



Report from Long Island: Vineyard Visits and the Agricultural Forum



Visits to Long Island are always a serious and satisfying learning experience for anyone interested in all aspects of wine. Long Island life, culture, and viticulture is all about the water, the Atlantic, Peconic Bay or LI Sound means that water is never more than a mile or so away. When all is calm, as in 2010, the wines are amazing. But a maritime climate goes wrong, well, life is difficult. I had a chance to sit down and talk with Barbara Shinn and David Page at Shinn Estate Vineyard on Oregon Road on the North Fork to talk about their adventure in wine, which is completely at the whim of the weather. I know Barbara and David from their cubby-hole size but wonderful and cozy restaurant

that they owned in the village called Home (best mac and cheese I have ever tasted). They left Home, and to see what they have done is nothing short of miraculous – a beautiful, functional, small artisan winery, with a cozy (seems to be a theme) tasting room and lovely bed and breakfast inn attached to their also lovely home, all of it very green and sustainable from the wind generator to the solar panels. Barbara and David are among the wave of foodies (chefs, sommeliers, retailers, etc) who are testing their mettle in wine production, and often achieving spectacular results. I suppose it makes perfect sense that people whose palates are so finely tuned, and have the necessary creativity and technique in the kitchen turned cellar would make good wine makers. They made some waves when they decided to adopt organic, and then biodynamic methods for the vineyard, joining Macari Vineyards as the only commercial vineyards in this category.

As ever, for me the validation of the vineyard is in the glass and Barbara and David, along with their very soft-spoken and talented wine maker, Patrick Casserta, went into the cellar and tasted from barrel their 2011 Merlot and Malbec. I'll have to say that I was quite stunned by the color of the wine that exited the thief into my glass, dark, purple-black, almost inky, so that set up my expectations. David says he gets hints of cardamom in his red wines, and though I need to freshen up on my spices, I was amazed by the depth and length of these wines, and the concentration of fruit, especially the dark cherry in the Merlot and the earthy, briary quality of the Malbec. 2011 was a hard vintage, lots of grapes were lost on the North Fork because of difficult weather, and these wines are an affirmation of what they are doing in the vineyard, and the careful choices they made when the grapes arrived at the crush pad. With humility, Barbara said the grapes were in awful condition when they were picked and Patrick waved his magic wine making wand over them to make them what they are. In my experience, you don't get wines like this without doing something very right in the vineyard. In a contrast of vintages, we tasted their 2010 Merlot which is, in a warm, perfect vintage on the North Fork, delivered everything one might expect.

I wish I could offer a definitive list of exactly what Barbara did in the vineyard last year that allowed such high quality red wines to be made, but I can't, and I'm not quite sure if she could either. I think to a large

degree it's simply her great passion for the vines and being out in the vineyard all the time, and trying to understand how the vintage is developing and responding creatively and intelligently to the conditions.

In fact, the theme of this vintage is it's complete unpredictability, and defiance of all rational analysis – the birds appear here but not there, one grower loses most of the crop to sour rot and nearby vineyards are relatively unscathed, it rains a lot in one area but hardly at all five miles away. In the end, I'm almost led to believe that success is based purely on location and luck. A group of growers, extension educators and research faculty from New York and Pennsylvania met to talk about the lessons of the vintage, and there was no clear consensus or conclusions. My science side says there must be something that we can learn from the chaos of the vintage to help grape growers. My farmer says tough luck and better luck next year.

