

# Finger Lakes Vineyard Update

# In the Vineyard

Hans Walter-Peterson

This year's growing season, particularly since bloom, was shaping up to be on the dry side of normal. Rainfall in June and the first half of July were well below average in most locations, which was resulting in slightly smaller berry size and even some early drought symptoms developing on sites with limited rooting volume. But as we all know, weather patterns can change quickly.

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NEWA Station	Aug 14 Rainfall
Branchport	1.15″
Dresden	2.73″
Dundee	3.50″
Geneva	3.52″
Hammondsport	1.67″
Interlaken	3.47″
Lakemont	5.77″
Lodi (Lamoreaux Landing)	7.03″
Penn Yan	1.17″
Romulus	2.47"
South Bristol	1.43″
Watkins Glen	1.65″
Williamson (Wayne County)	1.60″

The storms that hit the Finger Lakes on Tuesday dropped anywhere from just over 1" to more than 9" of rain, with the heaviest amounts falling in the area around Lodi, Ovid, Hector, and Interlaken. During the heaviest downpours, rain was coming down at a rate of more than 1.5" per hour in some spots. Roads in those areas were underwater for several hours in some places, and damaged others. I expect that some of the vineyards in those areas with the heaviest rains had some kind of impacts from the storm, but I haven't had a chance to connect with many of those growers yet. Growers who believe that they have had damage to their vineyards as a result of the storm should be sure to contact their crop insurance carrier as soon as they can, in order to open up a potential claim. I'm sure that the storm and any impacts from it will be a topic of conversation at next week's Tailgate Meeting (Tuedsay, August 21 at 4:30 at Hosmer Winery in Ovid).

Meanwhile, there are a few varieties still to "officially" hit veraison at the Teaching Vineyard. Over the past week, Don has called veraison in Vidal, Chardonnay, Grüner Veltliner, Lemberger, and Corot noir. Concord berries started to develop color at the end of last week as well. This leaves Riesling and Cabernet Franc as the two remaining varieties to do so, but both have started to change over the last week as well. I expect they will be well into veraison by the end of the week.



# Finger Lakes Vineyard Update

#### Finger Lakes Grape Program

#### IPM

Hans Walter-Peterson

Signs of powdery mildew infections are more readily visible in vineyards lately than they have been in a few years, at least to my eyes. Many of these infections are on several berries in an otherwise healthy-looking cluster. Berries are resistant to further new infections by PM at this point, so we should be seeing little to no development of further cluster infections from this point forward. Leaf symptoms of new infections, however, are also a little easier to find this year.

The heavy rains on Tuesday will likely mean that there will be some berry splitting as a result of water absorption through the skin (after veraison, berry size is not influenced by how much water is in the soil profile). Growers will need to be prepared to protect berries from botrytis infections which can take advantage of these points of entry. We are starting to see some bird predation on our earlier ripening varieties as well. Where the birds aren't able to remove the entire berry cleanly (like they have in our Marquette, pictured), they will often just puncture the fruit, causing damage that will allow other pests to become established.



The question about how well fungicides and insecticides are able to adhere to the vines often comes up after high rainfall events like Tuesday. Several years ago, Michigan State conducted some trials to examine how rainfast different insecticides are. While there are lots of factors that can influence these results, the table below

gives some basic guidance for insecticide adherence to leaves and fruit depending on different rain amounts.

