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Agricultural Sciences

WINE GRAPE INFORMATION FOR PENNSYLVANIA AND THE REGION
From Penn State Cooperative Extension
Pennsylvania Wine Grape Network http://pawinegrape.com/

Table of Contents:

Temperature and Light in Wine Growing: Most grape growers don't have time to think of the really esoteric stuff when it comes to growing grapes. But in this business, the small details count for a lot when it comes to quality. Ever since I was a grower trying to grow the perfect Pinot Noir grape, ideal fruit maturity has been the Holy Grail. In Burgundy, Pinot Noir and Chardonnay find their perfect place and the results can be exhilarating. We chased it in Oregon with some success and today I really like high altitude or coastal Pinots from California for much the same temperature effects. We have oddball conditions in the Mid-Atlantic, even more humid but warmer than Bordeaux along with cold winters, conditions that would be foreign to the more sensible folks that grow grapes in very arid places like Chile, California and Australia. In 1992 John Gladstones wrote the definitive text on the relationship between environmental conditions, grapevine performance and wine quality. Some of his ideas have been put to work by Daniel Roberts in California (probably others too) with good results. Now there is the follow up book called *Wine, Terroir and Climate Change*, which spans the 20 years since *Viticulture and Environment.* Reading it has helped to guide us towards an understanding of how our unusual conditions of high humidity and high day/night temperatures affect vine physiology and, ultimately, wine quality. It's still plenty confusing, I'm still not sure if our narrow diurnal shifts are a net plus or minus for grape quality but it's all fascinating to ponder. I'm also not sure what all these 90+ days and a compressed growing season are having on our fruit and wine quality either. I try to summarize it in some notes I took from the book on the plane to and from California this summer. This book gets my highest recommendation to all serious wine growers. See attachment: Gladstones

Clark Smith of Vinovation: I was at UC Davis with Clark and I'm a bit embarrassed how our two careers in wine have turned out. He's is one of the brightest and most absolute authorities on the process of making wine, right down to chemical bonds. I'm still trying to figure out where the rain shadows are. Clark was in charge of a student wine tasting group and even back then he demonstrated his knowledge and teaching abilities. Both were on brilliant display during a two-day wine making workshop hosted by the Pennsylvania Quality Assurance group only this time he had almost 30 years worth of experience, anecdotes, and stories to mix in between the technical stuff. I'll admit that most of it went over my

head like the jet stream but I couldn't help but note the rapt attention paid to Clark by some of our best wine makers. This was grist for the mill and I believe just the stuff necessary at the advanced level to push our wine quality way up. Mucho kudos to Dominic Strohlein from Big Creek Vineyards and Sarah Troxell from Galen Glen Vineyards for bringing Clark to Pennsylvania. Denise Gardner, our extension enologist, wrote a summary of the seminar. See attachment: Clark Smith

Viticulture Seminar with Jesus Yuste and Jim Wolpert: It's exciting when two top notch research viticulturists come to Pennsylvania. No one would ever mistake California or the middle of Spain for the Mid-Atlantic but we would ignore the wealth of information they offer at our own peril. As you know I like learning what other people are doing to grow wine, whether it's on the dark side of the moon or in Virginia. Recent tastings have demonstrated that we are making pretty nice wines according to international standards but we have a long way to go. But at the most advanced level, progress comes in very small increments and any little tidbit of knowledge, if recognized and applied properly, can make a wine better. That's how learning and progress take place. Jim's presentation on vine balance and rootstocks pretty much captured the whole concept in a nutshell and if we can just apply these principles to our vineyards we will see a vast improvement in the quality of our wines. Jesus explained to us what is going on now in Spain, surely one of the most exciting wine regions, old or new, in the world. Just the sheer size of Spain, 2.5M acres, causes us to take notice. I tried to capture just a teensy bit of what they talked about in my notes. You can also view their presentations on the *Pennsylvania Winegrape Network* website. See attachment: Wolpert and Yuste

