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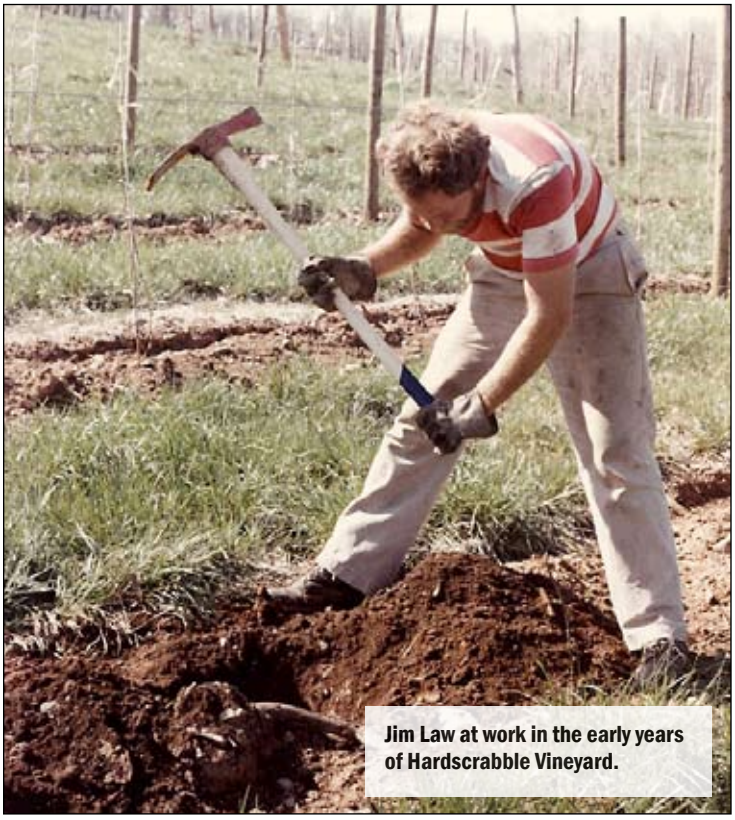
INSIDE



Jim Law at work in the early years of Hardscrabble Vineyard.

Courtesy of Jim Law

Hardscrabble Vineyard at 30

The making of a grape grower in Va.

By Jim Law
Linden Vineyards

I'm not an anniversary kind of guy. Years ending with zero regularly come and go without much fanfare. However, this winter, while pruning Chardonnay vines going into their 30th year, I found myself getting uncharacteristically nostalgic.

I felt a need to share my vineyard's story. As I started writing, it became clear that past mistakes would give better insights into Hardscrabble's evolution. My focus in the 1980's was to make a living farming. My focus now is to grow great wine. The approaches are very different.

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President's Corner

Strategic Goals for The Year

By Tom Kelly

Looking out my window at the thermometer, it is hard to believe that a new growing season is almost upon us! Unusually cold temperatures and heavy snow fall this winter have given many growers cause for concern.

Fortunately, reports from those I have been in contact with have been positive with pruning progressing on or ahead of schedule and few, if any, reports of bud mortality as a result of February temperatures that were predicted to be the lowest on record since 1929.

It is apparent that growers who were able to maintain their canopies late into the season last year were rewarded with good hardening off of fruiting buds. I will take this as a good omen for the coming growing season, but as we all know, there are many months ahead of us before we can begin counting the proverbial "eggs in our baskets."

Another positive aspect to this chilly winter season is the potential it brings to slow down the spread of Pierce's Disease, which has been on the rise for

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► SAVE THE DATE!

The VVA Summer Technical meeting will be held June 5. Details to come.

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VIRGINIA VINEYARDS ASSOCIATION

PRESIDENT'S CORNER (cont.)

Continued from page 1

the last several years. This year is the time to get out and rogue out already infected vines, replant and get ahead of the problem.

Also, we can take some comfort in knowing that these cold temperatures may have an effect on the population levels of many of our smaller vertebrate pests that so plagued us this past harvest. Only time will tell.

Reviewing survey results

Thanks to the efforts of our Education Committee, we now have the results tabulated from our 2014 Winter Technical Meeting survey, and we will be reviewing those results over the next few weeks. Some of the information you provided will help us decide on topics for our upcoming Summer Technical Meeting, as well as next year's winter meeting.

But equally important is the feedback you provide on our performance. This is critical information that helps us continue to improve our programs as VVA membership and attendance of both technical meetings continues to rise each year.

Allowing enough time to provide quality content as well as valuable information regarding the state of our industry and our association is an ongoing challenge. Providing enough space for our trade show and technical seminars has also become more challenging as membership and attendance of our meetings grows.

/////I look at both of these issues as "good problems to have."

According to our survey, there is a strong interest in keeping our winter meeting in Charlottesville and at the Omni Hotel, so we will be working to find creative solutions to address both these issues. The 2015 winter meeting is scheduled to be held again at the Omni Feb. 5-7 next year.

Also, we have selected June 5th as the date for the 2014 Summer Technical Meeting. Look for our announcement of location and topics for that meeting in the coming months.

I would like to use the rest of this report to provide some of the information that time constraints prevented me from delivering in my President's Report during the Annual Business Meeting.

Strategic plan

First and foremost, your VVA Board of directors is working hard to develop a new strategic plan for your Association. This is a far-reaching plan that has many key aspects to improving the VVA as well as our industry as a whole. It is a very comprehensive work that not only sets goals, but defines a clear path to achieving those objectives through well-thought out strategies, clearly assigned action items, and a defined timeline for completion of each strategy within a goal.

A key focus of the plan is to address the current grape supply shortage. This will be a multi-pronged effort to not only provide incentives for new and expanded vineyard plantings, but to improve the profitability of existing vineyard operations. Other aspects of the plan will address grape quality improvements as well as improved unique benefits and advocacy for our members. Our hope is that this plan will set the VVA on a path toward being recognized as the leading voice of winegrowers not only in Virginia but throughout the greater Mid-Atlantic region.

► A key focus of the (strategic) plan is to address the current grape supply shortage. This will be a multi-pronged effort to not only provide incentives for new and expanded vineyard plantings, but to improve the profitability of existing vineyard operations.

A discussion board

Next, I had hoped to be able to announce to you at the 2014 meeting the launch of a new discussion board page to our website. The discussion boards will provide a place for members to share information and experiences on a variety of relevant topics such as Spotted Wing Drosophila, wildlife management, and other issues currently facing member grape growers.

This is a feature that is in the development stages. The technical aspects of developing the discussion board itself is fairly straight forward.

However, due to some unforeseen delays and complications (one of which many of you may have experienced while trying register online for the winter technical meeting), we have not been able to bring this much anticipated feature to fruition.

Rest assured, we are working to resolve our current technical issues and continue to work on the discussion board enhancement to our website. We still hope to be able to launch in time to be of use during the 2014 growing season.

These are just a few of the many exciting improvements on the near horizon for the VVA. We look forward to being able to continue to provide excellent service and benefits to our members and the Virginia wine industry for many years to come!

Cheers!

NORTHERN: "The phrase 'polar vortex' has been ingrained into our ... psyche."

By Dean Triplett
Willowcroft Farm Vineyards

My first vines went into the ground in 1996. In the 18 years I've been growing grapes here in Loudoun County, this has been the coldest winter I've seen. My coldest reading was minus 2 degrees on January 7.

Since then I've had multiple readings of 3, 4 and 7 above zero. Besides the cold temperatures, we've also had nearly 30 inches of snow through multiple events.

As I write this on March 3, we are in the midst of yet another snowstorm. The phrase "polar vortex" has been ingrained into our common psyche.

