Veraison to Harvest

Statewide Vineyard Crop Development Update #3

Cornell University Cooperative Extension

September 21, 2007

Around New York…

Statewide - *Tim Martinson*

The pace of ripening slowed last week with cooler temperatures throughout New York. Sugar levels rose by 0.5 to 1° brix, and titratable acidity (TA) dropped by 0.2 to 0.8 g/liter in our sampled vineyards (page 4-6). Chardonnay (nearing harvest) and Marechal Foch (harvested) numbers leveled out. Berry weight leveled out for most varieties except Cabernet Franc and Lemberger, which gained about 0.1 g each. Berry size for varieties sampled in '06 still remains 10-20% lower than last year.

Following this week's warm, dry weather, we should see sugars rising and acids dropping at a greater rate in next week's samples.

Finger Lakes-*Hans Walter Peterson*

The Finger Lakes received about a half inch of rain last Saturday, which was welcome in the midst of this dry growing season. This shot of rain, along with the soaking we received about 10 days ago, should help healthy vines to continue ripening fruit. Vineyards along the northern portion of Seneca Lake and some areas around Keuka Lake, however, are still showing symptoms of significant drought stress, including curled leaf margins, warm leaf temperatures, and senescence of basal leaves. Niagara harvest is pretty much finished, as are most early red hybrids, with Concords to follow by this weekend, most likely. A couple of wineries have brought in Pinot Noir for sparkling wine production this week, as well. Winemakers and grower reps continue to report that acids are low for this time of year in most varieties, and are dropping fairly rapidly. Conditions that are forecast for the next several days continue to sustain our optimism about the high quality of this year's crop.

Long Island - *Alice Wise*

Continued warm sunny weather has provided ideal ripening conditions. Harvest of some Chardonnay began this week. The bulk of the Chardonnay crop will come off within the next two weeks. Merlot ripening seems to be slightly accelerated this season thus vineyard managers are hopeful for an earlier than usual harvest. Flavor development in both Chardonnay and Merlot is excellent. The Cabernets still have some green flavors.

Libby Tarleton, CCE Long Island Grape Program, weighs fruit harvested from the program's variety trial at the Long Island Horticultural Research Center in Riverhead, NY.

Lake Erie and Niagara Escarpment- *Tim Weigle*

Niagara harvest is wrapping up in both the Lake Erie and Niagara Escarpment regions. The extended drought combined with an excessively wet fall in 2006 has left a number of Niagara County Niagara vineyards on heavier soils with poor shoot growth, poor leaf quality and questions as to hardiness going into the winter. Both regions are gearing up for Concord harvest with sugar accumulation moving along slower than expected given the unusual warm temperatures and abundant sunshine that we are experiencing this year. Some Chardonnay has been harvested in the Niagara Escarpment and harvest indicators of Brix, TA and pH are looking favorable for Cabernet Sauvignon, Cabernet Franc, Syrah and Merlot in that area as well.

Hudson Valley - *Steve McKay and Steve Hoying*

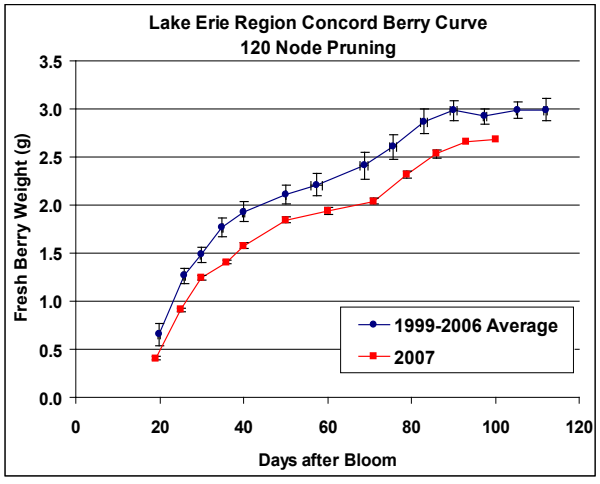
The past week has been dry with very cool nights in the Hudson Valley. This has helped to develop color and flavor in the crop. Growers are seeing lower incidence of *Botrytis* than in recent years due to the dry weather. The harvest has been good so far, with Marechal Foch having been picked recently. Growers are anticipating Chardonnay harvest for wine soon, and are waiting for sugars to build more in Pinot Noir. Winemakers are saying that they don't anticipate problems with high acid in the juice this year.

