Subject: New England Grape Notes, Sept 27, 2010
From: Sonia Schloemann <sgs@umext.umass.edu>
Date: Mon, 27 Sep 2010 20:18:33 -0400
To: Sonia Schloemann <sgs@umext.umass.edu>

New England Grape Notes

Sept 27, 2010, Vol. 5, No. 7

UMass Extension

Phenology: Harvest

Crop Management:

Fall Fertilization

Alice Wise and Lailiang Cheng, Cornell University

Fall fertilization may be feasible this year with harvest a little earlier than normal and green functioning canopies. Applying nutrients now gives them time to move through the root zone, especially important for lime, potassium and calcium. The need for nutrients is determined by soil and petiole analysis as well as vineyard manager experience and observations. It is not always straightforward, thus experience plays a very important role. Cost might factor in as well.

- **Lime** – Application now allows tweaking in the spring if necessary. Heavier doses can be applied in fall. A major lime application in spring can induce nutrient imbalances especially in young plantings. Consider dolomitic (high Mg) lime if Mg is low.
- **Gypsum** – Soils with adequate pH but low calcium benefit from gypsum (calcium sulfate). Typical rates are 1t/a or less. Pelletized is available and easier to handle though more expensive.
- **Boron** – Boron is applied in minute quantities (up to several lbs./a of product applied under the trellis) thus it is best to soil apply with the herbicide sprayer or to have a custom blend made with another nutrient such as K and/or N. If spun on, the rate should be adjusted accordingly. In the research vineyard, soil results came back at 0.1 ppm with petioles 35-45 ppm (sufficiency range is usually 25-50). Given tight budgets and adequate B in petioles, we are electing to skip it for now.
- **Potassium** – K applications are necessary every few years especially with large crops in dry years i.e. 2010. It is usually broadcast rather than spread under the trellis. Organic sources are available though can be pricey. We tried greensand as an organic source of K and found it to be excruciatingly slow release.
- **Nitrogen** – Some growers have used this strategy successfully. If trying fall N, do it earlier rather than later and try to leave untreated sections of vineyard for comparison. Cornell grape nutritionist Lailiang Cheng suggests that a fall application of foliar urea might be a good alternative to ground application. This should be applied to green canopies at least 7-10 days before a hard frost.
- **Compost** – Many sandier vineyard blocks would benefit from compost application. It does take money and effort to get it on, but we have found it beneficial for the research vineyard. The need for nitrogen is reduced as the compost slowly releases N over 2-4 years. If the compost is not well composted (it has a high C:N ratio), fall application would prevent the competition for N between vines and soil microbes.

(***Source**: Long Island Vegetable & Fruit Update, Sept. 23, 2010, No. 28*)

Insect Management:

Brown Marmorated Stink Bug (BMSB)

Joseph A. Fiola, University of Maryland

The brown marmorated stink bug (BMSB) has been a localized problem in Maryland [*and New England*]

thus far but that may be expected to change in the future. The full impact on vineyards and wine quality potential of this newly introduced pest is unclear. Regretfully, it must be stressed from the beginning that this is a new "introduced" pest and very little is currently known of its biology, but it is evident that it has the potential to be a very significant pest.



Background

- The brown marmorated stink bug, Halyomorpha halys (Stål), was introduced from Asia into the mid-Atlantic region, near Allentown, PA in the mid 1990s.
- In Asia, BMSB is known to attack high value crops, such as tree fruit.
- BMSB has spread and become a pest of homes and more recently fruits and vegetables in New Jersey, Maryland, Delaware, West Virginia, and Virginia.
- BMSB is "polyphagous" pest whose host range includes tree fruit, ornamentals, hardwood trees, and cultivated crops (soybean, corn.)
- First detection in orchards in the region was in 2003, and during the 2009 growing season, serious economic injury to peach, apple, and Asian pear.
- In 2010, BMSB has caused complete crop loss in some orchards in western MD, southeastern PA, and the eastern panhandle of WV.
- There are no established commercial monitoring methods, treatment thresholds, or control strategies for BMSB in any cropping system – these are being developed.
- BMSB populations and their damage are currently being monitored by UDSA scientist in MD, PA, and WV.
- BMSB have been observed in commercial and R&D vineyards in Frederick and Washington county MD, Southeastern PA, and Loudon county VA.
- This is a very recently introduced pest; there remain many questions about life cycles, overwintering, monitoring, and management of BMSB.
- There do not appear to be any native natural enemies that have, as yet, impacted BMSB populations.
- Extensive explorations in China have identified some potential biological control candidates.
- In the absence of a naturally occurring solution, major damage is possible from this pest.