I also tasted wines at Paumanock and Bedell, and they are worthy of comment. Three whites from 2011 at Paumanock, the Chenin Blanc, Sauvignon Blanc, and Festival Chardonnay were all incredibly fresh, crisp, bright, fruity, and completely enjoyable to drink. Kareem told me that he is pleasantly surprised by the quality and character of fruit in these wines that were harvest at much lower brix than in typical vineyards (e.g. Chenin Blanc at 15 instead of the usual 19 or 20). It certainly made a different wine from a ripe vintage like 2010 but no less appealing. This is the fundamental beauty of whites: flexible and adaptable, they make nice wines over a range of ripeness. 2010 barrel samples of their Assemblage (Bordeaux blend), the Tuthill Lane Merlot and 3-year old vines of Cabernet Sauvignon clone 420, Cabernet Franc and Petit Verdot were simply amazing in their depth, length, balance, concentration and beauty of the fruit. Kareem explained the CS 420 is a field selection from Howell Mountain (Napa), and has the smallest berries of any variety or clone he has ever seen. I'm a fan.

At Bedell and Corey Creek, Rich makes wines that are on the edge or outside of what are normal expectations. The First White is fresh, clean and fruity, a simple and well-defined white wine. The other wines, notably a Gewurztraminer and Viognier, are not defined by their names and characteristic flavors. Rich blends to provide interest to the wines, which are unfailingly different and offer a surprise. The Syrah, however, is classic in its spice and pepper overtones, what one would expect from a cool climate Syrah.

I wrote in my earlier missive on LI that when people start writing about a region it's a sign that it has "arrived." The "Edible" series of magazines highlight local food culture and *Edible East End* likes to write about the locals wines. I don't want to linger on 2011 any more than necessary but since LI viticulture is relevant I'd like to direct attention to a vintage review by Christopher Tracy, the über-talented winemaker at Channing Daughters. Chris did quite a remarkable thing by taking some bits and pieces of my last article and making it appear coherent. You can read his article at <http://www.edibleeastend.com/departments/winemakers-wonderings/the-2011-vintage/>.

Rich told me that wine marketing surveys and the buzz in the city is for Cabernet Franc. I was pleased and surprised to hear this (at least there is a buzz about something). We will work together to organize a CF symposium with wine growers from the Loire and Bordeaux to start a dialogue about production practices. We have learned a lot about Cabernet Franc in recent years. We know that it is viticulturally challenging, canopy and crop management are critically important to quality and there is little margin for error. Also that clonal selection is diverse and, depending on the intended style of wine, can have a big influence on wine quality. The research done by Dr. Gavin Sacks at Cornell on methoxypyrazines in CF has encouraged wine makers to tackle the MP problem in the vineyard, not the cellar. I observed that in the past year, tasting mostly '08 and '10, but even '09 CFs, I cannot remember tasting a single bell pepper bomb. Apparently we are getting it!

I'd like to put in plug for Malbec. I have not been a fan because I'm not particularly enthralled by the wines from Argentina, but I shouldn't let ignorance get in the way of understanding the potential for a grape to succeed in our region. David and Barbara, and Dave Thompson at Bedell, are very high on

Malbec. Dave said it is thick-skinned and rot resistant, and while the clusters are huge and require careful attention to yield, it ripens early and can make a lovely wine on Long Island. SEV puts theirs in 500ml bottle that sells well at \$35.

Sustainability is on the mind of progressive wine industries in the East. It began here about 10 years ago when Alice was “asked” by EPA to develop a plan for the Long Island vineyards. Because of a relatively high water table and sensitive aquifers, there is a heightened awareness and concern for groundwater contamination in the region. It is impossible to state the local importance of environmental issues in this little corner of the world, where agriculture and humanity are so intermingled. Monitoring wells are scattered across the landscape and a CSI-caliber lab processes vast numbers of samples down to parts per trillion. It was stunning to learn that the landscape of all properties owned by the county are now managed organically. As for vineyards, Alice and Libby did a superb job of developing a point system sustainable wine growing plan for *vinifera* vineyards, using existing models from California and Oregon to guide them through the process, and the help of some of the best growers on the East End. The plan was eventually adopted on a statewide basis in the form of the *VineBalance* program (www.vinebalance.com). Recently, Virginia and Ontario have embarked on developing plans of their own. Oregon LIVE may be considered the role model for these plans. I was there at the genesis of LIVE and can state that the motivation was to define what we felt were environmentally-sensitive best practices at the time, but hoping too that there would be a marketing benefit to the program. Interestingly, 15 years later, it is unclear if the latter is true. The main motivation should be to do the right thing. LIVE includes a third-party certification system that enforces strict standards for participants. It is a good time for Eastern vineyards to be moving into formal sustainability. As the industry matures and the general quality of viticulture rises, a defined system of best practices will help to push everyone into better, safer, healthier farming practices that benefit wine quality, the consumer, the farmer, and the environment.

