Veraison to Harvest

Statewide Vineyard Crop Development Update #6

Cornell University Cooperative Extension

October 16, 2009

Edited by Tim Martinson and Chris Gerling

Around New York...

Statewide *(Tim Martinson)*

Harvest is in full swing as we near the end of the growing season. While I woke up to an inch of snowfall, low temperature at my house hovered right at 32° F - not yet a hard freeze in the Finger Lakes. Warmer weather is forecast for next week, so growers may be able to squeeze out a bit more ripeness for the remaining grapes. With many blocks harvested, the number of blocks with fruit samples continues to shrink (see fruit maturity table, pp 4-7), and is now dominated by Riesling and Traminette (harvest in progress), Cabernet Franc and Merlot (harvest still to come). Brix readings rose 0.7 to 1.2 degrees, but acids remained more or less static. Yeast assimilable nitrogen (YAN) from blocks harvested this week (see table p. 7) showed a lot of variability.

*Finger Lakes: Plant Pathologist **Wayne Wilcox** rates disease incidence and severity at a Seneca Lake Riesling block with different canopy management (shoot thinning and leaf removal) treatments, as part of a project led by **Justine Vanden Heuvel** and funded by the Northeast SARE program.*

Photo by Tim Martinson

Anna Katharine Mansfield (p3) reviews the role of nitrogen and YAN measurements in yeast nutrition and fermentation management, and we have an article about Dairy One's wine analysis service pilot project in the Finger Lakes (funded by the New York Farm Viability Institute). There is no Concord Maturity Report from Terry Bates this week, as the grapes have been harvested.

Finger Lakes (*Hans Walter-Peterson*)

Temperatures in the Finger Lakes dropped perilously close to the freezing mark earlier this week, but at this point indications are that most areas in the region did not get quite cold enough to cause significant damage to precious leaves. Freeze damage was most noticeable in a few vineyards near Keuka Lake, and some damage was visible as well around northern Seneca Lake. Not all of the leaves on the canopy were affected, however, so there is still the potential for at least a little more ripening activity by the remaining leaves. Temperatures are supposed to rebound back to near normal levels next week, so hopefully we can still squeeze another couple of weeks out of this growing season.

Riesling is beginning to get picked in a few vineyards, but most of the crop will still be hanging for another week or more. Brix numbers continue to move up slowly, while acids remain relatively unchanged from last week. This isn't terribly surprising given the cool, cloudy weather that we experienced over the past several days. Fruit that still remains in the vineyards is still very clean for the most part. Growers and wineries believe that the year is still shaping up to be a very good one for Riesling, which is good news. Concord harvest continues in full swing, but brix numbers are struggling to get much higher than the upper 15s. A stretch of drier and warmer weather after this weekend will enable fruit to hang out there a little bit longer in hopes of concentrating flavors in the remaining fruit and making the best out of this challenging year.

Lake Erie *(Jodi Creasap Gee)*

This week began with freezing or nearly-freezing temperatures around the region. While the majority of vineyards appear to be in decent shape, there are a few vineyards – primarily Concord and Niagara that have already been picked – that definitely appear worse for the wear. All the harvesters are out in full force, and crews of tractors and trailers are moving along Route 20 at a steady pace. Although the forecast for the rest of this week looks promising, in terms of no rain, the freeze warnings do incite some concern. But, nothing can be done about the weather, so the industry will keep chugging away until the last load is left at the plant/winery.

Continued on Page 2

Hudson Valley *(Steve McKay & Steve Hoying)*

The weather in the Hudson Valley has cooled down during the past week. Frosts have been common in the north, although the southern part of the valley has been spared. Canopies in Ulster County are still reported to be in good shape except for the occasional damage by late-season Downy Mildew. Scattered snow showers are predicted over the weekend, with a bit of a warming trend expected next week. Growers are hoping to get a few more ripening days before the season ends. Whites and early season reds are coming in in good shape, while late red grapes are still at risk. Cabernet Franc still appears to be about two weeks from harvest.

Oak Summit vineyard harvested 'Pinot Noir' and 'Chardonnay' at 23 brix, and Whitecliff reported similar numbers.'Vignoles' is being picked this week at about 20 brix although readings of 26 brix have been achieved in the past. Millbrook reports 'Chardonnay' being picked at 21 brix with good maturity, and 'Pinot Noir' will follow, with 'Tokai Friulano' after that, hopefully by the weekend. 'Traminette' and 'Noiret' will be harvested in a few days.