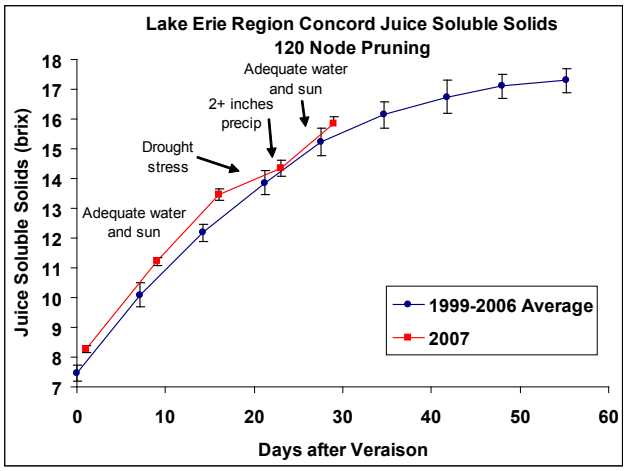
Concord Ripening Profile at Fredonia - September 18

Terry Bates, Cornell Vineyard Laboratory

Concord berry weight and juice soluble solids were collected on 9/18/2007 on 120 fixed node pruned vines at the new Cornell vineyard lab site in Portland, NY. As expected, Concord berry weight leveled off around 100 days after bloom at 2.7 grams, about 10% lower than 8-year average. Interestingly, the 2+ inches of precipitation between received in the Lake Erie region did not have a noticeable impact on the berry curve (i.e. it did not pump the berries up with water). In the past, we have measured an increase or decrease in Concord fresh berry weight with either excessively wet or dry conditions, respectively. However, this typically does not happen until later in the season when the fruit becomes (arbitrarily speaking) overripe.

The precipitation did have a noticeable impact on vine water status (mid-day stem potential), leaf photosynthesis (gas exchange), and therefore, juice soluble solids (°brix). As mentioned in last week's update, the lack of precipitation was finally impacting vine water relations and decreasing the rate juice soluble solids accumulation. However, the well timed precipitation restored vine water status and brought the rate of juice soluble solids accumulation back up over average rates for the same time after veraison. With sun and high 70's in the forecast, juice soluble solids should continue to increase at or above normal rates in the upcoming week.





Harvest Decisions: It's Not Just about the Numbers

Tim Martinson and Ben Gavitt

Our table summarizing analytical results on brix, acids, pH, and malic, tartaric, and acetic acid of berry samples throughout New York is a major feature of Veraison to Harvest. The 'numbers' help winemakers plan the harvest and schedule fruit for delivery and vinification.

But harvest decisions are about so much more than brix, titratable acidity (TA), and pH.

Ultimately, harvest is about capturing flavors in a bottle. While numbers are a guide, flavor development is not always tightly coupled with sugars and acids. It's also important to taste the fruit.

The Numbers: At the risk of stepping outside of my viticulture 'box' (I'm not a winemaker), lets look at general benchmarks for brix and TA. For late, full-bodied reds fermented dry, winemakers generally look for brix to level out (and higher is generally better), and TA to be below 8 g/liter at harvest. (Note the units; winemakers more commonly use 'grams/100 ml'- which would be 0.8 g/100ml rather than 8.0 g/liter). For light-bodied, fruity reds (such as many red hybrids), higher brix is not always better, as the resulting higher alcohol levels may mask the desired 'fruitiness' of the wine. Hybrids done in an off-dry style can also support higher acid levels than dry, full-bodied reds.

For classic *Vinifera* whites such as Riesling and Chardonnay, many look towards maximum sugars around the 21-23 brix range, and for TA to drop below 10 g/liter (1.0 g/100 ml). In my experience, while Chardonnay often gets to that range, Riesling rarely does. Excellent Riesling can be made at a wide range of brix at harvest (17-21 is a common range in the FL, I've seen them as low as 15.5). But excellent Riesling requires flavor ripeness (which may vary by wine style), which is only loosely tied to brix. Other varieties (hybrids and natives) each have their own parameters. Cayuga White is commonly harvested at 16-18 brix to avoid development of 'native' or 'foxy' aromas in the wines.