Barbara, Rich Olsen-Harbich (Bedell), Larry Perrine (Channing Daughters), and Jim Thompson (Martha Clara) have been the leaders of the project (with Alice and Libby’s help), and they have developed a pledge that clearly defines, if in broad terms, the philosophy and goals of the program. While it is too early to release it to the public, I can say they are words that every wine grower, indeed any farmer, should subscribe and adhere to. The point system is being refined towards needs specific to growing conditions on Long Island, which, due to its highly regulated environment, requires this level of detail. As you may imagine, integrated pest and nutrient management practices are at the top of the list, but so is soil health.

I think we should all watch this program with great interest and offer our encouragement. I always recommend to wine growers that they examine *VineBalance* and see how well your vineyard scores. It is a yardstick by which you can measure your practices against those defined by some of our best and most progressive wine growers – who doesn’t want to know what the best in their business is doing, and why?

There is a buzz in the wine media about organic and biodynamic that is loud and, to me at least, a bit annoying because wine pundits have decided it is in fashion without really understanding what it is, and why it might make a difference to a grape or wine. We had this discussion at a sustainable viticulture meeting in 2009, and the conclusion I reached is that these are agricultural systems that just have a different approach to viticulture that works well for the most devoted practitioners.

Alice and Libby arranged to grower sessions at Palmer Vineyard and Bedell. We had wide-ranging conversations and I wanted just to report on some of the highlights in no particular order or meaning:

Birds are always on the minds of growers here and these folks know their netting materials. Ron Goerler, the fine grower from Jamesport Vineyard, even had some samples in his truck for us to inspect. These growers are the masters of netting material and methods. The weave method and material is very important, preventing the birds from separating the strands so their beaks can penetrate to the fruit, and

lock stitch is preferred. Gintec, once highly favored, is now considered substandard as other net fabrics get tougher and more tightly woven. Libby told me that their trials show no compromise in ripening or botrytis control under the nets. Side nets are now preferred over over-the-top for ease of use and expense, and they do not have to be removed. Jim Thompson at Martha Clara said he has a huge building just to store nets. Spacing devices to push nets away from the clusters may be necessary to protect the outsides of clusters. Ron said that he doesn't hedge as tight late in the season so the vine is a bit bushier which allow the net to hang away from the fruit zone. Nets go on very early here, sometimes end of July, and spraying continues after nets are installed.

Deer are also a big problem, yet I am amazed at the local effect they have. Dave Thompson farms two vineyards for Bedell and Corey Creek no more than a mile or so apart and one is a deer magnet, while the other has no fence and very little pressure. I see more deer fences every time I'm on the North Fork, but there is no discernable pattern to their presence.

Vineyard labor is supplied largely by Guatemalan seasonal workers, many with years of experience. The ability of a wine region to maintain a steady, experienced workforce that is managed by professionals makes a huge difference on the consistency and quality of the wines. The Canadians rely on a H2A-like program that is very much like ours but seems to have become part of the fabric of Canadian agriculture, and the costs are built into business plans. LI wine growing is very labor intensive, and like other fine wine regions its success is tied to the availability of a skilled seasonal workforce.

With all the rain – Alice says they probably got about 20" during the harvest period on the North Fork, the topic of soil drainage and other anti-water methods were discussed. The sandy-loam soils drain very well and the water table is 60-80' down in most areas of the North Fork. Jim Thompson moved from Michigan to LI in 2009, had some experience with growing grapes in high tunnels. At \$50,000 per acre to install it isn't for the faint of wallet but it allows the grower to control conditions in the vineyard. Maybe for a \$50 reserve wine it that level of control may be worth it.

