494

Additional Weather Data is available form the following sites:

UMass Cold Spring Orchard (Belchertown MA), Tougas Family Farm (Northboro MA), and Clarkdale Fruit Farm (Deerfield MA) at <http://www.umass.edu/fruitadvisor/hrcweather/index.html>

University of Vermont Weather Data from several sites around the state at <http://pss.uvm.edu/grape/2010DDAccumulationGrape.html>

New Hampshire Growing Degree Days at <http://extension.unh.edu/Agric/GDDays/GDDays.htm>

Connecticut Disease Risk Model Results at <http://www.hort.uconn.edu/ipm/>

Network for Environment and Weather Applications program run by the Cornell IPM team at <http://newa.cornell.edu/>.

This message is compiled by Sonia Schloemann from information collected by: Arthur Tuttle and students from the University of Massachusetts

and Frank Ferandino from the University of Connecticut. We are very grateful for the collaboration with UConn.
We also acknowledge the excellent resources of [Michigan State University](#), Cornell Cooperative Extension of Suffolk County, and the [University of Vermont Cold Climate Viticulture Program](#). See the links below for additional seasonal reports:
[University of Vermont's Cold Climate Grape Growers' Newsletter](#)
[UConn Grape IPM Scouting Report](#)



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Sonia Schloemann <sgs@umext.umass.edu>

UMass Extension Fruit Specialist
Plant, Soil, Insect Sciences
UMass Center for Agriculture