

# GRAPE PRESS

Fall 2014

The Quarterly Newsletter of the VIRGINIA VINEYARDS ASSOCIATION

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Courtesy of Jeff Sanders

## HARVEST TIME!

Merlot and Chambourcin grapes were harvested in September at Glass House Winery in Free Union, Va.

## Looking to the Future Of Virginia Viticulture

By Jim Law  
*Linden Vineyards*

Once harvest winds down I try to take some time to put things in perspective. Since March, my focus has been on the immediate demands of running a vineyard and reacting to the variability that our fine weather presents. Along with resting, looking at the long view are my most important post-harvest priorities.

I would like to apply this idea of taking stock to the Virginia wine industry. However, the focus will be more on the impacts on vineyards. Because of this I will go in "reverse order," starting with marketing, then to winemaking and finally, vines.

### Marketing

Virginia excels at marketing. When I first came here in 1981, it became obvious that the state had its act together, both in the private and public sectors. We have been a benchmark for other emerging wine states. Years ago, Linden hosted internships for French technical students. Their thesis reports tended to focus mostly on our amazing prowess for direct marketing rather than viticulture or winemaking.

Direct-to-consumer sales have been the foundation of the economic vitality of our industry. Tasting rooms and festivals account for the majority of sales. In this scenario wineries need to have a broad spectrum of wine

*Continued on page 8*

### President's Corner

## VVA Goal: Increased Acreage

By Tom Kelly  
*Kelly Vineyard Services*

Harvest is upon us and the weather is fine! The wetness experienced in the first part of the growing season has generally dried up for those of us in the Northern parts of the Piedmont and Shenandoah Valley and this has given us a much needed reduction in disease pressure.

Temperatures have been mostly cool both day and night which is helping to retain acid and slow sugar accumulation while flavors continue to develop.

This crop seems in no hurry to ripen but so far, the weather has been on our side. At the writing of this article, the bulk of harvest is still several weeks away and I remain cautiously optimistic for a high quality 2014 vintage.

Of course, those of us here at VVA headquarters aren't just sitting around watching the fruit ripen! We've been hard at work planning our upcoming 2015 Winter Technical Meeting. Currently, we are well ahead of schedule with our planning, and we already have most of the three-day program worked out. There will be a few changes to our previous format that we hope will make the event even more educational than ever.

Of special interest are the breakout sessions that will provide an opportunity for a more hands on and interactive experience for attendees. These will be smaller sessions and seating will be first

*Continued on page 2*

# VVA BOARD

## 2014

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Paul Ancil, Jim Law, Ben Margulies,  
Mizuho Nita, Bill Tonkins, Dean Triplett,  
Tony Wolf



## PRESIDENT'S CORNER (cont.)

*Continued from page 1*

come, first served, so be sure to watch for registration information and sign up early! We'll tease you a bit with a draft version of the program (subject to change) included in this issue of the Grape Press.

One of the key (and most anticipated) features of our winter meetings is the announcement of the Grower of the Year Award. We are now accepting nominations for the 2015 recipient so put your thinking caps on and let us know of those folks you believe should be recognized.

### Website improvements

The board has also been busy working on enhancements to our current website, which will include a new members area. This area will be the home of the long-awaited member forums as well as additional content and resources not available to the average browser. Another improvement will be a dedicated new growers page that will be designed to prepare those thinking about starting a vineyard for the ins and outs of their potential new career.

Other tweaks will help improve the way we communicate and share information with our members. We'll also make changes to streamline events registration and attract new members. We hope to launch the new website prior to the upcoming Winter Technical Meeting in February.

In addition to the activities mentioned above, the VVA Board continues to tackle the many objectives and strategies laid out in our new strategic plan. Several of the strategies that address vineyard profitability, improved quality and incentivizing new plantings are already underway.

Those of you who saw the summary version of the strategic plan in the summer issue of the Grape Press are familiar with the challenge that we face.

The Virginia wine industry needs to expand its vineyard acreage by a minimum 1000 acres over the next five years in order to meet the projected growth in wine sales as well as solve the grape deficit we currently face.

### More acreage is top priority

The VVA Board of Directors has taken this on as our association's number one priority and built our strategic plan around that priority. This is not to say, however that we are shifting our focus.

Continuing and improving upon what we already do is critical to achieving a successful and sustainable wine industry.

And, I think you will see this attitude reflected through the improved content and format of our technical meetings, Grape Press and website as well as new and ever improving tools such as the Virginia Sustainability Guide.

But, we need your help. In order to meet the

challenges of a growing industry we need good people. There are many opportunities to get involved with the VVA beyond membership.

We have several standing committees that need your support. While it is always a challenge to find motivated people to fill the chair positions on these committees (we currently have many talented folks filling these chairs), it is exponentially more difficult to find willing participants to fill the supporting roles of committee members.

