

VERAISON TO HARVEST

Statewide Vineyard Crop Development Update #4



Cornell University
Cooperative Extension

September 23, 2011

Edited by Tim Martinson and Chris Gerling

Around New York...

Statewide (*Tim Martinson*).

I think it's fair to say we've entered 'midseason', with varieties like Pinot noir and Chardonnay – along with Niagara for juice – being harvested. Niagaras this year are coming in sweet – both as a deliberate process (processors are wanting riper grapes than historical benchmark of 12.5 °brix for a portion of the crop), and due to the season. Charlene Ryder's weekly harvest update (just in) for National Grape Coop members reports average brix from NY and PA at 14.4, after the first three days of processing. Fruit maturity samples (pp. 5-7) show relatively low sugars compared with acids. Soluble solids showed gains of 1 to 1.5 °brix over last week – but are running -1.0 to -3.5 °brix behind last year's samples taken at this time, while titratable acidity is in normal range – and -1 to -2 g/l higher than last year (among earliest on record). Riesling acidity at an average of 9.6 is in 'range'. Having spent parts of my week harvesting vigneoles and sampling Riesling, this season underscores for me what a huge difference cluster exposure makes (along with fungicidal protection) in the incidence of Botrytis and other fruit rots.

Long Island (*Alice Wise and Libby Tarleton*).

After a warm summer, cooler conditions are prevailing in September. Intermittent rainfall has made vineyard managers vigilant at a time when they should be able to scale back while waiting for the signal to harvest. Every season is part of the learning curve. Fruit for sparkling wine is in, a few other early blocks in the industry have been picked. Harvest of varieties such as Chardonnay and Sauvignon Blanc will start next week. At the research vineyard, we harvested this week as follows: Pinot Noir 115, 20.1 Brix, 7.2 g/l TA and 3.36 pH; PN Pommard clone, 20.4, 5.85, 3.50. Both Pinots required sorting, not unexpected in a year like this. We had to harvest Dornfelder carefully lest we knock the berries off the clusters – 17.8, 5.55, 3.40. And our other early variety Muscat Ottonel came in at 17.2 Brix, 4.95 g/l TA and 3.24 pH. Modest Brix and low acids seem to be pretty common this season. Looking at long term data, the numbers are well within the range of normal for a season like this. It appears unusual only because we're coming off the 2010 season when growing conditions were ideal.



Pinot noir harvested Thursday, September 22, from a Seneca Lake vineyard.

Photo by Hans Walter-Peterson

Finger Lakes (*Hans Walter-Peterson*)

The list of varieties being harvested in the Finger Lakes continues to grow, with Niagara, Vigneoles, all three Pinot varieties (blanc, gris and noir), some Chardonnay and even a little bit of Gewürztraminer arriving at the presses this week, as well as the continuing harvest of Concords for wine production. Indications right now are that tonnage is running a little higher than normal, thanks to a combination of good weather last year that increased cluster numbers and good fruit set this spring in most places.

The main challenge that continues for growers and wineries is watching for the development of fruit rots, and making decisions on how to deal with them before harvest. In a few instances, wineries are asking growers to pick a little earlier than usual in order to keep the level of rot to a minimum in the harvested fruit. Acidity levels are near the range where they usually are for harvest, even though sugar levels are not quite as advanced, so making this call may not necessarily compromise final wine quality. In other cases, wineries are sorting fruit before sending it to the press. Later varieties including Riesling, the Bordeaux reds, Catawba, Vidal and others seem to be holding up well for the most part at this point.

The best thing we could get right now is about 10 straight days of sunny, mild weather - but I'd be willing to compromise and take just 5 or 6 instead.

Lake Erie (*Jodi Creasap Gee*).

The extension offices have been quiet as growers are picking and trucking their Niagaras this week. Concord grapes are just starting for a couple of the processors, too. We have had a few more rainy days, bringing our September total to just over 2 inches. More berry splitting continues to be a bit of a problem in the Lake Erie Region, so growers are making harvest plans with buyers based on the state of the fruit. Luckily, the first couple of weeks after veraison were sunny and dry enough to get sugars to where they need to be for Concord and Niagara harvests this year. The wine grapes are progressing nicely, and from what we see, only those that are heavily cropped have low sugars for this time of year.

Hudson Valley (*Steven McKay & Steve Hoying*).

The Hudson Valley report will resume next week.



Vignoles on September 21. Top: As canopy appeared. Note how many of the berries/clusters with sunlight exposure appear intact. Bottom: Same vine, with leaves removed. Note and compare the interior portions of clusters, here exposed, with the 'exterior' portions shown in the top photo.

