Cornell AgriTech
New York State Agricultural Experiment Station

Véraison to Harvest

Statewide Vineyard Crop Development Update #5
September 28, 2018
Edited by Tim Martinson and Chris Gerling

Around New York...

Statewide (Tim Martinson)

Of the 91 blocks that we started off with, 31 have been harvested, leaving 60 blocks with grapes still in the field. Before our sampling on the 24th, La Crescent, Niagara, Marechal Foch, Gruner veltliner, Sauvignon blanc, and Vignoles were harvested. Additional Chardonnay, Pinot noir, and most Marquette blocks were also harvested.

Cooler temperatures, grapes nearing maturity, and rainfall/cloudy conditions slowed the rate of soluble solids accumulation (average +0.5 °brix vs. +0.8 last week) and reduction in titratable acidity (TA) (average -1.4 vs.-2.6 g/L last week). Berry size changed little during the past week. Natives (Concord and Catawba) showed the greatest gains (1.1-1.3°brix) in soluble solids, and both Catawba and Vidal blanc showed whopping declines in TA of -5.7 and -6.3 g/l, respectively. Across varieties, TAs of remaining hybrids (ave. 8.5 g/l), vinifera (7.5g/l), and natives (9.2 g/l) are, on average 1 to 3 g/l lower than last year at this time. Soluble solids of hybrids and natives are higher than last year (0.5 to 2.6 °brix), while vinifera are slightly lower (-0.5 °brix on average, but note that Malbec (-2.7) and Merlot (-2.9) are substantially behind last year's numbers. Notably, Riesling soluble solids did not change from last week. This year, Riesling has lower brix (16.9 vs 17.6 °brix last year) and lower TA (ave 8.8 g/l, 2.1 g/l lower than last year) compared with 2017.

Notably, the Concord blocks we're monitoring are all above 17 °brix – well above processor standards. Elsewhere Terry Bates reports that all of the high-yielding CLEREL research blocks came in at over 16 °brix. The Concord crop is ripe and ready to go.

With overcast weather and rain (along with lower acidity?) fruit rots – and mainly sour rot – continue to be an issue for growers, which may prompt some to accelerate the pace of harvest for late-season grapes.

Long Island (Alice Wise)

Harvest was full swing on Long Island this past week with a number of different varieties making it to the crush pad including Pinot Noir, Pinot Gris, Gewürztraminer, Sauvignon Blanc, Tocai Friulano and even some Chardonnay.

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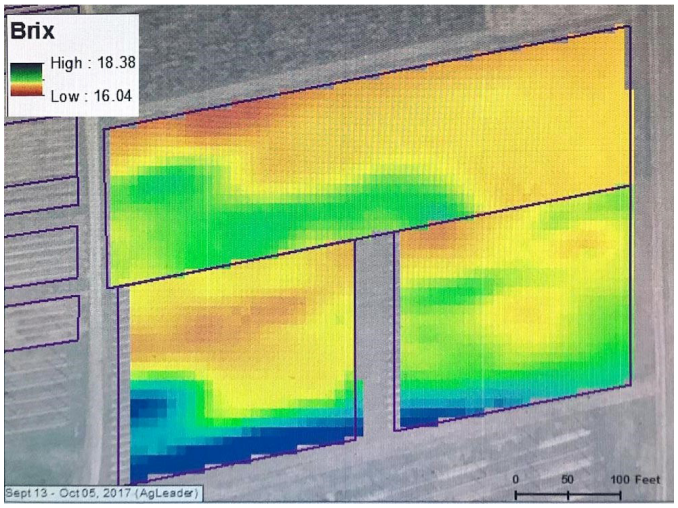


Spatial juice soluble solids *of young Concord blocks at CLEREL collected with an on-the-fly Brix monitor mounted on a mechanical grape harvester. The north block was planted in 2015 and is in full production while the two south blocks were planted in 2016 and were carrying 50% crop this season. t.*

Photo by Terry Bates

On-the-Fly Brix Monitoring at CLEREL

Terry Bates

Research efforts at the Cornell Lake Erie Research and Extension Laboratory (CLEREL) to evaluate commercial yield monitors were described in the last *Veraison to Harvest* issue.

In conjunction with yield monitoring, the team at CLEREL has been developing the ability to monitor and spatially map juice soluble solids during the harvest operation.

Dan Sprague and Andy Joy have invented a novel fruit collection and processing mechanism mounted on a mechanical harvester which delivers juice to a continuously recording refractometer.

Rhiann Eckstrom and Jackie Dresser are validating and mapping spatial juice soluble solids. Brix monitor sensor readings are being validated against hand samples, bin probes, and truck probes and will be integrated with yield maps to describe the Yield-Brix relationship in individual vineyard blocks.

Fruit was picked for both table and sparkling wine. As usual, picking was dictated by fruit quality/integrity, the availability of labor, winery scheduling, and the weather. The past week had periodic rain and clouds, not ideal when trying to bring in any agricultural commodity. However, this is life in the eastern U.S. For the grape industry, it reinforces the need to properly address canopy, crop and pest management throughout the season.

