Veraison to Harvest

Statewide Vineyard Crop Development Update #5

September 23, 2010

Edited by Tim Martinson and Chris Gerling

Around New York...

Statewide (Tim Martinson).

Cooler weather prior to our monday sample date has had its impact on fruit ripening and the numbers, which showed little movement last week (fruit maturity table, pp. 5 to 7). Across varieties, brix increased by 0.2 to 0.8 degrees. Acid levels - already low - barely budged. However, fruit maturity still is well advanced compared to last year, with brix running 4 to 5 degrees ahead and titratable acidity 5 to 8 g/liter lower than in 2009. While harvest continues at a good pace, there seemed to be a lull in activity (see regional reports below) this week as growers cleaned up early varieties. In this issue, Anna Katharine Mansfield (p. 3) discusses how this early season may impact fruit chemistry, flavor components and winemaking issues. We also highlight harvest in a Vignoles block (p.8) and the impact of canopy management on severity of *Botrytis* through pictures.

Long Island (Alice Wise and Libby Tarleton).

A few Chardonnay and Gewurztraminer blocks are still hanging. Fruit is sound with little rot. Otherwise, there seems to be somewhat of a lull in harvest. Merlot at the research vineyard recently tested at 21.8, 7.5 g/l, 3.30 pH. The weather remains very cooperative with warm sunny days and cool evenings. Growers can afford to have a lot of patience this year with the reds. GDD came in at 3326 as of September 21, with another 5 weeks to accumulate GDD, we may hit a new high. On the same date in 2009, GDD were 2721.

Lake Erie (Tim Weigle).

Too much of a good thing? It appears that the sunny skies and warm temperatures experienced after bloom in the Lake Erie region resulted in some Concord vineyards having a difficult time making color and developing the flavor profiles this harvest season that the region is known for. National Grape Cooperative has temporarily suspended Concord harvest for their North East, PA processing facility while still maintaining their processing schedule for their facility in Westfield, NY. It appears that when the weather conditions mimic the growing conditions found in Concord vineyards of Washington State so do the color and flavor profiles. It is

Chardonnay ready for harvest on East Seneca Lake, Thursday, September 22.

Photo by Tim Martinson

thought that flavor and color components will further develop as we move through the harvest. The long range forecast calls for an up and down ride of days that rotate between above and below normal temperatures with showers and thunderstorms appearing on a regular basis.

While some Concord vineyards are in a holding pattern for sugar, color and flavor accumulations there are others that are moving to the point of becoming over mature and we are seeing shelling in blocks where Brix readings of 20 or better are being recorded. The 2010 growing season is still being hailed as a vintage year for many of the wine grape varieties in the Lake Erie Region. There is some concern for varieties that are susceptible to *Botrytis* infections as damage is being found from a partial fourth generation of grape berry moth. Grape berry moth feeding sites have been identified as access points for *Botrytis* and other members of the rot complex to move into the berry and become established.

Finger Lakes (Hans Walter-Peterson).

The cool weather has really slowed things down over the past week. The results from this week's samples show very little movement in the brix and acid numbers for all of the varieties we sampled this week, in stark contrast to what we saw up until a week or two ago. In most cases, we only saw about a 1° Brix increase, if that, and very little change at all in pH or total acidity. This slow down may give growers and wineries a little bit of breathing space in an otherwise fairly compressed harvest season so far.

Constellation was picking Catawba and ripe Elvira earlier this week and has now moved on to Concords for the remainder of the season. Tonnage on Catawba and Aurore this year was relatively light, but a large Elvira crop seems to have made up for that. Vignoles and some early Vidal were also being picked this week, along with the tail end of Chardonnay and Pinot Noir for this year (it's a mind-bending thought that we're finishing up these two varieties while California is just in the early part of their harvest).

The region also saw some of the first Riesling fruit come in this week, which has got to be one of the earliest dates for that variety in the Finger Lakes. I suspect we will see more of a push for Riesling starting in the next week or so. At this point, we haven't heard of anybody preparing to bring in later season reds – most seem to be willing to let them hang for another couple of weeks at least.

Hudson Valley (Steven McKay & Steve Hoying).