The coldest temps that I've heard of were from the Northern Shenandoah with one vineyard recording 5 below. After the January 7th event, I waited a few days then brought in a dozen canes of Chardonnay and Merlot. After letting them warm up for 24 hours I dissected all the buds and found no damage.

We held off on starting the final pruning of the vines until the end of February. We're about 80% done at this point and have left longer spurs than we would in a normal winter. I'm hoping there's still enough cold hardiness in the buds at this point to avoid major damage. We'll see as the season progresses.

Bill Freitag, on February 11, emailed me to add his "two cents for the regional report." Here's what he had to say:

I have checked for cold damage to buds but have thankfully found no bud dieback in any of the varieties. What I have found, as I started pruning, is much more cicada damage than I had expected.

I would estimate that on shoots in my cordon/spur pruned blocks, I have about a 50 percent damage rate, requiring pruning down to one bud in more cases than I'd like to get below the damage. Not catastrophic, but certainly not good.

On my cane pruned blocks, I'm finding less of a problem since I can fairly easily select a cane without damage in most instances. On some one-year-old vines that were, for the most part, replants, I have found many cases in which the shoot was damaged about 12-18" above the graft union so they will miss a year's worth of growth just to recover to where they were this year.

While visiting a vineyard in Northern Loudoun County, I saw what appeared to me to be cicada damage as well. Not as severe as what Bill describes, but it was there none the less. I haven't seen any in our vineyards but it still may be something to scout for.

I'm a bit concerned as to how well the vineyards in our area that were hit by frost last May have survived the winter. The vineyard I mentioned above got hit by the May frost and lost its entire crop. The owner did an excellent job of maintaining a good spray program however, and they have come through the cold temps in great shape.

Several vineyards I saw last season did not get the kind of attention that they needed and I wonder what they will look like come spring. Spending money on a vineyard with no crop is hard on the wallet. Watching a vineyard die because you didn't give it proper attention is hard on the soul.

EASTERN: "We are pleased to see several new growers coming into our region."

By Pete Johns
New Kent Winery

Growing grapes requires a strong back, a readiness to spend long hours working in the vineyard, and a willingness to face challenges. This year, in the Eastern Region of the Commonwealth, we have had more than our share of challenges.

Late fall produced an abundance of rainy days and overcast skies. With inadequate hours of sunlight, our grapes took much longer to mature, which led to a later-than-normal harvest.

Our growers found that the extra "time on the vine" brought with it an increased difficulty from pest damage, as well as mildew and mold. In addition to the normal deer and bird pressures, we found a new pest this year: squirrels.

It seems that in our region, there are two types of oak trees; one that produces acorns every other year and one that produces acorns every year. In 2012, the acorn crop failed, and that was followed in 2013 by another unsuccessful acorn crop.

Acorns are an essential part of the diet for both deer and squirrels. Without this important food supply, these animals had to look for anything and everything they could eat to survive. Some of our growers reported seeing as many as 10 or 12 squirrels at a time in their vineyards, causing additional pressures that are not normally experienced in our region.

I guess we don't have a lot to complain about compared to the damage done by bears in the more western areas of the state. Bears also rely on acorns as a primary source of food.

This winter we have faced three major "snow events" so far.

For the Eastern Region these snow events are extremely rare and when coupled with lower temperatures than normal, this winter has been one to remember. At this point little damage has been reported by our growers; we will have to wait to see until spring approaches to see how extensive the cold damage has been.

Pruning has been difficult during these extreme conditions.

Many growers, including us, are using a mixed pruning program; traditional spur pruning coupled with an occasional cane pruning. This method helps to "clean up and keep a vineyard fresh."

We do an initial pruning to four buds and then just before bud break we prune back to two buds; this gives us added protection from late spring frosts.

We are pleased to see several new growers coming into our region. The largest planting reported to me this spring will take place at Upper Shirley Plantation on the James River. They will be planting 10,000 new vines. This is a most ambitious project but I am confident that it has been well thought out and well planned.

Other new growers in the area will be experimenting with several new Italian varieties, while still others will be planting more traditional varieties.

I expect to see at least 20 to 25 new acres planted in our region, still short of what is needed for our industry.

One cautionary note: With the soils as water-saturated as they are now, due to the melting snow and added rainfall, everyone should be extremely careful about when and how they use tractors and heavy equipment this time of year.

Compaction of the soils by this equipment will cause rutting, which will hold water, and the compacted soils will not allow water penetration when it is needed.

CENTRAL: "We were extremely happy with the results of netting." — Jeff Sanders, Glass House

By Bob Garsson

It's pretty hard to overstate the perplexing and erratic quality of this winter. It seemed to jump from spring-like days to polar vortexes and back again overnight. And every time winter seemed finally over, another major snowfall dropped down on us.

However, for all the snow and the cold, vineyards in the central region reported variable experiences, and even some potentially positive outcomes.

Carrington King from King Family Vineyard called the cold and the snow more of an annoyance than anything else. "It has slowed down pruning a bit, but other than that, has been just a nuisance." Carrington echoed others in Virginia in expressing the hope "that the cold may have knocked back the population of overwintering insects like the Brazilian Fig Fly and the Spotted Wing Drosophila."

Jeff Sanders at Glass House Winery agreed, saying there was little impact on his vineyard.

"But it wasn't actually that cold," he said. "The lowest temperature we had was 5 degrees (Fahrenheit) one night, and 4 degrees another night. And that was after a buildup of cold, rather than a sudden change from warm temperatures, so we didn't expect any damage and haven't seen any to date."

Jeff said his Viognier "seems to have a fair amount of bud necrosis again, likely due to the rains last spring and early summer when these buds were forming. We will have to leave many extra buds in this variety, and wait to thin after we see the fruit."

At Veritas Vineyard and Winery, "We are very much on top of our winter pruning this year despite the winter storms and dangerously cold temperatures," said Bill Tonkins. "This is mainly due to the fact that we have acquired a shredder for our prunings. The flail hammers on the shredder do a fantastic job of turning shoots and trunks up to 2 inches in diameter into dust, returning nutrients to the vineyard."

Small pieces of shoots occasionally escape, Bill noted, "but not nearly as many as we left behind when we removed prunings by hand."

All in all, Bill added, "the shredder will pay for itself this year in reduced labor costs from bundling and removing the prunings. And that's not to mention the inconvenience and eyesore of large burn piles to deal with.

"What is more," he added, "the vineyard looks absolutely immaculate."

Of course, the unusually heavy winter snowfalls follow a summer that was noteworthy for the unusually severe pest damage. Jeff noted that he harvested a low volume of white grapes because of damage from animals, as well as bud necrosis in the Viognier. The whites, he said, will be medium to high quality.

On the other hand, the reds came in at a high volume, and of excellent quality – the best since 2010.

"After losing some whites to animals, we took all means to control animals in the reds, and were largely successful, he said. "We were extremely happy with the results of netting, which we had previously done only on perimeters and in problem varieties. We will now net everything. It helped prevent the minor bird and animal damage which helps sow sour rot. Our reds were able to hang longer, as a result."

A Sense of Place

And a chance in Virginia to establish our own traditions

By Christine Vrooman
Ankida RidgeVineyards

Upon returning from a recent trip to the vineyards of Burgundy, I have found myself inspired and even more dedicated to creating wines with a sense of place. To many wine lovers, Burgundy has an allure about it like no other wine region in the world.

We know that great wines are made around the globe, but just what is it about Burgundy that sets it apart from the others? What sets apart any wine region from another?

Is it “old world” versus “new world” — the history and tradition found in old world regions that has not yet been created in the new? Is it the character of the wines, the story behind them, or that sense of place defined by the soils and the climate? More likely, it is a combination of all of the above.