We are currently seeking individuals to fill member positions on all of our committees including; Communications, Legislative, Education, Sustainability and Research. If you feel you have talents that lend themselves to any of these areas, I urge you to contact us to learn more.

You can directly contact any of the committee chairpersons or any board officer to get more information (see the 'About' tab on the VVA website for contact information). This is your opportunity to help shape the future of not only the VVA but the Virginia wine industry as a whole.

### Board members up for re-election

Additionally, 2014 is an election year for the VVA and as it happens, all board officers are up for re-election.

All the current officers are standing for re-election, with the exception of Karl Hamsch, Secretary, who will be stepping down after finishing his current term.

So, here also is an opportunity to serve. If you or someone you know would like an opportunity to serve the VVA in a/any leadership role, throw your (or their, as the case may be) hat in the ring. We would love an opportunity to work with you!

Ballots will be distributed in November. If you would like to be included on the ballot, contact Tracy Kirkman and let her know which position you would like to be nominated for. If you have questions about the position, see the VVA by-laws posted on the 'About' tab on our website or contact an officer directly.

Finally, I was honored and privileged to have had an opportunity to meet Governor McAuliffe and several members of his cabinet at a Virginia AgriBusiness Roundtable hosted at Farm Credit of the Virginias in Harrisonburg last month.

Legislative chairman Bill Robson and I made the journey in support of the Virginia wine industry and were joined there by several members of the Virginia Wine Council. I am pleased to say that the Governor had many exciting things to say about Virginia's wine industry and its agricultural community as a whole.

That's all for now... Thanks and may you all be blessed with a great harvest season!

Cheers!



## Boosting Agriculture in Virginia

Virginia Vineyards Association President Tom Kelly, left, and Bill Robson, VVA's legislative committee chair, right, participated in an Aug. 25 Virginia AgriBusiness Council's Roundtable with Virginia Gov. Terry McAuliffe, center, and cabinet members.

Robson said McAuliffe noted that Virginia is tied with Texas as the fifth largest wine grape producing state, and the governor wants Virginia to be Number 1.



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► **NO. VIRGINIA:** “We’ve used electric raccoon netting in three vineyards.”

By Dean Triplett  
Willowcroft Farm Vineyards

When the meteorologists talk about polar vortex during June you know something’s up.

This growing season, so far, has been much cooler than average. By the end of August, we had fewer than ten days with temps in the nineties. The first week of September, however, brought six days with temps in the 90’s.

The season started out very wet. The last month and a half on the other hand, have been pretty dry. This combination of rain early on, followed by relatively cool and dry weather, has made for very nice growing conditions.

Fruit set in most varieties in our vineyards has been very good. I have heard from some growers with fruit set problems in Viognier, Tannat, Riesling and Chardonnay. Aside from Viognier it’s been highly variable though.

Due to the late start to the season, harvest is a bit behind last year, but not as much as I would have thought back in May. We harvested our Muscat Ottonel the day after Labor Day. We’ve often picked it during the last week of August.

Fruit on all varieties at the end of August looked nice and clean. This in spite of an early season outbreak of Downey Mildew that had me freaking out. So far I’ve applied twelve sprays which is about normal for our operation. Talking to other growers in the region indicates similar conditions.

What we’re seeing now, two weeks into September, is fruit ripening, but with lower brix readings. The cool weather is slowing the whole ripening process. Flavors however, are nice. My concern is with the late season reds. Bird damage in a number of varieties is increasing as well. This bird damage in turn is causing cluster rot problems in some of our whites.

And speaking of bird damage, one thing I’ve noticed this year is the wide spread use of bird netting. Where used, this seems to be pretty



Electric raccoon fencing.

Courtesy of Dean Triplett

effective at slowing down bird predation and small animal damage.

We have, however, seen a problem with netting that touches up directly against clusters. Birds latch onto the netting where a cluster is present and proceed to peck on the individual berries they can reach. They then move on to the next cluster they can reach. We’ve seen this in netting with both tight and wide mesh.

Some sort of outrigger on the trellis in the fruit zone, to keep the netting from contacting the fruit, would seem to be in order. The netting I’ve seen in use, while not 100% effective, seems to be worth both the material and labor costs. In VSP trained vines in particular, I intend to increase its use next year, especially in our early season whites.

Critter damage so far this year is lower than last year.

In our vineyards we’ve experimented with electronic deer distress calls, electric raccoon netting and the previously mentioned bird netting. So far we seem to be enjoying some success.

We’ve used electric raccoon netting in three vineyards. The netting is 20 inches tall, 165 feet long with 2 to 3 inch mesh. It has eight horizontal nylon fiber strands intertwined with stainless steel wire which are hot.

The bottom strand and vertical strands are

nylon with no steel wire and thus not charged. The netting comes with nylon posts every 12 feet or so that are inserted into the ground to keep the netting upright. We’ve got 6, 7, and 8 sections of fencing connected in series, in a loop, around vineyards we’re trying to protect.

