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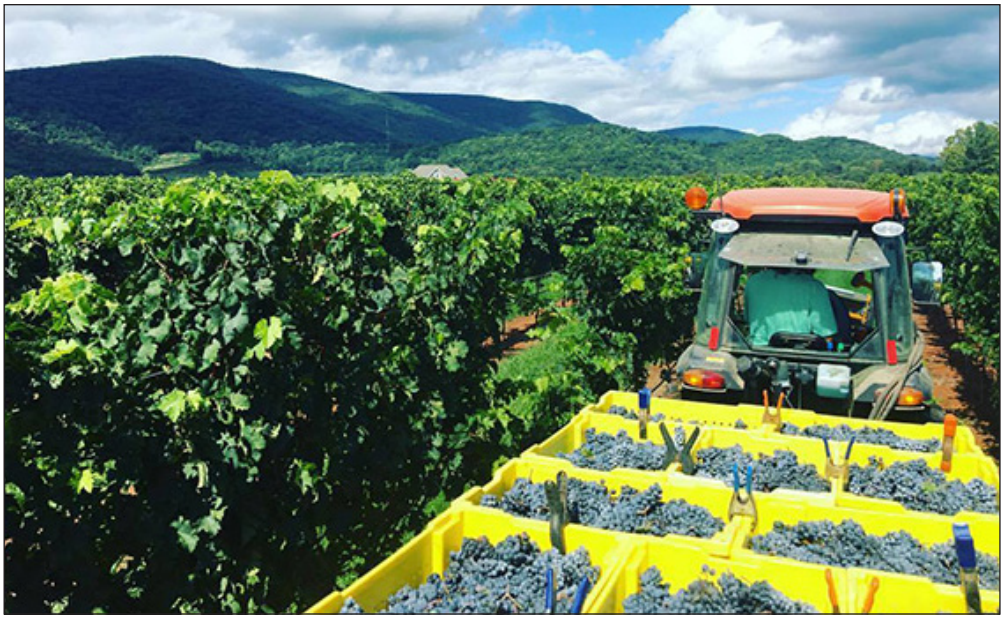
The Fruits of Our Labor



Carrington King

THE GRAPE HARVEST has been in full swing throughout Virginia, including at King Family Vineyards in Crozet, where they were bringing in Cabernet Franc in mid-September. Do you have harvest or vineyard photos you'd like to share on the Grape Press website? For more information, see Page 2.

Age Matters in the Vineyard

By Jim Law
Linden Vineyards

In the 1980s, viticulture discovery travels took me to Napa and Sonoma. Growers there found it amusing that someone would even consider growing grapes on the East coast. Our conversations often ended with a certain air of arrogance: "You'll have to wait a couple of decades to make good wine. Young vines just can't do it." On return trips in the 1990s, those same growers were replanting most of their vines due to phylloxera. When asked, it seemed that there now wasn't much difference between old vines and young vines.

In Europe, winegrowers treat their young vines as second-class citizens, automatically declassifying the wines to a lesser bottling, regardless of the terroir status.

One can't plant old vines, and because I had only young vines, I remained agnostic on the subject. I now have vineyards ranging from one to 31 years old. And now I have opinions on the matter. Vine age has a significant influence in

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President's Corner

The Virtue of Staying Flexible

By Nate Walsh
Walsh Family Wine

The variations in Virginia's growing seasons, particularly post-veraison, often require an adaptable approach, a level of agility and reactivity whereby growers see the positives and negatives of a vintage and shift their management according.

Vineyards rarely progress and ripen as we expect. I would argue that the better wine is made as a reaction to what happened, or is about to happen, rather than from forcing one's hand on a vineyard to push it as close as possible to what you had planned for during pruning, or, in a way, during planting.

Of course, we can stack the deck in our favor, and we can know multitudes about grape growing, but each year still presents us with some unknowns.

At the time this is published, some regions in Virginia will be finished with the 2017 harvest, some will be nearly finished, and some may be just sinking their teeth into the reds.

As always, the variation amongst Virginia's diverse regions — from

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INSIDE

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VIRGINIA VINEYARDS ASSOCIATION

PRESIDENT'S CORNER (cont.)

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the Eastern Shore to Northern Virginia — has been drastic, making it difficult to offer any broad generalizations about the Virginia vintage.

Personally, I would say this has been a particularly aberrant year, not just more difficult than average, but one of my most difficult in the past 10 years. Our vineyard management in August and September, as we've gotten closer and closer to harvest, has continually shifted in reaction to the weather and unanticipated imbalances in vine advancement.

Both of my sites are in Loudoun County. Post-veraison, we received almost six inches of rain this year, four of which came in August via slow, daylong drenches. Varietals that appeared to be almost 10 days ahead of schedule throughout the summer slowed down and in some instances fell behind average, as we watched berries and clusters expand to be significantly larger than normal. Late-season downy mildew has been an issue, shrinking canopy size and exacerbating the lag in ripening.

Berry size and cluster size have been particular outliers this year, tracking 20 to 40 percent larger than average, particularly in the case of merlot. For the reds, this most drastically affects overall yield and cluster crowding in the canopy, but also puts a question mark over maceration techniques.

One response we had to this was to thin crowded fruit and shoulders in early September for rosé production in order to maintain adequate air flow in the fruit zone. At the time of this writing, we are on the eve of picking our first red block, and are anticipating an additional juice bleed in order to lower the juice/skin ratio to a number that will lend itself to more extraction.

Many of my neighbors are seeing these same large berry and cluster sizes, and thus large yields. Since then, our neck of the woods has been enjoying almost two straight weeks of hot, sunny weather — I will be interested to see what comes of these higher yield reds.

A second challenge we've encountered this year is a difficulty in ripening Viognier in many of our blocks. Most years, my primary challenge with Viognier is ripening it while still retaining some (although never all that much) acidity. This year has been different.

Viognier cropload, notoriously aperiodic, has been exceptional (possibly even a bit high), but many clusters or entire shoots seemed to stall in mid-August.