Life cycle

- BMSB overwintered as adults in protected areas and enter orchards as early as late April early May.

- Life stages include eggs, 5 instar nymphal stages, and adults.
- All stages have been noted in orchards at the same time
- Currently 2 generations per season have been documented in the region.

BMSB as a vineyard pest

- The potential problem is multi-faceted.
- The threat from BMSB in tree fruit begins in early May as overwintered adults enter orchards and feed on developing fruit.
- Unlike other stink bugs, it appears that all instars and adults feed on their hosts.
- Fruit injury from nymphal and adult feeding can continue until harvest.
- Injury caused by piercing and feeding on the berries can lead to increased susceptibility to Botrytis and other late season rots.
- The presence of BMSB in the clusters at harvest and transport in lugs to the winery.
    - Crushing stink bugs with the fruit could result in a stink bug odor or taint and/or off-flavor, as was the case with the multi-colored Asian lady Beetle (MALB). This has already occurred at a commercial winery in VA in 2009.
    - In studies with BMSB on caneberries in VA, the frass produced by stink bugs has also created a bad taste.
    - Again, because this is a recently introduced pest, we are largely ignorant of the actual impact of the bugs on finished wine.
        - Details such as the “thresholds” of how many stink bugs (e.g., per lug) are required to impart a detectable taint to wine are not known at this point. It is best to be very conservative and try your best to eliminate them.
- Many agricultural chemicals do not appear to have much or any activity against BMSB and those that do appear to have only short term effects.
- The good news is that there are some pesticides that are effective and have a short (0, 1) days to harvest interval
- Stink bugs can cause direct injury to grapes by piercing and feeding on the berries.
- Injury caused by piercing and feeding on the berries can lead to increased susceptibility to Botrytis and other late season rots.

Tolerance or thresholds

- The presence of BMSB in the clusters at harvest and transport in lugs to the winery.
- Crushing stink bugs with the fruit could result in a stink bug odor or taint and/or off-flavor, as was the case with the Multi-Colored Asian Lady Beetle (MALB).
    - As this is a recently introduced pest, we are largely ignorant of the actual impact of the bugs on finished wine.
    - Details such as the “thresholds” of how many stink bugs (e.g., per lug) are required to impart a detectable taint to wine are not known at this point. It is best to be very conservative and try your best to eliminate or greatly minimize them from the fruit before processing.

Monitoring in the vineyard

- All life stages (nymphs thru adult) have been found in the vineyard and ALL can damage fruit and taint the juice/wine.
- There are traps that can attract the BMSB although the lure is specifically for another stink bug.
- They can be used to monitor to determine if you have the pest in the vineyards although simple observation is usually adequate to determine presence.
    - The attraction of the traps is not strong enough to use them for population management.

- The insects have been found both in the foliage and the clusters, although those in the clusters are most important close to harvest.

Management in the vineyard

- Fruit should be sorted in the vineyard when harvesting to remove stink bugs prior to placing in the lug.
    - Sometimes shaking the wire or the cluster itself may help to disturb the insect causing it to fly away.
- It is strongly recommended to sort fruit prior to crushing or de-stemming, removing additional stink bugs.
- If you only notice populations on the clusters (not in the foliage) very close to harvest, a directed fruit zone spray may be all that is necessary; in this setting, several 0 day PHI materials are options.
- Many agricultural chemicals do not appear to have much or any activity against BMSB and those that do appear to have only short term effects.
- As there has not been much research and development conducted on control of this new pest, the following are suggested control measures are the result of observations in commercial fruit orchards.
- The good news is that there are some pesticides that are effective and have a short (0, 1) days to harvest interval.
    - The pyrethrins, pyrethroids, and neonicotinoids seem to have good activity and short preharvest intervals (PHI).
    - Pyrethrin is a natural product with a short residual life. Pyrethroids were originally based on pyrethrin chemistry, but have been engineered to have a longer residual life.
- Both have a rapid knockdown of pests but neither is likely to keep high populations of SB from reinvading the vineyard. However, if sprayed just before harvest, they may suffice to eliminate bugs that are actually present.
- Warning - The use of pyrethroids, while likely effective, also has the risk of flaring secondary pests, e.g. mealybugs and/or mites.
- Recommended insecticides should be used at the highest recommended rates.
- As usual, always have a copy of the label present when using and always follow label instructions and be aware of maximum application rates in a single season and using.