The beginning of the fence is then connected to either DC or AC powered chargers depending on power availability. The last section of the fencing is not attached at its end. Because the circuit is not closed, animals touching the fence make contact with the ground which causes them to receive the shock. In all three vineyards, we’ve had less predation than we had last year. While not meant to be permanent, the netting goes up quickly and can be moved from vineyard to vineyard quickly.

In one of our vineyards we’ve placed two electronic deer distress calls activated by motion sensors. When the motion sensor is activated the unit plays recorded fawn distress calls and adult distress calls in a random sequence.

I placed both calls, along with a deep cycle 12 volt battery and solar trickle charger for each, in areas of the vineyard which have been “hot spots” of deer activity in the past. Again, so far we’ve seen less deer problems in this vineyard than we have in the past.

However, before I declare victory, I’ll have to continue using these defenses for several years and see how effective they are over time.

I also realize that the mast crop in the forest along with wild berries and other sources of food are much more available this year than last. This I think has to be changing the dynamics of critter injury compared to last year.

I also wonder what the harsh winter has done to the population of deer and raccoon. So many things we’ve tried in the past have worked for a while, only to become less effective over time. By mixing up techniques and strategies, I hope we can minimize the critter damage, knowing full well that Mother Nature will try to extract her pound of flesh.

I’m just hoping to keep it to a couple of ounces.

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## ► SOUTHERN: “I was able to witness a mechanical grape harvester at work.”

By Paul Anctil  
*San Soucy Vineyards*

Another season, another transition, and another challenging year heading for the finish line!

When I read the other regional reports, I am always comforted in knowing that throughout the state we all deal with similar vineyard management challenges (misery likes company). However, it is also interesting to note how different things can be as we focus on specific regions.

Rain? Did it rain enough to keep the vines sufficiently hydrated as the fruit ripened? Compared to the 30-year average, the rainfall for June, July and August for this area was pretty normal.

However, when you break down the numbers, we went almost 10 to 12 days without rain, then we got a downpour of 2 inches or more for 2 days. The averages look good, but it will be interesting to see the final crop yields.

At this time of the year in the past (last week of August), I would be organizing workers and equipment for harvesting my Traminette or Tempranillo, but both are several brix short of my target. And depending on what part of the Southern region you are in, things can be very different.

Kevin Trent at Pinehaven Vineyards harvested his Traminette on August 29 (more on that later). I got an email from Stephen Ballard of AnneField saying they decided to harvest the Pinot Gris early because of concerns over the fruit skin integrity breaking down from *Drosophila* and other insect threats.

Starting at veraison, I set out some homemade fruit fly traps to monitor the arrival of the dreaded *Drosophila*. The first two checks indicated a few fruit flies but I could not detect any spotted wing varieties.

However, around August 15, two of my traps did show evidence of SWD. One trap had 17 flies with only one that I could identify as a SWD. The second trap had over 30 fruit flies but I could only detect two SWD.

I don't know if this kind of population distribution is normal, or if there were more SWD that I could not detect due to my aging eyes, fat fingers that might have crushed the little critters, or simply because of folded over wings from the wetness of the trap. Either way, I started a more vigorous application of the pesticides that target the critter.

I was able to witness a mechanical grape



Courtesy of Paul Anctil

A mechanical grape harvester at work at Pinehaven Vineyards.

harvester at work. Kevin Trent at Pinehaven Vineyards employed the services of Foster Farms mechanical harvester from North Carolina.

We all know the difficulty and frustration of finding adequate workers to bring in the harvest.

Each year it seems to be getting more difficult and more expensive. And we all pray the crew shows up the day it's needed.

I watched the machine at work to see if I could use the contract service at my vineyard. But it turns out that my vineyard is not set up to even consider mechanical harvesting. First of all, my rows have notched metal posts that support VSP canopy.

I have been experiencing post failure at a growing rate. (If you are designing a new vineyard and are considering metal posts, give me a call first.) We are changing to wooden posts as needed, but we still have a lot of weak metal posts out there.

This machine uses a combination of shaking and vacuum to strip the grapes from the stems, leaving bare stems minus grapes still hanging on the trellis.

The other crucial point that prevents me from using the machinery is the need for a significant turn-around space at the end of the rows.

And finally, I have a few rows that slope “sideways” that would make this huge machine very top heavy.

I have concerns over the grape “slurry” that is delivered to the winery for processing. I would think some immediate

sulphite addition would be important. The product is collected in non-slotted macro bins to deliver to the winery. If you want more details I suggest you contact Kevin. I'm sure he will share the pros and cons with you.

Finally, I am trying to locate other growers in the southern region. I personally know the dozen or so growers in the region who were among the first to plant vines, but the number of growers has increased dramatically over the past few years. If you are a new grower, please feel free to contact me so that I can include you in our regional reports.

## In remembrance of Pete Johns

Pete Johns, 69, owner of New Kent Vineyards, passed away on Aug. 21. Among his many activities, Pete found time to write the Eastern Regional report for Grape Press.