By mid-September, when we found ourselves with wildly uneven ripening between "stalled" clusters and "normal" clusters, we made a pass and dropped clusters based on taste — a process that might sound impossibly slow but is made easier by the fact that the "stalled" clusters were beginning to shrivel, and were therefore easier to spot, sample, and drop.

The downside here is that our ripening has been delayed. We are picking Viognier almost two weeks later than in the previous four years, and certainly the acid balance, already very difficult with Viognier, will be a challenge in the cellar.

These idiosyncrasies are new to me this year. In speaking with other growers, I found that many have seen similar difficulties and have reacted in different ways (or not reacted at all).

Ultimately, it will be from the finished wines that we learn the most. But, mid-way through the harvest, with the weather pattern we've had — a pointedly wet August followed by a cool, dry September — these challenges have been brought to the forefront. As we move into the second half of our harvest up here, I hope to keep a flexible, adaptable outlook.

Show Off Your Vineyard!

With the guidance of the VVA board, we'll be revamping the VVA website over the next few months so that it better serves our members and better represents Virginia growers.

To showcase the state's vineyards, we're looking for photos of your vines, your grapes or your harvest that can be displayed on a rotating basis on the website.

Here are some guidelines:

1. Include the name of your vineyard and town so they can be added to the site, and, if relevant, specify the varietal pictured (harvesting Chardonnay, etc.).

2. We'll try to work with any image; most helpful are photos with a minimum resolution of 72 pixels per inch and minimum width of 10 inches — larger is always better.

3. For each photo, identify the photographer so that we can give proper credit, and please be sure that you have the rights to have the photo published.

4. Please email photos (or any questions) to Grape Press at cgarsson@gmail.com. Thank you!

NORTHERN VA.: "Flavors in all the fruit harvested so far have been quite nice."

By Dean Triplett
Greenstone Vineyard

So far the summer of 2017 can be described as hot, wet, and early.

June and July were hot, with 30 days over 90 degrees Farenheit. The good news here is that we did not have any days over 100. Although we had several heat spells, we also had several cold fronts that moved down into our area throughout the summer to give us and the vineyard relief.

Rain, while not constant, was plentiful throughout the summer, with one downfall of 5 inches in about 24 hours. The rain was so plentiful that most growers had to make multiple trips through the vines, hedging, pulling laterals and leaf pulling.

Kevin Goolsby of Tarara Winery emailed me before harvest began saying the summer rains had caused his vines to display longer -than-average internode lengths and accelerated canopy growth. Under-the-trellis weed management was more problematic as well. Kevin said this was the first year he's had to hedge in June. Along with the increased vigor, downy mildew has been a constant threat.

Mitch and Betsy Russ of Russ Mountain Vineyards also wrote me, noting much the same conditions at veraison as Kevin cited. Hedging, early and often, was the name of the game this year throughout the Russ's vineyard.

Early fruit set in most vineyards seems to be the common theme as well. Mitch estimates that production in his Merlot vineyard is down probably 10 percent from last year. Fruit quality going into harvest looked very good, however. And one bright note this summer was the low Japanese beetle pressure that most vineyards experienced.

Sébastien Marquet, consultant, and winemaker for Doukenie Winery and Greenhill Winery & Vineyards, told me that his entire crop seems to be at record quantities. Harvest in most varieties is very early as well. Sebastien says he is seeing fruit come in two to three weeks ahead of past harvests.

The other thing he is seeing is a leveling off of sugar accumulation. Grapes are hitting 19-20 degrees brix and then just sitting there; all the while pH is creeping up. This appears to be a function of the cooler-than-average temperatures we've seen throughout much of August and September. Sebastien sources fruit from the Northern Virginia area, but also from central Virginia. The other anomaly he is seeing in some sites is a kind of "out-of-order" ripening sequence. He is picking Petit Verdot ahead of Merlot, Cab Franc and Chambourcin in some vineyards. Petit Verdot and Cabernet Sauvignon have always been the last two varieties picked in my vineyard.

I had the same experience in my vineyard as others when it comes to excessive vigor. Vegetative growth, both that of vines and weeds, made for more labor being required all season long.

And since timing is everything when it comes to trellis work I struggled to get hand work done in a timely fashion. As it seems to happen each year, a form of triage has to be applied in the vineyard: doing the work that has to be done right away and getting to the rest when you can. This is certainly not the ideal, but it is reality.

Downy mildew pressure was high this year along with the other usual suspects. I wound up putting down 17 sprays through the season, five more than normal.

As noted by others, Japanese beetle damage was very low this year. Fruit set was normal in some varieties, though early, but uneven in others. While my Merlot had normal quantities at harvest, in some sections of this variety, shot berries were much more prevalent than in other sections.

The portion of the vineyard highest up the hill seems to have had the greater percentage of shot berries compared to vines further down the slope. My Muscat Ottonel, the first variety picked, was down in quantity this year. A major factor was predator damage, which is all too normal with this variety. This was primarily my fault since I was slow in getting the netting up this year. (There's that timing thing again.) It also has a history of inconsistent yields in most years.

The Albarino was down in yield this year as well, with two and a half tons picked compared to almost four last year. Two and a half to three tons is the more normal yield in this variety in my vineyard, however, so I look at last year's yield as more of an outlier.

Flavors in all the fruit harvested so far have been quite nice. The Cab Sauv and Petit Verdot yields look to be on the heavy side. As I write this on Sept. 16, the brix in my Petit Verdot is 19.5 with pH at 3.10. The weather forecast is for temperatures in the low to mid 80's for the next 10 days or so. Hopefully that will help pump up sugar levels in the remaining red fruit before the acids start to drop out.

I have seen what appears to be the first real sign of trunk/cordon damage due to Esca in my vineyard. While I've struggled with various viral diseases in my vines for years, this is the first sign of what we think is Esca in some of my Albarino and Muscat Ottonel. Although it's limited to just a handful of vines now, I'll have to keep a sharp eye out for further infections.