Weather in the Hudson Valley has continued to be dry and warm. The few showers that have developed have had no visible impact on the developing crop. Forecasts into the next week look similar, and no significant storm events are expected. Grapes continue to ripen, and a number of white varieties have been harvested over the past week including Cayuga White, Chardonnay, and DeChaunac. The DeChaunac had a brix level of 23. Traminette is being harvested presently, and Merlot is in line to be harvested. Merlot is traditionally harvested here at 22 brix, and it has already reached a reading of between 23 and 24. Riesling harvest appears to be about ten days out. The only pest problem reported has been with yellow jackets nibbling at grapes. At the Hudson Valley Lab planting, brix accumulation has appeared to slow down, and Cabernet Sauvignon is ahead of Riesling in its development.

Lake Erie Concord Ripening Profile

Terry Bates

Cornell Lake Erie Research and Extension Laboratory

The crop load plots used for the Concord ripening profile have been harvested. Look for an overall summary in a future issue.

Long Island Research Vineyard Fruit Chemistry

Alice Wise, Cornell Cooperative Extension of Suffolk County

Here are analytical results of 100-berry samples taken at harvest (various dates) at the Long Island Horticultural Research and Extension Center's research vineyard, near Riverhead, NY as part of a long-term variety and clonal evaluation trial, ongoing since the late 1980s.

Sauvignon blanc at the LI Hort Res Center, Riverhead.

Photo by Alice Wise

Variety/Clone	˚Brix	pH	TA (g/l)	Comments
Albariño	22.0	3.05	9.60	3 yr vines harvested early - threat of storm
Chardonnay - 76	22.8	3.24	7.95	18 yr vines grafted by Gary Howard in early 90s
Chardonnay - 15	22.6	3.28	7.65	Loose clustered CA clone
Dornfelder	19.6	3.39	5.40	Big clusters this year
Muscat Ottonel	22.7	3.42	4.35	Good crop
Pinot Noir - Pommard	22.6	3.36	7.35	Fruit very shriveled at harvest but no rot
Sauvignon Blanc-1	23.6	3.20	7.80	Most common on LI, large clusters this year
Sauvignon Blanc -530	24.6	3.12	8.70	CA clone
Tocai Friulano	21.9	3.50	6.75	Good quality this year though light crop
Viognier	23.1	3.34	6.90	We actually had crop this year
Zweigelt	20.4	3.25	6.75	Very lg clusters, 3 yo vines, fruit shrivel common, no rot

With Maturity Comes… Better Taste?

Anna Katharine Mansfield
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While the left-coast furor over hang time and extended maturation rarely visits our cool-climate shores, New York is certainly feeling the heat this year. In the last three issues, both our analysis numbers and reports provide ample evidence that the warm weather in 2010 has resulted in early ripening, and potential for longer overall hang time. Instead of the bright, lively, still-green-behind-the-pedicels fruit typical to our cool climate, winemakers are preparing for grapes more likely to exhibit mellower acidity, a richer, lusher palate- characteristics found in grapes 'of a certain age.' For the first time in years, New York is dealing with a harvest that is decidedly mature, and, in some cases, may even have the potential for over ripeness.

How should winemakers used to a certain level of immaturity deal with this year's crop? First, rejoice – this is a year to leave the potassium bicarbonate in the lab cupboard and experiment with higher sugars and different flavor profiles. Once the elation passes, however, there are a few aspects of 'not-quite-so-cool' climate winemaking that it might be helpful to review.

Elevated sugar levels: Clearly, more mature grapes means higher soluble solids. There's nothing mysterious about this increase; it's the same glucose and fructose found in less-ripe grapes, and usually at the same glu:fru ratio-there's just more of it. Higher sugar concentration leads to either higher final alcohol or, if fermentation is arrested prior to dryness, residual sugar and/or enhanced viscosity. While all of this seems obvious, it's important to bear in mind that ethanol is a primary contributor to a wine's sensory profile. In addition to enhancing perceptions of heat, sweetness, and palate weight at elevated levels, there is some evidence that ethanol may suppress perceived intensity of some fruity esters. Further, there are always the twin issues of taxation and labeling that arise when final alcohol is greater than 14%.