Taste the Vineyard. More important than the numbers are the flavors - ripeness, presence of characteristic varietal flavors and lack of unripe flavors (e.g. 'bell pepper' in reds, typical aromas in Traminette, Gewurz, Muscat and other aromatic whites). Flavor development occurs in tandem with the drop in acids and increase in sugars, but the best indicator of flavor ripeness is your taste buds. As the numbers tell you that 'its getting close', its important to get out and taste the fruit frequently. Often, at the end of the ripening process, the numbers will stay the same, but the flavors will change rapidly.

Tasting Guidelines. At the recent Berry Sensory Analysis workshop, Gianni Trioli outlined a process for systematically tasting and evaluating berry maturity. It involves separate evaluation of the pulp, the skins, and the seeds. In its most involved form, 20 berry ripeness characteristics are evaluated. In the simplified form (after training), the taster evaluates four broader categories: Technicological pulp ripeness (sugar, acids, texture), Pulp aromatic ripeness, skin ripeness, and seed ripeness. These are 'scored' on a 1-4 rating system.

The procedure is:

1. Collect a representative berry sample (important, but no room to describe here)

2. Place 3-4 berries between the tongue and roof of the mouth, and squeeze.

3. Separate skins and seeds and spit out.

4. Evaluate pulp (aromas, acidity, sweetness) by crushing with tongue

5. Put skins back in mouth, chew them 15 times (same amount each time)

6. Run crushed skins over the palate, and between lips and gums. Evaluate tannin intensity, astringency, and 'dryness'

7. Examine seed color (runs from green to brown)

8. Bite into seeds, evaluate 'crushability' (range: soft and mushy to nutty)

In a nutshell, the four broad characteristics (from less to more ripe) run like this:

Technological pulp ripeness: (Less ripe): Pulp acidic and not sweet and 'gelatinous' to (more ripe) very sweet, not acid, 'juicy' and no adherence to skin.

Aromatic pulp ripeness: (Less ripe):Intensely herbaceous and not fruity to (more ripe) not herbaceous, fruity and jammy notes, varietal characters may be prominent.

Skin ripeness: (Less ripe): Green (white varieties) or Pinkish (reds) color, acidic and hard to chew, aggressive tannins to (more ripe) uniform color, crumbly when chewed, intensely fruity, and weakly astringent.

Seeds: (Less ripe): Green and soft, astringent when licked to (more ripe) dark brown, hard and crack quickly between teeth, toasted aromas, not astringent.

Please note that at harvest, not everything has to be in the 'ripest' category. Seeds of many varieties, for example, do not necessarily turn dark brown. But by tasting different berry components separately, you can train yourself to think about and evaluate these separate components of ripeness together. Your taste evaluations, with practice, should be more consistent from block to block and year to year.

*Continued on **page 3***

Fruit Maturation Report

Samples reported here were collected on **Monday, September 17** The next samples will be collected on **Monday, September 24**. Where appropriate, sample data from 2006, averaged over all sites (mostly Finger Lakes), is included. Fruit maturation data from 2006 is posted at:

September 5: http://www.nysaes.cornell.edu/fst/faculty/henick/pdf/Ripening%20Progress%2006R2.pdf

September 12: http://www.nysaes.cornell.edu/fst/faculty/henick/pdf/Ripening%20Progress%2006R3B.pdf

September 18: http://www.nysaes.cornell.edu/fst/faculty/henick/pdf/Ripening%20Progress%2006R4.pdf

