



## WINE GRAPE INFORMATION FOR PENNSYLVANIA AND THE REGION

From Penn State Cooperative Extension

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**Essential Resources for Wine Grape Integrated Pest Management:** Around the region wine growers are fortunate to be served by an outstanding corps of grape pathologists including Mike Ellis in Ohio, Mizuho Nita in Virginia, Lorraine Berkett in Vermont, Annemiek Schilder in Michigan, but perhaps none commands the respect that Dr. Wayne Wilcox has earned over the decades at the NY State Ag Experiment Station and Cornell University in Geneva by the Finger Lakes. His annual grape disease guide (aka magnum opus) is a rite of spring, and when combined with the updated [NY-PA Pest Management Guidelines for Grapes](#), they become the critical ingredients for a successful integrated pest management for Eastern wine grape growers. Whether you are farming conventionally, sustainably or even organically, these guides will provide invaluable information to help you keep your vines and fruit free of pests and diseases. In his [2013 grape disease control](#) guide (3MB), Dr. Wilcox updates growers on a couple of new fungicide products (Torino for powdery mildew and Botector, a botrytis bioicide), and provides an excellent section on developing concerns about fungicide resistance, including a detailed explanation of qualitative and quantitative resistance, and finally “pulls it all together” to give grape growers the foundation of a working spray program. I really like his explanations of sour and summer rots (pages 31-32), two very insidious and rather new arrivals in the region that hit vineyards late in the season and are very destructive to wine quality. Cluster compactness and shading are two of the great evils that promote fruit and foliage disease and anything that can be done, such as early leaf removal (see the research of Bryan Hed in Erie) and well-timed spray applications to prevent these conditions will be beneficial. There is so much of Wayne’s knowledge, experience and great personality in this document, you feel like he is talking to you when you read it, and has been always been one of my poster-kids for the very best synthesis of research and extension. As I have suggested in recent missives, sprayer calibration is critically important to a successful IPM program so refer to Dr. Andrew Landers’ (another outstanding Cornell research-extension provider) book [Effective Vineyard Spraying](#) for all the instructions you will ever need to be a successful pesticide applicator, and use the Penn State Pesticide Education sprayer calibration program to check your calibration homework. Of course, your vineyard is different from every other vineyard so it is up to each grower to tailor an IPM program to the needs and challenges of your site, farming methods, and growing conditions. Please rely on viticulture and IPM

resources in your region for further advice and instructions about managing diseases and pests in your vineyard. If I walk into a grower's office and see copies of the Wilcox M.O. the NY-PA guide, and *Effective Vineyard Spraying* on the desk (evidently used and not pristine condition) I know that I am working with a serious and dedicated wine grower.

**Sustainable Wine Growing on Long Island:** In 2001 five growers gathered in the tasting room at Bethel Heights Vineyard near Salem, OR in the heart of the Willamette Valley and hatched a plan for a sustainable wine growing program that would codify specific practices and products into an certified system with professional verification and enforcement. Thus was [Oregon Low Input Viticulture and Enology](#) (LIVE) born and later launched with the cooperation of Oregon State University. The program was somewhat slow to gain traction in the wine industry – was it a marketing tool or a genuine best practices farming program, but after attending their 2013 annual meeting at Adelsheim Vineyard in April it is clear that the program has flourished, having been accepted by many of the largest vineyards in the state and being adopted, formally or through imitation, by other wine regions. Naturally, Eastern wine regions have begun to move towards formalizing sustainable best practices, led by Alice Wise on Long Island. It is no surprise that Long Island would be at the forefront of this movement with their extremely delicate ecosystem (high water table, sandy soils, ocean and bay so near to farms, etc). Alice was pushed towards sustainability by the US Environmental Protection Agency in an effort to protect these resources, it became clear to a few visionary leaders in the wine industry that, while this was not an easy thing to do, it was the right thing to do. Eventually, a LIVE-like program was developed and launched and now [Long Island Sustainable Winegrowing](#) (LISW) has one year under its belt and it looks to have most of the successful attributes that allowed LIVE to flourish. A recent [PRESS RELEASE](#) from LISW explains their progress to date, and a website that gives interested parties a place to go for more information. An organization and program like this is only possible with inspired and dedicated leadership, and the list of names behind LISW offers no surprises, but that they created a formal program in such short time is. Other regions including [Virginia](#) and [Ontario](#) are currently working on their own sustainable programs, and NY's statewide [VineBalance](#) program (see samples of the vineyard practices and scoring system) offers a voluntary set of practices for native, hybrid and *vinifera* varieties. You can be farming anywhere and mimic or adopt a set of standards from any of these systems, and tailor them to your terroir, and even informally apply the scoring process to your vineyard. At its core lies a belief that environmental, economic and social sustainability are inseparable from responsible agriculture and it is incumbent upon every individual who chooses to farm to become a good steward of the land and its people. I would encourage grape growers to study LISW, LIVE, [LODI](#) and talk with fellow growers about how to grow grapes more sustainably.