The main concern is for the late red grapes with Cabernet Franc being at the top of the list. The fruit is still reported to be in great shape with acceptable canopy, but ripening time is needed.

Long Island *(Alice Wise and Libby Tarleton)*

A week of chilly weather accompanied Chardonnay harvest on Long Island. Growers report decent yields averaging 3 t/a, 22-23 Brix and acids in the 8-10 g/l range. In the research vineyard, we finished up Chardonnay this past week. Cluster size was down overall with a few selections experiencing the poor set phenomenon. In general, the Dijon clones as well as clones 4 and 5 (large clustered, later ripening) had fewer issues with set than clones 15 and 17. Clone 15 is known for occasional issues with set. The Dijon clones have been widely planted in the industry, thus their solid performance in a challenging year is good news. Berry size for all Chardonnay clones was average to below average. The June rains were followed by a virtual drought late July through mid-September, thus the moderate berry size is not too surprising. Numbers ranged from 21-22.5 Brix and 9-10.5 g/l TA. We had some minor cluster rot that was largely linked to bird damage. Growers are very pleased to be able to deliver a decent crop of Chardonnay. It is still the most widely planted white winegrape variety on Long Island and so a lot of time and effort goes into producing these wines.

YAN -The Other Harvest Parameter (that we mostly pretend doesn't exist)

Anna Katharine Mansfield
Assistant Professor of Enology

It's that time of year again. The grapes are in, the crush pad is a mess, and we've pulled out refractometers and hydrometers and pH meters and maybe- if we're really good- even the titration set-up. Measurements have been made, analyses have been run, and we know our harvest chemistry- pH, TA, and soluble solids, check! The tank is ready, the yeast is rehydrating, and we're ready to pitch!

Or are we?

For those of us wearing the badge of Enology Extension, the official answer is "No, you aren't ready to pitch until you measure your yeast assimilable nitrogen content!" At this point many winemakers avert their eyes, murmur something about the time, and go right ahead with their fermentation plans. We know it happens–by our estimates, maybe 5% of small wineries have their yeast assimilable nitrogen content (usually abbreviated as YAN or YANC.) measured–and that's a generous estimate. And we're sympathetic; we understand that the analysis is hard to do in-house, that it's expensive to send out, and that fermentations mostly seem to go ok, anyway. Most winemakers are happy to make some sort of prophylactic addition, cross their fingers, and maybe add a bit more DAP later if things seem sluggish.

The problem with this approach is that nitrogen is the only really important fermentation parameter that you have to measure to get any estimate of content. Unlike the other major quality determinants- color, sugar, acid, phenolic compounds- there's no way for even the most experienced winemaker to sensorially guesstimate YAN. And, unlike sugars and acids and pH, YAN is the parameter that tends to vary wildly, since it's influenced by cultivar, microclimate, season, harvest date, and viticultural practices. Subsequently, if you're guessing what your YAN is, you're probably guessing wrong- and that can have significant consequences.

In addition to being hard to measure and hard to estimate, many of us have habitually ignored the whole nitrogen problem because it's pretty complicated, and who has time to deal with that when their head's already exploding from all the last-minute harvest decisions? Fortunately, while there are numerous nitrogenous compounds present in the

must that may or may not be useful to the yeast, there are only two components that need to be measured prior to making fermentation decisions: ammonia and α-amino amino nitrogen. Even better (if you look on the bright side) the most efficient way to get a YAN measurement is to outsource the analysis. While the formol method of measurement is fairly affordable, the toxicity of the reagents involved and the cost of recommended safety gear make it impractical for most wineries.

Currently, commercial labs are using analyses based on spectrophotometric measurements or FTIR, which are relatively rapid (less than 12 hour turn-around) and very accurate. The cost of both analyses (and it makes little sense to just do one) runs between $35 and $60, or about the price of two bottles of wine. Turn around is pretty rapid, but YAN doesn't change dramatically during the final stages of ripening, so it is possible to test a berry sample (collected with an appropriate sampling protocol) and have analysis numbers well in advance of harvest. Advance sampling can save time during the busy crush, and keep you occupied during the 'hurry up and wait' stage of the game.

