

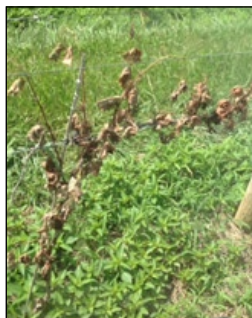
GRAPE PRESS

Summer 2015

The Quarterly Newsletter of the VIRGINIA VINEYARDS ASSOCIATION

Vol. 31 No. 2

INSIDE



Regional Reports

Winter injury takes a toll, but it may not be the only cause of vine death.

PAGES 4-5

Spray Drift

The spread of RoundUp Ready crops poses special concerns for vineyards. See our four-step look at dealing with spray drift.

PAGE 8

Pre-Harvest

Virginia Tech studies the effect of on-the-vine dehydration on wine quality.

PAGE 12

Vineyard Leasing

Second in a series: Medium-term leases and when they may make sense.

PAGE 14

Land Use Tax

If you haven't become familiar with the potential benefits of the land use tax, it could be costing you money.

PAGE 16



Jim Law

Cabernet Sauvignon, about to be planted at Linden's Hardscrabble Vineyard, loves rocks and slopes, which mean less soil and less water retention.

In Pursuit of Virginia's Terroir

By Jim Law
Linden Vineyards

In 1981, after a few years' experience working in vineyards and wineries, I had two job offers. One was in Oregon and the other in Virginia. I chose Virginia.

Discovering the potential of a new viticultural region was too exciting an opportunity to pass up. In the 1970's, I lived, studied and worked in Europe and Africa and was drawn to regional distinctions of wine and food. Suddenly, I found myself in a position to influence the identity of a new region.

I am just as excited now as I was then. Wines produced across the Commonwealth are very good, but the emphasis continues to be on manipulative winemaking

rather than winegrowing. This technical approach precludes us from gathering a critical mass of experience and knowledge in the vineyard to take us to the next quality level.

Wines of Effort vs. Wines of Place (Terroir)

A wine of effort expresses a certain house style or brand that can change according to consumer preference. These wines tend to be correct, serviceable and soulless. Effort is made in the cellar to correct shortcomings in the harvested grapes.

These wines are made by technical winemakers who depend on manipulative techniques and additions (acid, tannins, oak products, colorants).

See TERROIR on page 7

President's Corner

Improving Yields and Quality

By Tom Kelly
Kelly Vineyard Services

Recalling the weather over the months since my last column, it seems as if we missed spring altogether. Here in the Northern Piedmont, blustery days through the early part of May made it feel as if winter would never end. However, that was quickly followed by hot humid days that made late May feel more like early July!

With the exception of cloudy and rainy days over the first week of June, rainfall has been light.

But humid and cool nights have kept disease pressure high, with perfect conditions for Black Rot and Downy Mildew to gain a foothold in the vineyard.

Timely canopy management and smart spraying are our best tools to ward off infection during times like this, and I've seen little in the way of disease in the vineyards I've visited. Over these past few days in mid-June, however, I've witnessed some disappointing fruit set as a result of the extended rainy period during bloom and a few occurrences of early Botrytis infection.

One bright spot during that rainy first week of June was this year's VVA Summer Technical Meeting, held at Ingleside Vineyards in Oak Grove, Va.

While rain kept us inside most

See PRESIDENT on page 2

VVA BOARD 2015

President

Tom Kelly

tom@kellyvineyardservices.com

Vice President

Jim Benefiel

jwbenefiel@aol.com

Treasurer

Kay Thompson

kaythompson@gmail.com

Secretary

Aimee Henkle

aimee@lostcreekwinery.com

Advisor

Dr. Tony K. Wolf

vitis@vt.edu

Business Manager

Tracy Kirkman

vavineyardsassoc@gmail.com

Grape Press Editors/Production

Bob Garsson

rgarsson@gmail.com

Chris Garsson

cgarsson@gmail.com

VVA Mailing Address

P.O. Box 168

Waterford, Va. 20197

vavineyardsassoc@gmail.com

Special thanks to:

Paul Anctil, Jim Benefiel,

Katie Hellebush, Jim Law,

Bill Robson, Dean Triplett, Michael

Weaver, Bruce Zoecklein



PRESIDENT'S CORNER (cont.)

PRESIDENT from page 1

of the day, our host, Doug Flemer, was able to provide a short vineyard tour.

As a continuation of the vineyard renovation topic from the most recent Winter Technical Meeting, Doug focused his talk on the many renovations he's been putting his vineyard through. Many of the vineyards at Ingleside are original plantings from 30-plus years ago, and while Doug has had his challenges over the years, the vineyards we saw during our tour looked to be healthy and quite vigorous – perhaps a bit more vigorous than he'd like, but still, a testament to good management practices over the years by a veteran grower.

Thanks to Doug and his staff for their gracious hospitality!

Another great topic at the meeting was a discussion by Mark Hollingsworth of Dog and Oyster Vineyard who showcased several tools for increasing productivity in the vineyard in a segment called Semi-Automation for the Small Grower.

Mark showcased three handheld machines that in some cases can reduce vineyard labor by as much as 50 percent depending on the task and vine density in a given vineyard. He gave an in-field demonstration of a rotary de-suckering tool and discussed the benefits of electrical pruners and tying tools.

I hope to have Mark back for our next winter meeting in addition to others to expand upon this exciting topic.

Tony Wolf and his team from Virginia Cooperative Extension were on hand to provide presentations including a timely talk by Cain Hickey on the effects of leaf removal and seasonal updates by Tony and Mizuho Nita.

Tremain Hatch, also from Tony's office, reviewed a vineyard financial calculation tool that he has been developing. In addition, Paul Morgan of Ausley and Associates made a presentation on the use of drone imagery in the vineyard.

Following the technical meeting was, of course, our Annual Summer Social event where we sampled Ingleside wines in their barrel room. Dinner was a delicious "low country boil" which was paired with several selections of Virginia fine wines provided by our members.

All in all, another great technical meeting provided by the VVA and VCE. I can't think

of a better way to spend a rainy summer day!

Another noteworthy event of late is the launch of the VVA's new website. While visually very similar to the old site, the new site incorporates many new features.

Of particular interest is the new "Members Only" area. Here, VVA members will find information and features available only to them, such as the new forum boards where members can ask questions and exchange ideas on a variety of pre-determined topics relevant to grape growers throughout the Mid-Atlantic, or, start a thread of their own! Please visit the new website and explore the new features available under your member account.

If you have not yet received instructions on how to create your new account, contact Tracy Kirkman at VaVineyardsAssoc@gmail.com and get signed in today!

Finally, I would like to return to the discussion I've begun regarding some ways that vineyard economics might be improved. Thus far, I've covered the topics of economies of scale (Winter 2014 issue), which involves advantages growers can realize through mechanization, bulk purchasing, etc. on larger sites.

I've also discussed the merits of incorporating at least some hybrid varieties into a well-diversified vineyard enterprise (Spring 2015 issue). Now, I'd like to focus a bit on the yield component of our business.

I have many times heard the comment that we've got to find a way to increase yields as a way to improve the bottom line for Virginia growers. My knee-jerk reaction to this comment has always been that we have no way of magically causing the vine to produce more fruit.

But this is only partly true. The factors that determine the maximum fruit load of an individual vine are many and complex, ranging from a variety of site and soil characteristics and seasonal climatic conditions to the varieties and clones selected for that site.

And while there may be ways (that I will not mention here) of forcing a vine into higher yields by increasing berry size and weight, these methods will likely have detrimental effects on fruit and wine quality. They may also adversely affect the long-term viability of the vine while at the



TOM KELLY

See PRESIDENT on page 3

PRESIDENT from page 2

same time increasing management costs of the vineyard.

As I've said in the past, many winemakers have some fairly rigid opinions about yields in relation to fruit quality. These views are often expressed (incorrectly in my opinion) in terms of tons per acre. A somewhat more accurate way of expressing optimum fruit load would be in terms of pounds of fruit per foot of cordon (or fruiting wire in the case of cane pruned vines).

But really, the best way to assess proper crop load in a vineyard block, with respect to wine quality, is in terms of pounds of fruit per square foot (or more commonly, grams per square meter) of solar-collecting canopy.

The technical details of understanding and assessing vine balance and the appropriate amount of fruit-to-canopy ratio are beyond the scope of this article. In general, however, a given amount of canopy area should be able to ripen fruit up to a specific threshold. Too much fruit and

there simply isn't enough leaf area to fully ripen it; too little, and the canopy will grow too vigorously and become difficult and expensive to manage. Of course, there are site and seasonal variables to consider such as the availability of light, heat and water, but you get the idea.

Understanding all that, there are still a couple ways to improve yields when looked at from the tons-per-acre perspective without compromising the appropriate fruit to canopy ratio.

One method specific to the installation of new vineyards is to decrease the row spacing: i.e., narrowing the area between the rows of the vineyard.

For example, simply reducing the row spacing from nine feet between rows to seven feet between will result in an increase in lineal feet of trellis per acre of almost 30%. This is not a radical increase but a significant one.