Fortunately, sunny weather is predicted for the weekend and beyond. Canopies are holding up well now that downy mildew is no longer a factor. Bird pressure has been spotty but overall lighter than in previous seasons. The flocks of starlings that normally torture the Cornell research vineyard have not made an appearance.

Numbers from our recent harvest are consistent - moderate Brix and low to moderate acids. Cluster rot, mainly sour rot and a little *Botrytis*, can be found in some varieties but there have also been some surprises. For example, both Pinot Noir and Pinot Gris in the research vineyard had only minor sour rot. Sauvignon Blanc suffered a bit, no doubt due in part to its proximity to a major source of fruit flies, yellow jackets etc. in an adjacent field.

Variety	°Brix	TA, g/l	pH	Comments
Arneis	19.5	5.6	3.13	Clean fruit despite fairly compact clusters
Pinot Gris	19.4	4.6	3.46	Minor sour rot
Grüner Veltliner	19.3	5.2	3.32	Large clusters with moderate sour rot/ Botrytis
Sauvignon Blanc	20.4	7.8	3.28	Moderate sour rot, particularly on western side of vyd.
Tocai Friulano	19.3	7.2	3.31	Poor set and/ or low cluster no. on some vines, otherwise loose clusters with no cluster rot

Finger Lakes (Hans Walter-Peterson)

The 2018 vintage in the Finger Lakes will likely not go down as one that was "easy" (I'm not sure any of them can really be called easy). The juggling of decisions like deciding how long to let some varieties hang, whether to apply a final spray or not, and how ripe is "ripe enough" to pick something, are going on in many vineyards right now. The pressure from bunch rots has been influencing some picking decisions in certain varieties and certain blocks. Some growers are choosing to pick Riesling and even Cabernet Franc a little earlier than they might otherwise, rather than risk the loss of fruit to rots. In places where rots have started to gain a bit more of a foothold, crews are going through and dropping infected clusters before the mechanical harvesters come through. We are in that same boat at our Teaching Vineyard as well, where we have been dropping some Riesling clusters before the remainder of the crop gets picked early next week. Lemberger and Cabernet Franc will be coming off our vines next week as well.

With the pressure of sour rot being what it is this year, growers with varieties susceptible to the malady have been leaning heavily on the important research results from Megan Hall and Wayne Wilcox on managing it, especially the need to control fruit fly populations. A lot of growers have been relying on Mustang Maxx as their weapon of choice, but like almost any other pesticide, relying solely on one material for control of a pest is usually a recipe for resistance development sooner or later. While some materials that could be used for fruit fly control are out of the question at this point because of extended pre-harvest intervals (PHI), there are still other materials available to growers that are not related to the active ingredient in Mustang Maxx (which belongs to IRAC Group 3). A table of those materials with shorter PHI intervals (≤7 days) is included at the end of this week's Veraison to Harvest.

Lake Erie (Tim Weigle)

There has been heavy precipitation in the Lake Erie region 4 of the past 7 days with 2.7 inches of rainfall recorded at CLEREL in Portland, NY. High winds have accompanied a number of the fronts moving through the area and it is not difficult to find carpets of purple berries under some vineyard rows. Part of this shelling is due to grape berry moth, which is again wreaking havoc as harvest progresses, and part is due to the berries just being ready to come off the vines.

Some processors are reporting that sugar levels may not be the best representative of ripeness this year as they are finding problems in the pressing process that are more typical of the last week of harvest when berries are typically going downhill. The majority of growers are finding enough ripe fruit to keep the plants busy, although the heavy rains have delayed harvest in some vineyards that are right at the cusp of processor sugar standards.

Just a reminder that this is a great time to locate Tree-of-Heaven to use in monitoring for Spotted Lanternfly, the latest invasive pest to affect grapes. At this time of year, it becomes easier to see the difference between all the look-a-likes with compound leaves. Walnut and Hickory trees will typically have nuts at this time of year and Sumac will likely have its distinctive dark red

seed head. Penn State Extension has a great resource on the web on identifying Tree-of-Heaven and Some Native Look-a-Likes. This short video gives you all the information needed to identify Tree-of-Heaven. The video can be found at https://extension.psu.edu/identifying-tree-of-heaven-and-some-native-look-a-likes

Hudson/Champlain (Jim Meyers)

"You think you cleaned that potato?
You'll eat dirt.
They say you eat a peck of dirt before you die."

-- Roy Fisher

In Episode Five of Marquette Madness, all but two of the sampled eastern New York sites have been harvested. The additional recent data is reflected in Figure 1 which indicates that the responses of Brix, pH, and TA versus GDDs have generally maintained their statistical strength.