(***Source**: Maryland Timely Viticulture, Sept 2010*)
(Photos from Rutgers; http://njaes.rutgers.edu/stinkbug/)

Disease Management:

How to Differentiate Grape Bunch Rot Diseases

Annemiek Schilder, Michigan State University

The term “bunch rot” actually refers to a complex of diseases, including Botrytis bunch rot (Botrytis cinerea), sour rot (acetic acid bacteria, yeasts), and Phomopsis fruit rot (Phomopsis viticola) which appear late in the growing season, close to harvest. In a warm year like this, ripe rot, caused by Colletotrichum spp. may be present. Below is a description and pictures to aid in bunch rot diagnosis.

Some grape cultivars, particularly tightclustered ones, are particularly susceptible to bunch rots. For instance, Vignoles may be affected by all three major bunch rot pathogens. Rainy weather close to harvest increases the likelihood of bunch rot diseases.

Botrytis bunch rot is characterized by a rapidly spreading brown rot which usually affects several berries in tight clusters. Berries affected by Botrytis develop a gray mold on them and sometimes ants can be seen feeding on the sugary sap oozing out of Botrytis-infected berries. In contrast, sour rot is a wet rot, which causes clusters to smell distinctly of vinegar. Fruit flies are often present in sour rot clusters and help spread the disease. Damage can be extensive because infections that begin in a single berry can rapidly spread to adjacent berries and destroy most or all of a cluster. Injury to the berry, either by rain splitting, separation from stem due to internal pressures in tight clusters, hail, powdery mildew infection,

or insect or bird feeding can all allow sour rot organisms to enter the berry. Even inconspicuous powdery mildew colonies resulting from late-season infections can increase the severity of bunch rot.

In the case of Phomopsis, berries get infected directly through the skin or via the berry stem and turn brown and rubbery. Typically, the berry stem becomes necrotic and dies and the fungus moves from the stem into the berry. Within several days, the berry turns entirely brown. Any wounds on the berry can also provide entry points and brown spreading lesions can be seen. Black to brown lesions are also visible on the rachises, canes, and leaves. In severe cases, the entire rachis dies and all the berries shrivel up and fall to the ground. In 'Niagara', berries fall off readily when the berry stems or rachis dies. In wine grapes, berries may stay attached but rot and often get hollowed out by ants.

Leaf pulling (usually done earlier the season, at least by veraison) significantly reduces sour rot as well as Botrytis bunch rot by reducing humidity and increasing sun exposure of the clusters. Specific fungicides for Botrytis bunch rot are Vangard (cyprodinil), Scala (pyrimethanil), Elevate (fenhexamid), Pristine (pyraclostrobin + boscalid), Endura (boscalid). In trials, the biofungicides Serenade Max (Bacillus subtilis) and Fungastop (citric acid, mint oil) were also fairly effective against sour rot and Botrytis bunch rot . Phostrol (phosphorous acid) also aided in control.
(***Source**: Michigan Grape & Wine Newsletter, September 9, 2010, VOL 1, ISSUE 16)*

Fig 7. Botrytis bunch rot. Note brown discoloration and gray mold on rotting berries; *Photo: A. Schilder.*

Fig 8. Sour rot symptoms; *Photo: S.Van Timmeren.*

Fig 9. Phomopsis fruit rot with necrosis on rachis and stems and berries shriveling up; *Photo: A. Schilder.*

Weather data: (Source: [UMass Landscape IPM Message #23, Sept 17, 2010])

Region/Location	2010 Growing Degree Days (base 50˚ from March 1, 2010)		
	2-week gain	total accumulation for 2010	total accumulation near this date in 2009
Cape Cod	233	2,728	2,325
Southeast MA	226	2,695	2,217
East MA	290	2,997	2,472
Metro West MA	246	2,767	2,313
Central MA	--	--	2,159
Pioneer Valley MA	233	2,683	2,232
Berkshires MA	218	2,503	2,436

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/

In addition, we are working on integrating new base stations into the Network for Environment and Weather Applications program run by the Cornell IPM team at http://newa.cornell.edu/. This will include the ability to run disease and insect development models for a wider area. Stay tuned.

FYI – check out the newly formed Massachusetts Farm Winery and Growers Association and New Hampshire Winery Association and the Vermont Grape and Wine Council. These associations are of, by and for you! Join today!!

For Massachusetts residents, check out the new Massachusetts "Ag Tag" license plate. Each purchase can yield $15 for the Massachusetts Farm Winery and Grower's Association through a check-off plus pooled funds available for various programs or competitive grants. Get yours today!

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

Support for this work comes from UMass Extension, the UMass Agricultural Experiment Station, University of Connecticut Cooperative Extension, NE-SARE & NE-IPM Center

Sonia Schloemann <sgs@umext.umass.edu>
UMass Extension Fruit Specialist
Plant, Soil, Insect Sciences
UMass-Amherst