The downside of this approach, however, is the increased installation cost, requiring more vines and trellis material per acre. A more significant consideration might be the

increased cost of a tractor, as row widths this narrow will require specialized narrow equipment to fit through them.

Unless you can spread this cost out over a rather large planting, or you are planning a vineyard small enough that you can work it with a compact tractor or an ATV, this increased investment may take many years to justify.

Also, (as I have learned the hard way) the acceptable margin of error when laying out the vineyard goes way down when dealing with such narrow spacing.

Perhaps a more practical approach – and one better suited to established vineyards where reducing row spacing is not an option – is vertical division of the canopy as in such training systems as Scott Henry, Smart/Dyson or the many variations of those two systems.

Again, the details of canopy division are beyond the scope of this article but in essence the idea is to increase the amount of fruiting shoots per foot of cordon without increasing canopy density.

Beyond its potential to increase yields per acre, this approach has the added benefit of helping to reduce vigor and will allow more standard-sized tractors (like the one you already own) to fit through the vineyard.

The only downside I see to this option would be a rather long and awkward transition period for existing vineyards as they convert from VSP and perhaps a bit more difficulty with herbicide applications.

For new plantings, this approach would likely reduce installation and equipment costs, when compared to reducing row spacing, while still improving yield potential.

By the way, Jeanette Smith gave a fantastic presentation on converting VSP training systems over to what is commonly known as “solar collector” at last year's VVA Winter Technical Meeting.

Neither of these options is a silver bullet. Seasonal variables of weather, wildlife and disease will always be limiting factors to crop potential for those of us in the Mid-Atlantic and something we will always have to consider when making economic forecasts.

Additionally, site characteristics will play into crop potential for your site. I wish I had room in this article to dig a little deeper into each of the strategies above, but hopefully I've given you food for thought as you consider how to make your vineyard enterprise more profitable.

Until next time!

Tom Kelly



WE DO WINE DESIGN
Logos | Labels | Websites | Advertising

watermark design 434.295.5625
designbywatermark.com

The image features a dark background with the text 'WE DO WINE DESIGN' in large, white, sans-serif font. Below this, 'Logos | Labels | Websites | Advertising' is written in a smaller, white font. At the bottom, the 'watermark design' logo is shown in white, along with the phone number '434.295.5625' and the website 'designbywatermark.com'. In the center, there are four wine labels: 'GRACE ESTATE', 'ANKIDA RIDGE', and 'HENANDORE'.

▶ NO. VIRGINIA: “Just as you think you’ve seen it all . . . nature slips you a new one”

By Dean Triplett

Willowcroft Farm Vineyards

The second week of June found us in the thralls of a heat wave. Following on the heels of a warmer and drier than normal May, everything’s in full swing in the vineyards here in Northern Virginia.

The week before, we had about 2 inches of rain at our location over a five-day period. Fortunately we’ve maintained a good spray schedule so far and the vines are pretty clean. Flowering is pretty much over in nearly all varieties. Fruit set looks good throughout the vineyards.

Our crew is busy tucking and thinning shoots and everything else that ideally needs to be done at the same time. Leaf-pulling season is on us as well. And the weatherman is predicting at least another 10 days of temperatures in the upper 80’s and low to mid 90’s.

Most growers I’ve spoken with have experienced at least some winter damage in their vineyards. We’ve seen some vines collapse from what I’m guessing is winter damage. It’s really very few and far between, however, so at this point I’m not too concerned.

Nate Walsh of Sunset Hills Vineyard wrote me the following on June 4:

“Well, we have seen some trunk damage which is either from this winter or residual damage from the 2013/14 winter. Like last year, though, it’s primarily in wet, low spots, although varieties like Tannat show it throughout the blocks. We view this as somewhat of an indicator of vineyard areas that will likely have long-term issues anyway. The damage manifested itself as split trunks and sometimes cordons, which often then form galls. We expect to see continued damage throughout the year.

“This year we ripped out a handful of underperforming blocks and replanted to (hopefully), better suited varieties. Most of this had to do with plantings that were initially not good matches of variety and site. We also planted at a new site in Aldie and finished planting at our Sherman Ridge site (near Woodstock) in the Shenandoah Valley. All told now we have five sites with 75 acres under vine. Next year we will do a bit more ripping out/replanting and we will plant an additional 3 acres of Sauvignon Blanc and Albarino.

Up until the week of this writing, when we had five days of rain during flowering, I would categorize the spring as drier than



Dean Triplett

Winter was hard on vines across Virginia. Above, six-year old Albarino, and left, a three year-old Petit Verdot vine at Willowcroft Farm Vineyard. “Most growers I’ve spoken with have experienced at least some winter damage,” Dean Triplett said.



normal and quite favorable, although we did see more humidity earlier in the season than normal. Again, prior to this week of rain, we have had no significant disease issues, and we’ve seen good growth and a healthy amount of clusters per vine, especially on usually difficult varieties like Viognier.”

Bill Hatch of Zepheniah Farm Vineyard also wrote me:

“We planted about an acre each of four varieties in May of 2014. The Vermentino appears to have suffered the most winter damage at about 15% mortality. The Chardonnell has less than 1% mortality. The Vermentino, Viognier and Merlot may crop in their second leaf, while the Chardonnell will be cropped at a ton per acre to try to throttle down tremendous growth.”

Bill Freitag of Toll Gate Farm also emailed me his comments on the season so far:

“Just as you think you’ve seen it all, Mother Nature slips you a new one,” he wrote. “A warm April and all the excitement of early bud break and the worries about a possible late frost made for a lot of tense moments.

“We survived that and May moved on with cool spells and really hot weather as it progressed. It was hard to keep up with the burst of growth, both vines and grass. Bloom started at high speed and then June came along with a week of wet weather. Oh, boy!

“Here at Toll Gate Farm, we continued our program of rebuilding several blocks. I believe we may be near the end of replanting with another batch of 200 vines planted this year.

“The recovery from the cold injury of the previous year is really adding immense labor time to our initial thinning and positioning. We aggressively trained replacement shoots up on about 50 percent of mature vines.

“Laying down new cordons took more time than I expected. Assuming that we don’t have any hidden damage from this year’s arctic blast, along with the replanting we’ve done, should get us well on the way to recovery.

“Now let’s get the rain to give us a break, so we can work on what is rapidly

See NORTHERN VIRGINIA on page 5

▶ NO. VIRGINIA

NORTHERN VIRGINIA from page 4

becoming a critical time to spray.”

And finally, Fernando Mathov, president of the Loudoun Wine Growers Association and owner of F&J Vineyards, sent me his comments:

“I am a brand new grower here in Loudoun County. We planted 5,000 vines in April. So far so good. We observed a small amount of damage from girdlers and cutworms. From what I’m told, this is nothing out of the ordinary for a new vineyard, however. We planted Viognier, Petit Manseng, Cab Franc and Petit Verdot on 8 x 4 spacing without grow tubes.”

Here at my vineyard we retrained most of our Muscat Ottonel from GDC to VSP. The vines had a significant amount of damage from the winter of 2013/14 and a smaller amount of damage from this past winter.

Nearly all the vines that suffered trunk damage put out new shoots which we’ve retrained. This section of Muscat

Ottonel looks kind of weird right now, but surprisingly has a good amount of producing shoots, so even with the new training we should hopefully get a decent amount of fruit. (Knock on wood).

We also retrained the Albarino from VSP to Chris Hill and Jeanette Smith’s one-legged ballerina, or as Chris likes to call it, “the Suncatcher.” It’s basically a one-sided Smart Dyson training system where an additional set of cordons has been laid down parallel with the first set.

The rows are oriented in an east-west direction. The northern cordon and southern cordon wires are about 10 inches apart. The northern-most cordon has its shoots trained upward like a normal VSP, while the southern set of cordon canes have their shoots raked downward, but only on the one southern-facing side of the row.

Chris and Jeanette both like the system and Chris in particular has been on me to try this in an attempt to increase yield of this low-yielding variety.

It should also help with the high vigor I have in this vine. So far everything looks good and it’s time to start separating the two sets of foliage curtains in preparation for combing the southern shoots out and then down.

My wife, Karen, and I, along with a couple of out-of-state friends visited Stone Tower Winery in Lessburg, and we were fortunate enough to run into owner Mike Huber. He graciously gave our group a personal tour of the soon-to-be finished facility.

It’s already an impressive project and when done will be gorgeous. Equally impressive is the 50 acres of beautifully maintained vineyards. I look forward to tasting the wines that are produced as the vineyards mature. I’d like to thank Mike for the great tour; it was very kind of him to take the time.

I’d also like to thank everyone who emailed me with info for this report. It’s good to hear from other growers around the region.

Hopefully, the next report will be all rosy and full of happy comments about a wonderful season.

A guy can dream.

“GROWERS FIRST” ISN’T JUST A SLOGAN, IT’S A PROMISE.