Two additional comments on Figure 1: The GDD data for Figure 1 (and Figure 2) was derived from the NRCC High-Resolution Grid 3 data discussed last week. Also, the pH and TA data for the vineyard known as 'Northwest HV' have been estimated for the harvest sampling event due to lack of data. This approach would not be appropriate for a research publication, but is helpful to the current discussion where we are exploring potential hypotheses for more rigorous future studies.

Figure 2 revisits the hypothetical Marquette Quality Index that was introduced in issue #3. This index is a measure of how close the fruit comes to ideal Brix, pH, and TA values and is plotted against GDD accumulation in the five regularly sampled vineyards. In calculating the index value, every vineyard starts with a perfect score of 100 and is docked points when fruit chemistry variables deviate from ideal values.

For this example, the ideal values were set at Brix: 23 - 25, TA: 9 -10 g/L, and pH: 3.0 - 3.6. Of the harvested fruit, the northwest Hudson Valley vineyard scored best, followed by southwest Hudson Valley, and central Champlain Valley. The fruit from northern Champlain and northwest Hudson has not yet been harvested. It is worth noting that the three highest scores represent New York's northernmost vineyard, the southernmost Marquette vineyard, and one in the middle of the state's north-south extent, suggesting that good Marquette can be grown in most locations.

It is also worth noting that the highest scoring fruit was harvested at 25.6 Brix and the TA (which we estimated) was likely at the bottom of the ideal range, thus any additional time on the vine would have almost certainly reduced the score with both Brix and TA penalties -- suggesting that optimal harvest windows can be very narrow. Next week, we will take a look at some surprisingly affordable technologies that can optimize harvest operations by minimizing both pre-harvest lead time and labor.

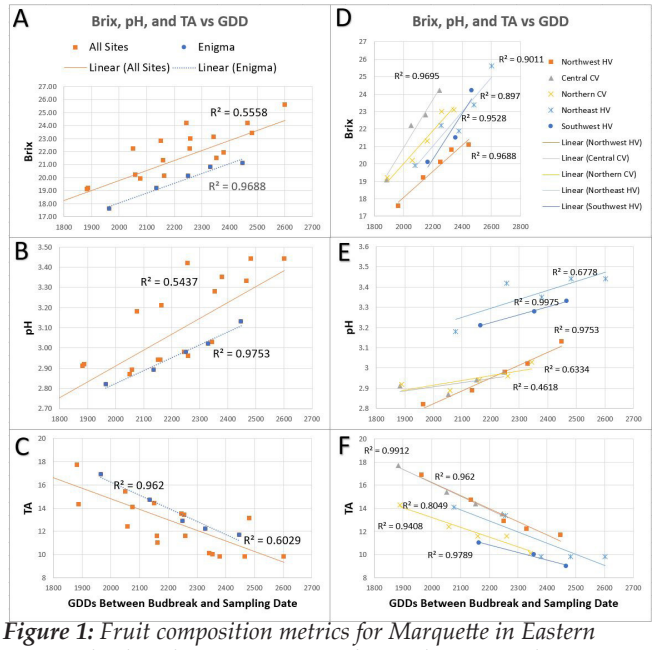


Figure 1: *Fruit composition metrics for Marquette in Eastern New York, plotted against growing degree-day accumulations*

