Cornell University Cooperative Extension

Eastern NY Commercial Horticulture Program

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August 3, 2016

Grape News

Monthly Updates:

Buckshot berries

Bunch closure

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

Phenology Update

Hudson Valley
-Veraison early varieties (Foch, Leon Millot)
-Bunch closure later varieties

Champlain Valley
Bunch Closure

Insect and Disease Pest Management

Downy and powdery mildew fruit infections are showing up in the Lower Hudson Valley and some places in the Champlain Valley.

There are no visible botrytis fruit infections yet. Berries will become more susceptible as they reach veraison. The most susceptible fruit are those in tight clusters. Hand-loosening clusters and canopy management to create faster drying times and improve UV penetration are mechanical practices that can prevent infections

Degree Day Accumulations (Base 50)

Weather Station	Aug. 1 2016	30 Year average
Chazy	1420	1354
Peru	1434	1391
Willsboro	1410	1366
Clifton Park	1719	1547
Hudson	1817	1720
Highland HVL	1842	1607
Riverhead	2004	1790

Temperature and Rain for July 2016

Weather Station	Avg Temp (F)	High Temp (F)	Low Temp (F)	Rain-fall (in)	DD Base 50 Jan 1 – May 10
Chazy	70.5	88.5	53.6	4.56	1420
Peru	71.2	89.7	52.1	1.97	1434
Willsboro	70.4	89.5	52.5	3.99	1410
Clifton Park	73.5	93	53	4.91	1719
Hudson	74.1	96	52.9	8.58	1817
Highland HVL	74.7	95.1	55.7	5.44	1842
Riverhead	77.6	94.7	59	2.93	2004

In this issue of Grape News:

- Assessing the Nutrient Status of Cold-Hardy Wine Grapes
- Petiole Sampling to Evaluate Grape Vine Nutrient Status
- Pennsylvania Expands Spotted Lanternfly Quarantine
- NGP News You Can Use
- How Much Heat Does it Take to Ruin Wine? Not Much

Assessing the Nutrient Status of Cold Hardy Wine Grapes

Carl Rosen and James Crants, University of Minnesota

This is an excerpt of the article from the February 2014 issue of NGP News You Can Use. You can access the full article by following this link: http://northerngrapesproject.org/wp-content/uploads/2014/02/2014FebruaryNGPnewsletter.pdf

Correctly assessing grapevine nutrient status is the essential first step in optimizing vine nutrition, which, in turn, is essential for producing a crop with high yield and quality. There are three general approaches to monitoring vine nutrient status: (1) diagnosing visible symptoms in the vines, (2) measuring soil nutrient concentrations, and (3) measuring tissue nutrient concentrations. An ideal nutrient monitoring program involves a combination of these three approaches.

Visual symptoms. The advantage of this approach is its low cost. However, the disadvantages of relying on visible symptoms alone greatly outweigh the advantage. Different deficiencies and toxicities may look alike or like problems unrelated to nutrient concentrations. Also, any visible nutrient stress means that yield and quality have likely already been negatively affected. Detecting problems before they occur will ensure healthier vines and better quality grapes.

Soil analysis. The second approach, soil analysis, is most important before the vineyard is planted. Soil testing several months to a year or more before planting is valuable in site selection. It also gives the grower a chance to amend and fertilize the soil properly before there are vine roots that can be damaged by soil disturbance. Testing well in advance of planting is especially important for amendments such as lime (to reduce soil acidity) that take months to have their full effect or for phosphorus and potassium, which are relatively immobile in the soil.

Tissue analysis. The third approach, tissue nutrient analysis, has been found to be a much better predictor of grape yield and quality and vine survival than soil analysis. Because it can diagnose nutrient problems before they produce symptoms, and because it provides information relevant to vine performance, tissue testing is an essential tool for assessing the nutrient status of established vineyards. Standard practice is to determine petiole nutrient concentrations annually, but the optimum time of year to sample is debatable. Some authorities prefer veraison because tissue nutrient concentrations are stable then, and tissue concentrations of some nutrients like potassium may be more closely related to fruit characteristics at harvest. Others argue for sampling at bloom, when the leaf is more responsive to external nutrient supply and there is more time to take corrective action.

The use of petioles instead of whole leaves is also not without controversy. Use of petioles may not be the best practice for all growing regions. Researchers in the Pacific Northwest found that relying on petiole analysis led to over-application of nitrogen fertilizer in their region, while whole-leaf analysis did not have similar issues. It is generally agreed that consistency in sampling time and tissue is more important than the specific time or tissue. Regular testing not only helps in diagnosing problems early, it also makes it possible to tell whether any given result is an anomaly or something that should influence your fertilization program.