Field grafting has arrived on the North Fork. Charlie Hargrave has had good success grafting Chardonnay to Merlot at Peconic Bay Vineyards. He hires a vine grafter named Salvador from California, who grafts in July (is that too late?) and charges \$1/bud or \$2 for a 2-bud scion. There is a lot of careful follow up work necessary but in 2010 the take was very good. Dave Thompson at Bedell pointed out that a field grafted vine is no longer a candidate for trunk renewal, something they do on older vines (not necessarily victims of winter injury).

To me, the hallmark of Long Island viticulture is uniformity. Even in areas below the Mason-Dixon where winter injury isn't really a problem, variability within vines and blocks is often a problem in vineyards. Most LI vines are pretty uniform and in balance, but even those that are out of balance are consistently so. Here's a photo I took of a cordon trained, spur pruned vines at Clovis Point Vineyard, which is a good visual representation of vine to vine, and vineyard block uniformity >>.



2011 was a vintage for the ages, and trash-heap for many vineyards in the Eastern US. While the conditions were highly variable according to location, notably, parts of Maryland, SE PA, the Hudson River Valley, southern New England, and Long Island sustained the worst blows, it seems that disease problems were widespread even beyond the bulls-

eye areas of Irene and Lee. I should note that colleagues in Missouri and Michigan, which had catastrophic rains in spring, finished out the vintage very nicely. Part of the frustration is that, while the season got off to a poor start everywhere (cold, wet, late spring), the warmth in July built the expectation that the vintage was back on track, only to have it turn on a dime and ruined by the incessant rains. There is a lesson to be learned from this because it can happen any year, and each one must be treated like 2011. In discussions with growers on LI there are definitely some vineyards that performed better, even much better, than others, although no one is quite sure why. The terroir is not variable enough to account for dramatically different outcomes, so I guess that it is the quality of viticulture that has the biggest impact. Farming as if each year is the proverbial “vintage from hell” is not easy or economical – as some growers explained it’s the difference between a \$500/ac chemical bill in a warm year and \$1000 or more in a wet one, and some growers said they sprayed 18-20 times in 2011. That’s a lot of time on the tractor and materials out of the nozzle, and worse, many still lost fruit to late season rots.

I published the following recommendations in an earlier article about Pinot Noir, which along with other tight cluster, thin skin varieties, took it in the shins in 2011. Based on our conversation with LI growers, I think they have more general applicability:

- Alice knows her *vinifera*. She suggests, as I have also in the past, that if you insist on growing risky varieties, then you must treat each year as if it will be the most awful in history. 2011 was lousy at the start, decent in the middle and horrible in the end. The middle got our (and their) juices flowing but it all caved-in so quickly. The growers who remembered the spring conditions and farmed for the worst, did the best in the end. Sorry, you have to farm for the stretch run in the East.
- Canopy management. What can I say? You just gotta do it and better than everyone else. Jim Law says that canopy work in June sets up the entire vintage and I believe him. Strictly regulate shoot spacing, usually 3-5 shoots per foot, and to make sure that both head and inter-vine areas are not over-grown. Prune the cordons and canes to leave at least 6-8” between vines. Leave 1-2 renewal spurs in the head position and thin this carefully to keep the canopy even and open. Some growers are cane pruning without renewal spurs, instead using one of the basal canes as the fruit cane. A balanced vine with 1- 1.5 leaf layers, as stated above, is an efficient canopy designed to capture light and combat disease.
- Leaf removal is the biggie for me and I’m going to stick my extension neck out here and say that if you are growing an ultra-sensitive, high value variety like Pinot Noir you should be removing leaves pre-bloom, and at minimum trace bloom, according to Bryan’s recommendations. But won’t I get sunburn? Well, probably, if we get some hot days. But what’s worse for the wine, sunburn or rot? Pull leaves smartly. Morning side first and more vigorously, then afternoon a bit lighter. As the season develops, remove leaves as the weather dictates – cold/wet more, warm/dry less. Removing laterals and interior leaves also helps to open the fruit zone. This is all skilled hand labor and really expensive, but there are good machine leaf removers that do a good job after fruit set, what we need is a machine that will do it earlier in the season without damaging the flower clusters.
- Fruit zone management. NO clusters should be touching. Cluster clumping must be avoided! Clusters should be evenly spaced and in a zone that can be effectively sprayed. On Long Island in September fruit zones were wide open, as they needed to be. There are some options, cultural and chemical, to loosen clusters, which growers with tight-clustered varieties should explore.
- Yield management on high quality varieties like Pinot Noir and Cabernet Franc has to be spot on. No getting greedy because the vintage looks fine in June or July. I still go for the lag phase crop estimation and, if necessary, an aggressive crop adjustment between lag phase and veraison with touch up passes as the fruit colors. The low side of crop yields is encouraged, especially on red varieties.