Rainfastness rating chart: General characteristics for insecticide chemical classes						
Insecticide class	Rainfastnes	ainfastness ≤ 0.5 inch Rainfastness ≤ 1.0 inch		tness ≤ 1.0 inch	Rainfastness ≤ 2.0 inch- es	
	Fruit	Leaves	Fruit	Leaves	Fruit	Leaves
Organophosphates	Low	Moderate	Low	Moderate	Low	Low
Pyrethroids	Moderate/High	Moderate/High	Moderate	Moderate	Low	Low
Carbamates	Moderate	Moderate/High	Moderate	Moderate	Low	Low
IGRs	Moderate	Moderate/High	Moderate	Moderate	Low	Low
Oxadiazines	Moderate	Moderate/High	Moderate	Moderate	Low	Low
Neonicotinoids	Moderate, Sys- temic	High, Systemic	Low, Sys- temic	Low, Systemic	Low, Sys- temic	Low, Systemic
Spinosyns	High	High	High	Moderate	Moderate	Low
Diamides	High	High	High	Moderate	Moderate	Low
Avermectins	Moderate, Sys- temic	High, Systemic	Low, Sys- temic	Moderate, Systemic	Low	Low

Highly rainfast =  $\leq$  30% residue wash-off; Moderately rainfast =  $\leq$  50% residue wash-off; Low rainfast =  $\leq$  70% residue wash-off; Systemic = Systemic residues remain within plant tissue.

From "Rainfast characteristics of insecticides on fruit" by John Wise, Dept. of Entomology, Mich. State Univ. Posted at <u>http://msue.anr.msu.edu/</u> news/rainfast\_characteristics\_of\_insecticides\_on\_fruit\_on June 7, 2018.

# Finger Lakes Vineyard Update

#### Finger Lakes Grape Program

#### **IPM** (continued from page 2)

Hans Walter-Peterson

With fungicides, the question primarily comes down to whether or not the material acts as a systemic (moves into the plant tissues) or remains primarily on the surface of the plant. Those that do not penetrate into the plant tissues are more susceptible to wash-off during a heavy rainstorm (obviously). Materials that might be used at this point in the season that primarily stay on the surface of the plant, and could therefore be more prone to washing off, include:

- Sulfur
- Captan
- Oxidate
- JMS Stylet Oil
- Kaligreen/Armicarb/Nutrol
- Copper
- Oso/Ph-D
- Botector
- Double Nickel

Most of the other materials that are used at this point in the season, primarily for botrytis and downy mildew control, are systemic, and therefore are much less affected by rains because they penetrate inside the plant tissues. These would include:

- Elevate
- Flint
- Phos acid products (e.g., ProPhyt, Rampart)
- Ranman
- Revus
- Rovral
- Scala
- Switch
- Vangard

Use of an adjuvant that helps materials to penetrate the plant surface more easily will allow more of these systemic materials to enter the tissue (check the label to see if the use of an adjuvant is recommended). Penetrating agents generally shouldn't be used with the first category of materials, because they are intended to function on the plant surface, not inside it.

Growers who had applied systemic materials a few days ahead of the rain this week may not need to worry about reapplying those materials right away after 2 - or 8 - inches of rain. Any of the "surface protectant" materials that were on the leaves and clusters before Tuesday are likely mostly washed off, depending on how much rain fell at a particular location.

#### Veraison Explained

#### DeAnna D'Atilio

The author was an undergraduate intern with Alice Wise in the CCE Suffolk County viticulture program in 2011. This article was originally published in 2011 in the Long Island Fruit & Vegetable Update, and republished last week.

I spy with my little eye... something red! The Marquette hit véraison earlier this week, so we thought it would be a good time to briefly address the biochemical and physiological shift that transpires at the onset of berry ripening. Berry growth can be defined by three stages that follow a double sigmoid curve. In phase I, berry cells divide and expand following bloom, sugar is low, berries are green due to the presence of chlorophyll and organic acids begin to accumulate. The berry then hits a "lag phase" and growth slows drastically this is the current state of most grape varieties in Long Island. Depending on the specific variety phase III comes along and marks the commencement of véraison.

During phase III cell enlargement is the sole factor increasing berry size because cell division no longer occurs. This enlargement is enabled by multiple factors which allow for skin stretching. Cell wall components such as cellulose, hemicellulose and pectin are modified by the activity of enzymes which release the hydrogen bonds that connect them. The activity of the protein expansion, which functions to loosen cell wall proteins, also peaks at this time (Keller, 2010). As berry cell walls lose integrity their intracellular and extracellular cell contents mix causing subsequent berry softening and skin stretching (Creasy & Creasy, 2009).