Petiole Sampling to Evaluate Grape Vine Nutrient Status

Anna Wallis, ENYCHP

Petiole sampling is an excellent way to evaluate the nutrient status of your grapevines. Better than taking a soil sample, which only shows what nutrients are present at your site, a foliar analysis indicates which nutrients are actually available and being taken up by the plant. Deficiencies can also be diagnosed from visual symptoms, but these are sometimes hard to distinguish from each other, diseases, and other physiological disorders, and they may present differently on different grape varieties. Results of petiole analyses can be used to confirm visual symptoms.

The best time to take foliar samples is typically considered to be about 70-100 days after wild grape bloom, or near the beginning of veraison. At this time, active growth of the has slowed significantly, and energy is being invested primarily in the fruit. Therefore, the nutrient status of the leaves and petioles is relatively stable.

Two companies that provide foliar analysis are listed below. Directions and submission forms specific to each company is available on their website. Each has their own pricing system and requires a fee for each sample processed. Because the labs use different facilities and processing procedures, it is a good idea to be consistent with the company you use for testing. This way you can compare the results of subsequent tests, and determine the effect of any treatments you are making.

1. Agro-One Plant Tissue Testing Service (Dairy One) http://dairyone.com/analytical-services/agronomy-services/plant-tissue-testing-services/

2. A&L Eastern Laboratories http://www.allabs.com/analytical_services/agri_plant2.aspx

Proper Collection of Tissue Samples

Carl Rosen and James Crants, University of Minnesota

The following is the general method you should use when taking foliar samples from your vineyard. Specific sampling method of foliar tissue for nutrient analysis will also depend on the company you choose.

⇒ Divide the vineyard area into separate sampling areas based on cropping history and soil type. If there are other major variations in the soil you believe to be important, those should also be used to divide up the vineyard area. No sampling area should be larger than 10 acres. In addition to dividing the vineyard based on soil series and history, the vines in one sampling unit should be of the same age, variety, and rootstock.

⇒ For routine testing, collect samples at bloom or veraison – the times for which sufficiency ranges are established. Be consistent about the timing from year to year. If visible symptoms are showing, samples can be collected at any time of the growing season. In this case, send in petiole samples from vines showing symptoms and petioles of the same physiological age from vines not showing symptoms.

⇒ Collect a representative sample of leaves – 1 to 2 per vine (not from the same shoot) for each sampling unit, from at least 25 vines, and collect a total of at least 50 leaves (more for smaller-leafed varieties like Marquette). Choose leaves from both sides of the row, as well as the canopy. Collect from vines in typical health; reserve atypical vines for separate analyses to diagnose problems.

⇒ For sampling at full bloom (when 30 – 60% of the clusters are in flower), take leaves opposite the basal flower cluster of a shoot. For sampling at veraison (40 – 60% of clusters changing color), take the fifth, sixth, or seventh fully expanded (i.e., flat) leaf from the tip of an unpruned shoot.

⇒ Separate the petioles from the blades and discard the blades.

⇒ If the petioles are dusty or dirty, rinse them while fresh in distilled or deionized water. Do not let them soak, or nutrients will leach out. Dried petioles should not be washed.

⇒ Place the petioles in a clean paper bag. Label the bag and note the sample label and a description of the area it represents for your own records.

⇒ Dry the petioles at room temperature or send them to a laboratory immediately. Do not use plastic bags unless the samples have been previously dried.

Pennsylvania Expands Spotted Lanternfly Quarantine

July 28, 2016 Fruit Grower News

Spotted lantern fly has not been found in New York State. However, Eastern New York Horticulture Program team members Jim O'Connell and Sarah Rohwer, conduct visual surveys for this pest in vineyards participating in the Cooperative Agricultural Pest Survey (CAPS), a pest monitoring program funded by the Federal Farm Bill through the New York State Department of Agriculture and Markets and coordinated in New York State by Tim Weigle.

Pennsylvania's spotted lanternfly quarantine has been expanded to Lower Macungie Township, Alburtis and Macungie Boroughs in Lehigh County and New Hanover Township in Montgomery County after small populations of the pest were found. The most recent detections are in municipalities adjacent to previously quarantined areas.

The pest had not been found in the United States prior to its initial detection in Berks County in the fall of 2014.

Areas where the pest has been found are now under quarantine. The general quarantine restricts movement of any material or object that can spread the pest. This includes firewood or wood products, brush or yard waste, remodeling or construction materials and waste, packing material like boxes, grapevines for decorative purposes or as nursery stock, and any outdoor household articles like lawnmowers, grills, tarps and other equipment, trucks or vehicles typically not stored indoors. The last detection of the pest was confirmed in November 2015.

continued on next page

In addition to the new areas where the invasive has been found, the quarantine also includes:

- **Berks County:** Amity, Colebrookdale, Douglass, District, Douglass, Earl, Hereford, Longswamp, Oley, Pike, Rockland and Washington townships and the boroughs of Bally, Bechtelsville, Boyertown and Topton.
- **Montgomery County:** Douglass and Upper Hanover townships and the boroughs of East Greenville, Pennsburg and Red Hill.
- **Bucks County:** Milford Township and Trumbauersville Borough.
- **Chester County:** South Coventry Township.