While the season is early this year, it's not over quite yet. I'll be very interested in seeing how the late reds mature. I doubt that there will a lot of huge, blockbuster reds made in 2017. But I'd be willing to bet that there will be quite a few very nice, elegant ones produced that will pair wonderfully with food.That's certainly what I enjoy about Virginia wines!

EASTERN VA.: "Lateral growth was on us quickly and added to ... canopy crowding."

By Paul Krop
Good Luck Cellars

The fascinating thing about dealing with biology is the multiple moving parts, each of which has its own bell curve, reflecting probability. Numerous factors influence where we are today in the middle of harvest: weather (both long range and short), soil nutrient and water-holding capacity, vine age and nutritional status, and canopy management.

My observations here in the East, and specifically our 25 acres under vine, suggested we were on the same date for budbreak as last year. By mid-July it looked like we would be picking a week or so early, and late July showed veraison proceeding ahead of last year's numbers. However, August brought the Rains of Ranchipur. A call to Rock Stephens, 30 miles east of us on the Eastern Shore, brought the news that he recorded over 11 inches of rain for the month of August. We recorded three and a quarter inches of rain in one overnight period alone.

Many cloudy days and cooler-than-normal temps in late August and early September were likely the cause of delayed ripening, so that our actual harvest dates were ultimately close to or behind those of last year. I've also been forced to pick at lower brix while watching the pH rise. When we spoke recently, Doug Flemer of Ingleside Vineyards voiced similar findings with delayed ripening.

Now that I've put so much blame on the weather I'll have to accept some blame myself for falling short of best canopy management. We did well with early leaf pulling and shoot positioning but got caught with less-than-ideal follow-up.

Lateral growth was on us quickly and added to unwanted canopy crowding. (See Dr. Tony Wolf's advice about controlling laterals in his July 2017 Viticulture Notes.)

I was so pleased with the advantages our new hedging rig and leaf-pulling apparatus provided. As you may remember, I crowed about this in the last Grape Press. But intelligent hands, and enough of them, are needed at the right times. And finding, training, and retaining such help has not come easily.

Our canopy spray program appeared to be on target with good control of some early downy mildew with later powdery mildew appearance, but the heavy rains of August produced a bloom of both. We've seen the proliferation of fruit flies in susceptible thin-skinned varieties such as Seyval, and treated with pyrethrins.

I believe we'll finish out harvest with Cabernet Sauvignon, Cabernet Franc, and Norton still looking good. Since early August we've done four canopy sprays of supplemental nitrogen and YANs have come in between 180 and 230, with the exception of a low reading of 63mg per liter on our Traminette.

The canopy on this variety has looked great all season, so I'm at a loss to explain it. We

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Young Vines, Old Vines and Their Wine

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both the vineyard and the wines.

Old Vineyards

Just like people, vines go through developmental phases. In their early bearing years (the first decade) they are teenagers. Vigorous, often out of control, they want to recklessly over-produce. Lots of discipline is required from the grower in terms of canopy management and crop control.

They become young adults in their second decade. Vigor and yields become more balanced. Confident and independent, they require less work for the grower. We often see this shift in years 10 to 12.

The third decade can be the sweet spot if the vines are planted in the right way and in the right place. We start to see significant vigor decline, which can be a shock after years of battling excessive vigor. Seemingly all of a sudden, a soil amendment program is urgently needed.

The fourth decade becomes more geriatric. Vigor and yields decline, often to unproductive levels; replants become more numerous. We start asking the hard question: Hold 'em or fold 'em?

Having experience now with all four "decades," my thoughts on trellising and vine spacing have changed. In the 1980s and 1990s the thought was to use low-density (6x9 feet) and/or divided canopy trellising (Lyre and GDC) to compensate for high vigor.

This worked in decade one and into decade two, but eventually the vines aged and could no longer fill their allotted space. We tried interplanting, soil amendments and re-trellising (to VSP). These Band-Aid measures helped, but each solution had its own set of problems. Eventually it became apparent that the best solution was to remove the vineyard and start again from scratch.

The Wines

Young vines ripen their grapes faster than old vines. They produce an abundance of sugar and lose acid quickly. Ripening can be asynchronistic, vine to vine. Old vines can take one to two weeks longer to ripen. Sugars (or potential alcohol) are a bit lower, but acidity remains higher. Tannin and phenolic development are more in sink with flavors and chemistry.

Wines from young vines are different than those from old vines. Young vine wines are fruit forward, voluminous, simple, varietal, and early drinking. They are rock and roll wines. They give immediate satisfaction and don't require much contemplation. They show well in a typical tasting room situation or wine competition.

Old vine wine expresses terroir and minerality over fruit. The wines are complex with density and length. Just like classical music, they need attention and time to appreciate. These are fine dining wines and wines for experienced wine writers.

An increasingly frequent question coming from our tasting room visitors is: "What is the lifespan of a vineyard?" At this stage of our viticultural evolution, a vineyard's life is not so much about keeping vines healthy and productive as it is about mitigating inexperienced pre-plant decisions from years ago. All of the vineyards we have removed and replanted have been a result of unsatisfactory grape (wine) quality.

For those vineyards where the right variety was planted in the right place and in the right way, economics play a major role. Yields will decline and missing vines will need to be replaced. And the question will arise: As our vineyards age, will an increase in wine quality justify a higher grape or bottle price to compensate for lower yields?

Regional Report

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applied an actual 10 pounds of nitrogen per acre, in the form of granular ammonium, at bloom to all vineyard blocks, but we may need more in the future. The addition of diammonium phosphate (DAP) at fermentation showed progression to "dry" with excellent aromatics.

Looking at climatologist David Tolleris' predictions for the next few weeks we see normal or below-average temperatures for most of the state but above normal precipitation. PLEASE, No Hurricanes!

The Ins and Outs of Paper Barriers

By Karl Hambsch
Loving Cup Vineyard & Winery

Yet another season has created more questions than answers. Chief among them are, "Why did I think I could grow grapes." Also prominent is, "Can I do anything right?"