What does the analysis really tell you? Well, in very concrete terms, it tells you exactly how much YAN your must has, which allows you to make very precise corrections to optimize nutrition. While science is still squabbling over the optimal YAN of a given must, we do know enough to make good recommendations. It is generally agreed that a YAN of 140 mg/L is the absolute minimum required for fermentation, and that 200-350 mg/L are optimal for fermentation of juice, depending on initial °Brix. (Nitrogen requirements for on-skins fermentation is a bit more complicated, and still under debate.) In New York, we also have enough historical data to know that NY grapes come in with highly variable YANC values, ranging from too low (Rieslings are often below 100 mg/L) to the high end of the acceptable range (a sampling of regional YAN values can be see in the results section of Veraison to Harvest). This means that to really optimize fermentation conditions, it's important to check YAN each year, and not rely on last year's numbers or fermentation performance to make additions this year.

Optimizing YAN isn't just about preventing stuck fermentation, either. Because there are many factors influencing nitrogen uptake, and the metabolic processes involved are complicated, we're slowly learning how wine quality can be altered when nitrogen levels are too high or too low. While we have yet to tease out the effect of nitrogen on the production of all of the various classes of wine volatiles, we now know that many important compounds are generated by yeast during fermentation; it follows naturally that anything affecting yeast activity (like nitrogen availability) also affects the amount and types of flavor compounds produced. In recent studies, scientists have found that appropriate YAN additions increase production of monoterpenes, which are responsible for floral notes in white wines. In contrast, excessive YAN has been tied to enhanced production of fusel or higher alcohols, as well as to increased volatile acidity- all of which can mar a wine's sensory profile.

Further, it's becoming obvious that adding the right kind of nitrogen is just as important as making sure YAN levels are adequate. Diammonium phosphate (DAP), the additive traditionally used to supplement low-nitrogen yeasts, provides only ammonia as a nitrogen source. While yeast happily- and even preferentially- metabolize ammonia, the very fact that it is a pure source of the compound is problematic. If the must doesn't contain enough of several necessary micronutrients to process the ammonia, problems will eventually arise. It's a bit like trying to run a car on gasoline, but without oil- it may work well in the beginning, but eventually you'll generate some bad smells, or be completely stuck. In the case of wine, an excess of ammonia without supporting vitamins and other micronutrients will lead to problems like decreased ethanol production and increased glycerol output, as well as a host of potential off-odors, not all of which are fully elaborated.

Hydrogen sulfide (H_2S) in particular is known to be produced at higher levels in wines with inadequate vitamin supply. To make sure the yeast are not only getting enough nitrogen, but are getting all the right kinds, it's wise to use some sort of nutritional supplement in addition to DAP.

Continued on Page 8

YAN analysis at the NYWAL:

With the new ChemWell multianalyzer, the Wine Analytical Lab now has the ability to rapidly determine both ammonia and α-amino amino nitrogen using an enzymatic method with spectrophotometric measurement. To make these analyses both affordable and convenient, the Lab is now offering YAN analysis on Tuesdays and Thursdays for the rest of the month of October. NY wineries will be charged $35 per sample for both analyses; out-of-state wineries $55. For more information, contact Ben Gavitt at bkg1@cornell.edu

Fruit Maturation Report - 10/12/09

Samples reported here were collected on **Monday, October 125, 2009.** Where appropriate, sample data from 2008, averaged over all sites is included. Tables from 2008 are archived at www.grapesandwine.cals.cornell.edu/extension/vtoh.php

Cabernet Franc

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	W Seneca Lake	1.69	20.9	3.21	10.8
		E Seneca Lake	1.43	19.7	3.08	14.9
		Cayuga Lake	1.56	18.7	3.09	13.6
Hudson Valley	10/12	HV Lab	1.54	20.6	3.35	10.1
Lake Erie	10/12	Fredonia	1.35	19.2	3.21	12.6
Long Island	10/12	S Side North Fork	1.43	20.0	3.41	9.5
		N Side North Fork	1.45	19.3	3.31	9.9
Average	**10/12**		**1.49**	**19.8**	**3.24**	**11.6**
Prev Sample	*10/05*		*1.49*	*18.9*	*3.29*	*11.7*
'08 Average	*10/13/08*		*1.66*	*20.7*	*3.36*	*8.7*