Cabernet Franc

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Finger Lakes	09/17/0 7	FL-CF-10	Seneca Lake W	1.43	17.7	2.97	10.5	4.8	3.8	0.10
Finger Lakes	09/17/0 7	FL-CF-11	Seneca Lake W	1.23	16.9	3.05	9.9	5.6	3.0	0.13
Finger Lakes	09/17/0 7	Fl-CF-12	Seneca Lake W	1.25	16.9	3.20	8.7	5.0	2.8	0.06
Finger Lakes	09/17/0 7	FL-CF-7	Cayuga Lake W	1.43	17.6	3.06	10.9	5.6	4.0	0.12
Finger Lakes	09/17/0 7	FL-CF-8	Seneca Lake E	1.52	16.7	3.10	9.7	5.1	3.5	0.05
Finger Lakes	09/17/0 7	FL-CF-9	Seneca Lake E	1.66	16.7	3.02	9.8	5.4	3.0	0.08
Hudson Valley	09/17/0 7	HV-CF-2	E of Hudson River	1.63	16.5	3.10	11.6	5.5	5.1	0.03
Hudson Valley	09/17/0 7	HV-CF-3	W of Hudson River	1.27	18.7	3.17	10.0	5.3	3.9	0.04
Lake Erie	09/17/0 7	LE-CF-9	Fredonia Vin Lab		19.1	2.99	9.7	5.2	3.2	0.06
Long Island	09/17/0 7	LI-CF-4	Aquebogue LI	1.70	18.2	3.28	9.6	4.1	5.3	0.05
Long Island	09/17/0 7	LI-CF-7	Aquebogue LI	1.69	20.2	3.18	10.4	5.0	4.4	0.14
Average	**09/17/07**			**1.48**	**17.7**	**3.10**	**10.1**	**5.1**	**3.8**	**0.08**
9/10 Ave	9/10/07			1.38	16.8	3.07	11.3	5.8	4.4	0.04
8/27 Ave	8/27/07			1.11	11.7	2.73	23.6	8.6	11.4	0.1
'06 Average	**9/18/06**	**FL**	**Finger Lakes**	**1.76**	**16.6**	**3.13**	**12.8**	**5.3**	**6.7**	**0.06**

Riesling

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Finger Lakes	09/17/0 7	Fl-R-239-1	Cayuga Lake W	1.05	17.6	2.89	11.8	6.9	3.4	0.0
Finger Lakes	09/17/0 7	FL-R-90-2	Cayuga Lake W	0.87	17.1	2.92	11.8	6.8	3.6	0.1
Finger Lakes	09/17/0 7	FL-R-90-3	Seneca Lake E	1.41	16.5	2.88	13.1	6.8	4.6	0.0
Finger Lakes	09/17/0 7	FL-R-239-4	Seneca Lake E	1.56	17.9	2.92	13.1	6.5	4.9	0.1
Finger Lakes	09/17/0 7	FL-R-239-5	Seneca Lake E	1.28	17.0	2.95	11.7	6.5	3.7	0.0
Finger Lakes	09/17/0 7	FL-R-90-6	Seneca Lake E	1.30	18.5	2.93	12.1	6.3	4.0	0.1
Hudson Valley	09/17/0 7	HV-R-4	E Hudson River	1.53	19.1	3.07	11.8	5.8	4.4	0.1
Lake Erie	09/17/0 7	Hi pH	Fredonia Vin Lab	1.39	17.3	2.85	12.5	7.2	4.1	0.0
Lake Erie	09/17/0 7	Low pH	Fredonia Vin Lab	1.39	17.9	2.86	12.8	7.3	4.2	0.0
Long Island	09/17/0 7	LI-R-3	Aquebogue LI	1.56	16.1	3.05	12.2	6.2	5.0	0.0
Long Island	09/17/0 7	LI-R-6	Aquebogue LI	1.57	17.7	3.01	12.6	6.6	4.8	0.0
Average	**09/17/07**			**1.36**	**17.5**	**2.94**	**12.3**	**6.6**	**4.2**	**0.03**
Average	9/10/07			1.37	16.7	2.93	13.1	7.0	4.7	0.02
8/27 Ave				1.14	12.4	2.73	23.4	9.3	11.0	0.07
06 Average	**9/18/06**		**Finger Lakes**	**1.70**	**16.6**	**2.92**	**16.4**	**7.1**	**7.2**	**0.04**

Lemberger

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Finger Lakes	09/17/0 7	FL-LEM-13	Seneca Lake W	1.93	18.6	2.96	11.2	6.0	3.9	0.03
Finger Lakes	09/17/0 7	FL-LEM-14	Seneca Lake W	1.66	19.7	2.91	10.0	6.1	2.2	0.21
Average	**9/17/0 7**			**1.80**	**19.2**	**2.94**	**10.6**	**6.1**	**3.1**	**0.12**
9/10 Average	09/10/07			1.67	18.2	2.95	11.1	6.4	3.2	0.13
8/27 Average	8/27/07			1.50	14.9	2.79	16.8	7.8	6.7	0.12
06 Average	**9/18/06**			**2.18**	**17.6**	**3.04**	**12.1**	**5.6**	**4.8**	**0.09**