One of the most prominent shifts in berry metabolism at véraison regards water flow. Early in berry development water is supplied via the xylem but after véraison the peripheral vascular issue of the berry ruptures, causing an alteration in water movement that creates a dependence on the phloem for water movement. This phenomenon partially explains the rapid increase in sugar accumulation which is done via phloem uploading. Sugar is imported to the berries as sucrose and upon arrival is cleaved enzymatically back into fructose and glucose. After véraison the concentrations of these hexose sugars are approximately equal and remain so until harvest. The increase in sugar concentration alters the water potential gradient so that water movement into the berry is favored and "pull back" into the leaves is decreased. Overall this results in the berries being less susceptible to water stress. Their resistance is also enhanced given the fact that berry stomata become physiologically plugged at véraison (Keller, 2010).

To enable sucrose accumulation malate becomes the substrate for berry respiration post véraison, causing a corresponding decline in acidity. While it is commonly thought that tartaric acid concentration decreases due to precipitation, the decrease is actually attributed to a dilution effect from the increase in berry water. In fact, tartaric acid does not form crystals with potassium or calcium ions within the berry (it will however form crystals after the berries are crushed due to cell partitions being broken down). The crystals that form within the berry are between oxalate and calcium ions. These crystals later act as a calcium reserve for the berry when import from the xylem halts post véraison. There is also evidence that suggests that the crystals exhibit an anti□feeding role to insects and mammals (Keller, 2010).

Berry color change is due to the accumulation of anthocyanins that commences with véraison. When anthocyanin accumulation begins skin tannin synthesis stops (seed tannin synthesis stops shortly after). The group of genes responsible for turning anthocyanin production on and tannin synthesis off are activated when Brix reaches  $9\Box 10^{\circ}$  (Keller, 2010).

Post véraison the enzymes responsible for degrading grape carotenoids  $\Box$  a group of compounds found in nearly all plant tissue  $\Box$  into norisoprenoid precursors are most active. "Norisoprenoids" are a group of aroma compounds that are often favorable in wine profiles  $\Box \beta \Box$  damascenone which has a floral/rose aroma is an example. A less preferred example includes "TDN," the petrol smelling compound that may taint wines when found in excess, which is common to Riesling wines because the grapes naturally have higher concentrations of the compound. Important to note is that there is a very direct correlation between light exposure and the concentration of norisoprenoid precursors in grape berries (Sacks, 2011).

# **Upcoming Events**

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

### Tailgate Meeting #8 – Final Tailgate Meeting of 2018!!

Tuesday, August 21, 2018 4:30 – 6:00 PM Hosmer Winery 7020 Route 89, Ovid NY 14521

Our final Tailgate Meeting of the season will be held at Hosmer Winery in Ovid. Pesticide credits have been approved for each Tailgate Meeting this season. No registration required – just bring a chair and your questions and observations about what's going on in the vineyard.

#### **Field Meeting**

Tuesday, August 28 4:30 – 6:00 PM Boundary Breaks Vineyard 1568 Porter Covert Road Lodi, NY 14860

Dr. Justine Vanden Heuvel and the FLGP will be discussing some of our programs' recent research projects. Topics will include differential harvesting based on NDVI imaging, mycorrhizal fungi to improve root function in grapevines, under-vine cover crops, and site and clone influences on Riesling. We will present research wines from both the differential harvest and clonal projects during the meeting as well. Because of that, we need to ask you to register for the meeting so we have an idea of how many people to plan for. Please register for the meeting at <a href="https://flgp.cce.cornell.edu/event\_preregistration.php?event=384">https://flgp.cce.cornell.edu/event\_preregistration.php?event=384</a>, or contact Brittany Griffin at 315-536-5134 or <a href="https://ga93@cornell.edu">bg393@cornell.edu</a>.

