



Finger Lakes Grape Program

August 18, 2016

Finger Lakes Vineyard Update

In the Vineyard

Hans Walter-Peterson

All of our varieties at the Teaching Vineyard are showing at least some signs of veraison as of today. Vidal and Cabernet Franc are still in the very early stages of change, and Riesling is still pretty early in the process as well. Lemberger, Corot noir, Zweigelt and Marquette are just about completed with color development at this point. We will be collecting samples for the annual Veraison to Harvest project beginning next Monday with Marquette, and the following week for other varieties. With this year's drought, it will be that much more important for growers and winemakers to be tracking fruit development as the ripening process will be compromised in vineyards that are under higher levels of water stress.



The good news is that the first two weeks of August have been a bit more reliable for rainfall, but amounts have been all over the board, ranging from less than 1" in Geneva and Watkins Glen to over 3" at one of the stations in Romulus. After suffering through another month with rainfall well-below average (1" in July, versus the long-term average of 3.4" at Geneva), anything that is closer to normal feels positive.

Vines that are under heavier water stress will lose leaf function as the stress increases. Alan Lakso sent along a short summary of how water stress affects the leaves, including how they heat up and the impact that the "bleaching" of the leaves that occurs because of that excess heat indicates a loss of function, and is included below. One important point that he makes is that once the leaves lose photosynthetic function, they are not able to recover and become fully functional again even if the vines are well-watered again.

Getting a "Feel" for Water Stress

Alan Lakso, Cornell University

Grape leaves depend on evaporative cooling by water evaporation from inside the leaf (called transpiration). The water escapes from the stomatal pores on the bottom of the leaf and cools the leaf. If the vine is under water stress, the stomatal pores on the leaf close partially or completely to conserve water, but this prevents the evaporative cooling; so the leaf heats up in the sun.

Getting a “Feeling” for Water Stress (continued from page1)

Alan Lakso

Narrow thin leaves like desert shrubs have can lose heat effectively by giving it off to the air, so they don't heat up so much even if stressed. Large wide leaves, like grapes or many tropical plants have, do not give off heat to the air very well. Consequently, they depend on evaporative cooling through



Bleaching on a leaf caused by water stress (photo from A. Lakso)

their pores. So, large wide leaves will heat up markedly in the sun if their pores are closed and there is not much wind to take away the heat. With large Concord leaves, healthy ones may be 85 degrees in the sun, while stressed ones can be around 110 degrees!

That kind of heat will cause bleaching of leaves, then burning. It is common to see the part of a leaf that directly faces the sun to be bleached while the parts faced away will be nice and green. The leaf function is reduced in the bleached part. The green part may also have reduced function but we generally find that with rains, the green part can recover but the

bleached part does not.

A simple test in the vineyard to look for water stress development:

- Find a time in the mid-day or afternoon that it is *sunny and without much wind* on canopy surface.
- First is to simply remove a few large leaves, lay them in the sun, and feel them every few minutes over 15-20 minutes as they lose water, close their pores and heat up. This will give you a feel for how hot they can get.
- Then go to the vines you are concerned about. Feel *shaded* leaves on the exterior of the canopy for reference (they should be near air temperature). Also if any vines are known to be well supplied with water (irrigated or in a wetter spot), their exposed leaves would be good references too.
- Feel between your thumb and first finger large leaves that are directly exposed to full sun. The large leaves will show the effect more than smaller leaves and also have more water in them so it is easier to feel the temperature. Exposed leaves will be somewhat warmer without any stress, but will be markedly warmer if the vine is water stressed. Water-stressed large Concord leaves for example can be as much as 15-18 degrees F hotter than well-watered ones. This is easy to feel as our finger tips are quite sensitive to heat.