- The pesticide part of IPM is not pleasant but a reality here. Sure we'd like to farm organic and in dry years like 2007 and 2010 we can almost get there, but be prepared for years like 2011. On rot prone, high value varieties I would suggest the "everything but the kitchen sink" approach to disease management. That would include 4-5 botrytis applications and saving Pristine for the end game. As much as I hate to say it, captan should be in the arsenal. I have an uneasy feeling that diffuse powdery mildew, as well as botrytis and all of its accomplices, are opening the door just a wee crack for the bad guys to get in. A lot of products were used at the end of the season this year for rot and downy mildew. I do not have a clear sense of what worked or didn't. I do know that anything less than squeaky clean leaves the fruit vulnerable to attack.
- Birds and yellow jackets. The birds were early and ferocious this year. On LI, nets go on end of July and spraying continues. Know your netting materials. I was rather surprised by the number of growers who called me and seemed rather puzzled that the birds were decimating their crop. Bird control is not a passive activity. Nets are needed and anti-bird patrols are necessary. The shoulder nets seem to work well, white appears to discourage birds more than black and net spacers should be used for Pinot Noir and Pinot Gris, the early varieties that seem to get the most attention. A few unattended canons and bird guards are not, in my book, bird protection.
- Oh, and don't forget about the insects, too. Grape berry moth, and the newly arrived spotted wing drosophila, yellow jackets, and brown marmorated stink bug all have the potential to open wounds that the opportunistic fungi look for like Black Friday at Walmart. We need to learn a lot more about SWD and its threat potential. BMSB was oddly absent in much of Pennsylvania. I have had testimony of direct feeding from a number of growers but have not seen it myself. There is a complete set of instructions about GBM control developed for the Finger Lakes and Michigan. Growers in other regions can use these as reference tools. Hopefully, management of GBM will also help with SWD. And, oh, the horror of the fruit flies this year (SWD surely among them), the wineries and tasting rooms were inundated. It was like a bad movie. Some growers sprayed the fruit flies hoping to slow the spread of rot. It's an idea worth exploring.
- Alternative products? We talked about the use of Vapor Gard on cherries to keep them from splitting. Many growers believe the splitting was the main cause of the rot. If rain is getting into the berry via the stem receptacle or skin, then some kind of barrier would make sense. Of course, there could be many possible side effects, for example, we know that stylet oil slows sugar development later in the season. Again, if I was a wine maker, I would sacrifice some sugar for less rot. But anything a grower can do, such as the "baseball cap" leaf-positioning, to help shed rain from the clusters will be helpful. Can anyone explain to me why Vidal was more prone to splitting than Cayuga this year? There are other products that may be effective on sour rot but have not been studied or registered here.
- Be ready after veraison to deal with adverse conditions. Have a plan, or you will end up wasting time and money. Just spraying more may not be the only or best option. The winery should be fully engaged in vineyard decisions once fruit quality begins to slip.
- Pick fast and early. Growers agonized over when to pick this year. Most who waited on whites after Irene got dinged, especially if they didn't pick in the teensy window between Irene and Lee. Early is safe, waiting clearly increases risk, often dramatically. The stakes can be very high, including the economic viability of winery and-or vineyard business. I wish meteorologists understood this fact. What we really, really need is better, more accurate weather forecasting, or maybe a little less global warming and climate change. Right now, in my estimation, climate change is net minus for our region given the instability of the weather conditions in the past five years. With high quality varieties like Pinot and Merlot, that have narrow maturity windows, being able to get into a vineyard and get them off before the next big one is essential. Labor availability, one of our industry's biggest problems is, well, a big problem. I have no idea what the solution is and it will take a resourceful group of growers to figure it out.
- Design and site considerations abound but are too late for the grower with a vineyard already in the ground. There is SO much you can do here to improve your chances of getting consistently