In a recent post, he noted that, “Growing grapes requires a strong back, a willingness to spend long hours working in the vineyard, and a willingness to face challenges.”

## ▶ CENTRAL: “We are poised . . . for a rare and interesting vintage.”

By **Bill Tonkins**  
*Veritas Vineyard and Winery*

After a great spring with lots of sunshine and an average amount of rain, followed by relatively sunny and partly cloudy months of June and July with lower than average rainfall and much cooler temperatures, we were looking forward to an exceptional vintage. And then came August with just one cloudless day.

At the time of writing we are enjoying our 2nd sunny day in mid-September.

Fortunately we had little to no rain in August and September. It passed us by to the North and South, and I am sorry if you were in its path. Dodging the storms did not prevent us being almost permanently wet in August and early September, though, from low hanging cloud, mist and fog.

The overnight and morning wetness did not, however, stop us getting in some of the prettiest Sauvignon Blanc, Chardonnay and Traminette I've ever seen. They truly benefitted from the high acids and cool weather. Our Viognier was harvested early on September 4 at 23.75 brix and 3.2 pH.

### Low-yielding Viognier

We credit the early ripeness to the fact that it is from three-year old vines with a very low yield of about one ton per acre.

It had better be very good; that's all I can say!

Why such a low yield, I do not know. We probably overcropped last year and there may have been cold damage. Anyway, hopefully we will get a better yield next year. We can discuss Viognier viticulture at our Winter Technical meeting, and we may learn something useful from this.

As it happens we still have Viognier hanging just 17 miles away and it is stuck around 21 brix. It's clean and tastes great and we are praying that the forecast sunshine will bring up the sugar



Courtesy of Bill Tonkins

### Harvesting in progress this year at Veritas Vineyard and Winery.

levels some more.

Sadly this is more than I think we can hope for on the Merlot. The Merlot, which is not normally far behind the Chardonnay appears to be going nowhere, not just here but elsewhere in the Central Region. The Cabernet Franc and Petit Verdot are now ahead of the Merlot. Go figure!

Fortunately the cool weather is preventing the acids from disappearing and the fruit is holding up well. Fingers crossed that we may yet get to full ripeness.

Overall, we are poised in mid-September for a rare and interesting vintage thanks to the

combination of a cool summer and a forecast sunny dry end to the month of September.

We are praying that the sunshine will last long enough for us to delay picking our red wine grapes until the last possible moment and that this will allow what little warmth we have to burn off their acidity. We will leave them to ripen in the sun as long as (winemaker) Emily's nerve hangs in there.

### Update from Glass House

Moving across the central region, Jeff Sanders of Glass House Winery reports that with the generally cool summer and the cool nights in late September, "acid

levels were great, with pH levels below typical years, measuring either by date or by comparable Brix levels." Sugar levels, he added, have been excellent, though a bit uneven.

"Our Merlot stopped gaining sugar at 21 Brix, flatlining, and we picked as the pH continued to rise slowly," he said. None of the other varieties, (including the Cab Franc and Barbera planted right next to the Merlot) had that problem, so they were still hanging on the vine in late September.

### Using rocks & Surround

Jeff said he ran two vineyard experiments this year.

In the first, he compared eight rows of Barbera with about three feet of Gabion rock to nine rows without the rock.

While one year's data doesn't provide the basis for drawing conclusions, Jeff said he did see slightly higher Brix (0.8) and slightly higher pH levels (0.1) in the Barbera with the rock, as opposed to the control.

The second experiment involved the use of Surround as an alternative to late season insecticides for spotted wing drosophila (SWD). Testing red varieties, Jeff said there were no negative effects on grape ripening, and he found the Surround to be largely effective against SWD, but ineffective against deer, and only modestly helpful against birds. It's too early to tell if there will be any effect on vinification, he added.

"Our tentative one year view is that Surround is probably an effective "green" alternative to late season insecticides, but does not have the bonus effect of eliminating the need for netting where there is animal or bird pressure," he said. "We would love to hear from others."

All in all, he added, "it has been an extremely calm harvest season, with no rushed pickings due to forecast rains or grape deterioration, nice cool harvests – a very nice change."