**Stating a Case for Viticulture and Enology Research:** In the research community, it is an accepted fact that farmers are often ahead of research in developing innovative knowledge and practices, after all, they are the ones who face problems head on in the field and must try to find a solution. In this case science often is cast in the role of validator of innovation. But science and research, especially in the area of new materials, products and technologies, can lead the way to greater quality and productivity. Ideally, working as a team can be an extremely effective way to acquire and push knowledge, quality and production. Toward this goal, the second [Pennsylvania Wine Marketing and Research Program](#) and [Penn State Extension](#) viticulture and enology research symposium was held in the Food Science building (only steps from the creamery!) recently. It was a great opportunity for wine growers and makers to learn about the latest research that is advancing the wine industry, and improving productivity and quality. Unfortunately, only a small number of industry members elected to attend the meeting. We

(and I include myself and Denise), encourage more active industry participation with these industry-driven Penn State programs, not just because the information they offer can directly impact the quality of grapes and wines produced in Pennsylvania, but to demonstrate to wine industry partners (academic, government, private, etc) that you are fully engaged in the research and education process. No wine industry can survive, much less thrive, without healthy partnerships. This means reaching out beyond your own business to the community of wine that outsiders judge us by what they encounter and perceive. New York, Virginia, Oregon, Washington, Missouri, Michigan are examples of thriving wine states where this has happened. It's a proven outcome and as close to a formulaic process as there is in moving developing wine regions forward.

The [USDA NE-1020 wine grape variety trial](#) – what does this mean to you, your vineyard and business? Why is it relevant and why should you have attended the meeting to taste the experimental wines produced by Denise Gardner and her enology team? In the 80s and 90s, a small research shop at Oregon State University performed Pinot Noir clonal trials that helped launch the French Dijon clones and led to rapid adoption and success that drove the amazing expansion of the vineyard acreage in Oregon. Growers should not take their grape varieties for granted, and we certainly have a complex varietal landscape in the Eastern U.S. but they represent the very essence of our identity as a wine industry. A wine grape variety trial in Pennsylvania is not an easy task given the diversity of climate across the state - from USDA 5a to 7b and growing degree day regions from 1 to 4. And like most non-western states the grape landscape is complicated by native, hybrid and *vinifera* varieties that are made into every conceivable style of wine. When the 2 wine grape variety trials were established at Penn State research stations in Adams and Erie counties, varieties were selected with industry input that represent what we know grows well in each area, and those that may have market and viticultural suitability in Pennsylvania. Some highly adaptable varieties, like Vidal, Chambourcin, and Pinot Grigio were planted at both locations, but Gruner Veltliner was assigned to Erie and Albarino to Adams. Within NE-1020, four core varieties are planted in each cool site (GDD50 < 2500: Vidal, Chambourcin, Cabernet Franc, Pinot Noir - Erie) or warm site (GDD50 2501-3500: Cabernet Sauvignon, Cabernet Franc, Merlot, Pinot Noir - Adams) are planted in each trial vineyard so data, performance and wines can be compared between regions. The wine made from familiar varieties represent the standard for each grape, a calibrating tool for wine makers to measure the typicality of the variety in your cellar. Behind the wine are the viticulture and wine making practices that underlie the character and quality of every wine – from plant material, vineyard design, rootstock choice, management practices, harvest parameters, choice of yeast, method of pressing, fining and filtering, and the myriad decisions that go into growing and making a wine. In almost every aspect of growing and making wine, calibrating against a known standard can be a useful and enlightening exercise. Here is a list of variety trial wines that Denise made and we tasted together:

- 2012 Pinot Grigio (Erie)
- 2012 Gruner Veltliner (Erie, EC1118)
- 2012 Gruner Veltliner (Erie, Top Floral)
- 2012 Vidal Blanc (Erie)
- 2012 Albarino (Adams)
- 2012 Cabernet Franc rose (Erie, Top Floral)
- 2012 Cabernet Franc rose (Erie, ES 488 + Top Floral)
- 2012 Cabernet Franc rose (Adams, Top Floral)
- 2012 Cabernet Franc rose (Adams, ES 488 + Top Floral)
- 2012 Chambourcin (Erie)
- 2012 Chambourcin (Adams)