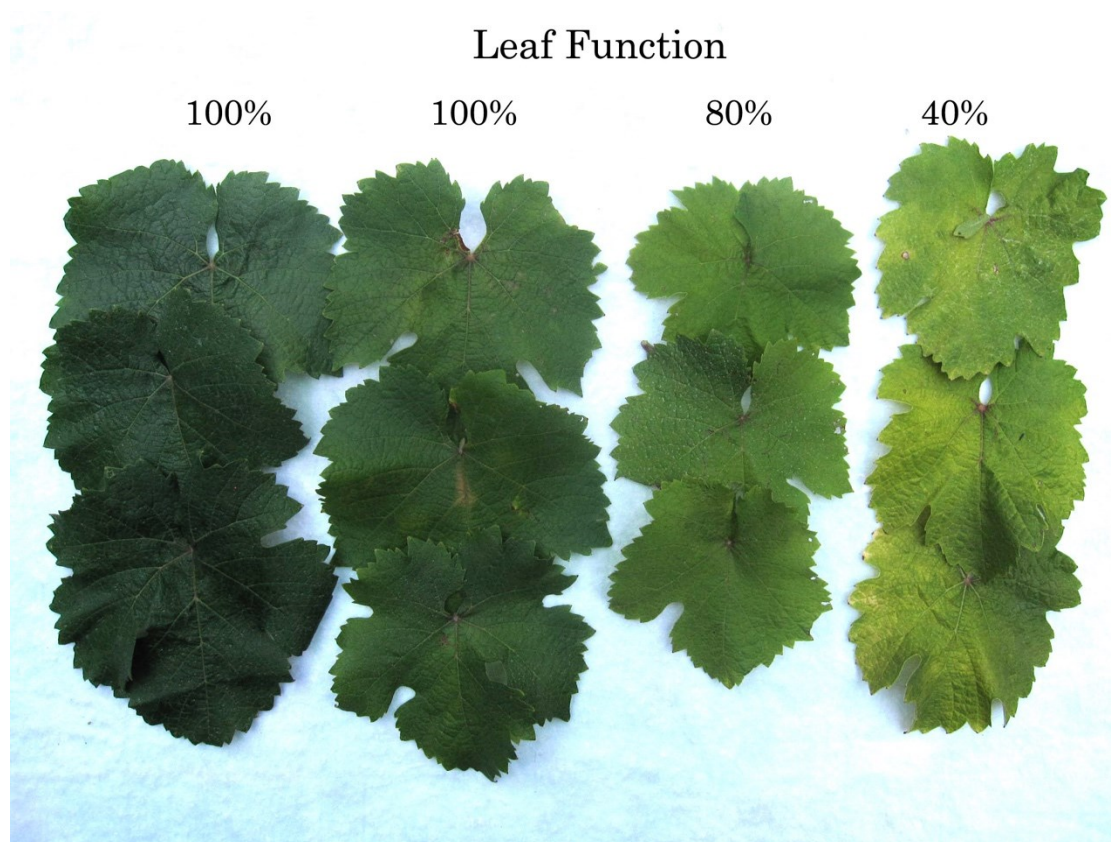
Getting a “Feeling” for Water Stress (continued from page 2)

Alan Lakso

We measured the photosynthetic function of the leaves that had different levels of visual bleaching and found that some loss of the dark greenness did not have major effects, but more bleaching was quite detrimental (see photo below). Also as mentioned above, these leaves did not recover even if the vine gets water.

So, if you have vines that look like the leaves below labeled 80% leaf function, the vine probably has lost about 20% of its ability to ripen a crop. Assuming there are rains so it doesn't get worse, the vine will be about 20% “over-cropped” compared to healthy vines. If the crop level is fairly low already, that may have little effect, but with the full normal crop, ripening will likely be delayed some.

A possible saving grace is that this very warm year seems to be pushing veraison early. This early veraison (like in 2012) will allow a longer and overall warmer ripening season. This might compensate for the reduced vine capacity.



IPM

Hans Walter-Peterson

Vineyards continue to look quite clean thanks to the lack of rain. Some growers have or will be applying a botrytis spray as a preventative measure, but others are planning to rely on good scouting to make a decision about whether or not a spray is needed at this point. Our discussion about sour rot at the Tailgate Meeting on Tuesday (see Gillian's summary of the meeting) was an important reminder that, even though vineyards are looking quite clean at this point, both botrytis and sour rot can still reappear if conditions change between now and harvest. So while conditions right now are not favorable for development of bunch rots, that can still change so growers with varieties that are susceptible to them should not be parking the sprayers for the season just yet.

Grape Berry Moth

Locations in the Finger Lakes region are well past the most recent window for spraying for GBM according to the models. Growers in Wayne County, where heat accumulation is significantly lower than further south, are near the end of the window for spray applications if they are necessary. In the later portion of the growing season, egg-laying and hatching of larvae is less synchronized and therefore makes it more difficult for a model to predict appropriate times for applications. At sites where GDD accumulation ([as calculated for the GBM model](#)) reached 1620 GDDs by August 5, the model recommends that growers continue to scout for GBM damage, as there will likely be some further egg-laying in those areas before the GBM begin to pupate for the winter. Cooler sites are less likely to see much more activity this season, and probably will not need any further treatment.

