Nowhere was there more heat than on Long Island. The amazing degree day accumulation led to what Rich Olsen-Harbich of Bedell Cellars calls the earliest harvest on record, or at least the “earliest in the modern era of bird-netting.” Riverhead was able to top Geneva in jaw-dropping statistics where the GDDs August 31 were roughly the same as Napa and Sonoma. Combined.

September crush. The result of the heat was that September, a month where many wineries twiddled their collective thumbs last year, became the setting for the majority of the crush. “For a small, under-staffed winery like us it was a lot to handle,” reports Matt at Benmarl. “Lots of stress,” agrees Kris Kane at Presque Isle, but in return “everything that was early was spectacular. Even the Chambourcin got ripe.” As Chris Stamp of Lakewood Vineyards says, 2010 has been “so much easier in the cellar, because you don’t have to balance the juices. They came in balanced. You squirt it in a tank, clarify and add yeast.” (Ed. Note: Trained professional. Results may vary.) At Presque Isle, the sugar bill “is a third of last year’s.” The downside? Pinot Noir shot past 20° brix during Labor Day picnics, challenging those who wanted to make sparkling wine.

Rain. It was against a backdrop of frantic but joyful harvest that a large part of the state got a forced break in the form of some heavy and sustained rain. Had it happened in
California, this weather pattern would currently be the subject of congressional hearings. As it happened here, however: “two-week break,” says Lindsay Stevens of King Ferry Winery. As Chris Stamp puts it, “if you could edit out that rain, the year would be perfect.” At this point I feel compelled to admit that I was trying to get my house painted in early October, so sorry about that. Chris continued, however: “Given a choice, I’d take a season like this every year.” His sentiments are echoed across the state, as hopes are high for everything, red wines in particular.

**Heat without drought.** One interesting note was that in this year when neither heat nor water was limiting, development occurred in different ways in different places. “There was not the normal spacing between varietals,” reports Juan from Martha Clara. “We are a farm of 14 different varietals and for the most part things were out of the normal picking sync.” Some winemakers reported getting the brix where they needed but still seeing high acids, while others saw the acid numbers getting frighteningly low and picked accordingly.

In the end, however, Rich Olsen-Harbich sees the delightful combination of “soft acids with low pH,” Pinot noir looks “fantastic” according to Lindsay Stevens (and others) and Kris Kane’s red hybrids are “quite pleasant.” If Kris could have had anything, it would be “more of everything.”

As I write, the last grapes have been crushed at the Vinification & Brewing Lab in Geneva and about half the wineries I talked with reported having everything in. Overall, everyone agreed on three major points:

- Although different places had different paths, the overall fruit quality is excellent,
- Despite rain early, late and in between, most grapes were kept remarkably clean as long as humanly possible, and
- It’s been intense.

Once again, there was an “excellent partnership” between vineyard and winery, as Chris Stamp put it, not only in terms of fruit quality but also in the logistics of getting things harvested rapidly. As things finally slow down, and Vinny can get some sleep and some SO₂ on his stained hands, the year is still looking pretty darn good.

How good? I asked Rich Olsen-Harbich to compare it to a recent year and he had some fairly encouraging words: “I’m not sure there is a comparable year. I don’t see it comparing to anything else. For us, for the reds, it’s been special.” Maybe we should plan to get the house painted more often.

**CONCORD RIPENING CURVE - 2004-2010**

*Terry Bates*

*Cornell Lake Erie Research and Extension Laboratory*

The charts below summarize berry growth and brix (soluble solids) in Concord grapes over the past seven years - by calendar date. Berry growth (top) was right in the middle of the pack, but brix accumulation curves (bottom) show 2010 to be earliest and 2009 to be the latest of the 7 years surveyed.

**Berry Weight**

![Berry Weight Chart]

**Juice Soluble Solids (brix)**

![Juice Soluble Solids (brix) Chart]
After analyzing over 700 samples for yeast assimilable nitrogen (YAN) this harvest season – including about 400 samples for Veraison to Harvest – we’re just beginning to get an idea of the range and variation of YAN content found vineyards across the state.

For this work, we followed changes in total YAN, PAN, and ammonia weekly from veraison through harvest in all of our commercial blocks that were part of Veraison to Harvest.

Components of YAN. A quick reminder: YAN represents the total nitrogen available for yeast to use for its nutrimental needs. YAN is made up of organic nitrogen forms called primary amino nitrogen (or PAN), and an inorganic form (ammonia.) The concentrations of PAN and ammonia were measured via chemical analysis with a spectrophotometer and enzymatic analysis, respectively, then simply added together to determine the total YAN concentration.