2012 Cabernet Sauvignon (Adams)  
2011 Chambourcin

A few comments about the wines: micro-vinification to commercial wine making and quality standards is extremely difficult to achieve, and it was unanimously agreed by symposium participants that Denise and her team did an outstanding job producing these wines. To have attained this level of competence and quality in just two vintages is a remarkable accomplishment. Personally, I was enormously impressed by the PG, GVs, Vidal and Albarino, all were textbook examples of the variety, within my experience and the range of styles of these varieties. The 4 CF rose wines were a yeast experiment done by Virginia Smith, Denise's research assistant who is now the assistant wine maker at Mazza Vineyards (congratulations, Virginia!). The Erie and Adams examples were surprisingly different, and indicative of how differences in climate may affect the wines from our varying regions. Unfortunately, what I cannot represent in this review is the high level and quality conversation that took place during the meeting about every manner of grape growing and wine making nuance and methodology. It was extremely exciting to participate in a discussion like this and everyone in the room benefited from ideas and practices shared among them. [NE-1020 Enology Review & Tasting 2012 Harvest](#) (3.2MB) is a summary of variety sensory panel notes, production methods and wine chemistry data presented by Denise Gardner.

Here is a list of varieties planted at each site:

Penn State Lake Erie Regional Grape Lab in North East (Erie), PA: Cabernet Franc, Chambourcin, Chancellor, Gruner Veltliner, La Crescent, Marquette, MN 1189 (Black Muscat-like variety), MN 1235 (red grape, possible successor to Marquette), Muscat Ottonel, Noiret, Norton, NY 81.0315.17 (Riesling x Cayuga), Pinot Grigio, Pinot Noir, Syrah, Traminette, and Vidal

Penn State Fruit Research and Extension Center in Biglerville (Adams), PA: Albarino, Barbera, Cabernet Franc, Cabernet Sauvignon, Chambourcin, Chancellor, Gruner Veltliner, Lemberger, Malbec, Merlot, Muscat Ottonel, Petit Manseng, Petit Verdot, Pinot Grigio, Pinot Noir, Sangiovese, Syrah, Tannat, Traminette, Viognier

For information about these varieties (and just about every other grape known to viticulture), may I suggest obtaining a copy of [WINE GRAPES](#), by Jancis Robinson, Julia Harding and Jose Vouillamoz. This is their description of Albarino (Alvarinho): *the best varietal wines combine aromas and flavours that are both fruity and floral – from linden, orange and acacia blossoms through lemongrass and honeysuckle to orange, dried orange peel, grapefruit, bergamot, peach and in some cases, green apple. Fresh acidity balances the full body and firm structure and there can often be a marine note, reminding the taster how well these wines go with seafood.* Panel descriptors in red were found in the NE-1020 wine in addition to a light tropical note in the wine.

In addition to the vineyards in Adams and Erie counties, a cold climate variety vineyard has been established at the Rock Springs research farm near State College by Dr. Rob Crassweller as both a research and teaching vineyard for budding viticulturists at Penn State.

There are NE-1020 vineyards in PA, MA, CT, NY, VA, NC, OH, KY, IN, MI, MO, IA, OK, NB and SD. We are very fortunate to have TWO sites in Pennsylvania that Dr. Rob Crassweller, professor of tree fruits in horticulture manages and collects the following data on each variety: pruning weights, crop per node, berry weight and berries per cluster, dates of bud break, bloom, veraison, and harvest, shoots (bud)

viability and thinned, cordon length, mid-summer thinning, shoots per foot of cordon, cold hardiness/survival. Dr. Crassweller makes the important point that variety trials are as important as a way to discover what varieties are not suitable as to demonstrate what does. In the case of Malbec at FREC, the vines have been removed due to consistent winter-spring frost injury and replaced with Dornfelder.