The schedule we set for ourselves this season was ambitious — in addition to the boring old grape-growing thing, we began several experiments that could each individually fill one's spare time, and collectively challenge one's sanity or affinity for sleep or sit-down meals.

The experiment that I'll report on in this issue is one in which we tried to establish a new one-acre block without herbicide … or roots. A direct stick planting through paper weed barrier.

Green Gambol

The origin of the project was the tremendous burden of weed control created by a new planting in 2016 when endless spring and summer rains awoke every weed seed in the 20-year seed bank. During that season, one-third of all man hours for the entire vineyard was applied to hand-hoeing and hand-weeding that tiny planting.

"Not again," I said.

So, without the efficient convenience of glyphosate, how does one suppress weeds? With mulch.

Funny thing about mulch: While its moisture retentiveness is absolute, its medium as a physical barrier is not. And the edges of mulch tend to foster the growth of "super weeds," which benefit from both soil moisture and full sunshine. We made this mistake with our 2010 planting with enormous mounds of wood mulch at each vine, and, six years later, we are still fighting persistent grass clumps on these trunks.

Not satisfied with making the same mistake the same way, we endeavored to make the same mistake in a different way.

As our "mulch" we chose an organic agricultural paper product that comes in 4-foot-wide rolls and is purported to last three to four months. Before laying it down, we cultivated in a cover crop of tillage radish and unrolled irrigation tubing with inline emitters. Vine spacing was at 4 feet apart, and emitters at 2 feet apart. The edges of the paper were held down by bamboo and landscape staples.

So how does one plant through paper? One does this by "planting" vines without roots. Budwood, that is: 3-node sticks cut and collected during winter pruning. The heat and moisture trapped by the dark paper should cause the budwood to callous and root in place. And it did just that.

Karl Hambsch

In one of several experiments, Loving Cup Vineyard laid down an organic agricultural paper product to try to suppress weeds around new budwood plantings, but the project wasn't entirely successful.

What we didn't anticipate — and what jeopardized the whole project — is that the paper MOVES. Every night, dew wets the paper and it expands, and every day, the sun dries the papers and it shrinks.

On a hot day, the paper is taut like a drum head. Often the papers at the ends of the rows are pulled off their moorings, or the paper just breaks in the middle of the row — both necessitating immediate repair.

This daily lengthwise shifting of the paper by 6 inches both ways caused us to rethink the plan. The little holes that we had carefully punched through the paper were grabbing the budwood and knocking them over, sometimes shearing off swollen buds and new shoots and undoubtedly doing unseen damage to what tiny roots we may have already grown.

Consequently, we cut the paper lengthwise at each vine to allow the paper to shift harmlessly around the budwood. This mostly worked.

Unfortunately, cutting the paper to fix one problem caused another. Weeds that had been growing grumpily under the paper in darkness now perked up by these slivers of light and grew up, out and over the paper.

At the same time, interrow ground cover was benefitting from both the nearby soil moisture and our reluctance to mow closely and damage the paper. These inter-row weeds met the weeds growing out though the paper, and within a couple of weeks the 4-foot-wide weed barrier was almost completely covered.

So, in the end, the system that we designed to avoid pulling weeds by hand caused us to pull weeds by hand — lots of them. Eventually we prevailed, of course, but still — the whole operation was less effective than it was complicated.

Adding to the frustration was that only about three-quarters of the budwood survived the season, and of those, only one-quarter of the vines made it to the fruiting wire. Future management of this block with widespread replants and non-uniform vine size will be challenging.

So, if we had to do it again, what would we do it differently? Choosing a paper weed barrier product that would stretch rather than break would be a place to start. Perhaps we could also figure out a way to plant rooted nursery vines first and then lay pre-punched paper over the top. (This also makes available the use of corn gluten for weed suppression, which was not used this year for fear of inhibiting budwood rooting.)

Lastly, if we could develop a tractor implement to surgically cultivate the narrow strip of ground along the outside of the paper, we might address the edge-weed issue inherent to mulch.

So that's all to report for now. In the next issue, I'll tell you about the 10,000 clusters that we covered with paper bags. Unless my family has me committed first.

Karl Hambsch is the vineyard manager for Loving Cup Vineyard, a certified-organic vineyard in Albemarle County. His "Green Gambol" column for Grape Press focuses on organic viticulture.

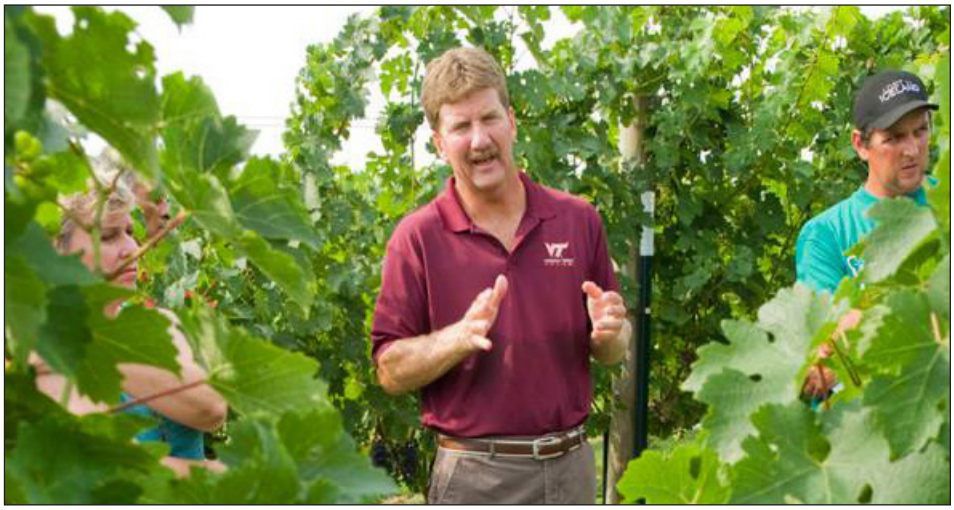
A Q&A with Tony Wolf

Guiding Viticulture in Va.