Since receiving additional funding from the United States Department of Agriculture, survey work began May 1, 2016 to identify additional challenges and improvements with the invasive species. Eight crews and 34 volunteers have placed more than 2,200 bands on Ailanthus trees, removing more than 14,000 eggs. To date, 39 properties have been treated in the quarantine area, removing more than 3,300 Ailanthus trees.

Adult with wings spread showing colorful hind wing. Photo: Holly Raguza, Pennsylvania Department of Agriculture

Visit the Pennsylvania Department of Agriculture website to access the "Spotted Lanternfly Quarantine Checklist" or contact a local municipality or extension office. The checklist provides guidelines for inspection of vehicles and other items stored outdoors, each time they move them out of the quarantine area. Businesses in the general quarantine area need to obtain a Certificate of Limited Permit from the department in order to move articles. Local Pennsylvania Department of Agriculture inspection staff can work with businesses to ensure they are complying with quarantine restrictions. Criminal and civil penalties of up to $20,000 and prison time can be imposed for violations by businesses or individuals.

The Spotted Lanternfly is an inch-long black, red and white spotted pest and is native to China, India, Japan and Vietnam. It's an invasive species in Korea, where it has attacked 25 plant species which also grow in Pennsylvania.

Spotted Lanternfly, *Lycorma delicatula*, attacks grapes, apples, pines and stone fruits. It often attaches to the bark of Tree of Heaven (*Ailanthus altissima*), an invasive species similar to Sumac that can be found around parking lots or along tree lines. Adults often cluster in groups and lay egg masses containing 30-50 eggs that adhere to flat surfaces including tree bark. Freshly laid egg masses have a grey waxy mud-like coating, while hatched eggs appear as brownish seed-like deposits in four to seven columns about an inch long. Trees attacked by the Spotted Lanternfly will show a grey or black trail of sap down the trunk.

All Pennsylvanians are encouraged to watch for the Spotted Lanternfly and offered the following suggestions:

- During the months of July through December, when the adults are active, conduct a quick inspection of your vehicle any time you move in or near a quarantine area, to find any spotted lanternfly hitchhikers.
- If you see eggs on trees or other smooth outdoor surfaces: Scrape them off, double bag them and throw them in the garbage, or place the eggs in alcohol or hand sanitizer to kill them.
- If you collect a specimen: First, place the sample in alcohol or hand sanitizer in a leak proof container. Then, submit the specimen to your county Penn State Extension office or to the department's Entomology Lab for verification. Don't move live specimens around, even within the quarantined area. There are many places under quarantine that do not yet have active populations of spotted lanternfly – you do not want to help them establish a new home base.

If you take a photo: Submit photo of adults or egg masses to badbug@pa.gov.

- If you want to report a site: Call the Invasive Species report line at 866-253-7189 and provide any details of the sighting and your contact information.

Suspect specimens can also be submitted directly to the department's headquarters in Harrisburg or to any of its six regional offices. Specimens can also be submitted to county Penn State Extension offices as well. For more information about the Spotted Lanternfly, visit the Pennsylvania Department of Agriculture and search "lanternfly."

Canopy Management and Light Interception

NGP News You Can Use, July 2016

Canopy Management and Light Interception July 2016 Shoot tipping and basal leaf removal in Frontenac training systems trials in Clayton, NY. (photo by T. Martinson).

Canopy management involves manipulation of vine growth to achieve production goals such as optimizing light interception, managing disease pressure, adjusting cropping levels or maximizing fruit quality. Site selection, grape variety, training system, soil fertility, and water management will all influence the amount of canopy management needed throughout the season. However, canopy management is labor intensive, so it is important to understand the costs and benefits associated with these practices. Mike White and Tim Martinson covered various canopy management practices, and the economics of them, in the February 2012 Webinar "Nuts and Bolts of Canopy Management."

As canopy management affects light exposure to the clusters, this month we will also review the work being done in Clayton, NY, looking at the difference in fruit chemistry between shaded and exposed clusters of Marquette and Frontenac. In short, clusters exposed to sunlight have lower titratable acidity and higher soluble solids at harvest than clusters that are shaded. A research report from the Year 4 Northern Grapes Project Progress Report has complete details.