The guest speaker at this year's symposium was [Dr. Justine Vanden Heuvel](#) who has a 50-50 split viticulture research and teaching appointment at Cornell University. I met Justine when she was doing cranberry research at the UMass research station in Wareham near the cape. Her research at Cornell is focused on practical issues facing grape growers that can have a positive impact on quality and production (see her excellent website for details). In her presentation: [Crop Load Adjustment: Does It Really Pay?](#) (2.4MB) Dr. Vanden Heuvel presented interesting data relating crop load to wine quality, with relative value and success of viticulture practices measured against wine consumers "willingness to pay" for a bottle of wine. The popular wine press often touts the necessity of low yields to make quality wines but Justine wanted to show that achieving a balanced vine supercedes the need to simply lower yield, and that costs involved in lowering yields, and loss of grape and wine revenue, are not always compensated by increased grape and-or wine prices. Justine explained that the [Ravaz Index](#) is a good way to measure vine balance, which a ratio of 15-20 for hybrids (Reynolds) and 5-10 (Smart) for *vinifera* of weight of fruit to pruning weight of a vine. In fact, in a block of Noiret, she is considering removing vines to a 16' distance between vines to get them in balance. This reminded me of Va La Vineyards unusual spacing of 5' between rows and 12' between vines on a former mushroom compost field (see photos 1, 45 and 71 in the [PWGN photo gallery](#)) that helped owner Tony Vietri achieve vine balance and produce excellent wines. From her trial experimental wines were presented to an elite group of sommeliers, wine bloggers and others experts in NY City and, perhaps it was no surprise there was little correlation between low yields and perceived quality among these experts. This is not to say that lowering yields cannot improve wine quality – in red wines especially tinkering with yields can be very important given site and vintage conditions, whites in general are more malleable in their tolerance of yield variation, offering acceptable wine quality and style at different levels of ripeness. There is simply too much compelling evidence that yields, at the highest level of wine quality, are an important contributor to achieving the type and style of wine sought by these producers, and one participant suggested that the soil capacity will have influenced the outcome of these trials, but this work gives growers, especially on moderate to vigorous sites, ample food for thought. For the preponderance of wine, simply lowering yields will cheat the grower and wine maker from grapes needed to sustain a profitable business. Click [HERE](#) to read Justine's American Journal of Enology and Viticulture paper titled: *Cluster Thinning Reduces the Economic Sustainability of Riesling Production*, which documents research done by Trent Pressler, her graduate student who is now the general manager and partner at Bedell Cellars on Long Island.

Other exciting developments at Penn State for the wine industry are the eventual arrival of a grape (and small fruit) pathologist (a shared position between Penn State and Univ of Md) and the Penn State research viticulturist (interviews are currently in progress). We were very pleased to have Dr. Gary Thompson (Associate Dean for Research), Dr. Marilyn Corbin (Associate Director of Extension), Dr. Dennis Calvin (Director of Extension) and Dr. Barb Christ (interim dean of the College of Ag Sciences) participate in the research meeting. Their support of viticulture and enology programs and initiatives at Penn State is essential!

**Frost:** Many Pennsylvania vineyards have endured another frosty spring and some sustained almost complete damage to primary shoots. The stories of crop losses and reduction in wine production are especially troubling for young businesses and a developing wine industry. The fact of the matter is most of our vineyards are not able to afford the most effective active methods of frost protection – wind machines, helicopters, and overhead irrigation. The power of a good site to ward off frost and freeze damage has become very evident in recent years – those on tops or slopes of hills that shed water and cold air always sustain less damage. Farmers are risk-takers and innovative by nature and come up with their own solutions to problems. The use of [Agro-K Potassium \(24%\) Dextrose-Lac](#) (KDL), a foliar