Here in the new world, we have yet to establish centuries of rituals and traditions that come with generations of time. Here we must begin with first finding the most suitable sites for the grapes we wish to grow. We must first grow a product that stands the test of time and pleases fine palates, wines that express a singular, unique place.

When we first decided to plant the Burgundian grapes of Pinot Noir and Chardonnay up on this forested Virginia mountainside, it was our hope that the grapes grown here would create a wine of quality that expresses the earth from which it grew and the human touch that transformed it.

Our desire was for the wines to be a tribute to this soil that feeds them, to the angle of the sun’s light, to the breezes that flow over Chestnut Ridge, to the relative altitude and slope to the valleys below, to the density of the plantings, and to the care in the vineyard and in the winery. All these elements are intricately woven together into what is known as a sense of place.

The importance of soil

In Burgundy, this sense is primal. But how is it accomplished? The most important distinction to the various “designations” of quality in Burgundy is in the vineyard soils. The soil composition can change meter by meter, and many “individual vineyards” are comprised of only a few rows within a larger planting of new and/or ancient vines.

There are four levels of appellation hierarchy, or presumed and historical quality of wine, ranging from the least superior, the Regional or Bourgogne, which makes up about 53 percent of acreage, to the most superior soil for growing grapes, the esteemed “Grand Cru” vineyards, comprising only 2 percent of vineyard space.

An image hanging in the wine cellar of Domaine Lucien Jacob shows a cleared vineyard and the strip of limestone soil in the upper part of the slope where typically the Premier or Grand Cru Chardonnays of Burgundy are grown.

Photo courtesy of Christine Vrooman

You can see in the accompanying image, which was hanging in the wine cellar of Domaine Lucien Jacob, a cleared vineyard awaiting replanting. It clearly displays a strip of limestone (calcareous) soil in the upper part of the slope where typically the Premier or Grand Cru Chardonnays of Burgundy are grown.

A ‘passionate culture’

But there is more to the success and the allure than simply planting in the proper soils. Decades and centuries of tradition have also ensued, creating a passionate culture of grape growing.

Annual festivals are plentiful. St. Vincent’s Day, named for the patron saint of vineyards, is celebrated January 22, the recognized day to begin winter pruning. In the fall, the families and workers of the vineyards gather to celebrate the end of harvest at “La Paulée,” a grand festival where growers and families and friends gather at long farm tables to eat, drink and celebrate the end of another vintage they all experienced together.

This expression of community that unites generations of growers and families adds to the intrinsic sense of place, not amongst the vines, but amongst those who care for those vines. These generations of Burgundian grape growers have handed down to each subsequent generation the subtle nuances of understanding and interpreting the vine and knowing how best to care for their vines that translates into producing the highest quality of fruit possible.

In Virginia’s youthful wine industry, it is rare to find even a second generation of vintners, much less a fifth or sixth generation as you find in Burgundy.

While we are in our infancy as winegrowers, here in Virginia, we are also the pioneers, slowly learning the locations of soil and terroir that produce high quality fruit from a variety of grapes. Growers are experimenting with new grapes in various locations.

At Ankida Ridge, we have planted Pinot Noir that seems to happily grow high up on this cooler mountainside. In the valleys below, Pinot Noir became stifled from the heat and lack of air movement and different soils, but other varieties have thrived. What other grapes will grow beautifully in unexpected places? How exciting to be a part of this “coming of age” in this new wine region of the world.

Keep on forging ahead, fellow growers. A new vintage is upon us. Every year presents new discoveries (we won’t mention discoveries like SWD).

Just what will we be planting, and where, 100 years from now? What delightful traditions will we have created for the generations that will follow? What little vineyard observations and nuances will we teach our children and grandchildren? Ahh … my pruning shears for a looking glass.

Hardscrabble Vineyard at 30

In a photo, above, that appeared in The Winchester Star, Peggy and Jim Law are shown planting vines in Linden, Va. At left, the grassy spaces between blocks represent recently removed vines that will be replanted. Thin, rocky soil, below, will be planted with Cabernet Sauvignon.

Photos courtesy of Jim Law

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Hardscrabble is the vineyard that surrounds the winery at Linden. In 1981, I was hired to start a winery in the Shenandoah Valley. I soon fell in love with Virginia's viticultural potential. I spent several years looking for a vineyard site that met a long list of requirements of elevation, aspect, slopes and soils. In 1983, with the help of my family, an abandoned orchard south of Linden was purchased. In 1984 I grafted vines in cooperation with a neighboring vineyard and in 1985 planted a total of 8 acres. Varieties were Chardonnay, Vidal, Seyval, Cabernet Sauvignon, and Cabernet Franc. Only the original Chardonnay and Vidal blocks remain.

So here are some lessons I've learned about what really matters in the quest to make great wine.

Landscape Form and Soils

In our rainy climate, the two most important factors contributing to the health and longevity of a vineyard are convex landforms and steep slopes. Swales, dips and flat sites are at best problematic, and usually end in disaster. In Virginia, anything we can do to mitigate excessive soil moisture is a plus. Slopes shed rain water, and the steeper the better. In 2003, we purchased a crawler tractor, giving us the ability to farm our steepest slopes.

Good drainage, both superficially (slope) and internally (soils) is critical for vine health. Understanding a soil's water holding capacity is critical for quality. A vine's need for available water depends on the variety and the desired wine style. White varieties and Merlot need some access to water throughout the growing season. If they become too drought stressed they never seem to fully recover. However, Cabernets need to go through a period of hydric stress to achieve their best quality. My first plantings of the Cabernets were mostly on clay based, high water holding capacity soils. This is why they are gone now. The quality was only good in drought years. Subsequent plantings are now on steeper slopes with thin rocky soils. These younger blocks produce much better wine. The older clay sites are being planted with white varieties and are doing quite well.

Climate

Climate is what you plan for and weather is what you get. It is best to select varieties that ripen in the sweet spot from mid September to mid October. We want ripe, but barely ripe grapes. Cool nights and warm days preserve acids, color and aromas. Hardscrabble's Seyval vines were removed over the past several years. Climate change had pushed ripening from mid-September in the 1980's to August in the 2000's. I was working harder just to maintain the same quality. Early ripening varieties can make a correct,

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serviceable wine, but that is not what I want to do with the rest of my life.

Cool temperatures also mitigate the negative effects of rain just before harvest. When it is cool, the vine's metabolism slows, so there is less uptake of water by the vines (and therefore less dilution of the berries). Rot organisms (especially sour rot) develop very slowly if nighttime temperatures are under 60 degrees Fahrenheit (even cooler is better). Early ripening varieties can suffer badly if caught by a warm rain event. However, cold rain in October doesn't seem to make as much of a difference.

Viticulture

I now design and plant a vineyard thinking of what it will look like in 10 to 30 years, rather than in years 5 to 10. Wide spaced cordon pruned vines did beautifully for those first 10 years, but eventually phomopsis and various wood diseases took hold. Handsaws and even chain saws became part of the pruning repertoire. Previously vigorous younger vines could no longer fill their allotted 6 feet of trellis space.

With the exception of some Merlot, all Hardscrabble's vines are now cane pruned. Inter-vine spacing is 32" to 48", with 48" being most common.

The goal is a balanced vine and vineyard block. A balanced vine is one that fills the allotted canopy space and requires minimal hedging. It has uniform shoot size and minimal laterals. Red wine grapes should be on the low end of the vigor scale, while white varieties do better with a bit more growth.

In the ideal vineyard, little cluster thinning is needed, as the vines naturally produce a balanced crop. The block itself is uniform, void of high vigor corners or dips. In order to come even close to achieving this goal, I have had to implement a 5-year program of removing vineyard blocks and replanting in a better way. These are the really hard decisions that have to happen if we are to make better wine.