## VVA 2015 Winter Technical Meeting Schedule

### THURSDAY, FEB. 5

- 1 to 5 pm: New Grower Track (Tony Wolf, Tremain Hatch, Mizuho Nita and others)
- 1 to 4 pm: Gov Cup Tasting (Jay Yeoman)
- 5 to 7 pm: New Growers Wine Social

### FRIDAY, FEB. 6

#### Main Session

- 8:30 am: Virus Panel: Leaf Roll, Red Blotch, Mealy Bugs (Nita moderating; Marc Fuchs, Alan Wei, others TBD)
- 9:45 am: Break
- 10:10 am: Matching varieties to climate and potential impacts of climate change (G. Jones) Tentative
- 11 am: Industry Updates
- Noon: Lunch (on your own)
- 1:15 pm: Retraining and recovery of cold-injured grapevines (Wolf and Nita)  
Breakout session: Arranging and using H2-A labor.
- 2:45 pm: Break
- 3 pm: Vineyard Renovation/Re-training Panel: (Jim Law, Tremain Hatch, Jeannette Smith, Scott Ellif, Hunter McCulloch)
- 5 pm: Grower of the Year
- 6 pm: Wine Reception

### SATURDAY, FEB. 7

#### Main Session

- 8 am: Research Updates (Charlotte Oliver – Ripe Rot, Doug Pfeiffer – SWD; Bubba Beasley)  
BREAKOUT SESSION: Basic Fruit analysis – Molly Kelly
- 9:45 am: Break
- 10 am: Herbicide Drift (issues, avoidance and legal ramifications) Speaker TBD  
Breakout session: Interactive design of disease management program (Nita)
- 10:45 am: TBD
- 11:30 am: VVA Annual Business Meeting
- Noon: Lunch
- 1:30 pm: Variety Focus (Panel): Viognier (Tony Wolf, Chris Hill, Mark Fedor)
- 2:30 pm: Break
- 3 pm: Variety Focus (Tasting): Viognier (Marti Mueller)
- 4:30 pm: Adjourn

## Nominations for Grower of the Year

There's no greater honor for a Virginia viticulturist than the VVA's Grower of the Year award. This year, the honor went to Jeff White of Glen Manor Vineyards, and we are looking to you, the members of the Virginia Vineyards Association, to tell us who deserves the 2015 award.

In considering who to nominate for the 2015 award, keep in mind the criteria we have set for Grower of the Year.

The candidate should be:

- Nominated by an active member of the VVA.
- Have managed or operated a vineyard in Virginia for at least seven


years.

- Contributed to the Virginia Viticulture Industry.
- Have a vineyard of at least five acres.
- Be an active member of the VVA.

A list of our current members can be found on our website.

**Nominations should be sent by Jan.7 to [vavineyardsassoc@gmail.com](mailto:vavineyardsassoc@gmail.com), or mailed to the VVA at P.O. Box 168, Waterford, VA 20297.**

All nominations, whether emailed or sent through the postal service, should be in letter form and should demonstrate how the nominee meets all requirements for the award.



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When Quality Counts

# Which way for Va. wine?

VITICULTURE, continued from page 1

styles and choices in order to please most palates. The result is that on the growing side, a diversity of varieties need to be grown to satisfy the marketing end.

We've heard comparisons made between Oregon and Virginia. Oregon found Pinot Noir as its signature grape. Virginia feels the need to follow suit.

After this winter one has to question the wisdom of jumping on Viognier. The difference is that Oregon has a bigger industry and a smaller hometown market. They needed to go outside their comfort zone in an organized and focused way with a signature wine.

Relying almost exclusively on the low hanging fruit of direct-to-consumer sales can take us only to a certain level. Getting into the big league marketplace of restaurants and retail shops is a whole different ball game.

Until Virginia has a better presence in traditional distribution we will continue to be minor league players. Prestige publications

such as Wine Spectator and Wine Advocate will not take us seriously.

## Winemaking

Virginia has seen a significant improvement in winemaking over the past few decades. This is due to critical mass; meaning lots more (well funded) wineries and therefore more winemakers. Most Virginia wines are now serviceable and technically correct. While these wines have an important place, they do not contribute to reputation and more importantly, they do not depend on the uniqueness of a specific vineyard site or the skill of a grower.

They are winemaker's wines, not winegrower's wines. When winemaking includes the regular addition of multiple additives one has to conclude that there is a problem either in the management or initial vineyard establishment decisions.

It takes more than a few vintages in one place to learn the personality of a vineyard. We are now benefiting from the longevity of a number of winemakers who have years or even decades working with the same



vineyards.

As winemakers become more comfortable and at ease with their terroir, they are able to make wines in a more thoughtful, non-interventionist way. They also can be very influential in guiding long term vineyard decision making in a quality-oriented direction.

## Viticulture

If the vineyards are the foundation of a region's wine industry, ours is presently somewhat shaky. Wineries with no producing vineyards have been popping up like mushrooms, putting pressure on an already fragile grape supply. The 2011, 2013 and now 2014 vintages have been short. Pricing doesn't seem to reflect this scarcity or the reality of growing grapes in Virginia. Perhaps this is because the shortage is being filled by sourcing out of state grapes.

It is more challenging to grow grapes in Virginia than in California. Weather risks are greater. However, there is no correlation between ease of viticulture and wine quality. Our Burgundian and Bordelais colleagues can attest to this. It is much easier to grow grapes in the south of France. Could it be that greater weather risks equal greater quality?