Catawba

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	Cayuga Lake	2.81	16.5	3.29	4.7
Average	**10/12**		2.81	16.5	3.29	4.7
Prev Sample	*10/05*		*2.71*	*16.1*	*3.29*	*5.1*

Chancellor

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Lake Erie	10/12	No Shoot/Cluster thin	H	H	H	H
		Mechanical Shoot thin	H	H	H	H
		Mechanical Cluster Thin	H	H	H	H
Final Sample	*10/05*	*(Final-Harvested)*	*1.77*	*17.7*	*3.34*	*10.9*

Chardonnay

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	W Seneca Shoot Thin	H	H	H	H
		W Seneca Noshoot thin	H	H	H	H
		Cayuga Lake	H	H	H	H
		HV Lab	1.79	20.1	3.43	10.4
Hudson Valley	10/12	North Hudson Valley	1.70	19.1	3.40	6.7
Long Island		S Side North Fork	H	H	H	H
Average	10/12		1.75	19.6	3.42	8.6
Prev Sample	*10/05*		*1.62*	*18.9*	*3.39*	*11.4*
'08 Average	*10/13/08*		*1.56*	*20.2*	*3.23*	*8.9*

Concord

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	Keuka Lake	3.29	15.6	3.37	6.0
Average	10/12		3.29	15.6	3.37	6.0
Prev Sample	*10/05*		*3.60*	*15.3*	*3.38*	*6.3*
'08 Average	*10/13/08*		*3.69*	*17.4*	*3.38*	*5.7*

Corot Noir

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	Shoot thin/Leaf Removal	2.23	16.4	3.34	7.9
		No Shoot Thin/No Leaf Rem	2.11	15.3	3.30	7.9
Average	**10/12**		**2.17**	**15.9**	**3.32**	**7.9**
Prev Sample	*10/05*		*2.24*	*16.6*	*3.34*	*9.0*
'08 Average	*10/13/08*		2.28	17.7	3.46	5.9

Gewürztraminer

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Hudson Valley	10/12	HV Lab	H	H	H	H
Final Sample	*10/05*		*1.61*	*20.4*	*3.80*	*6.7*

Marechal Foch

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Hudson Valley	10/12	HV Lab	H	H	H	H
Final Sample	*10/05*		*1.09*	*23.2*	*3.52*	*8.3*

Leon Millot

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	9/28	Shoot Thin	H	H	H	H
		No Shoot Thin	H	H	H	H
Final Average	*9/21*		*0.90*	*22.3*	*3.12*	*15.4*

Merlot

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Hudson Valley	10/12	HV Lab	2.03	19.2	3.49	8.8
Long Island	10/12	S Side North Fork	1.93	20.2	3.51	8.6
		N Side North Fork	1.82	18.9	3.43	9.2
Average	**10/12**		**1.93**	**19.4**	**3.48**	**8.9**
Prev Sample	*10/05*		*1.86*	*18.5*	*3.57*	*9.2*
'08 Average	10/13/08		1.67	22.1	3.53	6.9

Noiret

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	W Seneca Shoot Thin	2.30	15.6	3.23	9.6
		W Seneca Noshoot thin	2.22	15.1	3.16	9.7
Hudson Valley	10/12	HV Lab	1.81	18.8	3.43	8.0
		W Hudson Valley	1.69	18.6	3.33	9.0
Lake Erie	10/12	Sheridan-no treatment	1.99	17.1	3.17	13.2
		Sheridan-crown gall	1.79	17.5	3.18	13.3
Average	**10/12**		**1.97**	**17.1**	**3.25**	**10.5**
Prev Sample	*10/05*		*1.95*	*16.6*	*3.29*	*10.2*
'08 Average	*10/13/08*		*1.78*	*18.5*	*3.16*	*10.4*

Pinot Noir

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	E Seneca Lake	H	H	H	H
Hudson Valley	10/12	HV Lab	1.84	20.7	3.38	11.1
		Mid Valley	1.33	21.2	3.40	11.1
Average	**10/12**		**1.59**	**21.0**	**3.39**	**11.1**
Prev Sample	*10/05*		*1.60*	*20.3*	*3.42*	*10.0*
'08 Average	*10/06/08*	*(final sample)*	1.26	22.8	3.37	9.3