Nitrogenous compounds: The various components of yeast assimilable nitrogen (YAN) and the amino acids used as precursors for some aroma compounds fail to show a common trend during grape ripening. YAN concentration varies more by site and cultivar than by physiological age, as evinced by the range of numbers

found in the data charts this season. Individual amino acids generally tend to increase during ripening, but rates have been found to vary by individual amino acid and cultivar.

Acidity and pH: Throughout ripening, TA decreases (due to decreases in malic acid content) with a subsequent rise in pH. As these parameters were discussed in detail in the last issue, suffice it to say that these changes affect palate balance, and can give microbial pests a toehold.

Phenolic compounds: Beyond anecdotal evidence, little is known about the effects of grape maturity on phenolic development- at least in terms of sensory impact. Enologists generally agree that seed tannins become less extractable post-veraison, and that the mean degree of tannin polymerization increases, but the impact of these changes is not clearly understood. In sensory evaluations, one panel rated wines made from riper red grapes as having 'softer' tannin character, while another felt that riper red grapes resulted in more bitter wines. In some white wines, the increased polyphenolic content that occurs with berry ripening has resulted in decreased sensory quality scores. It is unclear, however, whether these changes are due to phenolic composition, interactions with other wine components, or all of the above; the lower acidity in riper grapes, for instance, will reduce the perception of tannin astringency. As with so much wine chemistry, differentiating the effects of phenolic changes from those of other parameters (like decreased acid, increased ethanol, and changes in volatile compositions) is difficult to impossible.

Volatile compounds: The multitude of chemical classes that constitute wine flavor, and the numerous reactions from which they derive, make it impossible to issue blanket statements on the effects of ripening on flavor development. The flavor chemist's motto, "Flavor is a point in time," holds true in grapes and wine as in any other flavor system. A review of the literature illustrates the lack of uniformity found in the developmental trends of key classes of aroma compounds. Further, many of the grape-derived flavor compounds in wines exist as bound precursors in grapes, and thus are challenging to assess by sensory analysis.

Monoterpenes are critical to the floral aroma of Gewürztraminer, Traminette, and Muscats, and can also contribute to the character of other aromatic cultivars like Riesling, Albariňo, and Vidal blanc. Monoterpene accumulation begins at veraison, but the behavior of individual compounds is inconsistent; some concentrations peak at 4-5 weeks post-veraison and remain constant for the remainder of ripening, while others increase for as many as seven days after sugar accumulation slows, and still others show decreased concentration during extended maturation.

• *C6 Compounds***.** C6 compounds are responsible for the "grassy, green apple" aromas of freshly crushed grapes. These compounds are produced enzymatically during grape crushing, and will be the dominant aroma compounds in many varieties, especially in immature grapes. However, many of the C6 compounds are transformed into less odorous compounds during fermentation.

• *Methoxypyrazines* are well known for their green or herbaceous character, especially in traditional Bordeaux varietals. Pre-veraison, the accumulation of MPs is correlated with increased vine growth, lower croploads, and shaded clusters. However, it is not clear what factors control MP degradation rates beyond grape maturity, as recent research at Cornell indicates that cluster exposure post-veraison does not affect MP degradation rates. Thus, grapes that accumulate more MPs early in the season are expected to need longer hang times post-veraison for MPs to decrease to a desirable concentration. It is easy to confuse the musty herbaceousness of MPs with the grassiness of C6 compounds; for a comparison, try sampling unripe Pinot noir or Syrah.

• *Volatile thiols* are responsible for the varietal notes of boxwood, grapefruit, and guava in Sauvignon blanc. However, they are also above threshold and likely contribute to the fruity aromas of many other wines, including Riesling, Gewurztraminer, and rosés. Volatile thiols also evolve during fermentation from grape-derived precursors, although it is reportedly possible to observe the thiol potential in Sauvignon grapes following chewing and swallowing due to microorganisms in the mouth. Winemakers and scientists agree that optimal ripeness in Sauvignon blanc is achieved for only a day or two, and that overripe grapes lead to loss of varietal character. Little research has been performed, however, beyond early work that found one volatile thiol to increase throughout ripening.

• *Rotundone* increases post-veraison, and contributes a black pepper note to such cultivars as Syrah, Lemberger, and Bordeaux varieties. Rotundone may also be responsible for the black pepper aroma of Noiret.