As Virginia pulls away from treating grapes as a commodity and pays according to quality we will begin to enter the next stage of evolution. Well-managed Napa To Kalon Cabernet fetches \$9,000/ton, while just 100 miles away, Central Valley Cabernet can't get \$900/ton. Provenance counts.

In Virginia, steep slope, rocky sites are capable of producing very high-end wines. This viticulture is expensive and farming costs need to be recouped. On the other end of the spectrum, easy to farm, high yielding, mechanized vineyards have an important place in the more affordable wine price range. We need both, but the farming, pricing, winemaking and marketing need to reflect these differences.

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# Broad Picture in Viticulture Research

By Tony Wolf

*Viticulture Extension Specialist,  
AHS Jr. Agricultural Research and  
Extension Center*

I wanted to use this opportunity to give a broad picture of our viticulture research program; not so much to answer the “how to,” as to address the “why” kind of questions.

Let’s start by looking back a bit. Around 2004-2005 I moved into an area of applied research that sought to reduce canopy management labor while improving grape and wine quality potential. We had a good understanding of the importance of proper canopy management, including appropriate fruit exposure, to help manage diseases and generally improve fruit composition.

Our nemesis was our normally abundant growing season rainfall and the inherent vigor and growth capacity of many of our varieties, especially those grafted to pest tolerant rootstocks.

Our training system trials with Viognier, Cabernet Franc and Traminette in the nineties had shown that canopy division effectively converted the high capacity of such vines into increased yields, often with improved grape composition and quantitative as well as qualitative (sensory) improvements to resultant wines (see for example, Zoecklein et al. 2008).

Besides canopy division, what other options existed? We planned and established a large experiment in 2006 using Cabernet Sauvignon to evaluate the use of under-trellis cover crops, compare rootstocks, and evaluate the merits of using root-restriction as methods that growers might use to suppress the vegetative growth of overly vigorous vines.

I advised two graduate students, Tremain Hatch and Cain Hickey, with this project, and we’ve presented a number of industry talks on the project, most recently at the “research summit” component of the 2014 Virginia Vineyards Association’s winter technical meeting in February 2014.

The work has been extensively funded by both the Virginia Wine Board and the USDA’s National Institute of Food and Agriculture’s Specialty Crops Research Initiative (NIFA).

A recent report from the research can be found on the Virginia Vineyards Association’s website and at our USDA/NIFA project



Courtesy of Tony Wolf  
**White clover under trellis plot at Indian Springs Vineyard in Woodstock, Va.**

website: <http://bit.ly/ZDVJGM>.

The under-trellis cover cropping, and to a lesser extent, the riparia rootstock, have had the desired effect of reducing vine vigor and vine size; however, the under-trellis cover crop effects were more pronounced in the first four years, compared to the last four years.

Our understanding of the reduced competition of cover crops over time, at least in deep soils such as ours, is that grapevine roots can exploit deeper soil horizons to tap water and thereby mitigate the competitive effects of the grass.

The use of the root-restriction bags to reduce the volume of the vines’ rootsystems, has had a more dramatic, and sustained effect on vine size and canopy porosity than either the under-trellis cover crops or any rootstock effect.

The rootbags (root restriction) were initially intended as a research tool, but we’ve been impressed enough with the impact on fruit composition and canopy architecture that we now have four grower/cooperators in central and northern Virginia who have been willing to try the rootbags on a small number of vines (n=100) in their 2014 plantings.

The rootbags in the 2013 season of our experiment, for example, led to a slight but significant increase in soluble solids at harvest (23.5 vs. 22.1 in non-root-restricted vines), a slight decrease in pH (3.2 vs. 3.3) and titratable acidity, and significant increases in juice color density (anthocyanins) and total phenolics. Crop yields were not significantly affected (3.9 tons/acre equivalent with root-restricted

vines vs. 4.3 tons/acre equivalent with non-root-restricted vines). Vines are spaced 5 feet apart in 9-foot rows.

One downside to the use of the under-trellis cover crops has been the added nutrient competition – especially for nitrogen – that the cover crops impose on the vines. Again with Wine Board and USDA/NIFA funding, and the help of graduate student DeAnna D’Attilio, we set up experiments at several vineyards including Glen Manor and Chateau O’Brien vineyards in 2012 and 2013 to evaluate different methods and materials for providing nitrogen to the vines without simply “making the grass grow greener.”

This work is also summarized in reports on the VVA and our SCRI website (URL provided above). DeAnna’s work showed that foliar application of urea,

applied repeatedly in small doses over the growing season was effective in elevating Yeast Assimilable Nitrogen (YAN) in fruit at harvest.

In addition, her work showed that certain amino acids, such as threonine and alanine, which are associated with grape and wine aroma compounds, were increased with both a high rate (60 kg N/ha) of soil nitrogen or the foliar N treatment.

We’re continuing the work at Glen Manor vineyard because we’ve not yet seen a “correction” in the downward trend of vine size there where vine size and crop yields were slipping into undesirably low levels in what was a low-vigor situation to start with.