Everyone who grows wine grapes in Virginia knows Virginia Tech professor and viticulture extension specialist Tony Wolf, not just by name but more likely through personal contact. Also serving as director of the Alson H. Smith Jr. Agricultural Research and Extension Center, Tony is a familiar presence in vineyards and viticulture conferences throughout the Commonwealth.

In July, Tony, a noted researcher, was the recipient of the Eastern Section of the American Society of Enology and Viticulture's Outstanding Achievement Award. He is the author and co-author of numerous articles and publications and is lead author and editor of the Wine Grape Production Guide for Eastern North America*, a standard reference for vineyard operators. He also publishes* Viticulture Notes*, which provides a wealth of practical advice and information on issues of immediate interest to grape growers.*

As technical advisor to the Virginia Vineyards Association, he provides the advice and counsel that make possible the VVA's technical meetings and a host of other activities. Tony took time out of his busy schedule in August to participate in a Q&A with Grape Press about his work and Virginia viticulture.



Courtesy of Virginia Tech

"I enjoy working with people who are eager to learn," says viticulture extension specialist Tony Wolf.

Q: *You started out majoring in plant sciences at West Virginia University in 1980. Did you always know you wanted to focus on viticulture, or how did you end up with a career in grapes?*

Tony: I had a green thumb as a kid and I never grew up. Viticulture, per se, evolved from an unrealistic idea of establishing a commercial vineyard when I was in my early twenties. No land, no capital, and very little knowledge about how grapevines grew were my constraints. The 'way' for me was to apply my viticulture interests towards an academic path where I could follow my interests.

Q: *Personally, what's the best part of your job?*

The answer would be different if you'd asked at the 5-, 15- or the 30-year waypoints. Certainly an underlying, appealing aspect of the job is the diversity of tasks that I can pursue in the course of a day, a week or a month. I enjoy working with people who are eager to learn, and that includes graduate students and the undergraduate students in the online course that I teach. I also enjoy working in our research vineyard — it's small enough that it is seldom overwhelming, and it helps me stay connected to the reason I got into this gig in the first place. Research and discovery are also important to me.

I'd say that we're more interested today in finding ways to enhance grape and wine quality potential in the vineyard.

Q: *What's your favorite varietal for growing and favorite varietal for drinking.*

We've grown a number of varieties over the years and I'm not sure that I have a favorite; some are better behaved than others. Currently, I'd have to say that Petit Manseng is relatively easy to grow and to produce high-quality fruit with, although it can be very vigorous in wet years.

I don't really have a favorite variety in terms of varietal wines. My "go-to" wines are Bordeaux reds (blends and occasional varietals such as Petit Verdot), reds from the Iberian Peninsula, and an occasional Brunello di Montalcino or Barolo when my budget allows. Perhaps not surprisingly, our first variety planting at Winchester back in the late '80s included some of the principal players in these wines: Petit Verdot, Nebbiolo, and Touriga Nacional. I would emphasize though that I do buy, drink, and share many Virginia wines.

Q: *Can you discuss an area of research that has had an impact on Virginia viticulture and that's particularly satisfying to you?*

My "research" has had two forms: applied research that seeks to adapt generally established concepts to Virginia's unique climate and variety mix, and more fundamental research that seeks knowledge (discovery) that contributes to the science of viticulture. So, two areas: Our demonstration research trials in the late '80s and early '90s, I believe, were instrumental in showing that both the yield and quality of grapes could be increased by dividing the canopies of large vines into two discrete canopies either horizontally (e.g., lyre training) or vertically (e.g, Smart-Dyson

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Timing is Everything for Grape Growers

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training). This was particularly useful in retrofitting older, widely spaced vines where both row width and vine spacing in the row were not making optimal use of the vineyard area.

The down side of the more elaborate training and attendant trellising is the added material and labor costs, and the fact that it's often more difficult to mechanize some of our canopy management practices, such as leaf-thinning and bird netting, with these systems. So even in our own research vineyard, we've moved to simpler training systems with new vineyard establishment.

Similarly, our novel variety evaluations have identified strengths and weaknesses of a number of varieties that are grown in Virginia: Petit Manseng, Tannat, and Petit Verdot were all part of our variety evaluations from the '80s, and it's satisfying in a way to see the acreage of some of these varieties expanding.

On the discovery side, I've had the opportunity to work on a disease of grapes — North American Grapevine Yellows — which is not our most common nor devastating disease, but it's one that very few people work on, and it does have relevance to some producers who lose vines to the disease each year. It's a complex disease and has been very difficult to research. We've been able to identify alternative hosts for the pathogen and we've also found evidence of one particular leafhopper vector that appears to be involved in the disease.

Q: *As you travel around the state visiting vineyards, what have you found is one of the most common mistakes new grape growers make?*

Simply underestimating the amount of time and work that goes into developing a young vineyard is a recurring issue. The consequence of this misstep is that a grower will fall behind schedule on a crucial vineyard management practice. This might be not getting the shoot-thinning done on time, which then results in excessive canopy density at fruit-set that contributes to a powdery mildew outbreak on young berries. Or leaf and lateral shoot thinning does not get done on time and all of a sudden we're into August and the crew does the last 30 rows during 90-degree weather resulting in sunburned fruit. Or weed management is neglected and the vineyard loses a year's worth of growth due to weed competition.

Unfortunately, some of these missteps happen with seasoned growers, too.

Q: *What's one of the toughest challenges facing grape growers in Virginia right now and how is your department helping to address it?*

The cost of grape production is very high at the scale that many of our producers operate at (< 20 acres). If you are producing wine, you can recover some of the grape growing expenses through bottle pricing, but if we are going to increase grape acreage in the state, we need to figure out less expensive means of growing grapes, or we need to increase production and/or the value of grapes.

An underlying theme of our early research ('80s and '90s) was to figure out what to grow, where to grow it, and how to grow it. Our demonstration research of variety evaluation produced some good alternative varieties such as Petit Manseng and even Tannat in certain (warm winter) locations. Our GIS work initially with John Boyer and then Peter Sforza collectively addressed what we knew about where grapes should or should not be grown.