NEWA Grape Forecast Models

Select a disease or insect:
Grape Berry Moth

State:
New York

Weather station:
Dresden (FLGP/FLCC)

Date of Interest:
08/17/2016

Calculate

MapResultsMore info

Grape Berry Moth Results for Dresden (FLGP/FLCC)

Wild Grape Bloom: 5/30/2016
Wild Grape Bloom date above is estimated based on degree day accumulations or user input. Enter the actual date for blocks of interest and the model will calculate the results more accurately.

Accumulated degree days (base 47.14°F) wild grape bloom through 8/17/2016: 2012 (0 days missing)

Daily Degree Days for Dresden (FLGP/FLCC)

Base Temp	Past	Past	Current	5-Day Forecast		Forecast Details		
	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19	Aug 20	Aug 21	Aug 22
47.14F - GBM	26	30	26	26	30	30	30	26
Accumulation	1966	1996	2022	2048	2078	2107	2138	2164

NA - not availableDownload Time: 8/17/2016 15:00

Pest Status	Pest Management
If 1620 DD occurs prior to August 5, you can expect continuous pressure from grape berry moth through harvest. Model results are not good predictors of timing of population pressures.	Multiple additional insecticide applications may be necessary in high pressure vineyards to address the extended egg-laying and overlapping generations. Continuous coverage is necessary to avoid excessive crop loss. NOTE: Insecticide applications after mid September will have limited effectiveness in preventing damage.

Spider mites and dry, hot weather

Greg Loeb, Cornell Entomology

August is often the time we see the emergence of spider mite problems in vineyards and this summer it is particularly important to scout for them because we often see more mite problems under dry conditions. There are several contributing factors but temperatures are usually above average when its dry and these higher temperatures lead to more rapid mite development and more generations and potentially higher populations. Also, beneficial mites often are not able to keep up with the population growth of spider mites with hot temperatures. Perhaps an even more important factor is that with drought conditions the vines will shut their stomates during part of the day to help conserve water and this has the result of increasing leaf temperatures due to lack of transpiration and evaporative cooling. Also, the vine stops adding new leaves earlier in the season in drought conditions and this has the effect of concentrating mites on less leaf material.

There are good reasons to scout your vineyard for spider mites and/or spider mite damage. I reviewed mites in my spring update, but briefly, there are two species of spider mites that attack grapes in the Eastern US, two-spotted spider mite (TSSM) and European red mite (ERM), but ERM typically is the more common. It is important to know the difference between the two species since some miticides are more

effective against one than the other. As the name indicates, ERM is reddish in color and lays red eggs. Adult female TSSM tend to have large black spots on the top of the abdomen but this is a pretty variable. TSSM eggs are clear to opaque. TSSM tends to stay on the bottom side of leaves and produces obvious webbing while ERM can be found on either side of the leaf and does not produce much webbing. Both species have the capacity to go through a number of generations during the season. Because of their small size, it is often difficult to know if you have mites. Foliar symptoms (bronzing of leaves) are one clue, although if you have wide spread, obvious symptoms then economic damage may already be occurring.

The working threshold for spider mites (TSSM and ERM combined) in our

area is 7 to 10 mites per leaf, although this will vary depending on health of the vineyard, crop load, value of the grape, etc. The impact of mite feeding on grapes includes reduced photosynthesis, delayed accumulation of sugars thereby delaying harvest date, and the potential of reduced yield the following season. I suggest sampling at least 50 mid-shoot leaves from both the edge and the interior (25 leaves each) of a vineyard block, examining both sides of the leaf. A hand lens will be necessary to see the mites for most people. Even with a hand lens, it is challenging to count the mites. Thus, we recommend estimating the proportion of leaves infested with one or more mites and use something like 50% infested as a treatment threshold. A leaf is considered infested if it has one or more spider mites. Remember to keep rough track of which species is most common.



Adult European red mite on bottom side of grape leaf



Two spotted spider mite adult. Photo: Jack Clark, UC Davis

Spider mites and dry, hot weather (continued from page 5)