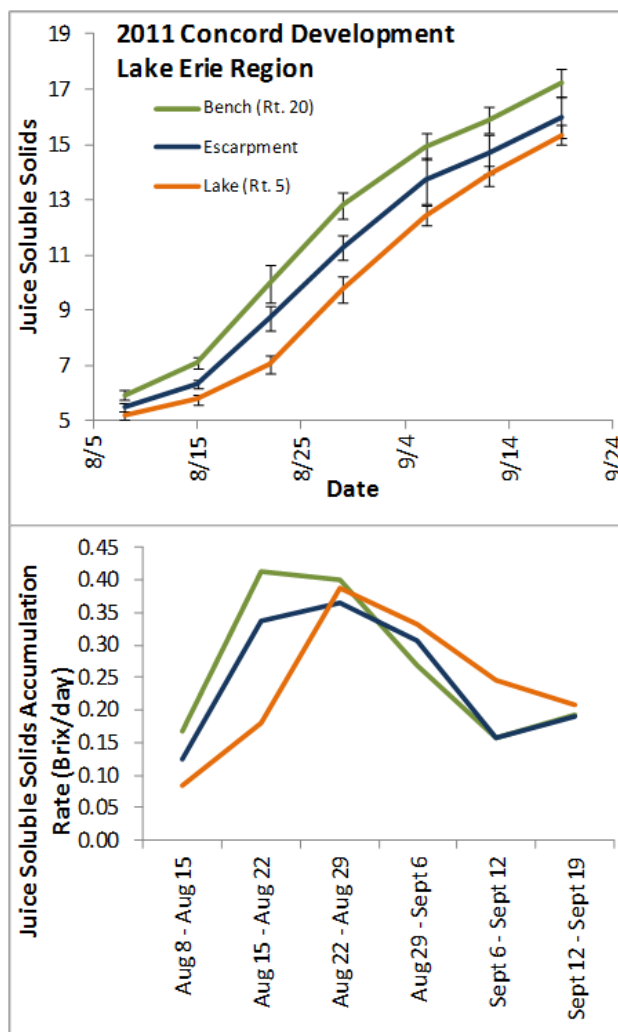
Photos by Bill Wilsey

LAKE ERIE CONCORD RIPENING PROFILE

Terry Bates

Cornell Lake Erie Research and Extension Laboratory

Concord juice soluble solids ranged from 15.3 to 17.2 oBrix across the Lake Erie Production region this week and the Concord harvest season has started. All of the sites continued to accumulate sugar around 0.2 Brix/day; therefore, the separation in juice soluble solids between regions held fairly steady this week.

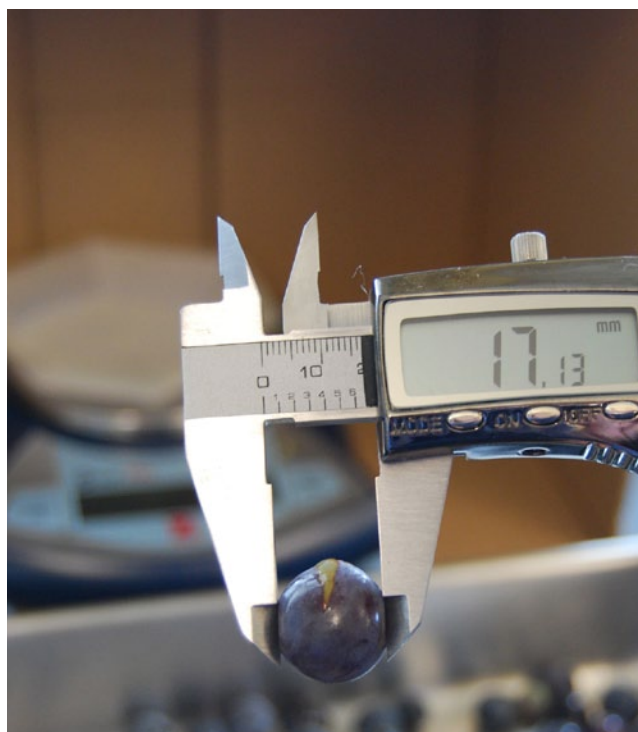


BERRY GROWTH CURVES FOR HYBRID AND VITIS VINIFERA GRAPES TO ENABLE NON-DESTRUCTIVE CROP ESTIMATION AND CROP ADJUSTMENT

Jodi Creasap Gee*, Terry Bates*, and Hans Walter-Peterson**

*LERGP at CLEREL, Portland, NY; **FLGP at Yates CCE, Penn Yan, NY

In the Lake Erie Region, seasonal berry growth curve information has been useful for mid-season crop estimation and adjustment in Concord grape production. Measuring the berry growth curve of Concord grapes over many years, for example, led to the insight that Concord grapes reach 50% of their final weight at 30 days post-bloom. This knowledge enabled development of harvester-based mid-season crop estimation and thinning techniques that have proven useful in helping growers make mid-season adjustments in less-than-ideal years - and thereby reduce crop to the level that meets processors standards when they need to do so.