#### USDA-ARS Apple, Grape, and Tart Cherry Germplasm Collection Tour

Saturday, September 15, 2018 9:00 – 11:00 AM McCarthy Farm 2865 County Road 6 (Preemption Road), Geneva, NY, 14456 (across from St. Mary's Cemetery).

The Clonal collection of Plant Genetic Resources Unit, USDA-ARS, Geneva, NY is pleased to announce our annual tour on September 15, 2018 from 9:00 - 11:00 am. The tour will be a two-hour walking tour (rain or shine!) on uneven ground through the orchard and vineyard. We will walk and talk for10 minutes about the collection overall, 10 minutes about the tart cherry collection, 30 minutes about the grape collection and 70 minutes about the apple collection. No reservation is needed. If there is any question, please contact Ben Gutierrez at <u>ben.gutierrez@ars.usda.gov</u> or 315-787-2439, or Thomas Chao at <u>c.thomas.chao@ars.usda.gov</u> or 315-787-2454.



#### August 16, 2018

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### 2018 GDD & Precipitation

FLX Teaching & Demonstration Vineyard – Dresden, NY					
Date	Hi Temp (F)	Lo Temp (F)	Rain (inches)	Daily GDDs	Total GDDs
8/8/2018	77.9	69.0	0.30	23.5	1901.6
8/9/2018	82.5	68.2	0.14	25.4	1926.9
8/10/2018	77.0	62.3	0.00	19.7	1946.6
8/11/2018	78.4	63.1	0.03	20.8	1967.3
8/12/2018	81.6	60.6	0.00	21.1	1988.4
8/13/2018	74.2	66.5	0.07	20.4	2008.8
8/14/2018	73.2	67.0	2.73	20.1	2028.9
Weekly Total			3.27"	150.8	
Season Total			14.44"	2028.9	

GDDs as of August 14, 2017: 1906.2

Rainfall as of August 14, 2017: 18.71"

Seasonal Comparisons (at Geneva) as of August 14

#### **Growing Degree Day**

	2018 GDD <sup>1</sup>	Long-term Avg GDD <sup>2</sup>	Cumulative days ahead (+)/behind (-)
April	8.2	65.4	
Мау	416.3	251.9	
June	472.3	481.1	
July	704.5	640.7	
August	324.1	285.0	
September			
October			
TOTAL	1925.4	1724.1	+12

<sup>1</sup> Accumulated GDDs for each month.

<sup>2</sup> The long-term average (1973-2017) GDD accumulation as of that date in the month.

<sup>3</sup> 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.



# 2018 GDD & Precipitation (continued from page 4)

#### Precipitation

	2018 Rain <sup>4</sup>	Long-term Avg Rain <sup>5</sup>	Monthly deviation from avg <sup>6</sup>
April	1.92"	2.87"	-0.93"
Мау	3.15"	3.13"	+0.02"
June	2.50"	3.62"	-1.12"
July	2.98"	3.45"	-0.47"
August	4.65"	3.14"	
September		3.57"	
October		3.37"	
TOTAL	15.20"	23.16"	

<sup>4</sup> Monthly rainfall totals up to current date

<sup>5</sup> Long-term average rainfall for the month (total)

<sup>6</sup> 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 <u>http://flgp.cce.cornell.edu</u>.

Got some grapes to sell? Looking to buy some equipment or bulk wine? List your ad on the <u>NY</u> <u>Grape & Wine Classifieds website today!</u>

#### Finger Lakes Grape Program Advisory Committee

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# **Cornell Cooperative Extension** Finger Lakes Grape Program

Hans Walter-Peterson—Team Leader Donald Caldwell—Viticulture Technician The Finger Lakes Grape Program is supported, in part, by six county Cornell Cooperative Extensions Associations: Ontario, Seneca, Schuyler, Steuben, Wayne and Yates.

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