SEE ALL THAT THE “NEW” VINTAGE IS DOING FOR YOU

WASCO
661-758-4777

PASO ROBLES
805-237-8914

SANTA ROSA
707-542-5510

TOLL FREE
800-499-9019

Find us on Facebook

We like to think that Vintage Nurseries does many things well, but listening to our grower partners is the one that makes us proudest. In fact, it’s the reason we’ve committed to invest millions of dollars for facility upgrades, improved procedures, and innovations to benefit the industry as a whole. You’d be amazed at all of the improvements from our newly improved grafting facility with temperature control and sterilization upgrades to quality control, production and customer service...the result of talking to growers like you. So check out the “new” Vintage Nurseries, where our success is built around the promise of *your* success.

WWW.VINTAGENURSERIES.COM

► **SOUTHERN:** Crown Gall raises tons of questions that have inadequate answers

By Paul Anctil
Sans Soucy Vineyards

In all the years since I started my vineyard. I have never experienced so many dead vines from winter kill. I counted 130 Tempranillo vines alone. (Mostly 4th leaf vines.) I lost about 30 vines each from my Cabernet Franc, Petit Verdot and Viognier. The 1.5 acres of Traminette was apparently not affected.

Unfortunately, I don't think the final damage assessment is in. It looks like a few more vines will succumb when the stress of hot dry weather kicks in. Like most things in life, I don't think it is so simple as just "winter kill."

Many of the dead vines from all the varieties showed evidence of other problems: various degrees of crown gall, Eutypa dieback, etc. There is no doubt that the harsh winters of the last two years accelerated the inevitable demise of those weakened vines.

As I was counting the dead vines, my brain was doing a simultaneous evaluation of the upcoming costs of new vines, labor, lost production, etc. I remembered a question relative to crown gall that has nagged at me for a long time.

My first vine order was from a now-defunct nursery. I had almost 100 percent crown gall from that first order and I was perplexed by it. I wondered why? What happened, what was the cause, etc.

I wish I had the time and resources to properly review the issue of crown gall (CG) in Virginia. It raises tons of questions that have at best inadequate answers that lead only to more questions.

Do other growing regions on the East Coast have the same incidence rate of CG infestations? Are there pockets of increased CG pressure within Virginia? Does a higher or lower graft union have any effect? Is grafting a cane onto a cordon of an established root stalk effective and still commercially productive?

And more questions. Does ground cover that holds the steamy humid air too close to the graft junction contribute to the problem – especially for newly planted vines? Is there a protective coating available to seal the graft junction in the vineyard those first two years? Is the use of glyphosate around a dormant vine really safe? Has any research of this kind ever been undertaken by anyone?

It's obvious we could go down a rat hole really quickly on this subject. Maybe some grant money could be directed towards a study of this type. Considering that the average age of most of us in this business hovers above and below Social Security qualification age, I

don't think many of us will be around to hear the answers – if they are ever found.

Stephen Ballard at Annefield Vineyards told me his vineyard lost at least 100 Vermentino vines last year. Like me, he isn't sure the loss was strictly due to low temperatures, but speculated that it was a combination of crown gall, young vines, and other health issues that contributed to their demise.

Stephen also gave me a heads up on an app he found from The Climate Corporation (www.climate.com). It is primarily a paid site for large grain crop growers, but there is a free version that has limited options. The free version is most useful for doing remote monitoring of precipitation.

You might want to check it out. It's a little cumbersome to figure out, but I can see some benefit in using it.

I mentioned in a previous article that I was pleased with the 2014 growing-year canopy that lasted well into the fall. I had high hopes for a well-conditioned cane to be fruitful this year. I think that might be happening at my

vineyard. The vines that didn't have winter damage are looking great.

I had bud break on April 10 for my Cab Franc and April 16 for the Viognier. Seventy five percent of the CF was at the third wire by May 16! I always feel jinxed when I speak too soon, but it looks great so far. The Viognier is still a little slow getting up there, but in general it also looks good. The laggard this year is the Tempranillo, which is very uncharacteristic of that early ripening varietal.

I also highlighted my concern about water deficits in my last column. That hasn't changed. April was about 0.8 inches behind historical norms and May has only received 0.91 inches of rain to date. It has been cool and mostly dry so disease pressure has been minimal but I'm sure that will change soon.

And finally, if you want an entertaining quick read, try "The History of the World in 6 Glasses" by Tom Standage. Only one chapter deals with wine, but it is a fun look at history as it relates to some of the world's most famous beverages.

WINCHESTER EQUIPMENT COMPANY
 Agricultural, Construction, Material Handling Equipment
 Since 1957

cima **Rinieri**

**Introducing a new partnership between
 BDi Machinery and Winchester Equipment.**

TERROIR from page 1

Wines of place express their vineyard site. They emphasize mineral characteristics over fruit. They generally need aging to develop to their fullest potential.

In the cellar, the winegrower takes on the role of caretaker, restraining from any unnecessary intervention. Winegrowers do not interfere with the aromas and flavors that are intrinsic to the site. Their job in the cellar is to guide texture and structure by careful decisions relating to extraction, lees contact and declassification.

Europeans do this well. They have the advantage of ancestral vineyard knowledge being passed down for generations. Their understanding and respect for terroir is deep and unwavering.

Comparatively, we Virginians are in our infancy when it comes to understanding our terroir, hence the majority of wines produced here are wines of effort.

The place has to be the right place. The land, the climate and the variety have to have a magical symbiotic relationship. In Virginia we are still far from understanding the nuances of these relationships, but we are starting to understand the basics.

In order to make wines of place, the winegrower's most important decisions are at the pre-plant stage.

Once the vineyard is in the ground, the die has been cast. This is the subject of my article.

Vine/water relationships

Virginia is one of the wettest viticultural regions on the planet. We are all aware of the above-ground consequences of too much rain at the wrong time, but the below-ground ramifications are also highly influential to wine quality. Because it rains so much here, landscape form and soils have a huge impact on vineyard performance and wine quality.

In California, the focus is on irrigation. In Virginia, the concern is water evacuation. This is why site and soils are much more critical to us than to our West Coast colleagues.

Northern Europeans have dealt with excessive water for a few millennia and have a deep understanding of vine/soil/water relationships. We can learn much more from them than from arid regions.

There are many critical stages where vines need to be slightly water-stressed to produce their best wines. Berry enlargement in June and fruit maturation before harvest are two, but mid-summer is arguably the most important.

Simply put, if vines have access to an abundance of water they grow too much



Jim Law

The Romans who originally planted this vineyard in a rainy part of Northwest Spain understood, 2,000 years ago, the importance of water evacuation and took advantage of the slope.

for too long. Red wines made from vines that continue to grow after veraison tend to have unbalanced textures (and chemistry), vegetal aromas and flavors, and green, unripe tannins.

Hydric (water) stress before veraison halts the vine's vegetative cycle and puts energy and resources into the grapes. In 2011, we had a very dry summer. The vines stopped their vegetative cycle just at the right time. I was surprised at the quality of some of the red wines I tasted, even with the debacle of the infamous September rains.

Some sites retain a lot more water than others. There are two aspects to a site's ability to absorb and hold water: landscape form (topography) and soil water holding capacity.

Landscape form

Landscape form is the most important and easiest to evaluate: convex (ridges or hills) vs. concave (dips, swales or bowls); steep slopes vs. flat. Even the slightest bulge in the terrain can have a very positive effect on shedding water both superficially and internally.

Vineyard block design should reflect topography, not neat, convenient, geometry. The steeper the slope the better as far as the vines are concerned. There is a reason that the greatest vineyards in Northern Rhone, Alsace and Mosel are planted on death-defying slopes.

Soils

Some soils hold lots of water for the vines to access. Others do not. In Virginia, because of our precipitation, soils that lose water quickly are preferable. Vineyard soil scientists refer to this as plant available water (PAW).

It is very complex, but using soil surveys and through observation, we are beginning to set the groundwork for predicting outcome. Soils that are deep, with high organic matter and certain clay colloids, tend to hold lots of water (high water holding capacity). This water is constantly available to the vine, therefore negating any chance of achieving hydric stress at the critical times.

Each grape variety has distinct water needs. Of the varieties commonly grown in Virginia, Cabernet Sauvignon and Cabernet Franc vines need the most hydric stress because of their long and strong vegetative cycle. Merlot prefers a bit more access to water. If Merlot is too stressed it will shut down and not fully recover.

White-fruited varieties can handle more PAW and still produce excellent wines. Chardonnay is a weak vine that can suffer from too much water stress, but Sauvignon Blanc prefers soils with lower PAW. Vineyard block design should reflect variety requirements and soil PAW.

Harvest sweet spot

The ripening time for the best quality wines is from mid-September to mid-October. Europeans feel that the best wines come from vintages where the grapes ripen at the very end of the growing season: "ripe, but barely ripe." In most of Virginia, later ripening varieties have the best chance of producing terroir-driven wines. This is for two reasons:

1. Warm days and cool nights retain acidity, enhance aromas, increase color and give us our best shot at silky tannins.

2. In Virginia, August, September and October experience roughly the same average rainfall total (October is statistically the driest of the three). However, rot is much less prevalent if it rains when temperatures are cool rather than warm. This is especially true of sour rot.

If more of us want to move beyond serviceable, wedding/festival wines, we need to start paying attention to vineyard fundamentals.

If we put more effort into pre-plant decisions, we can put less effort into the winemaking. The next generation has at its disposal much more knowledge and expertise than we did. My hope is that they take advantage of it.