ripe and clean grapes but if you didn't think about it then, it probably doesn't much matter now. I still subscribe to the small to medium sized balanced vine as the one that has the best potential to ripen fruit and wood early enough to deliver consistent quality of wine and vine survival.

Ag Forum

The reason for this trip was to attend the Long Island Agricultural Forum in Riverhead, an annual conference focusing on crops grown on the East End. Two of the best regional grape pathologists, Dr. Wendy McFadden-Smith from the Ontario Ministry of Agriculture, Food and Rural Affairs, and Dr. Wayne Wilcox from Cornell University, talked about the diseases that caused so much trauma in 2011. I'll try to report with some clarity on what they told us.

My observation, mostly in southeast Pennsylvania, was that sour rot was more of a problem than botrytis. It arrived early when it was still relatively warm and very wet and hit varieties like Pinot Gris and Gewurztraminer particularly hard. As in 2009, by the time the botrytis was ready, temperatures were too cool for a rapid spread. I view disease management as a multi-front war, and it is unwise to place bets on what will be the worst problem, you really need to cover all of them, every year. For example, diffuse powdery mildew can provide the almost-invisible opening for sour rot and botrytis to get a toe-hold and then spread rapidly when conditions become right. Toss in insects and other living creatures that prey on grapes at harvest and there is a virtual symphony of problems.

Wayne described a botrytis and sour rot trial on Vignoles, on vertical shoot positioned and top wire cordon trellises. The treatments were combinations of shoot thinning, and-or rachis (last year's cluster stems, a primary source of Botrytis inoculum) removal. A multi-variable trial like this is difficult to describe outside of the data, suffice to say in all cases shoot thin + rachis removal, with an impact of 43% botrytis reduction was better than shoot thinning > rachis removal only > control (no treatments). On all treatments VSP performed better than high wire training systems. It is dramatic how quickly botrytis and sour rot can appear and spread. On 9/9 less than 5% of clusters were badly infected (>1/4 of the berries diseased) in any of the treatments, but by 9/19 over 35% were badly infected on the treated vines, and 70% on the untreated. For a grower, the challenge is to understand the precarious condition that the fruit is in, and either pick or take steps to reduce the risk.

He described how important leaf layers are to spray deposition, as well as exposure to sunlight and air, in mitigating disease. There is a loss of 50% coverage with an additional leaf layer, for example, if canopy density increases from one leaf layer to two, spray coverage will be reduced by 50%. This has serious disease control implications for all viticulture systems. The key here is to maintain the ideal 1 – 1.5 leaf layers promoted by Richard Smart and other academic viticulturists. As in our diet conscious culture, thin is better.

Fruit zone management and cluster position is very important in rot-prone varieties. Emphatically, separation of berries and clusters is enormously helpful in reducing incidence of rot diseases. I would say that cluster positioning may be as important as shoot positioning, but especially in tight cluster varieties. Wayne says the Holy Grail of rot management is a loose cluster and lots of work, such as early leaf removal and plant growth regulators (Bryan Hed, Stefano Poni, and Wendy McFadden-Smith) are being tested to loosen clusters.