Greg Loeb, Cornell Entomology

There are several chemical options available for mite control in New York and Pennsylvania: Vendex [fenbutatin-oxide], Agri-Mek and several generics [abamectin], Nexter [pyridaben] (not on Long Island), Acramite [bifenazate], JMS Stylet Oil [aliphatic petroleum distillate], Zeal Miticide1 [etoxazole], Onager or Savey [hexythiazox], Danitol [fenpropathrin], Portal [fenproximate] and the newly labeled miticide called Nealta [cyflumetofen]. Read labels carefully. JMS Stylet Oil is not compatible with a number of other products including Captan, Vendex, and sulfur. Also, although Stylet Oil can help with mite problems, it is not likely to provide complete control in problem vineyards. Nexter is very effective against ERM but higher rates should be used for TSSM. Agri-Mek currently has TSSM on the label but not ERM, although in apples both species are on the label. Acramite includes both TSSM and ERM, although it calls for higher rates for ERM. The new label for Zeal Miticide 1 includes both ERM and TSSM in NY whereas the old label only had TSSM. You need a 2(ee) recommendation, which is readily available, for use against ERM with older material. Since Zeal Miticide1 affects eggs and immatures, it is advised to apply before populations reach damaging levels to give the material time to work. Similar advice can be applied to Onager, Savey and Portal. Danitol and Brigade (two-spotted only) are broad-spectrum insecticides that also have fairly good miticidal activity. Pyrethroids are hard on beneficial mites, however.

Spider mites are often thought of as a secondary pest. In other words, something must happen in the vineyard that disrupts their natural control by predators, particularly predatory mites, before their populations can increase to damaging levels. Since Danitol and Brigade have miticidal activity they would not be expected to flare spider mites in the short term. However, in the past, spider mites have been quick to develop resistance to frequent use of pyrethroid. This may or may not happen but it is worth keeping in mind. One of the first things to watch out for is initial good suppression of mites followed by a resurgence indicating the spider mites recovered more quickly than the predatory mites. The other miticides (Vendex, Onager, Savey, Zeal, Acramite, Nealta, and Nexter) are generally pretty easy on natural enemies, although at high rates Nexter can negatively affect predatory mites. Overall, paying attention to conserving predatory mites can pay economic dividends since miticides are quite expensive.

In summary, given how dry things are its worth getting out in the vineyard and scouting for mites and mite damage. While you are out there, also scout for grape berry moth and leafhoppers. As of today (August 9, 2016) we are at about 1600 DD using the grape berry moth phenology model (in Geneva, NY) at the NEWA web site (<http://newa.cornell.edu/>), so its about the right timing for the third flight of grape berry moth. As we get closer to harvest, you also will want to be cognizant of multicolored Asian beetle in clusters and Drosophila fruit flies (see my spring review for more information). If you have questions, send me an email (gme1@cornell.edu) or give me a call (315-787-2345).

Tailgate Meeting August 16th

Gillian Trimmer

Our penultimate Tailgate Meeting for the season, tucked under the terrace and against the winery at Ventosa Vineyards, brought talk not only of the changing weather, but of the changing grapes. We're seeing softening and a trend toward translucency in Riesling and Cayuga White; Chardonnay berries are practically yellow. Concord, Cabernet Sauvignon, Merlot, and Lemberger are all showing some red, along with many other varieties. It's the time of year when our focus really turns toward the upcoming harvest.

To that end, we were grateful to have Megan Hall come to speak on sour rot. It's been a clean year so far, and she urged growers to just keep an eye on the grapes for the first signs of infection. Her research, working with Wayne Wilcox, has shown that the combination of an insecticide to control fruit flies and an eradicant-type material such as Oxidate can effectively halt sour rot from spreading. Neither of the materials will work as well alone, and the treatment would need to be re-applied weekly until harvest. Megan also shared that most sour rot around here seems to be spread by the common, garden-variety fruit fly, *Drosophila melanogaster*, rather than the invasive spotted wing drosophila, *Drosophila suzukii*, that has been wreaking havoc for growers of other small fruits. Beyond the specifics of sour rot, it was also nice to have Megan and Wayne around to answer questions on diseases in general.

Like most of our meetings this summer, yesterday's was overshadowed by talk of drought and water stress. Thus, we were excited to see a downpour overtake Ventosa and Geneva—what a welcome sight! Hans discussed how the vines can definitely still use water between veraison and harvest, and will likely put that water first toward producing sugars to load into the grapes, then toward prepping next year's buds. Those that have the ability to irrigate should keep with it, as long as the water is there, even though the grapes have changed color. Hopefully we'll get some more rain coming through, too.

Many thanks to Jenna LaVita from Ventosa Vineyards for hosting our meeting, as well as to Megan Hall for speaking. Our final Tailgate Meeting of the season will be at Fulkerson Winery in Dundee, NY on August 30th from 4:30-6:00 PM. See you then!



Upcoming Events

Don't forget to check out the calendar on our website (<http://flgp.cce.cornell.edu/events.php>) for more information about these and other events relevant to the Finger Lakes grape industry.