Figure by Jim Meyers

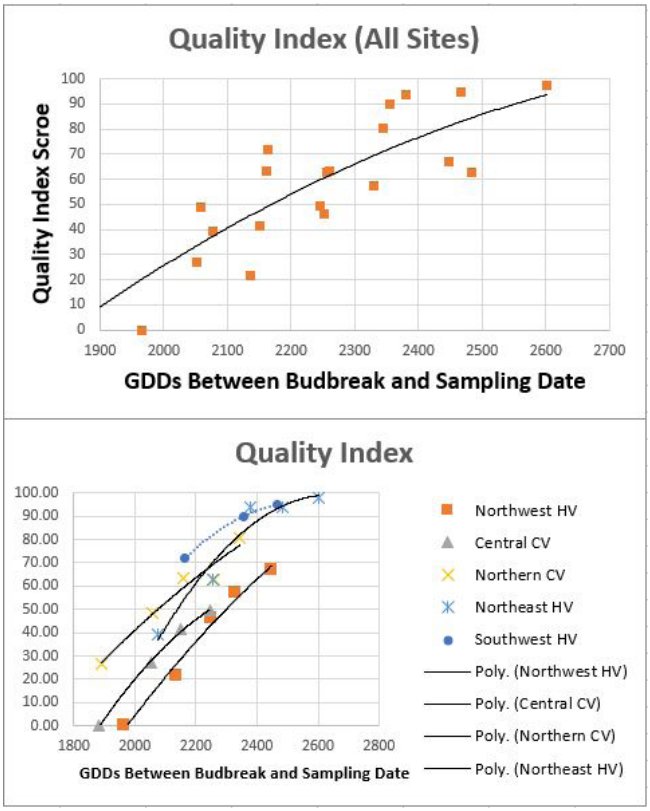


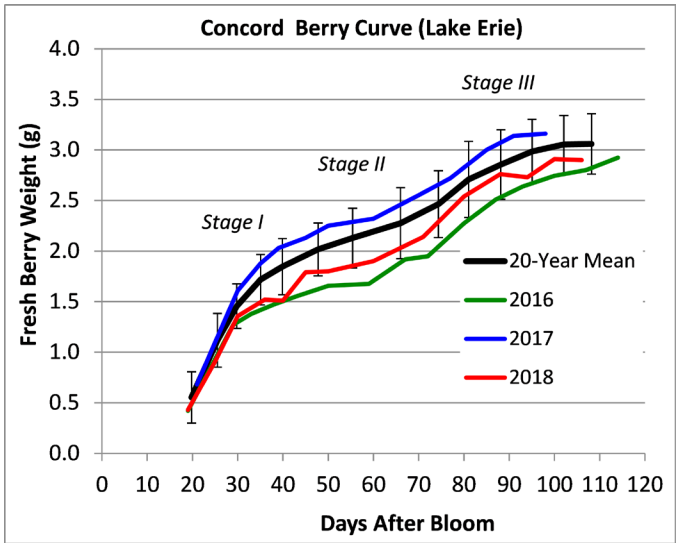
Figure 2: *Marquette Quality Index for Marquette in Eastern New York, plotted against growing degree-day accumulations.*

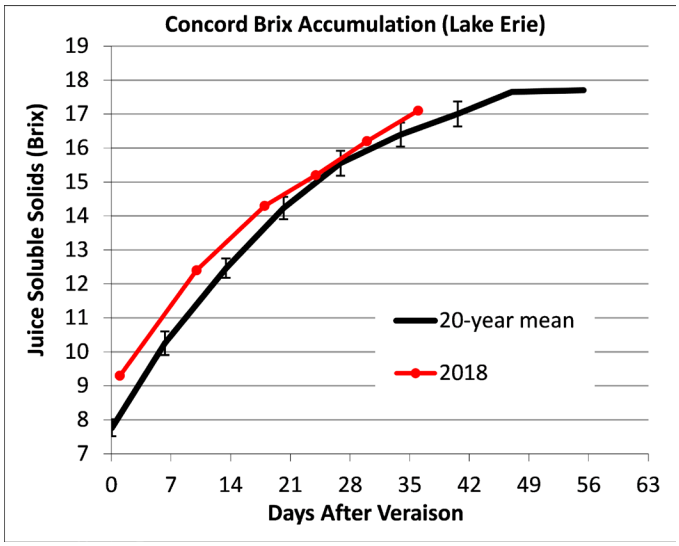
Figure by Jim Meyers

2018 Lake Erie Concord Update/2018

Terry Bates

Concord harvest is into full swing in the Lake Erie belt. Berry fresh weight in the CLEREL Concord phenology block has leveled off at 2.9 grams while juice soluble solids continued to climb at a reasonable pace. In the past week, CLEREL truck load Brix averaged 16.7 (young blocks), 16.3 (mature blocks), and 16.0 (mature block picked during a rain storm).





Berry Growth curve (Top) and soluble solids accumulation (Bottom) *in the Lake Erie Region, compared to the 20-year mean values*

Figures by Terry Bates

Sour Rot Stinks: Some Strategies for Managing Volatile Acidity

Chris Gerling

Sour rot

Photo by Megan Hall

Is it Sour Rot? First and foremost, we call it sour rot because we smell vinegar. And we smell vinegar because there is vinegar (aka acetic acid) present in the berries. Acetic acid is the acid that volatilizes (i.e., can be smelled), hence the term volatile acidity (VA). The smell of nail polish/ solvent is ethyl acetate, which is what acetic acid will form with ethanol and time.

The fantastic work that Megan Hall, Greg Loeb and Wayne Wilcox did clearly demonstrated what we already should have known: in order for a person to be smelling acetic acid, acetic acid must be present. In order for acetic acid to be present, we need the necessary elements of vinegar production- ethanol, oxygen and microbial/ enzymatic activity.

There are many other molds and rots out there, with varying effects on wine. The treatment regime is probably fairly similar in the winery, with the big difference being OGT (Old Grower's Tale) #647: "I brought them the ugliest grapes you ever saw and the wine turned out fantastic! They asked for more of the same the next year." Well, I'm here to tell you that wasn't sour rot.

Sorting, Press Fractions and Machine Hygiene. Physical separation is the most basic and effective management technique. Can it be cut out in the vineyard? Can it be sorted before processing? No? OK, just asking. But it would be great if that's possible.

Otherwise, do the cleanest lots first, and the cleanest bins of the dirtiest lots first. When a wine lot that has had significant rot is put through the equipment, clean and sanitize before the next grapes as opposed to the usual quick rinse. Try to do extra-good washing of bins and harvesters that have picked vinegar-smelling blocks. Don't pressure wash hand-harvesters. Separate press fractions if possible.