A new graduate student, Russell Moss, picked up where DeAnna’s work stopped in 2014. We again have different nitrogen field experiments set up with Russ’s work: we’re continuing the work with Sauvignon blanc at Glen Manor vineyards, but have expanded work that DeAnna started with Petit Manseng here at the Ag Research and Extension Center, and have a third project with Vidal blanc at Indian Springs Vineyard to evaluate both calcium nitrate soil application and legumes (white clover compared with crimson red clover), with the legumes compared with or without a supplemental foliar nitrogen component.

DeAnna’s work, while of a preliminary nature, showed an interesting elevation of vine

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*RESEARCH, continued from page 9*

nitrogen status with white clover used as the under-trellis cover crop. Our understanding of legumes used as cover crops was that the nitrogen release and benefit to a companion crop, such as our grapevines, is only derived when the legumes are destroyed and the nitrogen that had been “fixed” by symbiotic rhizobacteria associated with the legumes is released.

A part of Russ’s project will look at two clover species over a multi-year period to determine what impact the clovers have on vine nitrogen status. Russ is being co-advised by Virginia Tech’s research enologist, Dr. Amanda Stewart, who also has a specific interest in how YAN levels and specific amino acids ultimately impact wine quality potential.

Unrelated to the above work is another area of our research that involves the disease North American Grapevine Yellows (NAGY). This work is funded by the Virginia Wine Board.

The incidence of NAGY varies from year to year and from vineyard to vineyard. Like Pierce’s Disease, the causal pathogens (bacteria-like phytoplasmas) are vectored from plant to plant by leafhoppers.

A major part of our work with NAGY over the past 2 years has been to identify which leafhoppers are responsible for pathogen transmission.


Dr. Teresa Stoepler led this effort during her 2-year post-doctoral position while Dr. Paolo Lenzi was recently hired to continue the research, which has narrowed the list of potential vectors from well over 30 commonly found vineyard leafhoppers to a handful that appear to be capable of transmitting the pathogen.

Insects that were found to be capable of transmitting the phytoplasmas in a model system in the lab are currently being evaluated using grapevines as indicator plants. This requires holding the indicator vines over winter and looking for symptoms (and the phytoplasmas) in the following season.

We are also conducting a second year of field studies to determine the efficacy of insecticide treatments on reducing leafhopper numbers in the field, with the ultimate goal of determining how that impacts the incidence of NAGY. Both the 2013 and the 2014 seasons have been relatively low incidence years for NAGY in many of the vineyards we’ve surveyed and have been using with our insecticide trials. That’s great for those growers, but actually makes our job more difficult.

*Reference cited: Zoecklein et al. 2008. Effect of vertical shoot-positioned, Smart-Dyson, and Geneva Double Curtain training on Viognier grape and wine composition. Amer. J. Enol. Vitic 59:11-21.*

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# Crown Gall Management

**A look at four options: Cultural practices, resistance, chemical control, biological control**

By Mizuho Nita

Grape pathologist, Virginia Tech

**D**ue to a cold winter, plus temperature fluctuations in March-April of 2014, many growers experienced damage to their vines. You might have seen damage on buds, or clacking and splitting of vines, or you might even have found that some vines did not make it to spring. The effect of this cold injury may persist for several years, depending upon how severely your vine was damaged.

Among other issues, we have observed a fair number of crown gall injuries. It is not certain whether crown gall aggravates the winter injury or whether the winter injury has already done enough damage to the vine by itself, but certainly crown galls do not help overall health of the vineyard, especially in the long run.

This disease stems from a bacterium called *Agrobacterium vitis* (also known as *Rhizobium vitis*). This gall formation is the result of a genetic modification spurred by the bacterium in the infected grape vine.

The bacterium are able to insert a piece of their DNA in the grape DNA to force it to generate plant hormones auxin and cytokinin.

These hormones result in overgrowth of cells and uncontrolled cell division, thus, the gall formation.

In addition, the bacterium uses the same mechanism to make infected plant cell produce a product called opines, which is a nutrient source for *A. vitis*.



In order for *A. vitis* to cause disease, this bacterium requires a point of entry to the vine, which is a wound. Thus, the wounds from cold injury

can be a good opportunity for this bacterium to cause disease.

Symptoms may appear on the main trunk, or cordon, but you can also see it on the green tissues as well.

However, rather than galls, what you probably will see first is a sudden change in leaf and shoot color in the middle of the season, followed by a death of a cordon or even a vine. With this type of sudden decline, what you see on the trunk is often not a ball shaped gall, but rather a series of small galls forming vertically along the trunk (see photo at left).

There are several strains of *A. vitis* with



Courtesy of Mizuho Nita

**Sudden reddening of foliage due to crown gall, left, and typical round gall formation, right.**

varying degree of ability to cause galls, and probably because of that, sometimes crown gall is only a cosmetic issue. You may see a gall, but only a part of the vine is compromised, and you may have crop on these vines without any noticeable impact.