Because you qualified the question with "right now," I'd say that we're more interested today in finding ways to enhance grape and

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Remembering One of the Best Decisions Virginia Ever Made

(Editor's Note: The following is viticulturist Lucie Morton's tribute to Tony Wolf during the Eastern Section of the American Society for Enology and Viticulture program in Charlottesville in July.)

So… on this occasion when we take the time to pause and reflect with gratitude on the last three decades of Tony Wolf's career here in Virginia….

I would also like to honor other persons in this room.

In my work as an independent contractor with vineyards all over the place, I have a sort of bird's eye view of things — including the work of a plethora of viticultural research scientists, professors, extension agents, agricultural bureaucrats, and grape breeders.

What, for me, sets Tony Wolf apart on the world wine grape stage is — first and foremost — his unstinting work ethic.

I don't know how he has done and continues to take on so many jobs and responsibilities that extend from reading papers to writing them, from here at home to nationwide, and even to other crops beyond grapes as the director of the Winchester Station.

Tony has steadfastly maintained the highest standards in each of the roles he was cast into some 30 years ago by an embryonic Virginia winegrowing industry that could not afford to hire five people to be:

1. A grape research scientist with international reach;

2. A grape extension agent;

3. A professor of viticulture and mentor of students;

4. A communication hub of information at the dawn of the digital age;

5. An administrator to organize Virginia want-to-be winegrowers into a cohesive advocate group.

Back in the 1980s — with the indispensable support of Secretary of Agriculture Mason Carbaugh and his right-hand visionary Mel Jefferson of the Virginia Department of Agriculture and Consumer Services — a committee was established to bring viticultural expertise to the Old Dominion and also, very importantly, the tangential enological expertise in their first hire of that era: Bruce Zoecklein, because good grapes deserve good treatment in the cellar.

In a nutshell, the Old Dominion hired the newly Cornell-educated Tony Wolf to do five jobs in one. It was a kind of Hail Mary hire and we are here today to acknowledge that we made a winning touchdown with Tony.

So, who are the other persons in this room today whom I would like to congratulate? That would be me and all the others on the VDACs committee — whom I'll be darned if I remember — that hired Tony way back when. We all deserve a big pat on the back! If this were the Super Bowl, we'd be dousing you with Gatorade or Virginia wine. Lucky for you instead I suggest we raise a glass in toast.

Thanks, Tony, for helping all Virginans to be serious contenders in the world arena of fine wine.

WOLF, from page 8

wine quality potential in the vineyard.

Our training system comparisons with Viognier, Cab Franc, and Traminette, and our more recent work with altering the degree and timing of fruitzone leaf thinning, have demonstrated qualitative differences in grape quality components; however, I will admit that we've not adequately explored the cost:benefit ratio of these practices and I think we'll see that there are optimal levels of fruit exposure, above which negative consequences will be realized.

Furthermore, there's a limit to how much hand labor can be invested in the vineyard if the marginal increases in crop value are not commensurate with the labor input. We need to get a better handle on the cost:benefit ratios of some of these vineyard inputs.

Q: *Where do you see Virginia viticulture in 10 years' time?*

Well, 10 years is not that far away. There will be a continued exploration of grape growing at cooler, higher elevations of the state; areas which have previously been too cool or too short of a growing season to adequately ripen most of the varieties that we grow. I believe that our independent grape producers will need to get larger (>20 acres) to be profitable.

I like the model of established wineries helping to finance new vineyard expansion and hopefully this will help with the shortage of Virginia grown grapes. The quest for increased grape and wine quality will continue and operations with great sites, excellent vineyard management, and the "right" varieties will continue to make awesome wines in good vintages.

The only wildcard that I see is a more variable climate that increases both abiotic and biotic risk factors.

Q: *In terms of how the AHS Agricultural Research and Extension Center is working to meet the needs of grape growers, where would you like to see it in 10 years' time?*

The AREC has physical resources to accommodate an increased grape research and extension presence, but adding new faculty lines is a complex process at the university, as new positions have to also fit the strategic plans of the College of Agriculture and Life Sciences and the University itself. We were fortunate to create the grape pathology position (Dr. Mizuho Nita) a number of years ago and, ideally, I'd like to see both a viticulture research and a viticulture extension position within 10 years.

Research is increasingly multi-disciplinary, and often takes a multi-state team to secure sufficient funding and momentum to make progress on complex research issues.

For example, let's say that the industry really needs a proximal sensing system to speed the process of crop estimation. This, in fact, is something that a nationally funded team of experts is, in part, trying to develop. To achieve this "system" requires viticulturists, ag engineers, optical and electrical engineers, as well as economists. As such, the AHS AREC might provide just one cog — one scientist — in a larger research wheel to help solve some of the big-issue problems like climate change and labor shortage.

Q: *What's the biggest change you've seen in Virginia viticulture as the field has developed?*

I can't say there is "one" change that eclipses all others. Major shifts that I've seen in 30 years include the following:

► Change in varietal landscape to embrace more Merlot, Viognier, Petit Manseng, etc. and less Riesling, Chardonnay and some lesser quality hybrids

► Higher density plantings: We used to see a lot of 12-foot rows and vine spacing of 7 to 8 feet in the row, all destined for cordon-training. Eight and nine-foot rows are much more common now, as is closer in-row spacing, and head-training with cane-pruning.

► More attention to high-quality vineyard site selection. At the same time, we've seen vineyards expand into areas that had formerly been too cold or experienced too short a growing season to be sustainable.

► Younger people getting into the industry. Granted, many are mid-management level; however, I do see increased opportunity for careers in wine growing that were principally confined to owner/operators 30 years ago.

Q: *What are the most important things that Virginia wine grape growers can do to further the success of Virginia wine?*

A very open-ended question. A non-exhaustive answer would be to remain adaptable and resilient. We all know the hazards of doing the same thing over and over again and expecting different results, and yet we are creatures of habit. If you're not happy with your grape quality or quantity, perhaps management changes are in order. New clones, cleaner plant material, even new varieties all offer opportunities to change things up in the vineyard. My hat's off to the folks who are willing to take out a mediocre vineyard in an attempt to establish an outstanding vineyard.