Trends in our 2010 YAN samples. Our data suggests that YAN concentrations do follow certain general patterns. But because total YAN is a result of complex interactions between many environmental and physiological factors, including annual climatic variation, it’s wise not to over-interpret conclusions from just one year of data. In the graphs to the right (Figure 1) and on the following page (Figure 2), the average concentration for YAN, PAN, and ammonia in each grape variety (Cabernet Franc, Riesling, Chardonnay, Noiret, and Traminette) is shown for each sampling date, starting in late August and continuing until each cultivar was harvested.

These composite graphs do not include controls for regional variation, as samples were taken from across the state. This variation is, in part, responsible for the rather large range – as indicated by the vertical ‘error bars’ for total YAN. These bars, which represent the highest and lowest values (or range of values) observed during that week provide clear evidence that predicting YAN values across sites or even within vineyards is a challenge.

Cultivars reacted differently. One thing that is immediately obvious is that trends for changes in YAN are much more cultivar dependant than are the usual, predictable harvest parameters of pH, TA, °Brix and berry weight. Data in Figure 1 suggests that as Cabernet Franc matured, it experienced a slight increase in YAN around veraison, followed by either a plateau or slight decrease. Chardonnay and Noiret showed small changes in YAN, but the ammonia component decreased while the PAN seemed to increase. Finally, Traminette (Figure 2) showed an increase in YAN corresponding to an increase in PAN after veraison.

Comparison with 1998 Survey. In 1998 a survey of nitrogen compounds in grape musts from California, Oregon, and Washington was performed at UC Davis.
Based on the variability we see, it's difficult to predict what the right addition should be. Stay tuned: With additional data, we hope to shed more light on the major vineyard drivers of YAN next year. In the meantime, our data this year indicate that testing YAN in fruit samples collected a few weeks before harvest will give a relatively robust indication of what you will have in the winery at the start of fermentation. Sample early. Avoid the rush during crush.

### Changes in PAN and ammonium components.

Generally the concentration of ammonia decreases as grapes ripen, and the concentration of amino acids increases. Not all amino acids are assimilable, so this shift can have a variable effect on the YAN concentration. In the October 6th edition of *Veraison to Harvest* Chris Gerling reminded us that proline (one of 21 amino acids) is not metabolized by yeast, and therefore is not counted in the PAN or YAN values.

Previous studies have shown that proline accumulated post-veraison can result in a decrease in total YAN. For example, there's evidence that the evolution of nitrogen in Cabernet sauvignon consists primarily of the conversion of ammonia to proline, resulting in a net decrease in yeast-assimilable nitrogen. We don't know if the same pattern holds across different cultivars, but hope that further data collection will shed light on this. As part of this project, Dr. Lailiang Cheng will be measuring the changes in individual amino acids during ripening – and we will be trying to correlate YAN with yield components, tissue and soil samples, and other relevant vineyard measurements.

In future years, so we hope to provide more clarity on the major drivers of YAN through additional surveys and treatments in the vineyard. One thing is clear: YAN varies from site to site and variety to variety, for reasons that are yet unclear to us. This means that the only way to know for sure what your YAN values are is to test your musts. If you can't test for YAN, it's likely that routine nitrogen addition should be made, though based on the variability we see, it's difficult to predict what the right addition should be. Stay tuned: With additional data, we hope to shed more light on the major vineyard drivers of YAN next year.

In the meantime, our data this year indicate that testing YAN in fruit samples collected a few weeks before harvest will give a relatively robust indication of what you will have in the winery at the start of fermentation. *Sample early. Avoid the rush during crush.*

### Reference


### Table 1. Yeast assimilable nitrogen and its components in a 1998 study of Cabernet Franc and Chardonnay from California and New York (Butzke et al 1998)

<table>
<thead>
<tr>
<th>Variety</th>
<th>Location</th>
<th>Number</th>
<th>Ammonium (mg N/L)</th>
<th>PAN (mg N/L)</th>
<th>YAN (mg N/L)</th>
<th>RSD (%)</th>
<th>% Samples &lt; 140 mg N/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cab Franc</td>
<td>CA</td>
<td>41</td>
<td>48</td>
<td>124</td>
<td>172</td>
<td>38</td>
<td>36.6</td>
</tr>
<tr>
<td>Cab Franc</td>
<td>NY</td>
<td>8</td>
<td>10.5</td>
<td>69.5</td>
<td>80</td>
<td>24</td>
<td>100</td>
</tr>
<tr>
<td>Chardonnay</td>
<td>CA</td>
<td>224</td>
<td>102</td>
<td>152</td>
<td>254</td>
<td>30</td>
<td>4.5</td>
</tr>
<tr>
<td>Chardonnay</td>
<td>NY</td>
<td>6</td>
<td>58</td>
<td>152</td>
<td>211</td>
<td>31</td>
<td>16.7</td>
</tr>
</tbody>
</table>
The 2010 growing season produced fruit that had consistently higher juice pH and lower titratable acidity than in the previous three years. It was a mirror image of 2009 - which of course had low pH, lower brix and higher titratable acidity at the end of the day.