Botrytis primary infections occur during or shortly after bloom, and linger as latent infections that may become active after veraison, and before harvest (remember 2009, late and wet but strangely low levels of botrytis in many vineyards). Problems with rot are exacerbated by humid, wet and warm conditions, soil moisture (dry is much better than wet), excessive nitrogen (watch your fertilizer program!), plant water status, berry to berry contact (separate and loosen clusters), and wounds (cracking, insects, etc.).

Vanguard, Scala, and Elevate are still the workhorse botryticides available to wine growers, and all are susceptible to resistance, especially as they reach their second decade of use (see Rovral), so proper rotation of materials continues to be as important as what materials you use. Switch is very expensive but also very effective, and Wayne says it may be worth the additional cost. Remember that the full per-acre rate of Switch contains the active ingredient of Vanguard, equivalent to the 7 oz rate of that product (label rate for Vanguard is 10 oz) plus a second ingredient, which provides additional control of Botrytis (good for resistance management, especially where Vanguard has been used for a number of years). Elevate is still a reliable material and in a unique chemical class. For almost 15 years Rovral (and its cousin Ronilan) was the only effective botryticide on the market, and it was overused due to a lack of alternative, leading to resistance issues. However, resistance to this class of materials can “revert” if selection pressure is removed (no sprays). If used with care, Wayne suggests that it can be rotated into a program once every year or two years.

Downy mildew was a big problem in 2011, no surprise given all the rain. The mancozeb products are still very reliable. Strobies such as Abound and Pristine (Flint is poor, Sovran fair) are effective where resistance has not developed, but should be used on a limited basis due to the ease with which resistance develops. Presidio provides new chemistry and has yielded excellent results but it is expensive. Phosphorus acid products continue to be reasonably effective but are not the miracle cure that some had hoped for – resistance is possible so rotate with other materials, and be careful not to burn out this option.

Wayne mentioned a number of products that have demonstrated promise in his disease trials. There is too much detail in his overview for me to cover so you will have to read about them in his 2012 grape disease update, which usually arrives in the spring, or attend a meeting where he is speaking.

Sour rot has been a significant problem in Ontario for a few years, where it most severely affects Pinot Noir, Riesling, Chardonnay, Gewurztraminer, Gamay, and Baco Noir, and to a lesser extent, Cabernet Sauvignon, Cabernet Franc and Merlot. Wendy describes it as a very complicated disease, and, in fact, it has multiple contributors. There are no products registered for sour rot control, and currently most of the sour rot research took place in Italy and Spain in the 1980's and '90's. Once volatile acidity levels reach 0.2 g/L in grape must the winery can reject the fruit in Ontario. It is a very expensive disease to deal with since it strikes at the very end of the season after all vineyard inputs have been made and can still ruin the crop, and growers tend to throw even more at the beast. The grape growers in Ontario are very well organized and represented by the Ontario Grape Growers Association which has a multi-million budget. About 75% of all the vineyards carry crop insurance through Agricorp, a private entity, which can help mitigate the effects of crop and vine loss, the latter due to winter injury. Wendy, and her incredibly devoted graduate student, Cristina Huber, have found *Gluconobacter*, *Acetobacter*, *Hanseniaspora*, and *Candida zemplinina*. as partners in the sour rot complex, with *Hanseniaspora* as the most pathogenic. Tight clusters and any physical damage to the skin of a berry can offer an entry point for these organisms. Wendy mentioned, Wayne has described in past detail, and I have suspected that diffuse powdery mildew, a low level bloom that may weaken the berry skin, may play a role in the onset of sour rot. Wendy said that botrytis does not necessarily lead to sour rot, and I think we definitely saw that to be the case this year in southeast Pennsylvania. The sour rot simply appeared and took off, no botrytis necessary, although it arrived later in some vineyards. As many growers observed, grape berry moth and yellow jackets can help to initiate sour rot infections. Wendy also implicated fruit flies, which are attracted to acetic acid and ethyl acetate, including Spotted Wing *Drosophila*, as able to spread sour rot. SWD, which oviposits eggs into the berry, and can infect a berry, as can larvae as they both feed and crawl along a berry surface. Fruit flies can be a vector for sour rot. And, of course, the weather was perfect for sour rot this fall, warm and very wet, the ideal temperature range is 20-26°C. 2010 was also a sour rot year in Ontario, it's easy to forget that even though it was warm and dry in the mid-Atlantic, there was enough rain in late September and October to cause rots in late whites. For reasons not understood, sour rot moves in when the berries reach 13-15 brix.