Wine making Survey Results (Denise Gardner): In July 2011, I initiated an Industry Needs survey for the Pennsylvania wine industry. The purpose of this survey was to get relatively quick input from as many Pennsylvania wineries as possible on their thoughts regarding the extension enology program as well as problem areas that wineries are currently facing. I also used this survey to get a better idea on the best time to schedule educational events and workshops. The results of this survey showed five key areas that many wineries would like more education on:

- MLF/Secondary Fermentation
- Red Wine Enhancement
- Wine Microbiology
- Use of Enological Products
- Wine Defects/Faults

I also found that there is a general lack of understanding regarding analytical procedures – whether they are conducted in-house or at an external wine laboratory. I hope to make these topic areas the priority or focus of Penn State's extension enology program over the next several years. In the near future, I will meet with a committee to discuss the best ways to tackle these topic areas with workshops, seminars, and up-to-date information on the Penn State enology website.

The results of this survey, will, of course, directly affect the Pennsylvania wineries in several ways. It is my hope that with my program's future events, winemakers will learn pertinent information that they can take back to their winery. For example, continuation of wine defect training will enhance Pennsylvania winemakers' skills in identifying and fixing defects during production. This would ultimately enhance the quality of Pennsylvania wines as more winemakers are aware of defects during production and alter wines accordingly before they reach a consumer. Additionally, a better understanding of wine microbiology and sanitation would lead to cleaner production practices to maintain better wine quality from harvest to bottle. With these efforts, and your future participation, I think we can become a leader in

wine quality. The full report is available for your review. See attachment: Winemaking Needs Assessment

They're Here: Birds and Bees (and more): As of 8/15 we have had 28 90F+ days in Lancaster. After a long cool spring it has been very warm but as I write this we have the summer rains have returned to Lancaster. It's hard to say how the weather will go for the next 6-7 weeks but my old grower bones are a bit uneasy. The long, cool and wet spring that extended past bloom is likely to have set up fruit with latent infections that, given just this kind of rain event, can explode into, well, mushy fruit. In fact, I have already seen and heard reports of fruit rots appearing in tight cluster varieties in SE PA. At PSU FREC yesterday we saw and smelled rot in Syrah clusters. I think this is the proverbial shot across the bow and growers need to pay particular attention to tight cluster-thin skin varieties like Pinot Gris, Chardonnay, Pinot Noir, Riesling, Vignoles and others (if you have experience growing these, you know who the suspects are). We are progressing through of veraison so for many varieties it's a good time to apply a botrytis/fruit rot spray. The warm mid-summer will almost certainly yield an additional generation of Grape Berry Moth and if berries are already at risk, GBM damage can really hurt (we experienced this in 2010, especially with white varieties). Add bird, bee, diffuse and direct disease infections and anything else that compromises skin integrity and there are plenty of ways for fruit rots to get started.

Dr. Wayne Wilcox, grape pathologist at Cornell University, says that the veraison botrytis spray can be the most effective so susceptible varieties. An effective fruit disease application requires a fruit zone directed application, at optimal label rate, lots of water and complete coverage, and consideration of another application after two weeks (follow label instructions, refer to regional extension IPM literature). Other botryticides such as Vanguard, Elevate, Scala and even Rovral (if resistance isn't a problem and it hasn't been overused in the past) will all help to control fruit rots.

Dr. Turner Sutton, grape pathologist at North Carolina State University, has studied bitter (*Colletotrichum spp*), ripe (*Greeneria uvicola*) and Macrophoma (*Botryosphaeria dothidea*) fruit rots intensely during the past decade. 80F and wet are perfect conditions for these diseases to spread. He recommends Captan (danger label) and Pristine or Abound as late season control options. Mancozeb is very effective on bitter and ripe rot through the first cover spray. Spray intervals are very important according to weather conditions. If we get more persistent rain events intervals should tighten from an absolute maximum of 14 days down to 10 or even 7. A spray is nullified after 2" of rain (Jim Travis has indicated even less in the past). And, against the intuition of most growers, fruit rot sprays should be applied before a rain event to get protection in place. Most of the systemic fungicides are rainfast upon drying, certainly in a few hours after application. Sanitation is a key component to any successful fruit rot management program so get the dead and infected parts out of the vineyard.