A 4-Step Look at Spray Drift

1. Ask Questions before You Fill the Tank

By **Jim Benefiel**
Benevino Vineyards

Since the introduction of Roundup Ready crops nearly two decades ago, glyphosate – the active ingredient in Roundup – has been used extensively for weed management. However, many non-Roundup Ready crops can be damaged by glyphosate drift, including grapes, tomatoes, potatoes, soybeans, and fruit and nut crops.

Other hormonal-type herbicides with drift problems include dicamba, picloram, MCPA, triclopyr, fluroxypyr, mecoprop, and 2,4-D. When applying herbicides, take extra precautions to avoid damaging any sensitive crops. Particle spray drift, vapor drift, or runoff to adjacent fields may cause injury to crops.

Any agricultural crop can be damaged by herbicide drift, but commercial grapes are especially sensitive to commercial herbicides. By some estimates, they are 75 to 100 times more so than common row crops.

The potential for economic loss is significant, as grapes have a field value of perhaps \$5,000 per acre, and the processed value can be 10 times higher. Commercial vineyards are now planted in roughly half of our Commonwealth's counties, so the possibilities for damage exist if good practices are not observed.

Vineyards are being planted throughout the Commonwealth, so applicators should scan the countryside each spring before stopping at the chemical shop. Even

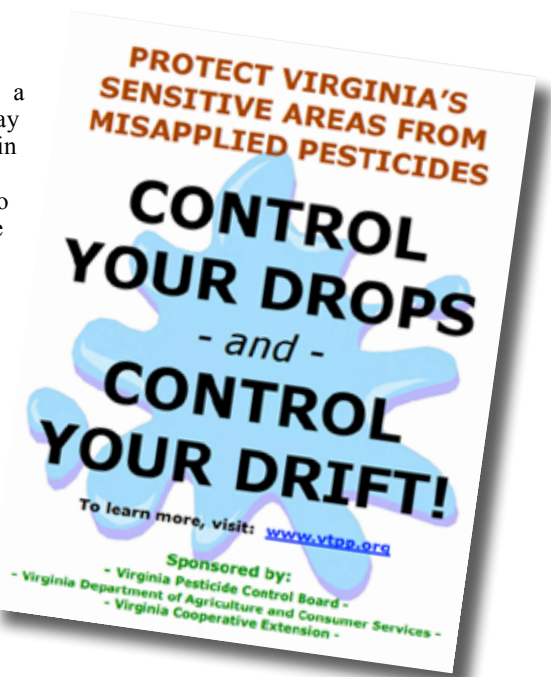
vineyards that are not adjacent to a property can be at risk, as some spray materials will drift a mile or more in even moderate winds.

Applicators are encouraged to document known locations of sensitive crops in application records, or to print a map showing those locations and incorporate it into application records.

It is also a good practice to scout the area before the planned pesticide application. As part of being a good neighbor, pesticide applicators and dealers should visit with nearby growers who may have sensitive crops or beehives to let them know of intended pesticide applications and to learn which ones and under what conditions might suffer damage from spray drift. Dealers are likely to know of such concerns, so ask.

Protecting Sensitive Crops

Use Integrated Pest Management. Before each application, review and consider using a variety of IPM methods, including pest prevention, scouting to monitor pest hot spots, considering economic thresholds and pesticide alternatives such as mechanical controls, sanitation, and biological controls. Then select an appropriate product that is no more toxic than necessary to control the targeted pest on the subject property. That should minimize the risk of harming unintended crops.



Read the label. That goes without saying. If you fail to notice the warnings for other crops and you cause damage, you will have no defense.

Follow all directions. We all know that the label is the law. Applying a pesticide to a crop not on the label or in excess of the allowable rate is a quick way to get into deep legal or financial trouble. Your risk of off-target injury to people, livestock, pets, wildlife, and other crops will be greatly

See *PESTICIDES* on page 9

2. Recommended Pesticide Drift Resources

By **Michael Weaver**
*Professor and director,
Virginia Tech Pesticide Programs*

The prevention of drift has been an ongoing educational effort of Virginia Cooperative Extension (VCE) and the Virginia Department of Agriculture and Consumer Service (VDACS) for many years.

This work is incorporated into our statewide pesticide safety education program, which has access to over 21,000 certified applicators enrolled in training and certification programs.

These applicators are certified by VDACS, which leads this program and partners with VCE to do much of the education.

Those applicators are both private (farmers) and commercial (in 23 different categories). We see these folks every two years in educational programs throughout the Commonwealth.

Drift is a zero-tolerance issue with pesticide application. If you drift off site you are liable and in violation of state and federal pesticide laws. As such, VDACS will enforce the law

and does pursue these violations. In partnering with VDACS we co-authored a publication in 2005 that was the center of our “Control Your Drops” campaign to protect Virginia’s sensitive sites including grape vineyards.

The online version of the publication is available at: <http://bit.ly/1K3mJUR>.

Two other sources to check are:

- DriftWatch (driftwatch.org)
- The Weed Science Society of America’s reference (on the Herbicide Resistance Action Committee website at <http://bit.ly/1FzXzW3>.)

PESTICIDES from page 8

reduced by following label instructions.

Most of us are guilty of not reading labels before every application. But not reviewing the label at the beginning of the season puts you at double the risk. Many products now have instructions on minimizing drift, such as including setback zones to protect sensitive areas.

Additionally, there could be information ranging from droplet size and nozzle selection to maximum wind speeds and setbacks. If you can't recall these right now, while you're thinking about it, make a note to re-read the label before your next application.

Before you fill the tank, ask yourself questions that your neighbors might ask: Are there children, pets or sensitive crops nearby? Is the wind low to moderate and blowing away from them? Is my stream flow today capable of carrying product out of my area? Does the weather forecast predict suitable conditions, or could the wind and heat volatilize and carry off unintended product? (Realize that with today's digital weather information, investigators can reconstruct most of the weather conditions for the day you sprayed.) Have I correctly calculated the amount of pesticide needed?

Use your dedicated herbicide sprayer. It's always a good practice to dedicate one sprayer for herbicide only. That one will be set up for large droplets and low pressures that minimize particle drift. Using a standard fungicide sprayer for herbicides is asking for trouble.

Calibrate your spray system. Run a test row to see how much is being used. Adjust your nozzles as necessary. Reduce your speed through the field and reduce the application rate near property boundaries. Stop applying the pesticide if the wind picks up too much or if the product starts to drain off your property.

This last precaution has the added benefit of minimizing the excess (unneeded) product you dispense, saving you money, while reducing wind turbulence that could form behind a fast-moving tractor. Don't think you have to finish spraying on a given day if weather conditions aren't right. And observe required setbacks if the wind picks up. If you don't recall the wind-specified setbacks for the product you are using, make another mental note to review the label.

Wind and boom height are two of the most important considerations when it comes to controlling drift. By using a rate controller that changes output pressure and lowering boom height, you can help reduce drift.

Ask these questions: What weather

conditions lead to an inversion? What are some practical ways to detect it?

If you don't know the answers, read up on it. When the air is still (i.e., no wind) and an inversion is occurring, vapor may drift for several miles in unanticipated directions.

Recall that after some pesticides are applied, the product may volatilize off the application site and move unpredictably. Does the volatilization of the product you are using increase with the temperatures you're working in? How long after application do you need to worry about volatilization, at current temperatures? (Again, read the label.)

Amine formulations of phenoxy herbicides are less likely to volatilize and damage sensitive crops than ester formulations. If you're unsure of which formulation you have been using, ask your supplier.

General pesticide practices

Practices that we all know and learn will be reviewed by an evaluator if a

complaint is lodged. At the conclusion of your application, clean your tank and nozzles properly, then spray rinse back on the intended site. If an authority finds that your equipment is not clean after your last application, it's probably a reasonable assumption that you don't do it routinely.


Does your storage facility meet requirements? Is the locker locked, and separated from general supplies? Are empty containers pierced to prevent inadvertent re-use? Are there any solutions in unmarked containers? Do you keep your place locked, cool and dark?

In summary, take 30 minutes to refresh yourself on the problems that can occur if you aren't aware of potential issues, and the relatively simple steps you can take to avoid them.

When it comes to herbicides, an ounce of prevention is worth pounds of cure.

Jim Benefiel is vice president of the Virginia Vineyards Association.

It is never necessary to enter an ALBRIGI tank to clean it!





ALBRIGI
TECNOLOGIE

- The leading manufacturer of stainless steel tanks for the wine industry for the past 30 years.
- Made from the finest, mirror-polished stainless steel, specifically designed for wine making

GUARANTEED FOR 25 YEARS!

Ask about Picture Tanks!

For information on sizes and styles available
Visit www.spectrellising.com • Call 800-237-4594

3. A Checklist for Spray Applications

Print the checklist out, and make sure your spray program takes the following considerations into account. Once you check off these issues, you're ready to roll.