• *Sugar degradation products*, such as furaneol, sotolon, and related compounds have been reported in higher concentrations in some raisined wines, but evidence is spotty due to the difficulties in accurately measuring these compounds.

Sensorial impact: Outside the realm of chemical analysis, sensory studies have indicated that the overall changes in grape maturity can impact consumer acceptance of wine. One study found that all aromas were ranked as less intense in Riesling wines produced from fruit allowed to hang beyond traditional harvest time. Other sensory tests have resulted in lower quality ratings for wines made from Chenin blanc, Pinotage, and Cabernet Sauvignon harvested later than considered 'normal' for their region. Winemakers in most regions find that there's a 'right' time to harvest each variety in their region, and that time may not be 'as ripe as possible.'

This all leads back to the same old advice: for the best picture of ripening, taste fruit early and often. With such a variety of volatile compounds changing at different rates during maturation, sensory evaluation is the only way to get any idea of grape flavors. It's important to remember, though, that many volatile compounds exist as odorless precursors, so the character of the wine won't be completely reflected in the grape. But then, isn't winemaking always about the perfect blend of science, art, and a healthy dose of the unexpected?

Gavin Sacks, assistant professor of food science, contributed to this article.

Fruit Maturation Report - 9/21/2010

Samples reported here were collected on **Tuesday, September 21, 2010.** Where appropriate, sample data from 2009, averaged over all sites is included. Tables from 2009 are archived at www.cals.cornell.edu/cals/grapesandwine/veraison-to-harvest/2009.cfm

Cabernet Franc

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Seneca	1.32	20.4	3.38	9.1	51
	9/20/2010	E Seneca	1.33	21.0	3.26	7.3	46
	9/20/2010	W Cayuga	1.51	20.5	3.32	8.0	83
	9/20/2010	E Seneca	1.59	21.0	3.60	6.4	70
	9/20/2010	W Cayuga	1.56	20.0	3.32	7.9	85
Hudson Valley	9/20/2010	HV Lab	1.51	21.8	3.78	4.6	133
Lake Erie	9/20/2010	Fredonia	1.65	22.0	3.42	5.6	64
Long Island	9/20/2010	N Fork	1.74	20.4	3.80	5.5	92
Average	9/20/2010		1.53	20.9	3.49	6.8	78
Prev Sample	9/13/2010		1.50	20.5	3.45	6.8	80
'09 Average	*9/21/09*		*1.43*	*18.3*	*3.22*	*11.2*	

Cabernet Sauvignon

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Lake Erie	9/20/2010	Fredonia	1.34	20.7	3.40	7.1	101
Prev Sample	9/13/2010	Fredonia	1.46	20.0	3.32	7.5	99

Catawba

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Cayuga	2.34	17.8	3.30	12.0	186
Prev Sample	9/13/2010	W Cayuga	2.35	15.6	3.14	12.6	160
'09 Sample	9/21/09		2.67	12.8	3.14	8.8	

Cayuga White

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	Harvested	W Keuka	Harvested	-	-	-	-
-	Harvested	W Cayuga	Harvested	-	-	-	-
Final Sample	*8/30/2010*		*2.91*	*15.4*	*3.30*	*12.1*	*201*
'09 Sample	*9/21/09*		*3.23*	*13.9*	*3.10*	*12.1*	*9/08*

Chardonnay

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Seneca - Shoot Thin	1.35	21.0	3.48	7.9	221
	9/20/2010	W Seneca - No Thin	1.42	20.7	3.47	8.5	289
	9/20/2010	W Cayuga	Harvest				
Hudson Valley	9/20/2010	HV Lab	1.39	23.0	3.68	5.2	201
Long Island	9/20/2010	N Fork	1.53	21.6	3.74	5.8	275
	9/20/2010	N Fork	Harvest				
Average	9/20/2010		1.42	21.6	3.59	6.8	246
Prev Sample	*9/13/2010*		*1.50*	*21.4*	*3.56*	*6.5*	*206*
'09 Average	*9/21/09*		*1.65*	*17.5*	*3.27*	*11.6*	