For example, I have seen 20-year-old vines with a series of galls on its trunk and cordons. However, often time, the gall tissue girdles the vine and restricts the movements of water and nutrients, and results in the death of the vine. Unfortunately, *A. vitis* is a systemic pathogen, meaning that it can move within the infected vine. Thus, once the vine is infected, the only true remedy is removal of the infected vines.

There are several management options. As usual, I will use our four-prong IPM model.

## 1. Cultural Practices

■ Site selection is probably the most important factor. Avoid frost-prone areas, as well as wet and heavy soils. One study shows that some soil-borne nematodes can increase the incidence of crown gall.

■ Hilling-up young vines can protect the graft union.

■ Over-cropping should be avoided.

■ The proper growth of the vine should be maintained – that is, you should make sure that the vine shuts down properly at the end of the season in order for the vines to harden off for winter.

■ Be careful with your weed-eater. It is a very common way to damage your vines.

■ Vines can also be damaged when unwanted shoots are removed. Early in the

season, they can be rubbed off with nothing more than your fingers, but once the shoots became thick, rubbing it off will create an open wound on the trunk. In that case, you should use a pruner.

■ If your vines are not suffering, you may be able to re-train the vine. Make sure to generate several shoots for trunk renewal.

■ When replacing the infected vine, remove the vine and as much root system as possible from the vineyard, and burn them. I often recommend applying glyphosate onto the vine – but don't spray during the season! You can cut the trunk near the end of the season, and paint glyphosate on the stub. After application of glyphosate, wait for a few weeks, and then remove the vine from the vineyard. This will ensure that the vine and hopefully the majority of the root system is dead. The bacterium can survive in the soil for at least two years, and even longer on the roots. Grapevine roots can be viable several years in the soil.

■ Be sure to obtain certified vines from a reputable source. Ask them if they use a hot water bath to treat the vines. The heat from the bath is effective against *A. vitis* that survives on the surface of the vine.

## 2. Resistance

■ Some rootstocks such as 3309C, 101-14, and Riparia Gloire provide resistance to crown gall.

■ As you can imagine, some less-winter hardy varieties (e.g., Merlot, Tannat, etc.) tend to develop more cases of crown galls. Avoid

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Tips & Techniques

# Capturing Rainwater

*Got a tip or technique that's made a difference in your vineyard? Tips & Techniques is a new feature in Grape Press that showcases ideas from our members to make our work in the vineyard a little easier, a little less expensive, or more productive. Take as much space as you need to tell your story, and pictures are always welcome.*

*Send your ideas – or finished articles – to Bob Garsson at [rgarsson@gmail.com](mailto:rgarsson@gmail.com), or to the association's email box, [vavineyardsassoc@gmail.com](mailto:vavineyardsassoc@gmail.com).*

**By Ben Margulies**  
*Vineyard Manager, Democracy Vineyards*

In Virginia, we are rarely plagued by the drought problems that have been so devastating to agriculture in California and the western states.

However, even in a wet year, vineyards and wineries in rural locations can have problems drawing water from unpredictable wells.

Last summer, Democracy Vineyards had trouble filling up the spray tank from our original well. At the same time, mud was building around the winery building because of rainwater runoff from the roof.

A quick calculation estimated that for every inch of rain that fell on the 3,600-square-foot roof, over 2,000 gallons of water ran off. This summer, we decided to take advantage of this rainwater and had two 850-gallon tanks installed on the crush pad on top of platforms. About one-third of the roof area

feeds into these tanks via gutters.

The tanks are fitted with two-inch threaded plastic ball valves for a fast flow rate. A reducer coupling can be placed on the valve to accommodate a garden hose or power washer to clean off the crush pad.

We collect about 700 gallons of rainwater per inch of precipitation. The tanks are raised high enough above ground that the captured water can simply flow by gravity into our 200-gallon vineyard sprayer. Future vineyard expansion won't be limited the capacity of our well.

As an added bonus, filling the spray tank takes less time using the tanks, and the water has no grit or minerals that could compromise the spray chemistry.

Before first frost, I'll open up the valves on the tanks to drain them for the winter.

This project reduced our impact on our site by slowing erosion and minimizing our use of limited groundwater for spray and cleaning purposes.



Courtesy of Ben Margulies

Rainwater tank in use at Democracy Vineyards.

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*CROWN GALL, continued from page 11*

planting these cold tender varieties in frost prone areas.

### 3. Chemical control

■ Unfortunately, we do not have a good solution for crown gall. Some of the products claim they will remove galls, and they may, but the bacterium can reside in other parts of the infected vine.

### 4. Biological control

■ This is an area where we may see some progress in the future. There is one product available (Galltrol, which is a strain of *Agrobacterium* that does not cause galls), and there is some active research going on as well. However, as with other biological agents, environmental conditions, as well as timing of application, can play a big role in their efficacy. We probably need more research in this area.