macronutrient derived from potassium bicarbonate is claimed by the manufacturer to compensate for spring nitrogen-potassium imbalance (low K), that the manufacturer says leads to a greater risk of frost injury. KDL, if applied to vines within 36 hours of a frost event, is “designed to enhance plant tolerance to frost.” I have not seen any research evidence of this effect but I have had enough testimony from reliable growers to believe that some benefit can be derived from this protective measure. As a grower, I was always testing new ideas and tinkering with existing practices in the vineyard, but if you decide to test something new like KDL, I have these suggestions: gather all of the pertinent information available, talk to other growers who have used a product or practice, check with local viticulture extension educators, follow the product label to the letter, use your instinct and common sense, and the knowledge of your site and vineyard to decide if the product or practice is safe and practical (does it pass the “do no harm” test), and please, leave a control or untreated check section, or a conventionally-treated check plot so you can attempt to measure the effect of the treatment. Of course, varieties like Chardonnay and Lemberger that break bud early are at the greatest risk of injury and should ideally be grown on reduced risk sites, but one option is to use [soybean oil-based adjuvants](#) (Amigo and Prime) to delay bud break, or abscisic acid to increase bud freeze tolerance – this latter method was the subject of the 2013 American Society for Enology and Viticulture Best Viticulture Paper Award ([Foliar Application of Increases Freezing Tolerance of Field Grown Cabernet Franc Grapevines](#)) by Yi Zhang and Imed Dami (Dept of Horticulture and Crop Science, The Ohio State University). Other growers have used irrigation, not the overhead method but soaking the soil and then using an airblast sprayer to circulate air near the ground and around the vines - the wet ground absorbs heat during the day and releases in the night (Snyder, 2005). During frost season, if conditions allow, keep cover crops mowed as low as possible and the vine strip clean of weeds and debris. The [Frost Dragon](#) is a PTO-mounted propane heater and air-assisted machine that the manufacturer claims can cover 25-30 acres and is effective in both radiant and advective frosts – I am not aware of any dragons operating in Eastern vineyards. There is ample information about active and passive frost mitigation on the internet and vineyard owners with vineyards at risk should investigate all of their options. I encourage estate vineyard owners to consider not only the potential crop loss value but the value of the wine at risk if a serious frost event reduces yields, all of a sudden a wind machine may make economic sense. One problem is that Eastern growers have learned to “take their lumps” over the years and risk and losses that would be considered unacceptable in many other wine regions is considered routine here. Given the severe pressure on the economics of wine production in the East, accepting consistent crop reduction from frost or other threats only complicates the economic sustainability of our industry as well as the quality of our wines. The Concord grape industry is fully tapped into the crop insurance program and growers of other varieties should consider participating, especially if the vineyard is in a frost-prone site. I sincerely hope that when the research viticulturist arrives, he or she may devote some effort to finding an acceptable solution to this serious problem. If you have sustained frost injury, please be patient to determine how well the vines and yields “bounce” back. In many cases in the past, growers have been surprised by the quantity and-or quality of the fruit on secondary shoots. Be aware that the vintage is further delayed by the frost event and that will likely push the harvest deeper into the fall, with the associated risks. Also, uniformity of canopy and crop may be upset by a frost event and some additional care in canopy and crop management may be needed during the growing season. If a crop is dramatically reduced, then the vineyard may have to be managed on a sustaining basis to protect foliage and provide for vineyard needs until 2014, and it is not too early to be thinking about frost prevention for next spring. Here are three excellent information resources for frost management in vineyards and orchards:

- Evans, Robert G. Biological Systems, Washington State University. [The Art of Protecting Grapevines from Low Temperature Injury](#). Proceedings of the ASEV 50<sup>th</sup> Anniversary Annual Meeting. June, 2000. Pages 60-72.
- Snyder, Richard. University of California Extension Biometeorologist. [Principles of Frost Protection](#). November, 2005.
- Zabadal, Tom (editor), et al. [Winter Injury to Grapevines and Methods of Protection](#). Michigan State Univ Extension Publication E2930. June, 2007.
- Battany, Mark. UC viticulture extension farm advisor. [Frost Protection](#). Univ of California Cooperative Extension San Luis Obispo County.

**Events:** Check the PWGN [regional calendar](#) for upcoming viticulture and enology events . . . Denise, Kathy Kelley and I will be in the Erie area on June 4 and 5 with coffee pot meetings at 21 Brix (10 a.m.) and Courtyard (2 p.m.) wineries on Wednesday, June 5<sup>th</sup> – contact Andy Muza at Penn State's Erie Extension for more information. The Virginia Vineyards Association offers a [Steep Terrain Grape Growing workshop](#) in Virginia on June 11 and the Maryland [summer field day](#) meeting on June 15. The [American Society for Enology and Viticulture national conference](#) is coming up June 24-28 in Monterey and will offer rootstock and tannin symposiums with excellent speakers. The [ASEV Eastern Section conference](#) is in Winston-Salem, NC this year from July 15-18 and will offer a pre-conference tour of NC wineries, and the symposium topic this year is *Advances in Red Wine Production: From Berry to Bottle*.

**Bulk wine and Shiners Offered:** PA winery with available bulk gallons of estate Cab Franc and Merlot from 2011, along with case goods (shiners w/ unbranded corks) of same varietals and blends from 2009 vintage w/ small amount of Chardonnay as well. Prices negotiable based on quantities; contact Kevin @ [krobinson@spartanorg.com](mailto:krobinson@spartanorg.com) or @ 815-541-4420 for samples and more information.

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