Concord

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Keuka	3.30	16.0	3.32	9.8	132
Prev Sample	9/13/2010	W Keuka	3.53	14.8	3.4	9.6	204
'09 Sample	*9/21/09*		*3.66*	*13.0*	*3.29*	*5.8*	

Corot Noir

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Cayuga	2.42	16.5	3.47	8.4	192
Prev Sample	*9/13/2010*	*W Cayuga*	*2.37*	*16.1*	*3.48*	*7.6*	*212*
Average	*9/21/09*		*2.27*	*15.3*	*3.28*	*10.2*	

Delaware

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Lake Erie	9/20/2010	Portland Lab	1.56	22.5	3.53	8.1	152
Prev Sample	9/13/2010	Portland Lab	1.46	22.0	3.43	7.7	165

Lemberger

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Seneca	2.06	21.4	3.18	7.4	39
Prev Sample	9/13/2010	W Seneca	1.91	21.6	3.27	7.2	84

Leon Millot

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/7/2010	W Keuka - Shoot Thin	Harvest				
	9/7/2010	W Keuka - No Thin	Harvest				
Final Sample	*9/7/2010*	*Harvested 9/10*	*0.76*	*27.9*	*3.40*	*12.4*	*116*
'09 Average	*9/21/09*	*Final sample*	*0.9*	*22.3*	*3.12*	*15.4*	

Merlot

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Hudson Valley	9/20/2010	HV Lab	1.43	20.9	3.81	4.6	135
Long Island	9/20/2010	N Fork	1.98	21.9	3.82	4.6	107
	9/20/2010	N Fork	2.00	19.8	3.75	5.8	170
Average	9/20/2010		1.80	20.9	3.79	5.0	137
Prev Sample	*9/2/2010*		1.71	20.3	3.73	5.0	147
'09 Average	*9/21/09*		*1.90*	*13.5*	*3.44*	*10.2*	

Noiret

Region	Harvest Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Seneca	2.23	15.6	3.25	9.6	116
	9/20/2010	W Seneca	1.48	19.7	3.33	8.1	114
Hudson Valley	9/20/2010	HV Lab	1.60	19.8	3.67	6.3	211
	9/20/2010	W HV	1.42	19.2	3.38	9.7	111
Lake Erie	9/20/2010	Fredonia	1.68	20.0	3.40	8.8	134
Average	9/20/2010		1.68	18.9	3.41	8.5	137
Prev Sample	*9/13/2010*		*1.65*	*18.4*	*3.34*	*8.5*	*137*
'09 Average	*9/21/09*		*1.79*	*15.5*	*3.19*	*12.2*	

Pinot Noir

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Seneca	Harvest				
Hudson Valley	9/20/2010	HV Lab	1.44	23.6	3.95	7.0	266
	9/20/2010	Hudson Valley	Harvest				
Average	9/20/2010		1.44	23.6	3.95	7.0	266
Prev Sample	*9/13/2010*		*1.37*	*22.6*	*3.75*	*7.0*	*210*
'09 Average	*9/21/09*		*1.59*	*17.2*	*3.29*	*11.6*	

Riesling

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Seneca - leaf rem, shoot thin	1.30	19.8	3.16	9.0	24
	9/20/2010	W Seneca - no leaf rem, no thin	1.40	20.6	3.17	8.7	29
	9/20/2010	E Seneca	1.59	20.5	3.16	9.2	78
	9/20/2010	E Seneca-shoot thin	1.44	18.7	3.20	9.5	72
	9/20/2010	E Seneca - no thin	1.27	18.6	3.16	9.5	78
	9/20/2010	W Cayuga	1.45	17.4	3.19	9.9	156
	9/20/2010	W Cayuga	1.68	18.7	3.25	9.7	148
Hudson Valley	9/20/2010	HV Lab	1.60	17.4	3.57	6.4	157
Lake Erie	9/20/2010	Fredonia	1.53	17.9	3.25	7.7	70
Long Island	9/20/2010	N Fork Riverhead	-	-	-	-	-
Average	9/20/2010		1.47	18.8	3.23	8.8	90
Prev Sample	*9/13/2010*		*1.48*	*18.4*	*3.19*	*9.2*	*94*
'09 Average	*9/14/09*		*1.61*	*15.7*	*3.07*	*16.2*	