Jeanette Smith of VineSmith (http://www.vinesmith.com/) has numerous recommendations for late rot treatments in her **2011 Winegrape Fungicide Guide** including Abound, Sovran, Pristine, Flint, Serenade, Captan, Ziram and Oxidate. You should refer to directly to the guide for information and use instructions. Please pay particular attention to REI and PHI for all products, and optimal application rates.

Sour rot is a problem caused by various bacteria and yeasts, including *Alternaria, Aspergillus, Rhizopus, Penicillium* and *Acetobacter*. These are opportunistic pathogens so if you can maintain berry integrity, you can keep them at bay. But once the infections are present you can easily smell it in the vineyard.

There are no fungicides currently registered for sour rot. I would suggest a quick Google literature search for "sour rot in grapes" for a variety of materials and methods to prevent and treat sour rot.

Keeping birds away from fruit, especially red varieties, is at odds with the need to complement a good spray program with canopy management – mainly keeping the fruit zone open and clusters separated and well and evenly spaced apart from each other. Leaf and lateral removal should have been done weeks ago and further thinning at this point is a judgment call. We still have the chance of heat spikes that may cause sunburn so be careful on the afternoon side of the vine, and remove leaves more aggressively on the morning side. As we get deeper into the season, more leaves can come off.

If you have any of these disease problems I strongly urge you to carefully read Wayne's **2011 Disease Update** (pages 22-27 for fruit rot diseases) and the **2011 NY-PA Pest Management Guidelines for Grapes** for more detailed information about late season sprays (you can find both on the PA Winegrape Network website).

Birds are already a BIG problem in vineyards. I have heard almost unanimous opinion that birds are here earlier and more ferociously than in any recent years. I have stopped trying to understand why birds are bad in one year and not the next, or in one vineyard and not the other. We dealt with birds in Oregon so I'll call on my own experience here. I can state emphatically that doing nothing is not a good strategy to protect your crop from birds. Bird patrol is an active and important part of the harvest season. It makes no sense whatsoever to work like crazy for five months to grow good grapes and then lose them at the 11th hour, either to birds or disease.

Nets are still the best solution. There are many netting options and some work better than others. Besides their ability to protect fruit from birds, consideration should be given to how nets may photosynthesis and disease, but in the end, we are simply trying to protect the grapes. Alice Wise, Cornell Extension, has done the best research I know of on the efficacy of various net materials (see http://132.236.1.24/pubs/vitcon/pdf2008/40.pdf). There seems to be a general drift towards fruit zone/side nets, which are less expensive and easier to install and they must be properly fastened on the top and bottom. Some roll up and stay on the trellis throughout the year. Dr. Tony Wolf from Virginia Tech said they use hay bale nets on the research vineyard in Winchester, which are very inexpensive but do not last long and proper disposal can be an issue. Birds have learned to penetrate nets, either by hanging onto nets and pecking through to clusters or finding holes or spaces on the ground where they can get under the nets. In some cases, spacers may be needed to push the net away from the outside of the cluster. Nets should be installed well before birds arrive. Alice was talking about putting her nets up a month ago. Nets are expensive, a hassle to install, remove and store but they are the best assurance against a major crop loss through predation and disease.