While conventional wisdom often calls for light pressing of sub-optimal fruit, it's likely that the highest VA

concentration will come from the free run and lightest pressed juice since sour rot will be in the damaged, broken berries. The "hard-pressed" juice may come from intact, sound grapes and could be cleaner, all things considered. Or not. Regardless, be very wary of the first few gallons of free-run and know that If you can separate fractions, you've got options. I hope it goes without saying that cold soaks are not recommended when dealing with rot. Call it a sour soak at this point.

Think Like a Terrible Vinegar Maker. If we wanted to make vinegar, how would we do it? We'd use those three elements of ethanol, microbes and oxygen. Now that we have must/ juice in the cellar, we can work to limit these ingredients where possible. Alcohol production is the goal, of course, so that's not going to be particularly actionable, but there are lots of opportunities to work with (against) microbes and oxygen.

First, there is SO2, which can fight against both spoilage and oxidation, but will be most effective against bacteria and yeast that have come in with the fruit. A dose of at least 50 ppm will help prevent further microbial activity.

Next choose a yeast strain that will provide a strong, clean fermentation and produce very little VA itself. While it's all the range to go with no added yeast or nutrients, high rot situations are not the best candidates for such (lack of) treatment. Spoilage organisms often consume nitrogen or otherwise facilitate its removal, so more may be required.

Some people advocate gas blanketing and/ or dry ice to keep oxygen out before fermentation, and that makes sense with the general thrust of this paragraph. The catch is that oxygen is a nutrient for "good" yeast, too, so be aware that really high SO2 and absolutely no oxygen could make for a stressful fermentation situation. The key is to remember that any treatment that actually works can be overdone, and that's the case here as well.

Techniques and Technology

Upstream: Those with access to hot-press equipment would probably do well to use it at this point. Some enzyme treatments may be of use, but Scott Labs recommends against any kind of enzyme that will further degrade skins. Lysozyme and other methods of neutralizing bacteria could also be helpful, especially if you are trying to limit SO2 use.

Downstream: The legal limits for VA are 1.2 g/L for red wine and 1.4 for white wine, but the sensory threshold is about half (0.6-0.7 g/L). The simplest thing to do with a wine just at or slightly above sensory threshold is to blend with one that is well below until the entire lot is below threshold. Two words: bench trial.

Reverse Osmosis (RO) treatment can actually lower the VA concentration by roughly 30% per pass. This will not be cheap, of course, and there may be loss of other volatiles, but this is obviously a last-ditch effort to make the wine legal and saleable.

A Brief Word on Fruit Flies. Megan's work showed the critical role that fruit flies play in promoting sour rot in the vineyard. If they can do it in the vineyard, they can also spread VA in the cellar. I know it's much easier said than done to keep fruit flies out at harvest, but there are some precautions we can take. Move the compost pile as far away from the cellar as possible. Shrink-wrap macro bin fermenters when possible. Clean early and often. Smile with your teeth closed. Etc.

Dealing with sour rot is not fun in the vineyard or winery, and I know everyone is already working hard to limit it. The key is to remember that vinegar production is not magic, and if we can limit two of the three elements (oxygen and VA producing microbes), we can limit further production. If the juice already smells like vinegar or nail polish, it may be worth getting the VA measured. Good luck out there and remember that your nose never lies…

Useful Links:

Denise Gardner's Sour Rot Article

https://extension.psu.edu/managing-sour-rotted-fruit-in-the-cellar

Megan Hall, Greg Loeb and Wayne Wilcox

Appellation Cornell

https://grapesandwine.cals.cornell.edu/sites/grapesandwine.cals.cornell.edu/files/shared/Research%20Focus%202017-3.pdf

Brock's Summary Report on Sour Rot

http://www.grapegrowersofontario.com/node/454

Fruit Composition Report - 9/24/2018

Samples reported here were collected on Monday 9/24. Where appropriate, sample data from 2017, averaged over all sites is included. Tables from 2017 are archived at http://grapesandwine.cals.cornell.edu/newsletters/veraison-harvest. Next samples will be collected on **Monday, October 1**. Brown text indicates final sample for each variety.

Baco Noir

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Hudson Valley	9/10/2018	Southwest HV	HARVEST				
Final sample	9/10/2018	Southwest HV	1.18	18.4	3.38	11.0	418
'17 Final Sample	9/11/2017		1.61	16.9	2.78	15.4	

Cabernet Franc

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Lansing	1.38	19.2	3.27	7.8	
Finger Lakes	9/24/2018	Keuka	1.39	19.6	3.27	7.7	
Finger Lakes	9/24/2018	W. Seneca	1.39	20.0	3.24	7.5	
Finger Lakes	9/24/2018	Wayne County	1.53	18.8	3.24	8.4	
Finger Lakes	9/24/2018	Cayuga	1.58	19.0	3.21	8.3	
Finger Lakes	9/24/2018	E. Seneca	1.60	18.9	3.32	7.6	
Finger Lakes	9/24/2018	Dresden	1.46	21.4	3.28	7.1	
Hudson Valley	9/24/2018	East Central HV	1.50	17.0	3.44	7.0	
Hudson Valley	9/24/2018	Southwest HV	1.56	17.2	3.52	6.3	
Long Island	9/24/2018	LI-09	1.68	16.7	3.49	6.1	
Long Island	9/24/2018	LI-05	2.13	17.3	3.43	6.5	
Average	**9/24/2018**		**1.56**	**18.6**	**3.34**	**7.3**	
Prev Sample	9/17/2018		1.51	17.5	3.25	8.4	124
'17 Average	9/25/2017		1.42	19.1	3.22	8.6	