February 2012 Webinar "Nuts and Bolts of Canopy Management" http://youtu.be/eBGfmsSVJsM

Research Report "Impact of Shading on Frontenac & Marquette Fruit Composition" http://northerngrapesproject.org/wp-content/uploads/2016/02/NY-shaded-vs-exposed-Year-4.pdf

Additional Info: 2016 Preliminary Results. This year we are looking at ways to increase light interception by using a rake wire and "downward shoot positioning," along with cluster-zone leaf removal, on high cordon-trained Frontenac at Clayton. The two-factor experiment involves:

1. Use of a rake wire to constrain canopy (Y or N)

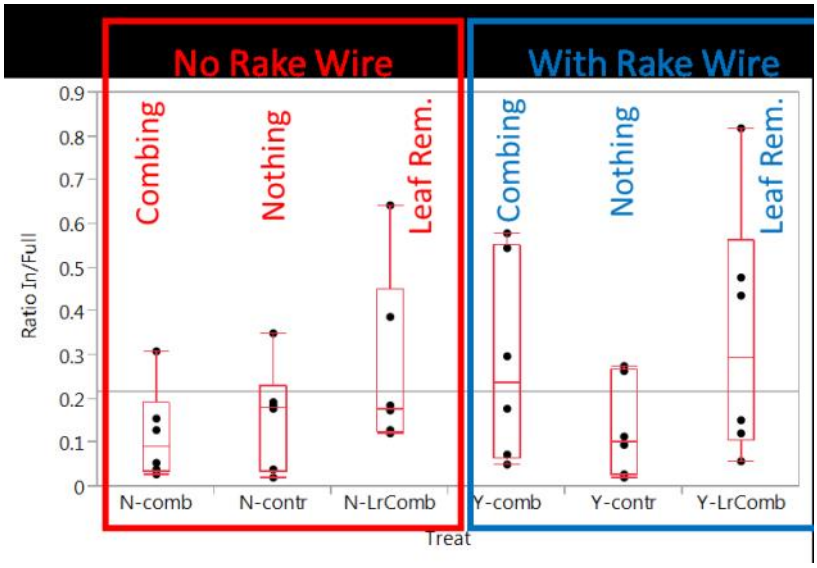
2. Shoot combing and/or leaf removal in the cluster zone.

Rake Wire: Two moveable wires on each side of the canopy were used to constrain the canopy downward. They were at the top of the canopy at the start of the season and were moved down, with shoots tucked behind them, as the season progressed.

Last week we used a light meter to compare ambient light to the light reaching the cluster zone in this experiment. Preliminary results showed that shoot combing + the rake wire resulted in elevated light exposure – the range of values indicated by box plots below being similar to the "Rake Wire + Leaf Removal" treatment. Compare to the 'no rake wire' values at the left.

We will collect samples to compare fruit composition under these treatments this fall.

Proportion of Sunlight Reaching Cluster Zone



FYI: How Much Heat Does It Take To Ruin Wine? Not Much

Laura Burgess, Vine Pair

At the height of the summer we often think about how the hot weather is affecting the vineyard. But what about the wine cellar? Here is an interesting article about how heat affects wine:

http://vinepair.com/articles/how-much-heat-does-it-take-to-ruin-wine-not-much/

Resources for Cold Climate Vineyard IPM

Cornell IPM Fact Sheets for Grapes
http://nysipm.cornell.edu/factsheets/grapes/default.asp

New York and Pennsylvania Pest Management Guidelines for Grapes (published annually)
http://store.cornell.edu/p-189430-2015-new-york-and-pennsylvania-pest-management-guidelines-for-grapes.aspx

Grape Disease Control, 2015. Dr. Wayne Wilcox (published annually)
http://rvpadmin.cce.cornell.edu/uploads/doc_308.pdf

Cornell Vineyard Spraying Website
http://web.entomology.cornell.edu/landers/pestapp/grape.htm

Integrated Pest Management Strategy for Cold Climate Winegrape Growers. Lorraine Berkett
http://www.uvm.edu/~fruit/grapes/gr_ipm/AnInitialIPMStrategy.pdf

LINKS

Cornell Grapes Website
http://ww.fruit.cornell.edugrape/

ENYCHP: http://enych.cce.cornell.edu/

Northern Grapes Project
http://northerngrapesproject.org/

NEWA Weather and Pest Forecasting
http://newa.cornell.edu/

Viticulture and Enology Cornell
https://grapesandwine.cals.cornell.edu/

Veraison to Harvest
http://grapesandwine.cals.cornell.edu/newsletters/veraison-harvest

Appellation Cornell
http://grapesandwine.cals.cornell.edu/newsletters/appellation-cornell

NYS IPM Fact Sheets
http://www.nysipm.cornell.edu/factsheets/grapes/

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