A quality crop is SO dependent upon appropriate timing. Make a misstep with canopy management and disease management can suffer. Get behind on shoot thinning and crop management AND disease management can suffer.

Also, a quality crop is SO dependent upon appropriate timing. Make a misstep with canopy management and disease management can suffer. Get behind on shoot thinning and crop management AND disease management can suffer. Miss a critical spray near bloom, and … we've all seen examples. Being resilient requires physical and mental stamina and, for most, it means having an equity buffer to ride out the financial hardship that comes from misadventures that are out of our control: frost, hail, hurricanes to mention just a few.

Q: *Can you tell us about your current research projects and what looks promising?*

I feel like more of a facilitator of research at this point and find myself guiding others, such as graduate students, rather than leading the charge. I've addressed parts of your question elsewhere. I believe that improvements in grape quality can be made with refinements in vineyard management, but these changes occur incrementally.

Another general point I'd make here is that while discovery is important, getting growers to adopt new practices and to apply the research findings is equally important.

From a time management standpoint, I intend to spend more of my time on the practical application of some of our past research, rather than embarking on new research practices. There are refinements in vineyard nitrogen management, crop management, training and canopy management, as well as variety adaptation that comprise past research projects, and that need to be further explained in practical terms. And, the Wine Grape Production Guide (2008) is in need of a major rewrite. So — I've dodged your question, but with good intentions.

Always Think Ahead in the Vineyard

By Bill Freitag
Toll Gate Farm & Vineyards

We are rapidly approaching the culmination of the year's vineyard activity and reaping the reward of our labor over the last eight months. The harvest, although simple in concept — removing ripe grapes from the vines and delivering them to the winery customer — is so much more.

Proper management of the harvest and its myriad of details is a must. The harvest involves a logistics exercise that rivals a military maneuver.

We need to perform a multitude of planning and preparatory activities and, perhaps most important, we need to keep an eye on the weather.

Flexibility in our thinking is a must to actually achieve our goal of delivering a quality product in a timely manner.

Sustainability Corner

Current Situation

When veraison was well under way, with our Pinot Gris almost completely turned, the Viognier gaining its golden hue, and our reds (Cab Franc and Petit Verdot) showing some red and some blue, it was time for a last look at some viticultural issues before the details of harvesting overtook us.

First, I took advantage of this final opportunity to review my crop estimates. Since we had some attrition from both frost damage and disease resulting in replacement plants as well as additional inter-planting, my panels have varying number of plants both producing and not yet producing. (I use the term "panel" as the space between two consecutive line posts in a row.)

Consequently, a per-acre estimate no longer holds true and I will do a final cluster count based on an average of randomly selected rows and panels in my various vine blocks. I will look at about 5 percent of the panels.

This also gives me a final opportunity to make certain that shoots with insufficient length do not have any clusters still hanging before they get mixed in with the acceptable grapes during harvest. Equally important is making any minor crop adjustments by removing unripe clusters from the reds and whites, trimming bad shoulders and removing any pink berries in the reds. It's just my way of trying to do the best possible job to give my customers what they want. Customers also appreciate as accurate a crop estimate as possible.

Then comes the moment of truth. You have

See SUSTAINABLE on page 12

‘I’ll Have Some Mozart With My Wine, Please’

By Andrew Hodson
Veritas Vineyard & Winery

Clara Davison/courtesy of Wintergreen Performing Arts

Harmonious pairings of wine and music entertained guests at the Wintergreen Performing Arts Summer Music Festival “Violins and Vines” performance at Veritas Winery in Afton.

We hear about wine and food pairing all the time, so what about a wine and music pairing?

The person who introduced me to the concept of the interplay between wine and music was Clark Smith, a well-known figure in the world of wine chemistry and the author of *Postmodern Winemaking*. I met him at a winemaker’s seminar organized by Mark Chien, who at that time was the Pennsylvania enology extension agent. As a carrot to attract participants, we were told that after a day of learning about wine chemistry, Smith would entertain us with a seminar on music and wine. You can imagine I was much more impressed with wine and music than I was with a whole day on wine chemistry.

With that experience in mind and in conjunction with Erin Freeman, artistic director of Wintergreen Performing Arts and its 2017 Summer Music Festival, I thought it would be fun for Veritas to do a wine and music pairing. Our premise was simply that cognitive and emotional processes affect the perception of wine. There is no debate that music affects emotions, therefore there has to be a relationship worth exploring between wine and music.

We know from common experience that if we are feeling happy, happy music makes us feel happier and, conversely, if we are feeling sad, sad music makes us feel sadder. Just look at the way music and wine behave together; where there is music usually there is wine. Whether it is “wetting the baby’s head,” a bar mitzvah, a graduation, an engagement or a marriage, music and wine help us celebrate the important milestones in life.

There are a ton of studies in neuroscientific and psychological literature that attest to the fact that cognitive and emotional factors can influence the way we perceive and experience both wine and music. One of the most frequently quoted studies is a 2001 report by Gil Morrot of the National Institute for Agronomic Research in France. He took 54 students from the enology program at the University of Bordeaux and asked them to provide descriptions of red and white wine.

The red wine was a mix of Merlot and Cabernet Sauvignon and two others were a white Bordeaux wine, one of which had been dyed with a tasteless red color dye to look like the red wine. The result of the study was that the students described qualities of red wine like cherry, plum and even forest floor in the white wine that was dyed red. For me, this study only proves how easy it is to fool students who were under way too much psychological pressure and absolutely confirms that man is a more visual than olfactory creature.

Examples abound where conscious and especially subconscious bias influences our decision-making processes. One I particularly like was done at the University of Leicester back in the ‘90s where it was shown that French music played in the wine section of a supermarket increased the sales of French wines and the same held true if you played the Glockenspiel in the German section.