Catawba

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Keuka	2.48	17.3	3.00	9.4	
Prev Sample	9/17/2018	Keuka	2.55	16.2	2.87	10.1	110
'17 Sample	9/25/2017	Keuka	3.11	13.8	2.79	15.1	

Cayuga White

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Dresden	2.86	20.0	3.36	6.8	
Finger Lakes	9/24/2018	Ithaca	3.09	19.2	3.19	9.0	
Finger Lakes	9/24/2018	Keuka	3.17	16.7	3.24	7.9	
Finger Lakes	9/24/2018	Cayuga	HARVEST				
Average	**9/24/2018**		**3.04**	**18.6**	**3.26**	**7.9**	
Prev Sample	9/17/2018		2.98	18.2	3.17	7.7	181
'17 Sample	9/25/2017		2.87	19.3	3.06	9.2	

Chardonnay

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Lansing	1.49	21.1	3.41	6.7	
Finger Lakes	9/24/2018	W. Seneca	1.53	21.0	3.29	7.2	
Finger Lakes	9/24/2018	Cayuga	1.59	20.0	3.28	8.2	
Finger Lakes	9/24/2018	Dresden	HARVEST				
Lake Erie	9/24/2018		1.61	19.0	3.31	9.0	
Long Island	9/24/2018	LI-03	1.90	17.7	3.47	7.4	
Average	**9/24/2018**		**1.62**	**19.8**	**3.35**	**7.7**	
Prev sample	9/17/2018		1.61	19.5	3.29	8.1	165
'17 Sample	9/25/2017		1.80	18.9	3.14	9.4	

Concord

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Keuka	2.80	16.1	3.33	7.0	
Finger Lakes	9/24/2018	W. Canandaigua	2.95	17.9	3.31	6.2	
Lake Erie	9/24/2018	Fredonia	2.91	17.1	3.19	7.6	
Lake Erie	9/24/2018	Portland	3.09	17.5	3.24	8.7	
Average	**9/24/2018**		**2.94**	**17.2**	**3.27**	**7.4**	
Prev. Sample	9/17/2018		2.92	15.9	3.26	7.1	174
'17 Sample	9/25/2017		3.62	14.6	3.19	6.6	

Frontenac

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Champlain Valley	9/24/2018	Central Champlain	HARVEST				
Hudson Valley	9/24/2018	Northeast HV	1.02	24.4	3.27	12.5	
Champlain Valley	9/24/2018	Champlain (gris)	1.11	25.5	3.09	12.9	
Average	**9/24/2018**		**1.06**	**25.0**	**3.18**	**12.7**	
Prev Sample	9/17/2018		1.12	24.7	3.13	15.1	334
'17 Sample	9/25/2017		1.21	22.4	3.31	9.7	

Gruner Veltliner

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Dresden	HARVEST				Finger Lakes
Final Sample	9/17/2018	Dresden	1.79	20.3	3.33	5.5	133
'17 Sample	9/25/2017	Dresden	1.65	17.8	3.11	6.9	

La Crescent

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Champlain Valley	9/24/2018	Central Champlain	HARVEST				
Champlain Valley	9/24/2018	Northern Champlain	HARVEST				
Finger Lakes	9/24/2018	Geneva	HARVEST				
Hudson Valley	9/24/2018	Northwest HV	HARVEST				
Final Sample	9/17/2018		1.17	23.6	2.99	13.7	84
'17 Sample	9/25/2017		1.33	21.9	2.98	14.1	

Lemberger

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Keuka	1.70	20.4	3.12	8.8	
Finger Lakes	9/24/2018	Dresden	2.02	21.0	3.22	8.0	
Average	**9/24/2018**		**1.86**	**20.7**	**3.17**	**8.4**	
Previous sample	9/17/2018		1.90	20.6	3.15	8.5	107
'17 Sample	9/25/2017		2.04	20.6	3.06	9.3	

Malbec

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Long Island	9/24/2018	LI-06	2.59	17.2	3.50	8.2	
Prev. sample	9/17/2018	LI-06	2.47	15.8	3.48	9.2	353
'17 sample	9/25/2017	LI-06	2.03	19.9	3.49	8.5	

Marechal Foch

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Hudson Valley	9/24/2018	Northeast HV	HARVEST				
Final sample	9/17/2018	Northeast HV	1.39	22.7	3.50	10.8	204
'17 Sample	9/25/2017	Northeast HV	1.13	26.5	3.09	15.0	