The best way to reduce sour rot problems is to loosen the cluster, avoid berry squeeze and thicken the berry cuticle. Wendy has tested three materials to achieve these goals – gibberellic acid, prohexidone-Ca and stimplex (seaweed extract). She uses Tom Zabadal's cluster compactness scale that rates tightness-looseness on a 1-6 scale. GA and prohexidone-CA loosened clusters and reduced sour rot severity, however, in an interesting twist, in contrast to the recent work done by grape pathologist Bryan Hed at Penn State in four years of study on Riesling and Pinot Noir, pre-bloom leaf removal of as many as six basal leaves (all leaves up to the second cluster or sixth node) did not significantly affect cluster morphology or disease. Wendy has also tested moisture exclusion materials including Rainguard and Desicote, and surfactants, but with little success.

Another treatment that demonstrated promise in her trials is potassium metabisulfite, a chemical used in the cellar as an anti-oxidant/microbial agent. She wanted to find out if it works, what are the best rates and timing, and what possible impact on vinification it would have.

In her trials, KMS applied from veraison through harvest significantly reduced both sour rot and volatile acidity, and there were no negative effects of KMS applied as little as one day preharvest with respect to wine production – fermentation or SO₂ residues.

Dr. Tim Martinson, the state viticulture extension coordinator presented the work that he and others at Cornell have been doing to understand the impact of yeast assimilable nitrogen (YAN) on wine quality. The great opportunity with this project is in its scope, 70 vineyards in the Finger Lakes area participated in the survey. With nitrogen levels being manipulated to monitor YAN, it was an ideal opportunity to test its effects on botrytis. Tim's take home lessons for YAN include:

- YAN varied 5-fold from 50-250 mg/L
- YAN levels varied according to cultivar
- Wineries should measure YAN to insure successful fermentation
- Good estimates of YAN can be made 2 weeks prior to harvest
- Early sampling allows wine makers to plan DAP/nutrient adjustments
- Foliar and soil nitrogen increased YAN up to 2x (2011)
- Nitrogen can significant increase botrytis severity

In a disease-prone season, Tim had these take home lessons based on what he saw in the field:

- Among large and small vines, the smaller vines had less disease
- Overlapping canes and cordon ends that are too close between vines cause more disease
- Heads of vines crowded with renewal shoots cause more disease
- East-west rows have more disease on the north side of the fruit zone. N-S rows are a better orientation (for many reasons).

We nod our heads and say to ourselves, “yeh, yeh, all of this is all so obvious” which it is, but that doesn't explain why so many vineyards have these problems, even among those vigorously nodding. The struggle to achieve a balanced and well-regulated vine is a constant one.

I would like to thank Alice Wise, Libby Tartleton, and Linda Holm for allowing me to invite myself to their event, and hosting my visit, and Barbara Shinn and David Page, Dave Thompson and Rich Olsen-Harbich, Charlie Hargrave, Steve Mudd, Jim Thompson, Ron Goerler, Kareem Massoud, and Josh Carp who graciously offered their sage wisdom, advice and stories for my/our benefit. I always appreciate my esteemed colleagues, like Wayne, Wendy, and Tim, who do the research and outreach so I have something to write about, and Wendy and Wayne for editing my work for accuracy.

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January, 2012