Merlot

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Hudson Valley	09/17/0 7	HV-M-4	E Hudson River	1.55	18.8	3.26	9.4	5.1	3.8	0.1
Long Island	09/17/0 7	LI-M-1	Cutchogue LI	1.56	20.2	3.49	7.4	3.8	3.6	0.1
Long Island	09/17/0 7	LI-M-2	Cutchogue LI	1.71	19.8	3.30	8.3	5.0	3.1	0.1
Long Island	09/17/0 7	LI-M-5	Aquebogue LI	1.88	20.0	3.26	9.4	5.2	3.9	0.1
Long Island	09/17/0 7	LI-M-8	LIHRC Riverhead	1.86	21.2	3.32	8.7	4.4	3.6	0.2
Average	**09/17/0 7**			**1.71**	**20.0**	**3.33**	**8.6**	**4.7**	**3.6**	**0.12**
9/10 Ave	09/10/07			1.68	19.3	3.27	9.5	4.9	4.0	0.10
8/27 Ave	8/27/07			1.55	14.2	2.89	16.3	6.7	7.6	0.06

Chardonnay

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Hudson Valley	09/17/0 7	HV-C-2	E of Hudson River	1.45	19.5	3.09	11.1	5.3	4.8	0.10
Hudson Valley	09/17/0 7	HV-C-3	W of Hudson River	1.46	20.2	3.19	9.7	4.9	4.1	0.05
Long Island	09/17/0 7	LI-CH-9	LIHRC Riverhead	1.78	21.1	3.27	10.6	4.8	5.5	0.15
Average	**9/17/0 7**			**1.56**	**20.3**	**3.18**	**10.5**	**5.0**	**4.8**	**0.10**
9/10 Ave	09/10/07			1.59	19.8	3.18	10.7	5.0	4.9	0.08
8/27 Ave	08/27/07			1.35	14.8	2.94	15.4	6.3	7.3	0.07

Cabernet Sauvignon

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Lake Erie	09/17/0 7	High pH	Fredonia Vin Lab	1.31	19.5	3.03	13.4	6.5	6.0	0.03
Lake Erie	09/17/0 7	Low pH	Fredonia Vin Lab	1.24	19.2	3.04	13.3	6.5	5.9	0.01
Average	**09/17/0 7**			**1.28**	**19.4**	**3.04**	**13.4**	**6.5**	**6.0**	**0.02**
9/10 Ave	09/10/07			1.26	18.6	3.03	14.1	6.8	6.1	0.02
8/27 Ave	08/27/07			1.07	15.6	2.75	22.0	8.6	10.5	0.02

Noiret

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Finger Lakes	09/17/07	Exp. Clus	Keuka Lake W	1.61	16.5	3.11	12.1	6.1	5.3	0.00
Finger Lakes	09/17/07	Shad. Clus	Keuka Lake W	1.61	17.6	3.17	12.3	6.2	5.4	0.00
Hudson Valley	09/17/07	HV-N-3	W of Hudson River	1.58	18.8	3.10	9.4	5.0	3.1	0.06
Lake Erie	09/17/07	High pH	Fredonia Vin Lab	1.59	18.5	2.97	10.8	5.7	3.9	0.05
Lake Erie	09/17/07	Low pH	Fredonia Vin Lab	1.72	18.6	2.95	10.5	5.4	3.7	0.05
Average	**9/17/07**			1.62	18.0	3.06	11.0	5.7	4.3	0.03
9/10 Ave	09/10/07			1.64	17.5	3.08	11.5	5.9	4.7	0.02
8/27 Ave				1.44	14.6	2.87	17.9	7.6	8.1	0.01