Marquette

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Champlain Valley	9/24/2018	Northern Champlain	1.16	23.1	3.03	10.1	
Champlain Valley	9/24/2018	Central Champlain	HARVEST				
Finger Lakes	9/24/2018	Dresden	HARVEST				
Finger Lakes	9/24/2018	W Keuka	HARVEST				
Hudson Valley	9/24/2018	Northwest HV	1.54	21.1	3.13	11.7	
Hudson Valley	9/24/2018	Northeast HV	HARVEST				
Hudson Valley	9/24/2018	Northeast HV	HARVEST				
Lake Erie	9/24/2018	Fredonia	HARVEST				
Average	**9/24/2018**		**1.35**	**22.1**	**3.08**	**10.9**	
Prev Sample	9/17/2018		1.35	22.8	3.14	11.7	262
'17 Sample	9/25/2017		1.34	23.2	3.01	14.3	

Merlot

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Hudson Valley	9/24/2018	East Central HV	1.62	16.7	3.46	6.9	
Long Island	9/24/2018	LI-10	1.81	17.7	3.57	5.7	
Long Island	9/24/2018	LI-04	1.97	17.3	3.58	5.8	
Average	**9/24/2018**		**1.80**	**17.2**	**3.54**	**6.1**	
Prev sample	9/17/2018		1.78	16.4	3.49	7.2	162
'17 Sample	9/25/2017		1.63	20.1	3.68	5.6	

Niagara

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Lake Erie	9/24/2018	Portland	HARVEST				
'18 Final Sample	9/17/2018	Portland	3.60	14.2	3.21	7.5	210
'17 Final Sample	9/11/2017	Portland	3.35	14.2	3.15	6.1	Lake Erie

Pinot Noir

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Ontario	1.33	21.4	3.49	5.5	
Finger Lakes	9/24/2018	W. Cayuga	1.63	20.4	3.36	7.0	
Finger Lakes	9/24/2018	E. Seneca	HARVEST				
Hudson Valley	9/24/2018	East Central HV	1.24	17.3	3.77	7.9	
Hudson Valley	9/24/2018	Southwest HV	HARVEST				
Average	**9/24/2018**		**1.40**	**19.7**	**3.54**	**6.8**	
Prev sample	**9/17/2018**		**1.54**	**18.6**	**3.40**	**7.2**	**207**
'17 Sample	9/25/2017		1.49	20.3	3.37	7.8	

Riesling

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	CL 90 Cayuga	1.39	17.3	3.01	9.8	
Finger Lakes	9/24/2018	W. Seneca	1.42	18.2	3.04	8.8	
Finger Lakes	9/24/2018	Keuka	1.43	17.5	3.09	9.4	
Finger Lakes	9/24/2018	Cl 90, E. Seneca	1.46	17.5	3.07	8.4	
Finger Lakes	9/24/2018	Lansing	1.55	17.0	3.10	7.8	
Finger Lakes	9/24/2018	Cl 239, E. Seneca	1.56	17.6	3.09	8.9	
Finger Lakes	9/24/2018	Wayne County	1.57	16.3	3.06	10.1	
Finger Lakes	9/24/2018	Cl 198, E. Seneca	1.59	17.2	3.09	8.6	
Finger Lakes	9/24/2018	E. Seneca	1.62	17.3	3.13	9.9	
Finger Lakes	9/24/2018	W. Canandaigua	1.62	17.2	3.03	10.1	
Finger Lakes	9/24/2018	Dresden	1.57	17.7	3.06	8.5	

Hudson Valley	9/24/2018	East Central HV	1.37	15.1	3.23	8.9	
Hudson Valley	9/24/2018	East Central HV	1.59	14.7	3.26	9.3	
Hudson Valley	9/24/2018	Southwest HV	1.73	17.2	3.40	6.2	
Lake Erie	9/24/2018	Portland	1.60	17.9	3.14	7.8	
Long Island	9/24/2018	LI-01	1.54	15.0	3.25	7.9	
Average	**9/24/2018**		**1.54**	**16.9**	**3.13**	**8.8**	
Prev Sample	9/17/2018		1.49	16.9	3.07	9.7	125
'17 Sample	9/25/2017		1.57	17.6	3.03	10.9	

Sauvignon Blanc

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Long Island	9/24/2018	LI-02	HARVEST				Long Island
Final Sample	9/17/2018	LI-02	1.59	17.6	3.37	8.9	122
'17 Final Sample	9/18/2017	LI-02	1.68	19.7	3.29	8.6	198

Seyval Blanc

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/10/2018	Cayuga	HARVEST				
Hudson Valley	9/10/2018	Southwest HV	HARVEST				
Lake Erie	9/10/2018	Portland	HARVEST				
Final Sample	9/10/2018		1.81	17.3	3.22	7.1	
'17 Final Sample	9/18/2017		1.69	19.5	3.15	8.1	137