Riesling

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	W Seneca-Shoot thin/Leaf Rem	1.57	19.3	2.97	16.0
		W Seneca-No Shoot Thin/No Leaf Rem	1.55	19.4	2.90	16.8
		E Seneca (1)	1.53	18.5	2.99	17.2
		E Seneca -shoot thin (2)	1.70	19.4	2.93	15.5
		E Seneca - no shoot thin (2)	1.62	19.0	2.94	16.2
		Cayuga Lake	2.00	19.1	2.92	18.3
Hudson Valley	10/12	North Hudson Valley	1.96	16.6	3.24	10.1
Hudson Valley		HV Lab	2.28	18.7	3.28	9.9
Lake Erie	10/12	Fredonia -No Thin/No leaf rem	1.60	18.2	3.17	14.6
		Fredonia - No leaf rem/late hedge	1.59	17.4	3.15	15.6
		Fredonia-Leaf rem/early hedge	1.55	17.8	3.14	14.4
		Fredonia-No leaf rem/early hedge	1.54	18.2	3.15	15.3
Average	**10/12**		**1.71**	**18.5**	**3.07**	**15.0**
Prev Sample	*10/05*		*1.68*	*17.3*	*3.13*	*14.7*
'08 Average	*10/13/08*		*1.65*	*18.9*	*3.02*	*12.3*

Sauvignon Blanc

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Long Island	10/12	S Side North Fork	1.82	21.1	3.18	12.7
Average	**10/12**		**1.82**	**21.1**	**3.18**	**12.7**
Prev Sample	*10/05*		*1.72*	*20.4*	*3.30*	*13.0*
'08 Average	*9/22/08*	*(FINAL -HARVESTED)*	1.77	20.1	3.03	10.8

Seyval Blanc

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	Cayuga - Cluster thin/Shoot thin	H	H	H	H
		Cayuga - no Cluster/no shoot thin	H	H	H	H
Hudson Valley	10/12	HV Lab	H	H	H	H
		W Hudson Valley	H	H	H	H
Final Sample	10/05		1.98	19.0	3.42	7.2
'08 Average	*9/22/08*	*(Final '08 sample)*	*2.16*	*21.5*	*3.04*	*9.0*

Traminette

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	Shoot Thin	2.08	18.0	2.96	11.9
		No Shoot Thin	1.72	17.0	2.98	12.7
Hudson Valley	10/12	HV Lab	1.93	22.9	3.16	11.7
		W Hudson Valley	1.46	17.4	3.19	9.4
Lake Erie	10/12	No Shoot Thin (1)	2.20	17.6	3.09	13.4
		Shoot Thin (1)	2.19	18.0	3.13	13.5
		No Shoot thin (2)	1.97	16.6	3.13	16.3
		Shoot Thin (2)	2.01	17.0	3.13	16.0
Average	**10/12**		**1.95**	**18.1**	**3.10**	**13.1**
Prev Sample	*10/05*		*1.93*	*16.6*	*3.15*	*12.7*
'08 Average	*10/13/08*		1.77	20.7	3.07	11.5

Vignoles

Region	Harvest Date	Description	Berry Wt. (g)	% Brix	pH	TA (g/L)
Finger Lakes	10/12	Shoot thin	1.51	20.9	3.15	13.6
		No shoot thin	1.42	19.9	3.11	15.8
Average	10/12		1.47	20.4	3.13	14.7
Prev Sample	*10/05*		*1.63*	*18.2*	*3.17*	*15.0*

Yeast Assimilable Nitrogen- 10/12/09

Chris Gerling

Yeast Available Nitrogen (YAN) represents the sum of Ammonia (amm) and Free Amino Nitrogen (FAN) on the accompanying table. Nitrogen levels play a large role in yeast nutrition during fermentation and deficiencies can lead to stressed and/or sluggish fermentations and potential off-aromas. Furthermore, compounds with implications for human health are also related to the amount and types of nitrogen compounds contained in must and wine. The generally agreed upon minimum YAN for a successful fermentation is in the range of 150 mg/L, while the optimum levels are considered to be at least 200 mg/L and often higher.