Courtesy of Jim Law

The early years of LInden Vineyards: "After 30 years, I am even more excited and invigorated about the possibilities here in Virginia," said founder Jim Law.

Older vines produce better wine than young vines, but only if all factors are equal. Hardscrabble's original Cabernet Sauvignon and Cabernet Franc vines were old, but younger plantings were producing much better wine because they are planted on more appropriate sites in a better way.

Winemaking

I have come to the conclusion that the best wines are made by smart, but lazy people. If the winegrower has planned well, the vineyard is balanced. Not only does this produce the highest quality fruit, but it also requires the least amount of canopy work during the growing season.

The winegrower also has to choose the right grape for the right place in order to be non-interventionist in the cellar. If grapes are harvested vintage after vintage with good acids, sugars and in the case of reds, color and tannins, there's not much a winemaker needs to do.

I have found that the less I do in the cellar, the better the wine. If a winemaker has to consistently add stuff to the juice or wines, it is a reflection of vineyard problems and imbalances. At Linden, in most vintages, we only add yeasts, yeast nutrients and S02. Yeast nutrients will hopefully be eliminated soon, as we work on achieving better vine nutrition.

After 30 years I am even more excited and invigorated about the possibilities here in Virginia. Our "cloudy" weather is well suited for the more elegant, finessed, lower alcohol wine styles now in demand. Knowledge is the key, but it comes slowly. Consultants, soil scientists, and travel opportunities are shortening our learning curve. I often lament about how many years of trial and error I could have saved had I such resources back in the 1980's. Then I remember one of my favorite Zen stories and feel more content:

"A brash young man watched a sage drawing water from the village well. Slowly, hand over hand, the old man pulled up the wooden bucket of water. After some time the young man left and returned with a pulley, and excitedly explained how to use it, and how easy it would be to draw water by cranking the handle. The old man refused: 'Were I to use a device like this, my mind would congratulate itself on being so clever, and then I would quit putting my heart into what I was doing. . .If I don't put my heart and whole body into my work, my work will become joyless. And how, then, do you think the water would taste?'"

Winter Technical Meeting

Recap of Presentations

The Virginia Vineyards Association's Winter Technical Meeting drew growers from across the Commonwealth – and beyond – for two days of discussions and presentations on a wide range of current topics – from Spotted Wing Drosophila to the problems with pyridine.

All told, 125 vineyards, wineries and other organizations, such as Virginia Tech, were represented at the meeting. In addition, 27 exhibitors joined the show.

We can't replicate the full range of presentations here – let alone the various tastings – but a number of speakers provided Grape Press with highlights from their presentations.

The 2015 winter meeting is scheduled to be held again at the Omni in Charlottesville on Feb. 5-7. In the meantime, plan to attend the 2014 Summer Technical Meeting on June 5.

Pierce's Disease

By Elizabeth Bush
Senior research associate, Dept. of Plant Pathology, Physiology and Weed Science, Virginia Tech

Although most of the southeast was previously considered low risk for the devastating vascular disease, Pierce's Disease (PD), recent models by Anas et al. (2008) based on 8-year average low temperatures, show most of Virginia at high risk.

The Virginia Tech Plant Disease Clinic and Dr. Mizuho Nita's research group at the Alson H. Smith Agricultural Research and Extension Center are collaborating on a PD project. They compared commonly-used PD detection methods to a newly-developed test. They found it to be a very sensitive, robust and reliable test that has a significantly greater probability of detecting PD than the detection tests that used in a 2006 Virginia grape survey.

A significant part of the group's project is a PD survey throughout Virginia's wine regions and representative of the wine grape varieties grown. Both random samples and samples symptomatic for PD (i.e. with leaf scorch) were collected for testing. Preliminary survey results (243 of 398 samples) were presented at the Winter Technical Meeting.

Some highlights from the talk were:

- PD was detected in all Virginia wine regions except Heart of Appalachia where only a small number of samples were collected.
- Of the 243 samples tested, 38% were positive, 61% negative and 1% inconclusive
- Of the samples testing positive for PD 65% had leaf scorch symptoms and 33% were randomly collected, so they may have had leaf scorch or showed no symptoms.
- Of the randomly collected samples that were positive, most (84%) showed no symptoms of PD, which means that vines showing no symptoms may, in fact, have PD.
- Of the symptomatic samples (those with leaf scorch), about half tested positive for PD and half tested negative. So, based on our preliminary results, if leaf scorch symptoms are observed on a vine there is about a 50% chance that the vine has PD or the leaf scorch is caused by another problem, such as a trunk or root problem or inadequate water).

Using their new and very sensitive detection test, the group is also evaluating several grape varieties for resistance to PD and monitoring the movement of PD in affected vines over the growing season. This work will help to develop informed recommendations for Virginia wine grape growers to best manage PD and its insect vector.

Anas, O., et al., The effect of warming winter temperatures on the severity of Pierce's disease in the Appalachian mountains and Piedmont of the Southeastern United States. Plant Health Progress doi, 2008. 10.

Pyridine Herbicide Damage on Edible Crops

By Cathryn Kloetzli
Virginia Cooperative Extension

The Background: Pyridine herbicides are effective in providing long-term broadleaf weed control, primarily in turf and pastures. The active ingredients of most concern are: aminocyclopyrachlor, aminopyralid, clopyralid, and picloram. These herbicides also exhibit low toxicity to animals, are applied at very low rates and can be used at seeding time on a range of turfgrass species. All of these factors combined put these herbicides in common use in Virginia.

Additionally, farms often purchase off-farm supplies of composted manure, straw, hay, or grass clippings to improve soil health, provide food for animals or to use as mulch material.

The Problem: The primary way that pyridine herbicides cause crop damage is through root uptake. When products that contain pyridine residue are introduced into the root zone of a crop production system, damage can occur. Pyridine residue moves readily in water and therefore mulch or compost laid on the soil surface that is then rained on will leach pyridine herbicide residue down into the root zone.

Pyridine herbicide residue is persistent and can linger for an extended period of time in manure, straw, hay and/or grass when it's not given the chance to break down. The primary factor involved in the breakdown of these herbicides is aerobic microbial activity.

However, the baling and storage of grass bales and improperly managed compost piles (of manure or plants containing this residue) inhibit the breakdown of these herbicides. While some plants are sensitive to the residue of pyridine herbicides, including grapes, flowers, vegetables, pines, and spruces, others aren't bothered. This latter group includes grasses, grain crops, apples, oaks, and maples.

The Solution: Communication is key. Please ask your supplier of manure, straw, hay and/or grass clippings what herbicides have been applied. If pyridines have been used, either choose not to purchase that product or apply the product to crops or plants that are not sensitive. If the product's history is unknown or uncertain, you may wish to conduct a bioassay before using the product on your crop. This involves growing highly sensitive plants, such as sunflower or pea, in the questionable material to see if damage occurs.

For more information, please contact Cathryn Kloetzli, Virginia Cooperative Extension – Albemarle/Charlottesville at 434-872-4580 or cathrynk@vt.edu. You can also consult this article, Pyridine Herbicide Carryover: Causes and Precautions, at: http://pubs.ext.vt.edu/VTTP/VTTP-6/VTTP-6.pdf
Cathryn is a Virginia Cooperative Extension agent in the Albemarle and Charlottesville Office.

Winter Technical Meeting

Recap

Vegetation Management in Grape Production

By Jeffrey Derr
Weed Scientist, Virginia Tech

There are two components to a vegetation management plan in grape production – one for the areas between grape rows (row middles) and one for the area within the grape row. Through research funded by the Virginia Wine Board, the Virginia Vineyards Association, and the Virginia Department of Agriculture and Consumer Services, I have been investigating cover crops for use between grape rows.