Traminette

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Finger Lakes	09/17/07	Shade Clus	Keuka Lake W	1.64	15.6	2.87	14.7	6.4	6.2	0.07
Finger Lakes	09/17/07	Expos Clus	Keuka Lake W	1.60	18.2	2.83	12.1	6.3	3.7	0.13
Hudson Valley	09/17/07	HV-T-1	W of Hudson River	1.39	20.5	3.02	9.7	5.0	3.0	0.10
Lake Erie	09/17/07	LE-T-High-1	Fredonia Vin Lab	1.59	19.8	2.89	10.2	5.0	3.5	0.13
Lake Erie	09/17/07	LE-T-Low-2	Fredonia Vin Lab	1.54	19.8	2.88	10.5	5.4	3.3	0.15
Average	**9/17/07**			1.55	18.8	2.90	11.4	5.6	3.9	0.12
9/10 Ave	09/10/07			1.67	17.6	2.90	12.1	6.0	4.3	0.11
8/27 Ave.	08/27/07			1.34	11.5	2.67	23.8	8.9	11.2	0.15

Marachel Foch

Location	Collection	Sample ID	Location	Berry Wt g	% Brix	pH	g/L TA	g/L Tartaric Acid	g/L Malic Acid	g/L Acetic Acid
Finger Lakes	9/17/07	Lf Removal	Seneca Lake W	0.94	23.0	3.23	10.6	5.1	3.9	0.07
Finger Lakes	9/17/07	N Lf Remov	Seneca Lake W	1.01	23.5	3.27	11.0	5.0	4.6	0.11
Average	**9/17/07**			**0.98**	**23.3**	**3.25**	**10.8**	**5.1**	**4.3**	**0.09**
9/10 Ave	09/10/07			0.99	22.8	3.27	10.9	5.2	4.3	0.11
8/27 Ave				0.94	18.2	3.04	14.0	5.8	6.3	0.09

Thanks to the following persons who collected samples and data:

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Libby Tarleton and Alice Wise, CCE of Suffolk Co. and Long Island Horticultural Research and Extension Center

William Wilsey and Hans Walter-Peterson, Finger Lakes Grape Program

Kelly Link, Paula Joy, and Madonna Struzynski, Lake Erie Vineyard Laboratory

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These techniques are described in the book *Winegrape Berry Sensory Assessment in Australia*, published by Winetitles. http://winetitles.com/

Reality check. While its nice to let both the numbers and taste evaluations be your guide for scheduling harvest, the real world doesn't work that way! The reality is that time, tank space, labor availability, and weather conditions factor into - and often dominate - harvest decisions. Whether you buy fruit or grow your own, it doesn't do you any good if you wait for harvest only to watch the fruit fall apart in the vineyard. Factors other than 'grape ripeness' often drive harvest - and the reality is that increasing 'hang time' often increases risk to both grower and winery.

The bottom line is that growers (or vineyard managers) and wineries have to communicate closely to bring in the optimum ripeness of fruit possible in a given year. If current weather conditions hold through harvest, that should be a fairly easy task in 2007.

Final Note: Variations in fruit ripeness and chemistry are not necessarily bad. If different blocks of fruit are vinified separately, the range of maturity levels and fruit characteristics will increase your options for blending - one of the winemakers most powerful, and perhaps most underutilized tools.

New York State Wine Census: Finished Wines Wanted

Gavin Sacks and Ramón Mira de Orduña

Within a 'Total Quality Focus' project funded by the New York Wine and Grape Foundation, Profs. **Gavin Sacks** and **Ramón Mira de Orduña** of Cornell University are currently carrying out the first *Comprehensive Winemaker and Grower Oriented Quality Analysis of New York State Wines.*

Whole bottle samples of commercialized wines will be collected and analyzed for standard wine parameters as well as trace aroma compounds and other key metabolites relevant for wine aroma, color and chemistry in order to obtain a comprehensive overview of New York wine quality, such as acetaldehyde, reduced sulfur compounds, monoterpenes and methoxypyrazines.

We encourage your winery to participate in this project by submitting wines for this project. More information is posted at: www.nysaes.cornell.edu/fst/qualitywine/

Niagara Harvest at Martin and Anna Schultze farm in Niagara County on September 17.

This newsletter was made possible through a grant from the New York Wine and Grape Foundation's Total Quality Focus program.

Veraison to Harvest is a joint publication of:

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Long Island Grape Program

Finger Lakes Grape Program

Lake Erie Regional Grape Program

Hudson Valley Regional Fruit Program