Sauvignon Blanc

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Long Island	9/13/2010	N Fork Riverhead	Harvest				
Final Sample	*9/7/2010*	*N Fork Riverhead*	*1.84*	*19.8*	*3.64*	*8.0*	*242*
'09 Sample	*9/21/09*		*1.79*	*17.1*	*3.15*	*15.9*	

Seyval Blanc

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Cayuga - cluster, shoot thin	Harvest				
	9/20/2010	W Cayuga - no cluster, no thin	Harvest				
Hudson Valley	9/20/2010	HV Lab	1.24	18.6	3.52	6.6	156
	9/20/2010	W HV	1.10	17.5	3.17	9.9	176
Average	9/20/2010		1.17	18.1	3.35	8.2	166
Prev Sample	9/7/2010	(one sample only)	1.33	18.4	3.42	6.4	149
'09 Average	9/21/09		1.89	17.3	3.18	11.8	

Traminette

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Keuka - Shoot Thin	1.79	18.0	3.03	13.4	207
	9/20/2010	W Keuka - No Thin	1.77	17.6	3.12	13.1	276
Hudson Valley	9/20/2010	HV Lab	1.82	22.4	3.50	6.0	156
	9/20/2010	W HV	1.45	22.3	3.43	7.5	103
Lake Erie	9/20/2010	Fredonia	1.76	22.6	3.21	7.6	59
Average	9/20/2010		1.72	20.6	3.26	9.5	160
Prev Sample	*9/13/2010*		*1.66*	*19.8*	*3.20*	*10.4*	*167*
'09 Average `	9/21/09		1.81	14.4	3.06	16.0	`

Vidal blanc

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	E Seneca	1.65	20.9	3.40	9.5	151
Prev Sample	*9/13/2010*	*E Seneca*	*1.52*	*18.2*	*3.31*	*8.9*	*118*

Vignoles

Region	Sample Date	Description	Ber. Wt. g.	° Brix	pH	TA g/L	YAN (ppm)
Finger Lakes	9/20/2010	W Keuka-VSP, Shoot thin	1.55	23.4	3.08	12.8	238
	9/20/2010	W keuka-VSP, No Thin	1.64	22.3	3.21	12.5	250
	9/20/2010	W keuka-high cordon, shoot thin	1.76	23.4	3.23	14.6	232
	9/20/2010	W keuka-high cordon, no thin	1.63	23.8	3.23	13.4	206
Average	*9/20/2010*		*1.65*	*23.2*	*3.19*	*13.3*	*231*
Prev Sample	9/13/2010		1.51	21.6	3.13	14.7	263
'09 Average	9/21/2009		*1.62*	*17.8*	*3.12*	*15.8*	

Vignoles Harvest: Shoot thinning, Training System and *Botrytis*

Tim Martinson

Vignoles is known to be extremely prone to *Botrytis* bunch rot. The impact of training system (top-wire cordon vs mid-wire VSP) and shoot thinning on *botrytis* was evident in a demonstration block we harvested this last Wednesday. This block is grafted to 3309, and exhibits more vigor (and higher yields) than is typical of ungrafted vignoles.

1. The mid-wire (left) was spur-pruned, catch wires on top, and downward oriented shoots, to open up the cluster zone. Top wire cordon (right) was not shoot-positioned.

2. The mid-wire, shoot thinned treatment had some cluster exposure. This shows the canopy as it appeared (left) and with leaves in the cluster zone stripped (right).

3. Top wire, unthinned treatment had dense leaves shading the cluster zone (left) and with leaves removed (right).

4. Training system and shoot thinning both affected the severity of *Botrytis.* Here are 5 clusters selected at random from each treatment.

Mid-wire cordon: Unthinned (left) showed more severe *botrytis* than the shoot-thinned vines.

Top-Wire Cordon: Both unthinned (left) and thinned (right) top-wire treatments had more severe *botrytis* than the corresponding mid-wire (above) treatments. Unthinned, top-wire fruit had the most severe *botrytis.*

Brix, pH, and TA from these blocks is reported on p.7 in the 9/21/2010 fruit maturity table.

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