I would like to thank the Virginia Wine Board, the VVA, and VDACS for this support. We have been conducting this research in Blacksburg, Virginia Beach, and in cooperating vineyards. I have been assisted in this research by Ms. Lori Robertson and Mr. Charles Lytton.

The ideal cover crop would require little mowing and would establish itself easily. It would suppress weeds, prevent soil erosion, tolerate traffic, and have a desirable appearance. We have investigated both cool- and warm-season perennial grasses in regards to these characteristics. I have discussed the preliminary results from this research at the VVA conference in Charlottesville and at several grape IPM workshops (Hume, Oak Grove, Blacksburg, Lovingston).

Here are links to the PowerPoint presentations used for those presentations:

- http://oak.ppws.vt.edu/~amike/derr/grape_ipm_workshop.ppt
- http://oak.ppws.vt.edu/~amike/derr/grape_weed_control.pptx

The link for the second website for weed identification in these PowerPoint presentations has changed. Here is the new one:

- http://ipm.ppws.vt.edu/weeds_container_nurseries.php

In Blacksburg, we tested 'Bighorn GT' Sheep /Hard Fescue, 'DTT-43' Dwarf Tall Fescue, 'DTT-20' Dwarf Tall Fescue, 'Rough and Ready' Microclover mix, 'Companion Grass ' Cover Crop Mixture, 'Applaud' Perennial Ryegrass, 'Fawn' K31, 'Midnight' Kentucky Bluegrass, and 'Silverlawn' Creeping Red Fescue in the cool-season trial.

All of the cool season grasses eventually attained excellent cover in Blacksburg, although certain ones, including perennial ryegrass and 'Fawn' tall fescue, established faster. The warm-season grasses have lower cover six months after seeding than the cool-season grasses, but the plots containing zoysia should increase over time as this grass spreads vegetatively by stolons and rhizomes.

Only the tall fescue cultivars were providing acceptable cover in Virginia Beach the spring following seeding. Perennial ryegrass established quickly but cover decreased over time, probably due to heat and drought.

The bluegrasses did not establish, probably due to weed competition resulting from slower cover crop germination. Different grasses will be needed for vineyards in the eastern part of Virginia compared to the western part.

Ideally one would establish a permanent cover prior to planting grape vines. During site preparation, efforts should address eradication of troublesome perennial weeds, especially perennial broadleaf weeds species like horsenettle, field bindweed, and hemp dogbane.

It is much more difficult to control perennial broadleaf weeds after planting as we lack selective herbicides to accomplish this in grapes. A product such as glyphosate could be applied in strips to control the cover crop where the grape vines will be planted. The vines can then be planted into these killed strips.

In terms of in-row vegetation management, the general procedure is to maintain bare ground initially. Cover crops such as tall fescue compete with newly-planted grape vines for water, nutrients, and sunlight.

Maintaining bare grounds allows the grape vines to establish a root system without competition from cover crops or weed species. The bare ground strip within the row can be maintained using nonchemical means such as cultivation, by chemical means (preemergence and postemergence herbicides) or a combination of both strategies.

Current herbicide recommendations for grape production are contained in our Pest Management Guide for Horticultural crops. It is available online at: http://pubs.ext.vt.edu/456/456-017/Section-3_Grapes-3.pdf

Jeffrey Derr is a professor of Weed Science based at Virginia Tech's Hampton Roads Agricultural Research and Extension Center in Virginia Beach.

Winter Technical Meeting

Recap

Grape Disease Research Updates

By Mizuho Nita
Grape Pathologist
Virginia Tech

At the 2014 VVA meeting, we presented some updates on our extension and research programs. Here are some highlights. Copies of my recent presentations are uploaded on my blog (www.grapepathology.blogspot.com).

New products: Both Luna Experience and Luna Tranquility are available for 2014. A new label on Luna Experience has a reduced cane work restriction (reduced from 10 days to 5 days). Please obtain a new label, if you purchased it in 2012. If you decided to use Luna Tranquility, make sure to obtain a supplemental label for grapes. Both labels can be downloaded from my blog.

Virus Research: With support from the Wine Board, we are continuing our effort to learn more about virus infections among our grapevines.

Based on our preliminary results, Rupestris stem pitting-associated virus has been a very common virus (60% positive in our sample), followed by grapevine leaf roll-associated virus 3 (GLRaV-3, ~ 25% positive).

We are also working on insecticide trials to manage a vector insect (mealybug) for GLRaV-3. Both Movento and Scorpion resulted in reduction of mealybug population in all 3 years we tested.

Ripe rot research: The Wine Board, as well as the Virginia Department of Agriculture and Consumer Service's (VDACS) Specialty Crop Research Initiative (SCRI) block grant and the Southern Region Small Fruit Consortium have been supporting this project.

Our preliminary results showed that grape clusters are susceptible to infection of ripe rot pathogens from bloom to near harvest. Thus, vines need to be protected against infection at bloom through the use of mancozeb or other recommended materials.

Both captan and QoI (strobilurins, such as Abound, Flint, etc.) are used for late season ripe rot management; however, captan may not work on some of ripe rot isolates, and there is a report on QoI resistance.

Thus, we have been testing different mode of action groups, and some of DMI (aka SIm or sterol-inhibitor) fungicides seems to be effective. So far, tetraconazole, propiconazole, and difenoconazole, seem to be effective, but some of DMI may not be effective as others. More research on fungicide efficacy will be conducted in 2014.

Organic vineyard research: We presented some preliminary results from our organic variety and fungicide trials, which was supported by VDACS's SCRI block grant in 2011-2013.

In both years, the effect of variety on the development of downy mildew and black rot on foliage was very strong. When we compare a conventional low input program (combination

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► Jeff White: Grower of the Year

Virginia Secretary of Agriculture and Forestry Todd Haymore presented the Virginia Vineyards Association's Grape Grower of the Year award to Jeff White, owner and winemaker of Glen Manor Vineyards, Front Royal, at the VVA Winter Technical Meeting in Charlottesville.

"Virginia's burgeoning wine industry is making a significant and growing contribution to the Commonwealth's economy, and that's because of leaders like Jeff White who are producing world-class wines," Haymore said.

Tom Kelly, VVA president, said the association selected Mr. White based on his contributions to the Virginia wine industry as well as his support of the VVA.

"Two years ago, he won the Governor's Cup with his 2009 Hodder Hill, a Bordeaux-style red wine, and last year, he was gracious enough to volunteer his vineyard for a session at our summer technical meeting," Mr. Kelly said. "Jeff is one of the industry leaders who is helping put Virginia wine on the map, and he is more than deserving of this honor."

As a young boy growing up in Fairfax County, Mr. White spent summers working on his grandfather's farm.

As an adult, he eventually tired of the corporate life as a financial analyst and decided to move full time to the family farm in 1990. The farm was originally a Christmas tree and cattle operation. But as the Whites struggled to make a living off the farm, Mr. White's father wondered if grape production was a viable option. Mr. White began researching the possibility.

In 1993, he found a job with Virginia Tech's Tony Wolf for a season at the Agriculture Research and Extension Center near Winchester. Soon after, he began working with Jim Law at Linden Vineyards. He became Jim's assistant and worked at Linden for 12 years.

Mr. White's first six acres of vines were planted in 1995 and with them a new vineyard came to Virginia, Glen Manor.

He planted classic Bordeaux varieties; Merlot, Cabernet Franc, Cabernet Sauvignon and Petit Verdot along with Sauvignon Blanc and Chardonnay. All of the early harvests were sold to Linden Vineyards. Chardonnay that was planted was pulled out in the early 2000's and replanted to Merlot, Petit Verdot, Sauvignon Blanc and Cabernet Sauvignon.