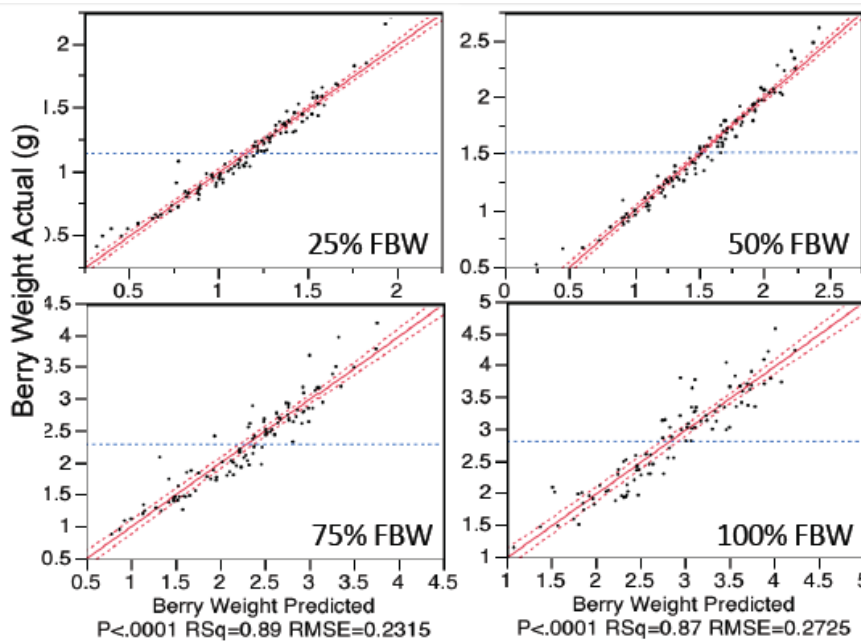


Caliper used to measure berry diameter. Berries from 12 varieties, collected weekly from 15-20 days after bloom until harvest were individually weighed and their diameter measured during the 2010 and 2011 (now underway) seasons.

Photo by Jodi Creasap Gee

Similar information could potentially be used in inter-specific hybrid and *Vitis vinifera* grape production; however, little information exists on seasonal changes in berry weight in hybrid and *V. vinifera* varieties. The purpose of this project is to establish berry weight and diameter curves for Concord and common hybrid and *Vitis vinifera* grape varieties in NY to enable growers to estimate crop size non-destructively and possibly thin with more accuracy and precision.

In the Lake Erie and Finger Lakes, individual ber-



A statistical analysis technique called regression indicates that Concord berry diameter at A) 20 days after bloom (25% of the final berry weight), B) 35 days after bloom (50% of the final berry weight), C) 73 days after bloom (75% of the final berry weight), and D) 95 days after bloom (final berry weight) can be used to predict berry weight. These graphs indicate that predicted berry weight is close to observed berry weight using the equation derived from the analysis.

FRUIT MATURATION REPORT - 9/23/2011

Samples reported here were collected on **Monday and Tuesday September 19-20**. This week we have samples from all four regions (Finger Lakes, Lake Erie, Long Island, Hudson Valley). Please note: Previous sample averages reflect **only** samples from the limited set we sampled last week. Where appropriate, sample data from 2010, averaged over all sites is included. Tables from 2010 are archived at <http://grapesandwine.cals.cornell.edu/cals/grapesandwine/veraison-to-harvest/2010.cfm>.

We are again reporting berry weight, brix, titratable acidity and pH, and yeast assimilable nitrogen (YAN), as part of a joint project with Anna Katharine Mansfield and Lailiang Cheng. Graduate student Mark Nisbit is running the YAN assays as part of his Ph D project, and other students from the Enology lab are running samples (details in later issue) . - TEM

Cabernet Franc

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	W Seneca	1.29	19.3	3.09	7.7	19
Finger Lakes	9/20/2011	W Cayuga	1.38	18.9	3.38	5.3	65
Hudson Valley	9/20/2011	HV Lab	1.50	17.0	3.48	7.1	191
Lake Erie	9/20/2011	Portland	1.91	17.2	3.12	10.6	176
Average	9/20/2011		1.52	18.1	3.27	7.7	113
Prev Sample	9/13/2011		1.52	16.4	3.12	10.3	111
'10 Average	9/20/2010		1.53	20.9	3.45	6.8	78