- Locations of herbicide-sensitive crops are documented in application records, or printed on a map.
- The area around your farm has been scouted and neighbors visited before the planned pesticide application.
- Any concerns of neighbors have been noted at the pesticide mixing site or in application records.
- Dealers have been visited to assist in identifying sensitive crops, beehives, pets or children nearby.
- The dealer's input has been sought to select a product that limits toxicity and extent to the problem at hand.
- The potential for amine formulations have been discussed with the dealer.
- Before mixing, the weather forecast was consulted to confirm suitable conditions for the product (fill in the blanks based on your

- conditions):
- Wind speed (___to___mph) and direction (_____)
 - Setbacks for these conditions (_____ ft from boundaries)
 - Wind speed at which the application should cease (_____mph)
 - Temperature (_____degrees F)
 - Time after application that volatilization can occur (_____hours)
 - Temperature at which application should cease (_____degrees F)
- Reviewed the forecast and scanned the sky to confirm no inversion.
 - Before application, entire label has been read for instructions on minimizing drift.
 - A dedicated herbicide sprayer is being used:
 - Droplet size (_____microns)
 - Nozzle selection (_____ type)
 - Maximum safe tractor speed at boundaries or turnarounds (_____mph)
 - Boom height (_____ft)
 - Nozzles have been cleaned.
 - Calibration records are up to date.
 - During mixing, the allowable rate has not

- been exceeded.
- The rate has been checked by a second party.
 - During application, the following considerations have been taken into account:
 - Rate controller in use
 - Test row was run to confirm appropriate rate of product use
 - Maximum wind speed observed (_____ mph)
 - Maximum safe tractor speeds observed (_____mph)
 - After application:
 - Tank and nozzles cleaned properly
 - Rinsate sprayed back on intended site
 - Storage facility:
 - Locker locked, separated from general supplies
 - Any empty containers pierced to prevent inadvertent re-use
 - No solutions in unmarked containers



4. How to Communicate Concerns to Neighbors

Grape Press

If you have neighbors within a mile of your vineyard who are using herbicides, you should contact them and make them aware of the problems that can result from

spray drift. You will most likely have better luck if you take the time to visit with your neighbors and discuss the issue than if you simply send a letter and hope that they read it and take its contents to heart. If you do visit, you may want to make the

- following points:
1. Grapes are your livelihood and they are not Roundup Ready.
 2. It can take three or more years to establish a productive vineyard, so vines that are lost to herbicide drift can't just be replanted next year. It will take years to get back to where you were.
 3. Other hormonal-type herbicides with drift problems include dicamba, picloram, MCPA, triclopyr, fluroxypyr, mecoprop, and 2,4-D.
 4. Grapes are more sensitive to herbicides, perhaps 75 to 100 times more so than other row crops.
 5. Under the right conditions, your sprays can drift up to a mile from your fields, so please be mindful of wind and other conditions that lead to spray drift. And before you fill the tank, ask yourself some simple questions.
 - Are there sensitive crops, pets, or children nearby?
 - Is the wind low to moderate and blowing away from them?

Winemaking Consultant
www.winemakingconsultant.com

Thomas J. Payette

Over twenty-five years of winemaking in
Virginia, Napa and East Coast

Multiple Governor's Cup Winner
2011 Wine Productivity Trophy
"1999 Winemaker of the Year"

Phone : 540.672.0387
winemakingconsultant@gmail.com

Winemaking solutions focusing on:
Winery and vineyard start-ups
Still and sparkling wines
General winery issues

Food Science Degree – Virginia Tech

See NEIGHBORS on page 11

IN THE VINEYARD

NEIGHBORS from page 10

- Is your stream flow capable of carrying product out of your area?
- Does the weather forecast predict suitable conditions, or could the wind and heat volatilize and carry off unintended product?
- Have I correctly calculated the amount of pesticide needed? Please limit use of herbicides to the amount needed to address the targeted concern.

I can provide you with a checklist (see checklist on page 10) that can help you make decisions about how to use sprays without harming your neighbors.

I'm glad we're neighbors, and I look forward to working with you. Please let me know if I can ever be of assistance to you.

If you choose to write a letter, incorporate the same points, but remember that written communications can't convey the warmth and personal touch of a face-to-face contact. Here's a sample that may help:

Dear Neighbor:

Like you, I make my living from agriculture, and as far as I'm concerned,

it's the only way to make a living. I'm writing today to ask for your help in dealing with a problem that is increasingly threatening vineyards like mine.

With the advent of Roundup Ready crops, glyphosate and other sprays are being used more liberally than ever. While those sprays won't hurt your crops, they can be devastating to mine. Commercial grapes are more sensitive to herbicides than other row crops – perhaps 75 to 100 percent more sensitive. And while I know you are spraying only within the confines of your fields, under the right conditions, herbicide sprays can drift up to a mile away, which could put my grapes at risk.

So, before you fill the tank, I hope you'll ask yourself some simple questions.

Are there sensitive crops, pets, or children nearby?

Is the wind no more than low to moderate in speed, and is it blowing away from them? Is your stream flow capable of carrying product out of your area?

Does the weather forecast predict suitable conditions, or could the wind and heat volatilize and carry off unintended product?

Have you correctly calculated the amount of pesticide needed? Please limit use of herbicides to the amount needed to address

the targeted concern.

I can provide you with a checklist (see checklist from page 10) that can help you make decisions about how to use sprays without harming your neighbors.

Since you make your living from the land, I know you are interested in taking care of our environment, and I hope you'll join me in spreading the word about herbicide spray drift.

I'm glad we're neighbors, and I look forward to working with you. Please let me know if I can ever be of assistance to you.

Thanks, and best regards,

/signed/

Feel free to customize this sample letter so that it feels right to you – it should sound like something you would write and make sense for the area in which you operate.

Do everything you can to make this dialogue a two-way street: find a way to help your neighbors on some small project or bring a bottle of your wine with you when you visit.

Finally, view your visit or letter not so much as a single event, but as the start of a process that will yield results over time. Be patient, be persistent, and most of all, be neighborly!

*America's Choice For Vineyards, Wineries
& Orchards Since 1986*

*Orchard
Valley*
SUPPLY INC.

VINEYARD SUPPLIES

No Vines... No Wines... Just Everything In Between!

WHOLESALE SUPPLIER FOR:

TRELLIS SUPPLIES • TRAINING/TYING SUPPLIES

WILDLIFE CONTROL SOLUTIONS

HARVEST SUPPLIES

AND SO MUCH MORE!

www.orchardvalleysupply.com • 888-755-0098

Better Wine - from the Vineyard

Virginia Tech Studies Effect of Pre-Harvest, On-the-Vine Dehydration

By Bruce Zoecklein
Professor Emeritus, Virginia Tech

If you don't know where you are going, any road will take you there.

As a college professor it was widely assumed that my major role as an instructor involved a form of missionary work – that is, spreading the gospel. In reality, students often provide the real education. Some students' operational motto is, "a little hard work never hurt anyone . . . but then again, why take a chance?" Others are accustomed to rote memorization as their form of "learning."

One day I found a student at my door quite distressed about having performed poorly on an exam. This particular student was not accustomed to actually thinking on an exam, but thought it enough to simply have a pedestrian acquaintance of some facts. On the verge of tears, she had a humorous and enlightening theophany – "I know it all, I just cannot remember it all at once." While somewhat presumptuous perhaps, I have adapted this as my own mantra.

The kaleidoscope of things to remember or consider is a constant feature in winemaking. Some New World winemakers have the illusion that knowing a set of facts enables them to control just about everything in wine. Even if this was a desirable goal, it is unattainable.

Fruit maturity evaluation is a good example of that conflation and the limits of both knowledge and control. While influencing wine style and the maximum wine potential thereafter, desirable measured indices seldom align.

Even if they did align, most are well aware that perfect numbers are no assurance that the wine will be any good. As exemplified by some of my past students, it is easy to manage the outward trappings of mastery by knowing a few particulars. Understanding what those specifics mean and how they apply is the issue.

In a previous edition of Grape Press, I reported on our plant hormone stimulation research to advance the rate of fruit maturation. The following review outlines our pre-harvest, on-the-vine dehydration research. This investigation is being conducted by Dr. Molly Kelly, Virginia Tech's Extension Enologist and myself, and is funded by the Virginia Wine Board.

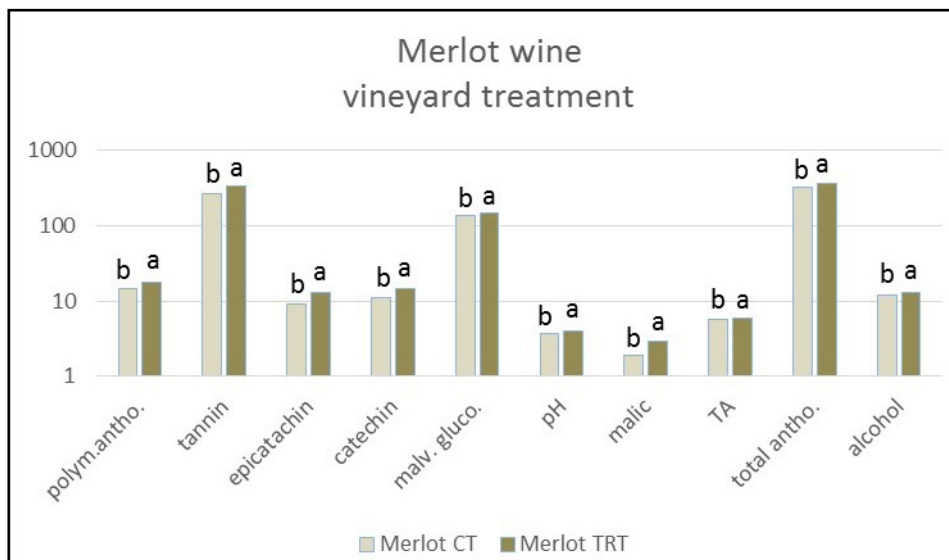


Figure 1. Effect of vineyard dehydration control (CT) and treatment (TRT) on wine phenols and primary chemistries. Different letters indicate significance at $\alpha = 0.05$.