In 2006, the Whites made the decision to start their own winery. From 2006 to 2009, the vineyards were expanded, with plantings of Petit Manseng, Merlot, Cabernet Franc and Cabernet Sauvignon bringing the total to 14.5 acres. The new plantings are on an extremely steep portion of the property, high up the slope from the original vineyard.

Mr. White's attention to detail in his vineyard and winery has produced wines of exceptional quality. In 2012, Glen Manor Vineyards won the Virginia Governors cup with their 2009 Hodder Hill Meritage blend. In 2013 Glen Manor's 2010 Hodder Hill was awarded a Gold medal at the Virginia Governors Cup.

Winter Technical Meeting

Recap

Nitrogen Fertilization in Cover Cropped Sites

By DeAnna D'Attilio
Viticulture Extension
AHS AREC at Winchester

At this year's technical meeting, I presented a brief summary of the results from my Master's research. The key take-home messages are summarized below.

Research Rationale and Objectives

My research objective was to address growers' concerns of how to balance the competing goals of suppressing vine size with under-trellis cover crops, while minimizing the negative effects of those cover crops on vine and berry nitrogen status. Although nitrogen can be directly added to grape must, I was interested in pinpointing the fertilization methods that are most effective at increasing berry nitrogen.

My rationale is still a debated one, but a large contingent of the scientific community believes that DAP additions are inferior to musts containing a naturally abundant mixture of amino acids. This is because yeast can directly incorporate those amino acids into protein, rather than synthesizing new amino acids and wasting energy.

But what about autolyzed yeast? Indeed, they provide the must with a source of amino nitrogen and are marketed as promoting more complex aromas in wine, by way of the role amino acids play as aroma precursors.

While this may be the case, we now know that berry tissue amino acid composition is genetically fixed for each variety and these signature amino acid profiles are thought to play an integral role in the formation of varietal character.

By this logic, naturally enhancing a variety's pre-determined amino acid profile (what Bruce Zoecklein referred to as "native YAN") is more likely to improve the formation of varietal aromas.

Results and Recommendations

High rates (60lbs Nitrogen per acre of soil-applied calcium nitrate split into two applications (bloom and six weeks post-bloom) effectively increased vine and berry nitrogen status in Sauvignon blanc and Merlot vines.

Unfortunately, no data were collected to analyze nitrate leaching through the soil, but given the trend to move away from high rates of nitrogen fertilizers, I was most interested in the results from my foliar nitrogen applications.

Season-long foliar applications (applied eight times—spaced between bloom and shortly after véraison) of a 0.75% urea solution drastically increased berry YAN and the concentration of individual amino acids in Sauvignon blanc.

Also effective were two post-véraison (seven days and fourteen days post-véraison) foliar applications of a 0.75% urea solution, which increased berry YAN and the concentration of individual amino acids in Petit Manseng.

Given the combined success of foliar urea applications and high rates of soil-applied calcium nitrate at increasing berry and vine nitrogen, an integrated approach using both methods will likely alleviate competition for soil nitrogen while facilitating adequate vine and berry nitrogen status.

Grape Disease Research Updates

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of mancozeb, sulfur, and occasional DMI) and a copper-based program, more susceptible varieties often times benefitted from the conventional fungicides.

To our surprise, comparisons of different combinations of Organic Materials Review Institute (OMRI) certified fungicides did not provide a clear difference. Therefore, proper variety selection would be the first step for either organic or reduced fungicide input program. We will obtain the first data on fruits in 2014.

Fungicide resistance issues: Dr. Anton Baudoin's group recently confirmed a Quintec resistant isolate from a Virginia vineyard. Our recommendation on Quintec (and any other new products with either a single mode of action or two modes of action) is to limit use to two times a season. We also recommend proper rotation of mode of action groups. If you have noticed loss of efficacy with Quintec, please contact us.

The ABC's of Terroir

A review of the 2013 Technical Study tour to Alsace, Burgundy and Champagne

By Dr. Bruce Zoecklein
Professor Emeritus, Wine/Enology–Grape Chemistry Group, Virginia Tech

Fortunately, not all who wander are lost. My colleague, Professor Pascal Durand, and I hosted another industry technical study tour in December 2013, spending three days in Champagne, two in Alsace/Germany and four in Burgundy.

There were many interesting aspects of this excursion including the culinary (we were treated to numerous demonstrations of the French genius for the gastronomic marathon-the ability to spend as long at the table as other nationalities spend watching TV), and the cultural (we visited, among other sites, the Cathedrale Notre Dame in Reims originally built in 401, where Joan of Arc watched the coronation of Charles Vll in 1429).

The technical ponderings certainly raised my consciousness a few feet, none more so than our discussions regarding terroir. The following is an outline of some of our discussions related to this subject.

In a mereological sense it is interesting to note that reputation tapping (wine marketing by comparing emerging regions such as our own with those established and esteemed) may be an important strategy (Rickard et al. 2012) and an additional justification for our Technical Study Tours. (For a review of previous Technical Study Tours, see Enology Notes index at www.vtwines.info).

Terroir is the often, and perhaps over-used term, referring to an ecosystem of a particular place.

Attempts to separate the kaleidoscope of variables including geology, geomorphology, soil, climate, the biology of the vine, and human interventions have proven difficult due to the complexity of interactions (van Leeuwen 2013).

The difficulties in understanding these very complex relationships remind me of Russell's paradox, named for its author, twentieth-century English philosopher Bertrand Russell: "Is the set of all sets that are not members of themselves a member of itself?" Or, perhaps a more modern version such as: true or false, this statement is true.

Regardless, the fact that French appellations, based on the uniqueness of the place from which a wine was created, have maintained their status and influence over the years attests to the perceived importance of this concept (Jackson and Lombard 1993).

Courtesy of Bruce Zoecklein

The Chablis Grand Cru vineyard at Vaudésir in Burgundy.

Soil, Climate and Terroir

Virtually every winegrower we visited reminded us that the full expression of the vine is not realized without the proper match between the cultivar, climate and soil. This is certainly true of Chablis, a part of Burgundy, but with soils and climate quite different from the rest of Burgundy. Chablis climate is generally cold, similar to that of Champagne to the north, with weather a particularly controlling feature.

Much has been written regarding the impact of soil on wine composition and quality, although much of it is contradictory. Soil is a complex medium and its role involves the multiple influences of texture, mineral composition, water supply, and root zone temperature, among other variables (van Leeuwen 2013).

Chablis has lots of limestone and Kimmeridgian clay (the limestone clay unique to this region) with fragments of fossilized oyster shells deposited when the region was covered by ocean. At Domaine William Fèvre, we had an extensive discussion of the importance of Kimmeridgian limestone. Reportedly, all of the Chablis Grand Cru wines come from vineyards high in this form of limestone. However, it is likely that at least some of the effects of soil are indirect, in that all of the Grand Cru vineyards are southern facing. Lesser-classified vineyards on soils with less Kimmeridgian limestone have different solar orientations.

In Champagne, we visited Moët et Chandon, Gaston Chiquet at Ay, Vranken-Pommery, and Champagne Mailly at La Montagne de Reims. The annual mean temperature in the Champagne region is about 10°C, just slightly above the temperature needed to support vine growth. The latitude is similar to that of Québec, Canada. Spending time in the vineyards, we were reminded why fully-enclosed spaces are popular in Champagne (winter motto: cold but damp) where winter may seem like it lasts about 17 months! The region is rainy with a large potential problem of spring frost.