On the following three pages, we show comparative trends in berry size, brix, pH, and TA for five varieties (Cabernet franc, Merlot, Noiret, Riesling and Traminette) for which we collected berry samples from at least five and up to 12 vineyards for Véraison to Harvest. Each year’s data, from 2007 to 2010 is plotted, along with an average (black line) over the four years.

Weekly samples span September and October - this year we started sampling one week earlier (August 23) than the other years - but also ended a week earlier.

Some general trends:

- **Berry weights** tracked the 4 yr average -not notably larger or smaller, on average.
- **Brix** accumulated earlier, but the rate of increase leveled off in mid September, ending up 1 to 3 degrees higher at harvest. We didn’t see the 26 brix fruit that some expected.
- **Juice pH** started out high, and remained consistently higher than the previous three years.
- **Titratable acidity** dropped faster, and ended up 3-6 g/L lower at harvest than last year.

Across varieties, fruit from 2010 should have a very different balance of sugars and acidity than in typical years - and more reminiscent of warmer climate regions than what is typical for our cool-climate region in NY.

Each variety responded in its own way to the extreme heat accumulations NY experienced through early September — which was followed by cooler, more typical ripening weather. Note, for example, that TAs leveled off in Cab Franc and Merlot, but kept dropping in Noiret. Riesling TAs also leveled out - but at 9 g/L instead of 6 g/L like Cab Franc and Merlot.

This underscores the point that in an ‘extreme’ year like 2010, the normal sequence of ripening of different varieties can change, because each variety responds in its individual way to climate variation.

Thanks to all the wineries and vineyards across NY that have provided fruit samples for inclusion in Véraison to Harvest over the past four years.
Merlot

Top to Bottom: Berry Wt, Brix, pH, TA

Noiret

Top to Bottom: Berry Wt, Brix, pH, TA
Riesling
*Top to Bottom: Berry Wt, Brix, pH, TA*

Traminette
*Top to Bottom: Berry Wt, Brix, pH, TA*
THANKS AND ACKNOWLEDGEMENTS

Tim Martinson

This newsletter - as it has been for the past four years - is above all a collaborative effort involving numerous people across the state, who collect and ship samples, analyse them, and write the weekly updates and articles. Each week for the past 8 weeks, they have done this on a very exacting schedule, to provide time-sensitive information to our readers.

In the Enology lab at Geneva Mark Nisbit, Ben Gavitt, Rebecca Nelson, and Pierre Lemoine (above) ran the weekly fruit chemistry and YAN samples. Pierre was an intern at Geneva this summer, from the University of Burgundy in France. Chris Gerling and Anna Katharine Mansfield wrote articles and edited.

In the Finger Lakes, Mike Collizi and Hans Walter-Peterson (right) collected samples and wrote articles. Bill Wilsey collected, weighed, delivered samples, and coordinated shipping across NY.

In Lake Erie, Tim Weigle and Terry Bates contributed writing and data, and Madonna Martin (left) collected samples from the Lake Erie Region.

Long Island samples were collected by Alice Wise and Libby Tarleton (right), and Alice contributed weekly updates and pictures.

Steve Hoving sampled vineyards in the Hudson Valley, and Steven McKay wrote the weekly Hudson Valley update.

Richard Lamoy and Kevin Iungerman contributed samples and articles highlighting Cold-climate cultivars and the grape variety trial at Willsboro, NY.

Finally, thanks to the New York Wine and Grape Foundation, Jim Trezise, Susan Spence, research chair Jim Bedient, for finding a way to help fund Veraison to Harvest again this year. The J. M Kaplan fund and USDA federal formula funding through Cornell and NYS Agricultural Experiment stations also provided support for this project.

Veraison to Harvest is a joint publication of:

Cornell Enology Extension Program
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Long Island Grape Program
Finger Lakes Grape Program
Lake Erie Regional Grape Program
Hudson Valley Regional Fruit Program

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LONG ISLAND: FINAL FRUIT MATURITY SAMPLES

Alice Wise and Libby Tarleton

Table: Final fruit samples from Long Island, taken at harvest in Merlot and Cabernet Franc blocks.

<table>
<thead>
<tr>
<th>Region</th>
<th>Cultivar</th>
<th>Berry Wt (G)</th>
<th>Brix °</th>
<th>pH</th>
<th>TA (g/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Island</td>
<td>Merlot</td>
<td>1.82</td>
<td>21.3</td>
<td>3.62</td>
<td>6.45</td>
</tr>
<tr>
<td></td>
<td>Cabernet Franc</td>
<td>1.76</td>
<td>22.3</td>
<td>3.66</td>
<td>6.30</td>
</tr>
</tbody>
</table>

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