Many of the same rules apply to other bird scare devices. All should be operating before the birds arrive. At Temperance Hill we had 20 propane cannons and av-alarms and we found that it is important to move these around regularly. Birds get very comfortable with routine and it is very discouraging to see one perched on top of a propane cannon. In my experience, the Scare Away is the best propane cannon, made in Belgium and distributed in the U.S. by Reed-Joseph (http://www.reedjoseph.com/pyrotechnics.htm). This is the loudest, scariest noise maker in the arsenal. Get it on a rotating tripod for best effect. As blocks are picked, move devices into remaining unpicked blocks. Noise devices, fake hawks, scary eyes, reflective tapes, etc. do not work well enough on their own in situations of severe bird pressure. They must be accompanied by a person on an ATV or mule with a whistle, pyrotechnics, shotgun or all of the above to move the birds out of the vineyard. On

a 100 acre vineyard we would patrol for 3 hours after dawn and 3 hours before dusk with periodic patrols during the day. Only persistence will pay off and even then, in my experience, you will reach a point when no matter what you do the birds will not move.

Remember that pyrotechnic devices may need to have approval by your local fire marshal for use in vineyards. Also, some birds, such as robins, are protected species. And be very aware of your neighbors and how they feel about your noisemaking activities. The Ontario wine industry has put a lot of effort into educating residents about their bird protection methods (http://www.omafra.gov.on.ca/english/engineer/facts/10-053.htm). At Temperance Hill, we would place a flyer in the mailbox of neighbors prior to the bird season to explain what we are doing and why and, for example, if a propane cannon is left on at night, who to contact.

If the birds are here the yellow jackets can't be far behind.

A word about yields…for crop sensitive reds like Pinot Noir and Cabernet Franc, adjusting crop is an ongoing process, especially if berry coloration is uneven. Wings always ripen behind the main cluster. Right now the weather looks good and even a big crop has the chance of getting ripe. But if the weather crumbles, yields will once again play a big role in wine quality.

There's also Brown Marmorated Stink Bug and possibly the Multi-Colored Asian Lady Beetle among the wine taint threats in the vineyard. Tree fruit growers have been battling BSMB but we're still not sure what impact it will have in vineyards. So far I have not heard that direct BMSB feeding on berries causes damage. We are mainly concerned if these guys get into the fermenters. It's best to have a plan in place that includes the winery in case it crosses threshold levels.

Learn How to Grow Wine Grapes at HACC: The enology program at Harrisburg Area Community College got off to a fine start last year. Viticulture was delayed a year so a suitable instructor could be found. Gabriel Balint received his PhD from the Cool Climate Oenology and Viticulture Institute at Brock University in Ontario under the tutelage of outstanding research viticulturist Dr. Andy Reynolds. He will be teaching General Viticulture and Vineyard Soils in the fall term at HACC. Many of you have no formal training in viticulture and through cleverness and hard work have developed and managed a vineyard. I would state emphatically that classical training in viticulture will make you a better wine grower. I am not talking about learning organic chemistry but instead the basic principles that underpin everything you do in the vineyard. The HACC courses are designed for adult learners – they are online and interactive with periodic "grape camps" on weekends to cover the necessary hands-on training. This is a curriculum that most people can fit into their daily schedules. I would encourage all commercial growers to consider taking these courses as part of a one-year certificate or two-year degree program. Enology courses are also available. The fall term begins on August 22nd. You see the course descriptions and cost at: http://www.hacc.edu/Academics/CoursesAndPrograms/Courses-and-Programs-Listing.cfm or contact Bob Green, the V&E program director at ragreen@hacc.edu.

DOT Number: Any business entity that operates in Pennsylvania must acquire a US DOT number if any truck they own or rent that has a gross vehicle weight of greater than 10,000 pounds. It does not matter if only drive 1 mile, you must still get a US DOT number. This applies to all interstate and intrastate shipments. Pennsylvania will be requiring this number when you apply for the registration of any vehicle you own with a GVWR of 10,001 pounds or greater. This same information also applies to Maryland. For

more information go to http://www.fmcsa.dot.gov/registration-licensing/online-registration/onlineregdescription.htm. From Martin Keen, Landey Vineyards, Lancaster, PA

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