Catawba

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes							
Prev Sample	9/13/2011	W Cayuga	2.36	15.0	2.77	13.6	57
'10 Sample	9/20/2010	W Cayuga	2.34	17.8	3.30	12.0	186

Cayuga White

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	W Keuka	2.60	15.3	3.06	9.4	169
Finger Lakes	9/20/2011	W Cayuga	2.50	17.6	3.17	7.1	167
Average	9/20/2011		2.55	16.5	3.12	8.3	168
Previous Sample	9/13/2011		2.39	16.0	3.00	8.8	184
'10 Sample	8/30/10	Final sample	2.91	15.4	3.3	12.1	201

Chardonnay

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	W Seneca	1.37	19.9	3.25	6.8	57
Finger Lakes	9/20/2011	W Cayuga	1.35	19.6	3.18	7.8	157
Hudson Valley	9/20/2011	HV Lab	1.45	17.5	3.57	7.8	388
Hudson Valley	9/20/2011	Hudson Valley	1.56	19.5	3.36	8.4	337
Long Island	9/20/2011	North Fork South	1.85	18.0	3.45	8.7	228
Average	9/20/2011		1.52	18.9	3.36	7.9	234
Prev Sample	9/13/2011		1.55	17.4	3.25	8.8	237
'10 Average	9/13/2010		1.42	21.6	3.59	6.8	246

Chenin blanc

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Long Island	9/20/2011	North Fork North	1.92	15.0	3.17	11.1	138
Prev Sample	9/13/2011	North Fork North	1.93	14.0	3.08	11.5	125

Concord

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	W.Keuka	2.86	16.2	3.21	9.0	182
Lake Erie	9/20/2011	Portland	3.94	16.9	3.27	10.5	243
Average	9/20/2011		3.40	16.6	3.24	9.7	212
Prev Sample	9/13/2011		3.33	15.4	3.20	9.7	237
'10 Sample	9/20/2010		3.30	16.0	3.32	9.8	132

Lemberger

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	E Keuka	1.63	21.1	3.16	6.5	33
Finger Lakes	9/20/2011	W Seneca	1.46	20.6	3.31	5.7	199
Average	9/20/2011		1.55	20.9	3.24	6.1	116
Prev. Sample	9/13/2011		1.60	20.9	3.11	7.0	106
'10 Sample	9/20/2010		2.06	21.4	3.18	7.4	39

Malbec

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Long Island	9/20/2011	North Fork South	2.18	17.9	3.50	9.3	282
Prev Sample	9/13/2011	North Fork South	2.21	16.1	3.37	10.1	283

Merlot

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Hudson Valley	9/20/2011	HV Lab	1.41	16.1	3.59	6.6	236
Long Island	9/20/2011	North Fork South	1.87	17.5	3.57	7.5	143
Average	9/20/2011		1.64	16.8	3.58	7.1	189
Prev Sample	9/13/2011		1.63	15.6	3.45	10.5	196
'10 Sample	9/13/2010		1.71	20.3	3.73	5.0	147

Niagara

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Lake Erie	9/20/2011	Portland	4.40	16.0	3.21	7.9	172
Prev Sample	9/13/2011	Portland	4.25	14.9	3.24	7.5	166

Noiret

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Hudson Valley	9/20/2011	HV Lab	1.61	17.2	3.39	7.9	295
Hudson Valley	9/20/2011	W. HV	1.62	17.7	3.14	10.3	138
Lake Erie	9/20/2011	Ripley	1.69	17.5	3.10	8.4	173
Average	9/20/2011		1.64	17.5	3.21	8.9	202
Prev Sample	9/13/2011		1.65	16.7	3.12	11.0	190
'10 Average	9/20/2010		1.68	18.9	3.41	8.5	137

Pinot Noir

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	E Seneca	1.23	20.0	3.36	5.7	99
Hudson Valley	9/20/2011	HV Lab	1.83	17.9	3.55	7.7	279
Hudson Valley	9/20/2011	Hudson Valley	1.38	19.8	3.58	7.1	349
Average	9/20/2011		1.48	19.2	3.50	6.9	243
Prev Sample	9/13/2011		1.50	17.8	3.36	7.8	246
'10 Average	9/20/2010		1.44	23.6	3.95	7.0	266