Tocai Friulano

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Hudson Valley	9/24/2018	Block B E Central HV	1.64	17.6	3.43	6.2	
Hudson Valley	9/24/2018	Block A E Central HV	1.67	17.0	3.44	6.5	
Average	**9/24/2018**		**1.65**	**17.3**	**3.44**	**6.4**	
Prev Sample	9/17/2018		1.69	16.5	3.42	9.4	201

Traminette

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Keuka	1.82	17.9	2.95	10.3	
Finger Lakes	9/24/2018	Ithaca	1.91	17.9	2.98	11.0	
Average	**9/24/2018**		**1.86**	**17.9**	**2.97**	**10.7**	
Prev Sample	9/17/2018		1.88	16.5	2.91	12.0	177
'17 Sample	9/25/2017		1.99	18.9	2.89	11.9	

Vidal Blanc

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	Dresden	1.97	20.4	3.25	8.3	
Prev Sample	9/17/2018	Dresden	1.96	19.5	3.17	8.8	121
'17 Sample	9/25/2017	Dresden	2.04	16.9	2.99	14.6	

Vignoles

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/24/2018	VSP Keuka	HARVEST				
Finger Lakes	9/24/2018	W. Seneca	HARVEST				
Finger Lakes	9/24/2018	R53V30	HARVEST				
Finger Lakes	9/24/2018	R62V78	HARVEST				
Finger Lakes	9/24/2018	R59V25	HARVEST				
Lake Erie	9/24/2018	R53V30	HARVEST				
Lake Erie	9/24/2018	R59V25	HARVEST				
Final Sample	9/17/2018		1.30	23.2	3.22	12.7	288
'17 Sample	**9/25/2017**		**1.67**	**22.8**	**2.92**	**19.9**	

Resistance Management and Insecticides Targeting Drosophila and Sour Rot

Tim Martinson and Hans Walter-Peterson

We have published several articles about sour rot management, based on Megan Hall's Ph D work with Wayne Wilcox and Greg Loeb. These articles summarized trial results, in which insecticides targeted at *Drosophila* fruit flies were instrumental in reducing the spread of sour rot and limiting new infections.

The two insecticides used in these trials were Delegate (7 d preharvest interval [PHI]) and Mustang Maxx (1 d PHI). The short PHI has made Mustang Maxx (IRAC group 3) a material of choice – and resulted in up to 3 or 4 repeated applications in some blocks. **We want to remind growers that repeated application of any insecticide with one mode of action can rapidly result in insecticide resistance and sudden loss in efficacy**.

To reduce this risk, it's important to avoid repeated use of one product –or others in the same class of compounds. The key to doing so is to rotate materials with different IRAC codes. Much like the FRAC codes used to distinguish fungicides with different modes of action, Insecticide Resistance Action Committee (IRAC) groups provide information on which products have similar mechanisms.

The table below lists all products currently labeled for fruit flies on grapes in New York. Note the IRAC code and PHI. We realize that we are at peak harvest, but if your harvest is still >7d out and you are considering targeting *Drosophila*, consider rotating to a different IRAC category for your next (and probably final) application.

Going forward, it will make sense to start with longer PHI materials and save ones with shorter PHI for closer to harvest.

Product name	EPA Number	IRAC Code	2(ee) required ?	Rate	REI (hrs)	PHI (days)	Reappli-cation interval (days)[b]	Max applic-ations per season	Max product applied per season	Comments
Assail 30SG	8033-36-70506	4A	Yes	4.5-5.3 oz/ac	12	3	14	2	10.6 oz	2(ee) required for use on SWD. Do not use an adjuvant.
Delegate WG	62719-541	5	No	3-5 oz/ac	4	7	4	5	19.5 oz	SWD is listed on recent label.. No more than 2 consecutive applications of Group 5 materials.
Entrust SC	62719-621	5	Yes	4-8 fl oz/ac	4	7	5	5	23 fl oz	2(ee) required for use on SWD. OMRI listed.No more than 2 consecutive applications of Group 5 materials.
Malathion 5EC	19713-217	1B	No	3 pints/ac	24	3	14	2	6 pints	Drosophila included on the label
Malathion 57%	67760-40-53883	1B	No	3 pints/ac	24	3	14	2	6 pints	Drosophila included on the label
Malathion 8Aquamul	34704-474	1B	No	1.88 pints/ac	24	3	14	2	3.76 pints	Drosophila included on the label.
Mustang Maxx*	279-3426	3A	No	4.0 fl oz/ac	12	1	7	6	24 fl oz	'Vinegar flies' and SWD listed on the label.

[a] If yes, a copy of the 2(ee) approval must be in possession when the material is applied. [b] Minimum number of days before reapplication of the material.* Mustang Maxx is included here for comparison purposes.Delegate, Entrust and malathion formulations are included for fruit fly control in Table 5.3, "Pest Management Schedules for Minor and Special Insects" of the NY/PA Pest Management Guidelines for Grapes.

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