Tailgate Meeting #10

Tuesday, August 30 4:30 – 6:00 PM

Fulkerson Winery

5576 Route 14

Dundee, NY 14837

Our tenth and final Tailgate Meeting of the year will be held at Fulkerson Winery in Dundee on Tuesday, August 30. If you haven't made it to a Tailgate Meeting this year, here's your last chance!

These meetings are held every other week at various grape farms around the Finger Lakes, and are intended to be informal, small-group meetings where FLGP staff and growers can ask questions and discuss issues about vineyard management, IPM strategies or other topics appropriate for that point in the growing season. 0.75 DEC recertification credits will be available.

Training on Changes to Worker-Protection Standards Regulations

Wednesday, October 5

Dickman Farms

13 Archie Street, Auburn NY

A number of significant changes to the federal Worker Protection Standard for Agricultural Pesticides (WPS) will go into effect on January 2, 2017. These changes will affect farms, greenhouses, nurseries, forests, and other establishments (including organic establishments) on which pesticides are used in the production of agricultural crops.

If you use, supervise the use, or are responsible for the use of pesticides on such establishments, the Department of Environmental Conservation (NYSDEC) invites you to attend a WPS Mock Inspection on the morning of October 5th at Dickman Farms, 13 Archie Street, Auburn, NY. NYSDEC staff will be on hand to explain the rule changes and how to comply with them.

Check-in is from 9:30 to 10:00, with training to follow from 10:00 to noon. Attendees who are certified to apply pesticides in Categories 1A, 1D, 10, 21, 22, 23, 24, or 25 will earn 2 recertification credits. (Remember to bring your NYS pesticide certification photo ID card.)

To register, please send an e-mail to PesticideCompliance@dec.ny.gov. If currently certified in New York as a pesticide applicator or commercial technician, include your Certification ID Number.

You can find additional information about changes to the WPS on EPA's website at: <https://www.epa.gov/pesticide-worker-safety/revisions-worker-protection-standard>.

2016 Growing Degree Days and Rainfall

FLX Teaching & Demonstration Vineyard – Dresden, NY					
Date	Hi Temp (F)	Lo Temp (F)	Rain (inches)	Daily GDDs	Total GDDs
8/10/16	90.6	70.3	0.67	30.5	1901.0
8/11/16	92.3	72.3	0.18	32.3	1933.3
8/12/16	91.5	72.0	0.09	31.8	1965.1
8/13/16	94.7	72.7	0.83	33.7	1998.8
8/14/16	82.2	71.5	0.01	26.9	2025.6
8/15/16	79.7	68.2	0.00	24.0	2049.6
8/16/16	88.8	69.9	0.13	29.4	2078.9
Weekly Total			1.91"	208.4	
Season Total			8.35"	2078.9	

GDDs as of July 19, 2015: 1974.8

Rainfall as of July 19, 2015: 17.51"



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Seasonal Comparisons (at Geneva)

Growing Degree Days

	2016 GDD ¹	Long-term Avg GDD ²	Cumulative days ahead (+)/behind (-) ³
April	36.1	65.2	-9
May	270.1	252.3	0
June	489.1	480.6	0
July	695.9	639.8	+3
August	413.2	588.2	+9
September		351.0	
October		105.2	
TOTAL	1904.3	2481.8	

1 Accumulated GDD's for the Month

2 The long-term average (1973-2015) GDD accumulation for that month.

3 Numbers at the end of each month represent where this year's GDD accumulation stands relative to the long-term average. The most recent number represents the current status.

Precipitation

	2016 Rain ⁴	Long-term Avg Rain ⁵	Monthly deviation from avg ⁶
April	1.17"	2.89"	-1.72"
May	1.66"	3.11"	-1.45"
June	0.65"	3.68"	-3.03"
July	1.01"	3.42"	-2.41"
August	0.80"	3.15"	
September		3.64	
October		3.22	
TOTAL	5.29"	23.12"	

4 Monthly rainfall totals up to current date

5 Long-term average rainfall for the month (total)

6 Monthly deviation from average (calculated at the end of the month)

Additional Information



Become a fan of the [Finger Lakes Grape Program on Facebook](#), or follow us on [Twitter \(@cceflgp\)](#) as well as YouTube. Also check out our website at <http://flgp.cce.cornell.edu>.

Got some grapes to sell? Looking to buy some equipment or bulk wine? List your ad on the [NY Grape & Wine Classifieds website](#) today!

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