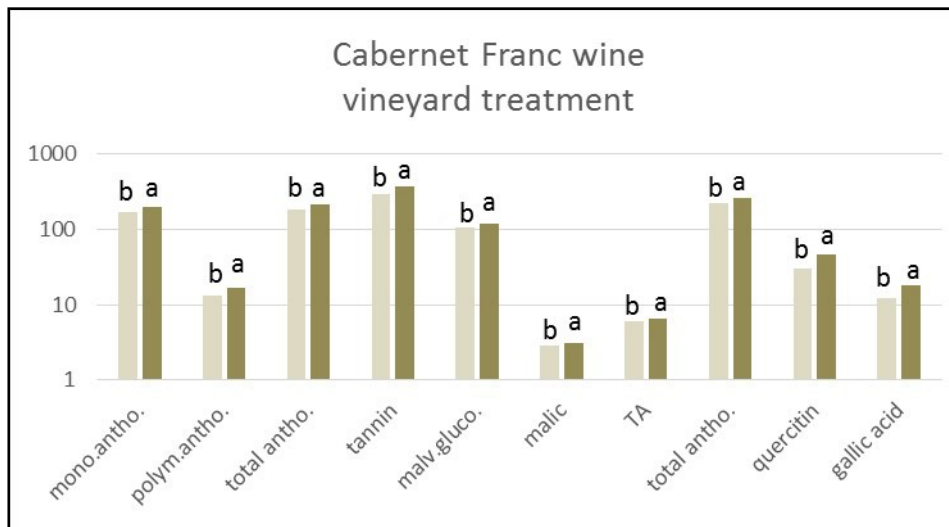


Figure 2. Effect of vineyard dehydration control (CT) and treatment (TRT) on wine phenols and primary chemistries. Different letters indicate significance at $\alpha = 0.05$.

Background

The grape cuticle or bloom is composed of wax platelets of even numbered alcohols, aldehydes, acids, esters and hydrocarbon chains. Produced in the fruit, they are responsible for controlling transpiration. These platelets are less than 0.1um (i.e. 0.1 micron) wide, and are normally hydrophobic (water repelling), which prevents the fruit

from losing water.

Certain oils and certain cations are known to lower the cuticle surface tension and cause the cuticle platelets to flatten and orient parallel to the grape berry surface. This effectively shrinks the area between the platelets, reducing the thickness of the wax layer by causing

See DEHYDRATION on page 13

DEHYDRATION from page 12

overlapping, facilitating moisture transfer through the cuticle. Additionally, cations can form linkages between the more hydrophilic fatty acids and esters enhancing dehydration.

Methods and Results

We are using a naturally occurring compound (selective safflower oil) to cause the microscopic wax platelets of the grape cuticle to realign themselves as described above, and thus increase dehydration while the fruit is on the vine. Preliminary research was conducted during the 2013 season and a formal research program established in 2014. The effort will be repeated in 2015.

Cabernet Franc and Merlot vines were treated at approximately 19 degrees Brix and harvested at 22 degrees Brix. Treated fruit was evaluated and compared with fruit from control vines. Wines were produced from all treatments at the Enology-Grape Chemistry Group Research Winery on the Virginia Tech campus under the direction of Dr. Kelly.

Some of the data generated in 2014 are provided in Figures 1 and 2. In all cases treatments increased Brix, pH, TA and malic acid concentrations. Under normal conditions of late season dehydration there is an increase in the rate of fruit respiration. Thus, fruit can lose a relatively high concentration of malic acid vs. tartaric acid in addition to water. As can be seen that was not the case with this study.

Tannins and Pigments

Tannins are phenolic compounds with a molecular weight between 500 and 3500. They are the source of structure in a red wine, contribute to color stability, astringency, and bitterness. All winemakers know that phenolic compounds are important to red wine quality.

It is tannin size and the way they are assembled, not their total concentration, that impacts red wine sensory attributes. As fruit matures, tannins polymerize or bind by several mechanisms (oxidative and non-oxidative).

Oxidative polymerization involves tannin chains binding or increasing in length until they are bound by the pigmented anthocyanins. Thus, during oxidative polymerization, anthocyanins act essentially as ‘book ends,’ stopping the chain elongation. Tannin chain length impacts the degree of astringency and harshness by limiting the number of sites able to bind with saliva proteins in the palate. Oxidative polymerization is impacted by several viticulture factors:

- fruit maturity
- maturity rate
- ratio of tannins to anthocyanins

Because of the increased anthocyanin content, there are shorter tannin polymers in the treated fruit. This suggests the possibility for increased mouthfeel. The higher the relative level of both monomeric anthocyanins and polymeric pigments in the treated wine suggests potentially greater color stability. Additionally, polymeric pigments form wine colloids, which help to integrate aroma/flavor.

Malvidin Glucoside and Color

Malvidin glucoside is one of 5-sugar bound (glucoside) anthocyanin pigments found in *Vitis vinifera*. As the principle pigment, malvidin makes up about 50% or more of the total pigment complex in Merlot and Cabernet Franc. The concentration of this monomeric

► The goal . . . is to enhance our ability to produce wines that please both the palate and the intellect . . .

pigment (unbound) was highest in treated fruit and young wine.

Color is an important wine attribute, because humans are visually oriented. As such, wine color can certainly bias evaluations. A classic example of color bias is to change the color of a white wine, such as Chardonnay, with red food coloring. In blind evaluations, the color-adjusted wine frequently receives a different sensory rating for attributes such as fullness, body, and complexity. As such, richly-colored wines are assumed to have high volume or body, and softer tannins. Conversely, a wine with less color is automatically assumed to have “green” or “harsh” tannins.

Quercetin and Color Cofactors

Quercetin is a flavonol phenol which is localized in grape skins. These compounds act as the grape’s sun screen and are produced in higher concentration in sun exposed fruit. They can enhance color and a result of copigmentation. Copigmentation or hyperchromicity, is an interesting phenomenon that allows more visible red color than would be expected due to the anthocyanin concentration alone. Cofactors are non-colored compounds that have the ability to bind with anthocyanins, creating

more color than the unbound pigment, hence the term hyperchromicity. Gallic acid is a simple phenol and used as a standard measure for phenol concentration. It can act as a source of color enhancement by acting as a cofactor for enhanced visual color.

Sensory Analysis

Wines from the 2014 season were evaluated using triangle difference testing at the Food Science and Technology Sensory Laboratory at Virginia Tech (data not shown). The procedure involved presenting three wines to a group of 52 wine consumers. Two of the wines were the same and one was different. Can evaluators identify the different wine? Evaluators were first asked to examine color, then to evaluate different sets of wines under red light (to avoid color bias) to review aroma and then flavor.

The treated wines were more deeply red colored and easily identified as such. The panel also identified the treated wines based on aroma and flavor differences at the 95% confidence level.

Electronic Nose Analysis

Electronic nose technology demonstrated that both fruit and wine volatiles were clustered in different special regions depending upon treatment. Such results (data not shown) confirmed that volatile component were statically and significantly different between control and treatments (95% confidence limits). Thus, clearly there was a treatment effect. GC/MS analysis of individual volatile components is currently underway.

The goal of this research is to aid in our understanding, to enhance our ability to produce wines that please both the palate and the intellect, hold the taster’s interest, offer intense aromas and flavors, taste better with each sip, and improve with age.

While these results do not signal a New Organon they do suggest some interesting stylistic alternatives and aid in maturity judgements. Good judgement, after all, comes from experience and a lot of that comes from bad judgement. What is required to fashion a memorable wine, in addition to experience, is to draw from the fountain of creativity, hallmarks of which include curiosity, passion and imagination. Our overall goal as winegrowers should be to create complexity and interest, wines where layers reveal additional flavors illuminating the distinctive rhythm or wave-form we call terroir.

The greatest obstacle to discovering the truth is being convinced you already know it. For additional information go to www.vtwines.info.

Conventional Leases for Vineyards

For a lease to be successful, both parties must gain something

By **Jim Benefiel**
Benevino Vineyards
(Second in a series)

Following up on last issue's article on short-term leases, this installment in our leasing series covers medium-term leases in which the winery typically takes over responsibility for tending a producing vineyard planted by the lessor. Here we define medium term as longer than three years, but less than the expected life of a newly established vineyard.