The soils of Champagne, like Chablis, are chalk, in some cases almost pure white chalk, and can be hundreds of feet deep. Interestingly, many producers suggested the importance of soil depth as a standard, universal mantra. Low water-holding capacity of shallow soils may be more likely to induce water-deficient stress compared to deeper soils (Seguin 1983, 1986). As such, it has been suggested that

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The ABC's of Terroir

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shallow soils may have a higher grape quality potential, at least for red wines.

Alsace, another region visited, is abundantly blessed with the crucial, yet essential natural ingredient that most Americans believe is needed to support a healthy wine region, namely tourists. The grapes grown in Alsace are for the most part not grown predominately in other French wine regions, adding uniqueness.

Alsace, along with the area northwest called Lorraine, was formerly part of Germany. Like Germany's, the wines are mainly white, predominantly unblended, and usually without oak influence. The most important landscape is the Vosges Mountains to the west, where most of the better vineyards are planted on the slopes. The soils are granite with some heavier schist soils and clay. This region is remarkably dry, with an average annual rainfall of about 19 inches.

Climate Change

Many of the French vignerons that I have met over the years live rather aesthetic lives, are somewhat polemic and embrace the philosophy of Pierre Teilhard de Chardin (expressed in his famous book The Phenomenon of Man) and/or that of James Lovelock (Gaia hypothesis) – that the earth is influenced by life to sustain life, and that the planet is the core of a single, unified living system. As such, issues like global climate change and genetically-modified organisms (GMOs) cause them a certain limited degree of conflict, pretty much in the same context that the Atlantic Ocean has a certain limited amount of water!

Several reported their concern for warmer, and therefore earlier vintages. One producer reported the average harvest dates of his parcels had advanced as much as 30 days in the last 20 years (even discounting the effects of the 2003 vintage – one of the warmest recorded in France). As they say – There is no time like the past, Armageddon was yesterday – today we have a serious problem! The question is: How does this impact terroir expression and overall quality in general?

Site climate is one of the most important variables impacting aroma/flavor and phenol compounds. The production of these secondary metabolites is influenced by the temperature during the final period of fruit maturation (Jackson and Lombard 1993).

Courtesy of Bruce Zoecklein

The Winery in the Round at Maison Louis Jadot in Beaune, France.

Maximum concentrations of these metabolites are produced when the fruit ripens within certain temperature ranges. Therefore, the best variety for a particular site is one that matches the length of the growing season, so that fruit maturation occurs when the season is cool, but warm enough to allow the fruit to continue to accumulate desirable metabolites. Site or mesoclimate has been divided into types, Alpha and Beta, dependent on the mean temperature during late stage ripening (Jackson 1987).

Alpha zones are those where the mean temperature at the time of ripening for a particular variety is 9-15°C. In Alpha zones, day temperatures are moderate and night temperatures usually cool, creating desirable conditions for the development of aroma/flavor and phenols. In Beta zones, the majority of grapes ripen well before temperatures begin to drop. Beta zones are those with a mean temperature above 16°C at the time of ripening for a particular variety. Thus, days and nights are still warm.

In many grape-growing regions, the choice of cultivars allows fruit maturity to occur just before the mean monthly temperature drops below about 10°C. Traditionally, this has occurred in mid-September to mid-October. Now that more fruit is maturing earlier, in the warmer part of the season, the concern is the effect on terroir expression due to quantitative and qualitative impacts on aroma/flavor and phenolic metabolites. It remains up to the industry to determine how to best adapt to the changing site-climate environment.

Soils

We visited Burgundy, which contains a staggering number of AOC wines, more than 650. The climate is continental with warm summers, cold winters and the constant threat of hail. The soils are extremely varied in their richness, depth and mineral content. It is said that this variation explains the enormous range of wines that comes from this region. Most vineyards have a base of limestone covered by limestone and marl (a mixture of clay and limestone), sometimes mixed with gravel and/or sand.

The presence of so much calcium in the soil is said to improve the soil structure, thus enhancing soil drainage. Active calcium carbonate reduces soil organic matter turnover, thus limiting plant nitrogen availability, an important feature.

Where limestone is dominant, Chardonnay or Aligoté is planted, and where more marl exists, generally Pinot Noir is grown. Good vineyard soil for the production of red wines are those that help limit yield and vine vigor either by limiting water supply or available nitrogen, two very important terroir features (van Leeuwen 2010). Heavy clay soils produce more sugar, anthocyanins and total phenols. Tools such as electrical conductivity may allow us to more precisely differentiate soils, allowing for enhanced cultivar-site matching (Beasley 2014).

Microbiological Terroir

At Domaine de la Vougeraie at Premeaux Prissey in Burgundy, we discussed terroir expression as related to soil ecology, specifically the microbiology of the soil. The vineyard is certified organic, and they farm biodynamically. Although a good soil should have adequate microbiological flora to aid

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in mineralization, little scientific evidence is available to suggest the link between soil microbes and wine quality or terroir (van Leeuwen 2013).

It was interesting to note their level of copper used as a vineyard spay (previously 5, but now 3 kg/ha/year). Such sprays over many years may have a detrimental impact on soil microorganisms (Courde et al. 1998). Copper, along with sulfur, is used by some in biodynamic practices.

Most, but not all, producers we visited reported the use of un-inoculated red fermentations. Yeasts and bacteria are part of a complex series of interactions where competition, equilibrium and collaboration form a dynamic ecosystem.

As discussed in Edition 167 of Enology Notes, the concept of microbial ecology is gaining attention. Even with the addition of sulfur dioxide and cultured yeasts to a red must, a portion of a fermentation can be conducted by other, native organisms (Bokulich et al. 2012). There can be a substantial difference in microbial populations among different wines produced at the same facility with the same inoculated yeast. It is becoming increasingly apparent that microbial ecology can be a source of terroir variation.

Vine Moisture Status

Several studies have demonstrated that terroir expression is correlated to water deficits (van Leeuwen 2013). Vine water status is influenced by rainfall, evaporation, soil water-holding capacity and vineyard management strategies. In studies conducted with Dr. Keith Patterson in California's Central Coast, we demonstrated that limited water availability increases the production of glycoconjugates, the main aromatic precursors in grapes. Subsequent research has demonstrated that vine water status, which relates strongly to nitrogen availability, may have a stronger influence on wine style and wine quality than soil mineral composition.

Vine Nitrogen

Vine nitrogen availability is related to soil type, depth, moisture and rises with increases in organic matter. During our visit, it was discussed that most vineyards producing high-quality red wines receive either no or very little nitrogen fertilization. Limiting nitrogen uptake for red-fruited varieties reduces vine vigor, berry weight, and yield, while increasing anthocyanins and tannin concentration.

For white wine production, low nitrogen availability to the vine may be a detriment because of the potential limit in the production of aromatic compounds and, thus, wine quality (Chone et al. 2006). As reported in Edition 167 of Enology Notes, Petit Manseng wine volatiles are increased by vine nitrogen addition.

It should also be noted that white grapes with low nitrogen levels produce low- fruit N and relatively lower concentrations of glutathione (Chone et al. 2006). Glutathione is a naturally occurring peptide that is an important white wine antioxidant (see Enology Notes # 101,102, 112, 127, 129, 134, 144 and 159 at www.vtwines.info). Again, more effort should be directed at specific fertilization regimes for specific cultivars on specific soil types in our region.

They say that fools with tools are still fools. Several producers in Alsace and Burgundy, however, reminded us of a great tool. They determine vine nitrogen status using juice analysis of YAN (yeast available nitrogen) at harvest. This is not a new concept; I have suggested the use of YAN analysis as a plant barometer for some time. This is not only a simple way of evaluating vine N status, it also allows for the assessment of parcel or block variations.

Winegrowers we visited reported they generally have adequate native YAN, avoiding the need to supplement, even if they accepted such practices.