Riesling

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	E Seneca	1.34	16.9	2.95	9.9	79
Finger Lakes	9/20/2011	E Seneca	1.49	18.2	2.97	9.7	73
Finger Lakes	9/20/2011	W Seneca - LR/ST	1.41	17.9	3.00	9.0	70
Finger Lakes	9/20/2011	W Seneca - NLR/NST	1.17	19.0	2.97	9.2	49
Finger Lakes	9/20/2011	E Seneca-shoot thin	1.38	18.6	3.03	8.9	48
Finger Lakes	9/20/2011	E Seneca - no thin	1.24	17.3	2.97	9.5	43
Finger Lakes	9/20/2011	W Cayuga	1.48	16.9	2.93	10.9	120
Hudson Valley	9/20/2011	HV Lab	1.50	14.9	3.25	9.1	231
Lake Erie	9/20/2011	Fredonia	2.00	15.4	2.97	11.7	242
Long Island	9/20/2011	North Fork North	1.55	16.7	3.24	8.4	117
Average	9/20/2011		1.46	17.2	3.03	9.6	107
Prev Sample	9/13/2011		1.36	16.4	2.95	10.4	97
'10 Average	9/20/2010		1.47	18.8	3.23	8.8	90

Sauvignon Blanc

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Long Island	9/20/2011	North Fork North	1.64	18.7	3.44	7.1	170
Prev Sample	9/13/2011	North Fork North	1.58	18.0	3.39	7.6	170
'10 Sample	9/08/2010	Final Sample	1.84	19.8	3.64	8.0	242

Seyval Blanc

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/13/2011	W Cayuga	HARVEST				
Hudson Valley	9/20/2011	HV Lab	1.76	18.4	3.29	7.2	136
Hudson Valley	9/13/2011	W HV	HARVEST				
Average		(only 1 block)	1.76	18.4	3.29	7.2	136
Prev Sample	9/13/2011		1.88	17.6	3.23	7.7	135
'10 Average	8/30/2010	Final Sample	1.64	18.3	3.46	9.3	170

Traminette

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	W Keuka	1.47	18.6	2.92	9.6	80
Finger Lakes	9/20/2011	W Seneca	1.80	18.7	3.08	11.0	70
Hudson Valley	9/20/2011	HV Lab	1.84	16.9	3.23	8.4	166
Hudson Valley	9/20/2011	W HV	1.68	20.0	3.09	8.4	39
Lake Erie	9/20/2011	Fredonia	2.31	21.0	2.89	9.9	88
Average	9/20/2011		1.82	19.0	3.04	9.5	88
Prev Sample	9/13/2011		1.84	18.0	2.98	10.0	71
'10 Average	9/20/2010		1.72	20.6	3.26	9.5	160

Vignoles

Region	Harvest Date	Description	Ber. Wt. g.	% Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2011	W Keuka-VSP, Shoot thin	1.35	23.5	3.12	12.1	173
Finger Lakes	9/20/2011	W keuka-VSP, No Thin	1.25	22.2	3.07	10.6	164
Finger Lakes	9/20/2011	W keuka-high wire ST	1.33	25.0	3.17	11.6	158
Finger Lakes	9/20/2011	W keuka-high wire NST	1.37	22.3	3.04	14.9	160
Average	9/20/2011		1.42	22.4	3.09	11.7	149
Prev Sample	9/13/2011		1.37	20.4	3.05	12.4	165
'10 Average	9/20/2010		1.65	23.2	2.19	13.3	231

Continued from page 3

ries from 12 different varieties in each region were collected throughout the 2010 and 2011 seasons from 15-20 days after bloom through harvest. Individual berry diameters and weights were measured and recorded. Sample sizes ranged from 100 to 200 berries per sample, for berry weight measurements, and sample sizes for the berry diameter measurements ranged from 30-100 berries. For the 2010 growing season, there were strong positive, linear relationships between berry weight and berry diameter for the sampled cultivars ($p < 0.001$). The 2011 data shows a similar trend. This indicates that a non-destructive sampling and crop estimation method may be feasible by measuring berry diameters in the field to estimate berry weights.

At this time, the data indicate that estimating crop size based on berry diameter is possible in the varieties analyzed in this study. According to the statistical

analyses, in most varieties berry diameter appears to be a good predictor of berry weight. Estimating berry weight alone will not provide an estimate of crop size without an estimate of berries/acre.

Further advances in imaging technologies can approximate numbers of berries per cluster, measure berry diameter, then calculate an estimate of final crop size. These imaging techniques are being developed in a joint project involving Terry Bates and scientists at Carnegie Mellon University and Intel, inc. The Lake Erie extension program offered a preview of this amazing technology at the vineyard mechanization workshop held this past July.

In the meantime, however, it is important to note that without the berry diameter data, we can still estimate crop size in these hybrid varieties via destructive sampling methods (eg. collecting and weighing berry samples) that are already in place.



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