Region	Harvest Date	Variety	Description	Ammonium mg/L	FAN mg/L	YAN mg/L
Finger Lakes	10/12	Vignoles	Shoot thin	0	257	257
	10/12	Vignoles	No shoot thin	1	283	284
	10/12	Traminette	Shoot thin	0	77	77
	10/12	Traminette	No shoot thin	0	71	71
	10/12	Concord	Keuka Lake	0	105	105
Long Island	10/12	Sauvignon Blanc	South Side North Fork	91	139	230
Hudson Valley	10/12	Pinot noir	HV Lab	91	288	379
	10/12	Seyval Blanc	HV Lab	5	197	202
	10/12	Pinot noir	Mid Valley	81	230	311
	10/12	Chardonnay	North Hudson valley	76	207	283

NYFVI Grant for Juice Testing for Wineries at Dairy One

The Finger Lakes Wine Laboratory of Dairy One received a two year New York Farm Viability grant for juice testing during the 2009 and 2010 season. The grant funds a project to determine if regular and timely testing of juice can improve the profitability through better decision making during the initial wine-making process through; decreased costs due to less additives; through knowledge-based trouble shooting to reduce potential losses; and through time savings of the cost of employees time. This project will address the issues of analytical resources, convenience and education relative to the use of juice analysis results.

Wine makers in New York believe with increased testing of juice at harvest, the costs of additives can be decreased, the fermentation process can be better managed and a successful fermentation improved. This will result in lowered costs of production and larger volumes of premium wine. Although commercial laboratories are available in other parts of the country, timeliness of results and the logistics of shipping samples during the busy crush season are burdensome for New York wineries. The Finger Lakes Wine Laboratory offers a courier service to local wineries of the Finger Lakes region to help with the transportation of juice samples. Results are available within 24 hours from the time the sample arrives at the lab. Currently, the lab tests for Brix, pH, (YAN) primary amino nitrogen + ammonia, titratable acidity, Acetic Acid and Malic Acid in juice and in different stages of the fermentation process.

If you are interested in knowing more about this service or in participating in the grant project, please contact Sharon Jaenson at 800-344-2697 ext. 2151 or email winelab@dairyone.com.

Continued from Page 3

Many of these products are available commercially, and most are a mix of DAP, assimilable amino acids (which are thought to aid aroma and flavor development) and vitamins and minerals the yeast needs to remain both healthy and happily metabolizing. The complex nutrients are generally more expensive than DAP, but they're used more sparingly. Yet another reason to have your YAN measured: it allows you to add just the quantity of supplement you need, without wasting money on expensive nutrients added "just in case."

As if all this isn't enough, adding the right amount of nitrogen isn't the only consideration; research also indicates that addition *timing* is important for optimizing fermentation conditions. Yeasts have different needs at different parts of their growth cycle, and additions of inappropriate types or quantities of nitrogen can result in metabolic problems that produce off-odors, or even sluggishness later, in the final stages of fermentation.

In the V&B lab at Cornell, for instance, experimental wines are made using a small amount of rehydration nutrient at yeast rehydration, a small amount of complex nutrient and some DAP (as needed) 24-48 hours after inoculation, and another small dose of complex nutrient at about 1/3 sugar depletion to keep the yeast going for the last bit of fermentation. There are many good resources available for those designing a plan of yeast nutrition; the Scott Labs Handbook is a particularly accessible one, and includes YAN recommendations for musts of different Brix levels. One key point: never add DAP at rehydration, as it will severely cripple the yeast- only formulas designed for rehydration are appropriate.

The more scientists investigate the complex workings of the yeast cell, the more obvious it becomes that an unbalanced nitrogen profile can cause a range of fermentation problems, with sensory and quality impacts that we don't fully understand. We do know, however, that preventing these unintended consequences is easy- it's just a matter of measuring your YAN and doing a few calculations. Yes, it's a little more expensive than running your soluble solids- but the information you gain is a lot more valuable.

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Veraison to Harvest is a joint publication of:

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Statewide Viticulture Extension Program

Long Island Grape Program

Finger Lakes Grape Program

Lake Erie Regional Grape Program

Hudson Valley Regional Fruit Program

Within block variaibility: Canopy density and cluster size varied tremendously between the south (top) and north (bottom) end of this Cayuga Lake vineyard, reflecting differences in soil characteristics.

Photo by Tim Martinson