In the New World, many assume additional N is needed for fermentation and that there is no difference between native YAN produced by the plant and addition products, an unwarranted assumption. To understand the full potential and expression of a variety under specific site conditions, we must be able to evaluate the full, intrinsic potential of the grape. Such evaluations are likely obscured by excessive wine addition products.

This visit reminded us that the typology terroir is difficult to understand. However, research suggests that climatic conditions have the greatest impact, followed by soil type and cultivar, and that soil effects are largely mediated through vine water status (van Leeuwen 2013).

Like a Zen coagon (example-what is the sound of one hand clapping?), there may not be answers to some questions regarding terrior. That may not be a bad thing.

Without logic, reason is useless. With it, you can win arguments and alienate multitudes.

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A Progress Update

By Bill Freitag
Toll Gate Farm

A year ago we launched an online self-assessment tool that codifies science-based best management practices (BMPs) for sustainable viticulture. It is designed to help vineyard managers assess how well they're doing against 105 BMPs spread across 12 major activities. We've named this tool the Virginia Sustainable Winegrowers self-Assessment Guide (VSWAG).

I would like to make a few points concerning the VSWAG. It provides two primary functions that should help each of us to grow better grapes.

- It allows users to see how well they are doing compared to their peers, and
- It helps growers enhance their performance by providing a single easy-to-use source of research-vetted BMPs covering critical areas of successful vineyards.

Sustainability is often used alongside other terms such as being green. We chose to define our sustainability goal as having three dimensions:

- Environmentally sound care of the land we farm;
- Socially equitable concern for our community and neighbors; and
- Economic viability. By enhancing our profitability, we stay in business.

To get more information and background about the tool, visit the VVA website to see the tool under the Sustainability Tab at the Virginia Vineyards Association web page (http://www.virginiavineyardsassociation.com).

Some Statistics from VSWAG's First Year

How our users scored themselves: We had 58 registered users at the end of the year, including ten that have not yet planted a vineyard. Additionally, 10 non-Virginia residents signed up to use VSWAG.

Vineyard acreage: 40 vineyards report a total of 55 blocks with total acreage of 254 acres.

The tool also showed that users farmed 254 acres altogether, with the average vineyard size running 6.35 acres. The largest vineyard is 60 acres.

Since the annual Virginia state grape report shows about 3,000 acres are in productionn growers representing less than 10% of the reported acreage are using the VSWAG. It looks like we have room for some improvement among our members.

Some Tips for the New Year

For those of you that created score sheets for last year, you will find your old workbooks on the tool exactly how you left them. To update your scores, you simply click on the score you want. You can select your existing score from last year or a new one. There is no need for you to first select the "edit" icon.

I'd like to encourage all of you who filled in partial responses last year to complete the entire self-evaluation in the coming season. Also, some of you had established multiple blocks. If you farmed them differently from each other, then please fill out a separate score sheet for each. You may find that if you actually farm them all the same way, then you may want to consolidate the various blocks into one block.

Help Us Help You

With statistics depicting a rather dismal rate of participation by our membership in using the tool, I would like to hear from our readers how we may able to increase member participation.

Some questions I would like to get input on include the following:

- Do you find it easy to use?
- Does it provide useful reference/advice for you to use?
- Do you see a benefit to it?
- Would you use it if you could display a plaque at your premise showing that you had met certain standards for sustainable viticulture?
- Would you use it if wineries paid more for your grapes if you had achieved a certain score?
- What you can do to help us improve the value to you?
- Would you use it if it had some add on feature that could allow use on a mobile device like your cell phone or tablet?
- What other enhancements would you recommend?

Please send your thoughts to me at the following address: bfreitag6@gmail.com

Why Social Media Matters: Using Twitter

By Frank Morgan
(Third in a series)

According to the 2013 Wine Industry Financial Benchmarking Report released in January by accounting firm Moss Adams, expanding the use of social media topped the list of strategies planned for the next three years. Over 65% of the wine industry survey participants responded that they plan to expand use of social media tools as way to connect with consumers.

These results are not surprising considering how social media-centric the wine world is. Winemakers, industry professionals, and wine enthusiasts love to share their thoughts about wine via social media platforms like Twitter, Facebook and Instagram.

The first two articles in this series, which appeared in the previous two issues of Grape Press, focused primarily on the why of using social media to engage and connect with customers. This, and the next several articles will provide more of the how — beginning with the most basic steps in this article to more advanced concepts in future articles.

In this month's installment, we'll start with how to get started with Twitter to begin leveraging this popular social media platform.

Twitter is free to use and can be set up in just a few minutes. Start by visiting, www.Twitter.com.

Once you have established the account, start telling customers, tasting room visitors and others that your winery is now on Twitter.

To grow your following, consider promoting your new Twitter account on your winery Facebook page (your winery does have a Facebook page, right?), and include that information on the printed tasting room sheets, or via an email to club members.

Rather than using Twitter.com to manage your winery Twitter account, 3rd party Twitter clients like HootSuite or TweetDeck provide more functionality.

Both TweetDeck and HootSuite offer some of the same basic functionality — like scheduling future tweets, establishing

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customized search lists, managing multiple Twitter accounts, and tracking hashtags — but TweetDeck offers a cleaner user interface and is easier for beginners.

The TweetDeck application can be downloaded for free at TweetDeck.com. Login with your Twitter handle (username) and password to get started. The entire process will take just a few minutes.

After downloading and installing TweetDeck, begin following other Twitter users — club members, local businesses, and other wineries.

Next, setup customized lists to track mentions of your winery, tweets from online wine influencers or other criteria like conversations about Virginia wine (#VAwine), mentions of your region (for example, #cville, #Monticello or #Loudoun), or even other wine topics like #Viognier, #VAWineChat, and #DrinkLocal.

Next, start tweeting. Announce an upcoming special event, or offer a discounted tasting to Twitter followers, provide food pairings for your wines, or link to news articles about your wine.

Most importantly, engage other users and those that tweet about related topics like #vawine. Be diligent about responding to tweets about your wine or winery. Be part of the conversation.

While TweetDeck is free, HootSuite offers a Pro version with more robust social analytics and advanced features for $8.99/month. Those advanced features include geo-tracking and the ability to manage multiple social media accounts like Twitter, Facebook, Wordpress, Google+, and Foursquare from one application.

Geo-tracking (sometimes referred to as geo-targeting) allows users to follow other Twitter users and conversations within a defined geographic area, such as those near your winery.

The HootSuite application is available for desktop (Mac and PC), iPad and other mobile devices like iPhone or Android, and can be downloaded for free at, www.HooteSuite.com.

Twitter, like other social media tools is not a panacea, but it can play a critical role in helping build a community of loyal customers around your wine brand and also provide a way to listen to your customers online.

As noted in the previous installment of this series, there is no one absolute best social media platform or one perfect, cookie-cutter approach. Each winery will need to test and determine how Twitter bests works for them.

The next article in this series will provide a detailed overview of how wineries listen, monitor and engage with current and potential customers via VinTank's Social Connect tool.

Customized search lists: Virginia wine

You can create a customized search list on TweetDeck to follow all Twitter conversations about Virginia wine., using the hashtag and search term, #vawine.

- First, open the application and then click on '+' or '+ Add Column' located on the far left column of TweetDeck. This bring up a new popup box.
- From there, click 'Search.' Type #vawine in the search box and hit enter.
- Finally, click on the 'Add Column' button near the bottom of that search box.

You have now added a customized search column to track and view all tweets about Virginia Wine (designated by the #vawine hashtag).

Follow this same process to setup additioanl columns to track other hashtags like #cville, #drinklocal, etc.). As an example, my TweetDeck columns include; mentions of my Twitter handle, #vawine, Wine Influencers, and Virginia.

— Frank Morgan