The term may run to the expected life of the subject vineyard. The lessee gains the right to the crop produced there for the specified lease payment — there is no separate grape supply contract.

The landowner may wish to convert a supply contract to a lease for a variety of reasons: declining health, advancing age, or a decision to pursue other opportunities. The winery will likely already be a client of the vineyard, and will have therefore satisfied itself of the productive capability and quality of grapes that can continue to be produced there.

Asking a number of wineries to propose a lease arrangement without them first having experience with the property will probably not net bona fide offers.

A winery may wish to convert from a general supply agreement (customer) to a lease (lessee) in order to gain full control of vine management or to secure the entire output from the vineyard (at the expense of other wineries — this could be done without a lease agreement).

This will be a true lease, which as noted in the first article, is a legal agreement that conveys the right of a party (the lessee) to use the property of another (the lessor). It will resemble conventional leases in general commerce and easily qualify as a lease for purposes of the Farm Winery Act.

Equipment

The landowner will typically own equipment that has been used in the operation of the vineyard. This equipment may have utility for the lessee, especially if the vineyard is remote from the winery's current location.

Alternatively, some equipment may not be useful to the lessee, especially if the lessee intends to restructure operations in order

to improve expected yield or quality. The landowner should offer the equipment in the lease, and then decide on a reasonable rental rate. Alternatively, the landowner can offer to sell the equipment outright, and should certainly try to sell any equipment the lessee doesn't wish to use, unless the landowner expects to resume vineyard operations at the end of the lease, or at other sites. You may also wish to consider the fair rental value of any building to be used. And because they are not truly a part of a lease, chemicals or other supplies should be priced separately.

For any equipment included in the lease, operation and maintenance (both routine and repair) should become the responsibility of the lessee. It gets a little dicey when the equipment includes a vehicle (tractor, truck) that has had extensive use.

For example, if the tractor is 20 years old, and requires a new engine or gear box in the first year of the lease, who pays? One possible solution for major maintenance is to pro-rate such repairs over the age of the equipment during the term of the lease. In the situation just discussed, the lessee would pay for one-twenty-first (1/21) of a repair in the first year of the lease, two twenty-seconds (2/22) in the second year, etc.

This can even extend to tires, batteries, etc. For example, if the age of the tires on the 20-year-old tractor is four years at the beginning of the lease, then the lessee would pay for one fifth of a new tire in the first year of the lease, two sixths (one third) in the second year, etc. The lessee should always pay for consumables and preventive or routine maintenance; e.g., lubrication, oils, fuels. Failure to do so should absolve the landowner from any responsibility to pay his portion of any subsequent major repairs that this might lead to.

Renovation and Improvement

The lessee will probably be expected to fund the cost of any improvements. In fact, an underlying reason for the transaction might be that either the landowner is unwilling to make capital improvements, or the lessee feels that it could benefit substantially from special improvements it has sole knowledge of. This can be as simple as installing irrigation software to improve quality, or an exclusion fence to increase yield. It may also include (but such is less likely) changing trellis systems

or grafting over varieties or clones.

Who pays for the continued planting of replacement vines is often a question. Certainly if the winery intends to graft over, change trellis systems, bring in irrigation, or implement other major projects, then reason would suggest the winery-lessee plant the new vines.

If, however, the vineyard is to be taken over largely "as is," then the winery is expecting to accede to a productive vineyard. If vines are dying due to a progressive disorder such as grapevine yellows, presumably the landowner had, or should have had, some indication in recent years. However, the winery-lessee may attribute a general decline to "pop up" disease, insects, or field conditions that could have/should have been addressed by the landowner.

To protect himself, the landowner probably should provide detailed production records for the 3- to 5-year period immediately preceding the initiation of the lease. Replacement plantings should be included in such records. Presuming that replacements cover vine deaths (i.e., unplanted areas/unproductive vines are not increasing), then the average historical replacements can serve as the base for future responsibilities.

Whether the landowner continues to pay for baseline replacements, or is responsible only for any increase above baseline, reflects the concerns and risk posture of the lessee for your specific vineyard.

Note that if the landowner is responsible for "replacements above baseline" and the lessee cites a need to replant because of a general (unspecified, except to the winemaker's satisfaction) decline in quality or yield, that landowner is on the hook for those costs, which could become excessive.

Because of the difficulty of establishing defensible, replicable criteria for rip-out and replacement, it is probably best for the landowner to agree to baseline replanting only. Since a newly planted grapevine usually takes five years to reach full production, don't expect a lessee to pay for replacement plantings within five years of the termination of the lease.

Lease Duration

The duration is up to the parties, but typically extends for the expected remaining

See LEASES on page 15

Conventional Vineyard Leases

LEASES from page 14

lifespan of the subject vineyard. The winery may wish a trial period; e.g., five years, but will probably seek additional periods at its option. The landowner-lessor probably doesn't want to return to tending vines on this property at some future unspecified date, and might expect to return the land to a raw, unplanted condition at the end of the lease. Who pays for this is the result of negotiation. The lessee will want the lease to survive the landowner's disposition of the underlying real property, and may also want a right of first refusal should the land go up for sale.

Assignment

Each party will probably want the right to assign its interest, but what if the assignor retains an interest? What happens if one party becomes disabled or incapacitated? Except for these two cases, a typical assignment provision requires the permission of the other party, and states that such permission cannot be unreasonably withheld. Some leases specify the criteria for denying an assignment, such as financial capability and production experience/technical competence.

Penalties and Remedies

Lay out the process for resolving disputes, including notifying the breeching party and allowing a reasonable "cure" period to correct the problem. What should be the penalty for a lessee's failure to make timely payments?

Because the lessor will probably have limited technical capability to intervene and produce grapes for its own accord,

provisions should probably be made for a lien on the lessee's production.

Price

The rate for a lease should be consistent with the property being used. The examples used in our prior article apply here. Your costs will certainly vary.

Current estimates range from \$15,000 to \$25,000 per acre for new vineyard development. New vineyard costs are relevant because that's the winery's alternative: acquire grapes from your land or plant vineyards itself.

Your historical cost is relevant only if the parties think that the productive life of your prior investment is substantially declining — determinable by the yield and quality of grapes you have recently produced from the property.

If a \$20,000 development expenditure is amortized over a 20-year productive period, then that establishes the base "development" rate at \$1,000 per acre per year — before including any carrying costs. If you had borrowed the money at 6.5% to develop the vineyard, you would be paying the bank \$1,815 per acre per year over a 20-year period. This would be the fully burdened development cost.

You may negotiate for more or less than this figure, depending on your standing relative to the prospective lessor and the expected remaining value at the end of the lease. The development cost is separate from the rental rate for the field capability of your raw (unplanted) land in your area.

Whether its next-best alternative use is hay, row crops or cattle, your county extension agent may provide you with a reasonable rental rate, and this amount is

usually considered to include any taxes and assessments on the underlying land.

Let's say the alternate value is \$40 per acre year. That puts your lease rate at about \$1,850 per acre per year. You can see now why some Virginia government officials see \$1-per-year lease rates as shams.

As an aside, the annual lease rate does not vary with the expected remaining life of the vineyard block. As long as the vineyard is producing at full production — whether five or 20 remaining years are expected—the annual lease rate remains the same, though the potential term, in years, varies.

What causes the value of the lease to vary is the efficiency and productivity of your investment. If you have a superior site (for yields or quality) or are producing varieties in high demand (as evidenced, perhaps, by high prices), then your investment is worth more to a lessee than another property producing lower yields or lower-valued varieties. Alternatively, if the vineyard is already showing signs of decline, then the value of the lease declines as well.

Payments

Since the lease is a right to use the property, payments should be made annually at the beginning of the growing season or spread out over the length of the growing season — unlike a grape supply contract when payment is usually made at delivery. Any delay in payment would give the lessor constructive notice of an impending default.

Summary

This article focused on the particulars of medium-term leases in which a winery typically takes over operation of a producing vineyard from the landowner/original developer. As was noted, there can be multiple reasons for either a landowner or winery to want to take this step.

For a lease to be successful, both parties must gain something from the arrangement. This is not difficult, but it requires forethought, so that one party isn't unacceptably surprised by foreseeable events that weren't considered on the front end.

A sample vineyard lease agreement is available from the Virginia Wineries Association on its website. That sample agreement is very basic, and doesn't cover many of the issues discussed here. It will be updated with input from the VVA Board.

Next issue: Long term leases.

Jim Benefiel is vice president of the Virginia Vineyards Association.

WINCHESTER EQUIPMENT COMPANY
 Agricultural, Construction, Material Handling Equipment
 Since 1957

VINEYARD TRACTORS AND SPRAYERS
 New Holland - Kubota - Durand Wayland

Tim Gano
 Cell: (540) 533-5887

121 Indian Hollow Road Winchester, VA 22603
 540-867-2244
www.winchesterequipment.com

Land Use Tax Basics and Vineyards

Want to Save Money? What You Need to Know About the Land Use Tax

By **Bill Robson**
16 Rows Vineyard

During the VVA's Winter Technical meeting, I had an opportunity to speak to several members about Virginia's Land Use tax program. It became evident that some did not know the program existed or how it might benefit their bottom line.