We set out to investigate in a purely hedonistic fashion the effect of music on wine perception using a group of everyday people, all of whom demonstrated their interest in wine and music by purchasing a ticket to the Wintergreen Performing Arts Summer Music Festival “Violins and Vines” event at Veritas Winery.

To prove our hypothesis, we had to show that wine affected how music was perceived and conversely how wine affected how music was perceived. The samples consisted of groups of 60 people randomly selected by their willingness to pay for a ticket. Three groups were exposed to the following pieces of music paired with specific wines.

Here’s a look at the wine, the composer and the music for each pairing at the Wintergreen Performing Arts Summer Music Festival performance at Veritas Winery:

Scintilla, Mozart, *K. 162, finale (fugue)*
We chose an effervescent fugue by Mozart that captured not only the bright, scintillating acidity mixed with soft toast notes of two years on the lees but also the continuity of the fugue, symbolized in the constant petillant flow of tiny bubbles — the hallmark of good bubbly.

Harlequin Reserve Chardonnay, Dvorak, *American String Quartet (slow movement)*
For this soft, creamy, yet fruity Chardonnay, we chose the slow movement of the Dvorak American String Quartet. It is smooth and lyrical, with a richness of harmony. Throughout the rich, romantic string textures there are also moments of brightness as the strings are plucked in a melodic pizzicato.

Cabernet Franc 2015, Haydn, *Scherzo Russian Quartet (Opus 33, No. 5)*
Veritas Cabernet Franc is fruity and peppery so we chose music by one of the fathers of humor and spice, Franz Joseph Haydn. The Scherzo (or Joke movement) takes the listener in a variety of directions, often redirecting the train of thought, just as this wine is an unexpected combination of experiences.

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Assess, Plan For Harvest

SUSTAINABLE, from page 10

done all that is possible and the harvest draws near. A kissing cousin to crop load estimating is forecasting fruit maturity. It usually begins three to four weeks after veraison with frequency of subsequent sampling depending on desired ripeness and rate of ripening. You may want to invite your winery counterpart to walk the vineyard with you and to taste and critique as the anticipation for a harvest date proceeds.

The weather can become a serious challenge with our geographic position, which is prone to hurricane activity.

Another major consideration at this point is your spray program. As you approach potential harvest dates you need to consider the pre-harvest interval (PHI) for each chemical you apply.

The closer you get to a planned harvest date the fewer products will meet your need to protect your crop at this critical juncture. You probably will be spraying a different cocktail for each variety, although your reds will give you some flexibility while you concentrate short term on the whites. The many variances in PHI can make your head spin.

The danger of the first frost begins to build in importance as the harvest moves toward the end. We also must be able to recognize that we may reach a point where nothing we can do will change the outcome and so make the decision to pick even if not all parameters are ideal.

This whole phase demands flexibility on the part of the grower and the winery to react to the many variables inherent in what I call the "Harvest Dance." The first frost will, of course, stop the process dead in its tracks.

You will need successful communications with your winery customer. You need to minimize any misunderstandings related to the timing that fits both their production schedule and your own ability to get the harvest crew lined up. The delivery of the fruit or the pickup by the winery must be clearly planned and agreed upon. The winery may make harvest bins available to ease their handling at the winery. Leave nothing to chance.

In Closing

No matter how good a job you've done over the past eight months or so, as you approach these tasks next year, you can get assistance from the Virginia Sustainable Winegrowers Self-Assessment Guide (VSWAG). The guide, which is posted on the VVA website, can help you examine the best practices for all the tasks to bring you finally to the harvest.

VSWAG is designed to help growers:

1. Succeed in growing high-quality fruit that is marketable;
2. Explain concepts important to sustainable wine grape production;
3. Assess current proven vineyard practices;
4. Identify components of vineyard operation where improvement will lead to increased sustainability.

VSWAG is not intended for a one-time use. It should provide a path for annual use and improvement.

For those who created partial score sheets in past years, you will find your old workbooks on the tool with scores as you left them. Let's get them updated and completed as you finish your work in 2017.

Be ready for next year after completing what I hope is a great harvest this year and getting your babies into a comfortable winter slumber.

And don't forget to print out your Completion Certificate when you complete the workbook.

A Little Mozart, A Little Wine

MUSIC, from page 11

Petit Verdot 2014, Schubert, *Rosamunde Quartet Andante*
Petit Verdot, as I have said on many occasions, is not a "petit" wine. It is dark and brooding with cascades of fruit, spice and mocha and fits with the dramatic yet lyrical slow movement of Schubert's Rosamunde Quartet.

Othello NV, Tchaikovsky, *Andante Cantabile*
Othello is our port-style wine to be enjoyed as a gloriously indulgent finish to any work of art whether it is gastronomic or musical. Andante Cantabile combines the luxurious sweetness of both wine and music.

The results, demonstrated by the volume of applause and a show of hands, indicated overwhelming approval for the pairings.

The thing that is so striking to me is the commonality of language used in describing wine and music; particularly so when one is trying to explain the concept of structure in a wine.

I like to use music as the analogy in a metaphorical sense. Imagine wine is music; like music, wine has to have structure that, for me, are the tannins from French oak. Those barrel tannins enable one to taste each flavor component in the wine just as with an orchestra each instrument has to be heard in its entirety and in its place.

Similarly with balance, if any one instrument is too loud, the music, like a wine, is out of balance. Like wine, music is complex. Remember in the Mozart movie *Amadeus* when the king complains that there are too many notes in Mozart's music? Can a wine have too many flavors? Not if the wine is properly structured.

Finally, the finish, one of the most important qualities of a good wine, which is often referred to as the length. Like a piece of music, tasting a wine has a beginning, a middle, and a finish, and the length of the finish determines the emotional acceptance of the whole tasting and/or listening experience.

So there we have it, music and wine are strained through the sieve of individual human perception. Just as wine and music are natural buddies, what each one of us has experienced, our biases and the circumstances in which we drink wine, are probably as important as the actual taste of the wine and the sound of the music.