In general terms, Land Use Tax and its application can reduce a property owner's annual real estate tax. The program allows property owners, in cooperation with their local county (or jurisdiction) to have their land taxed based on its potential revenue rather than its "market rate," or development potential.

A Significant Difference

In simple terms, if you produce a crop, keep cattle, have open space or timber, your land could be assessed at the value of what the land will produce rather than the possible sale value of the land. The difference can be significant.

By way of a very simple example (omitting some details), consider a property owner with 50 acres of timber land. If timber was being sold at an average of \$1,000 per acre, then the land use tax would be based on a value of \$50,000.

By comparison, if the local jurisdiction was in a high-value area and comparable properties had been sold for \$5,000 per acre (therefore establishing a cost or tax basis), then the property's tax value would be \$250,000 (50 acres x \$5,000).

Real estate tax-assessed values can rise and fall, but the "rate" (usually expressed as a value per \$100 dollars of assessed value) at which taxes are levied is rarely reduced.

It is a matter of simple economics. If a jurisdiction requires a certain amount of revenue, then the "rate" will adjust to ensure that any reduction in "assessed values" doesn't create a shortfall in revenue.

Setting Land Use Rates

"Land use rates," on the other hand, are based on statewide averages for crops, cattle, etc. These values are set at the state level, not the local level.

Therefore, under the land use tax, a land owner is not subject to variations

in the assessment values set by a local government.

The Land Use Tax legislation was created in 1973 to allow eligible land to be taxed based on "use," rather than the "market value" of the land. This is enabling legislation (rather than mandatory legislation) which means that a county or local jurisdiction has the option of using the legal authority.

As previously mentioned, crop values are set annually. These are prepared by the Technical Advisory Committee, which is a state-level committee.

The law defines four categories of land: agricultural, horticultural, forest and open space. The growing of wine grapes falls under the "horticultural use" designation.

Each "use" category has certain qualifying conditions such as minimum acreage and production levels.

Horticultural use requires a minimum of five acres of producing land. The minimum acreage can include circulation and other ancillary space. This category also stipulates that to qualify, the land must have been devoted to at least five consecutive years of production and sales.

Areas of Improvement

In 2013, the VVA's Legislative Committee identified several problems with the current land use tax structure as it applies to vineyards, which are summarized below:

The minimum acreage requirement for the horticultural designation does not reflect the average size of Virginia vineyards. Based on several sources, the average Virginia vineyard ranges in size from four to seven acres. Of those, a large number are below the five-acre minimum established under the horticulture designation.

The requirement for five years of production of a crop is especially burdensome for vineyards, which do not produce marketable crops for at least four – and more realistically five – years.

Therefore, a vineyard or winery would not qualify under this requirement until the 10th year after planting (five years to establish the vines, then five years of production).

The cost of grapes varies on an annual basis. The Technical Advisory Committee publishes the annual sales rates for all categories in order to establish the local

jurisdiction tax cost basis. This year "grapes" are categorized as "other" under the "orchard use" (see <http://usevalue.agecon.vt.edu/>). This may or may not be a fair determination of value for the purposes of vineyard land use tax.

In 2013, the Legislative Committee proposed to the VVA Board that we advance legislation to create a "vineyard" category under the horticultural designation. This would allow the law to be modified to specifically assist vineyard development in Virginia.

The proposal called for reducing the land acreage requirement from five to three acres; reducing the qualifying time from a five-year production standard to one that starts "upon planting of the vines," which would mimic the forestry designation; and establishing a means to set the annual cost of grapes.

Due to other priorities, the VVA decided not to advance a legislative amendment at this time, but we are very interested in hearing from our members about whether this is something we should pursue. You can email me at wrobson@msn.com. I'd love to hear from you about this important issue.

Of note, the 2015 legislative session did make a change to the land use law which resulted in a reduction of acreage.

Rather than mandating a minimum number of acres, the modification allows for a local jurisdiction to determine the qualifying minimum land area to a value less than five acres. Refer to 2015 HB 1483 Real property assessment; valuation for land preservation.

Do Your Research

Adequate care and research should be undertaken by each vineyard owner before committing to place acreage into the land use tax program. There are some significant drawbacks with the program including "roll back taxes," changes in ownership and zoning/use determination.

More information can be found at your local real estate tax commissioner's office or at various websites such as Virginia Tech's Department of Agriculture and Applied Economics.

Bill Robson is chairman of the VVA legislative committee.

Elections Impact VA Vineyards

Katie Hellebush

Executive Director, Virginia Wine Council

Citizens across Virginia voted June 9 in primary elections that set the tone for November's General Election. With high-profile retirements of several members of the Senate and multi-candidate races to fill open seats in both the House and the Senate, stakes were high and served as the decisive election in many races.

In fact, in 79 of the 140 House and Senate districts, only one name will appear on the ballot in November. This is especially true in the House of Delegates where 62 of the 100 seats are uncontested.

In comparison, the stakes are high in Virginia's Senate where control of the chamber is up for grabs. Currently, Republicans hold a 21-19 majority. However, in 23 Senate races, more than one candidate will be on the November ballot, so the question of control becomes very real.

Who will control the Senate? Who will serve as chair of committees such as the Senate Finance Committee? What will their background be? Will these new leaders be familiar with the Virginia wine industry and understand the impact of policy decisions on the day-to-day operations of vineyards?

Many newly elected officials will be taking office in January. It is critical to educate them about grape-growing and winemaking before they go to Richmond so that they are prepared to make educated decisions when it comes to their legislative responsibilities.

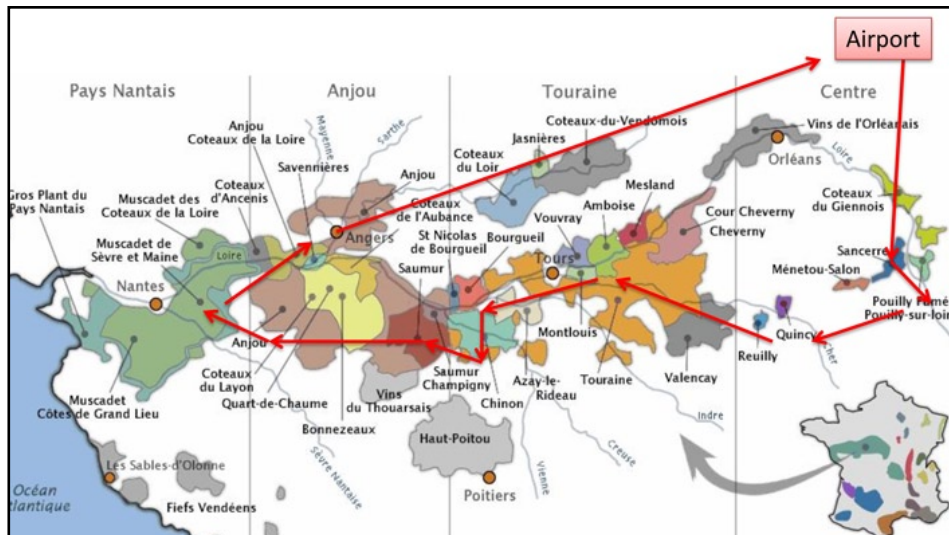
What can you do?

- Find out who's running.
- Meet the candidates and Get to Know Them – NOW!
- Introduce them to your neighbors, colleagues, and industry partners.
- And remember to VOTE!

Overall, voter turnout was light in most of the primary elections, peaking at 15.6 percent in the Howell-Stimpson race, according to the Virginia Public Access Project. Therefore, it is critical that you meet with your legislators and with the candidates and speak to them about grape-growing and winemaking.

The Virginia Wine Council will be offering opportunities for you to meet with your legislators as part of this summer's Regional Business Series.

We will also be sponsoring the "WVC Ballot Challenge" this fall. As always, we encourage your participation!



ITINERARY FOR LOIRE VALLEY TOUR

Loire Valley Tour Planned for 2015

By Bruce Zoecklein

Professor Emeritus, Virginia Tech

A nine-day Technical Study Tour of the Loire Valley in December will be led by Bruce Zoecklein, Enology Professor Emeritus, Virginia Tech, and Professor Pascal Durand, University of Burgundy.

The Loire Valley is the longest, most rural, and perhaps the most scenic wine region in France. We will leave from Paris and follow the Loire past beautiful 15th, 16th and 17th century castles that were once the summer homes of French nobility.

The study tour participants will visit some of the most respected vineyards and producers and will enjoy the gastronomic pleasures of each area sub-region. Grape varieties of the Loire Valley include: Cabernet Franc, Sauvignon Blanc, Gamay and Pinot, Chenin Blanc, and Melon de Bourgogne.

What You Need to Know

■ Dates: December 5-13, 2015

■ Who Should Attend: This is a technical tour and designed for commercial grape growers and winemakers. Registration will be restricted to Virginia growers and winemakers until August 1, 2015. Following that date, the enrollment restriction will be removed. The maximum number of participants is 18.

■ Tour Schedule: The tour area is indicated on the accompanying map. Specific details will be provided to registrants.

■ Cost: Cost includes all in-country expenses (hotel lodging, transport, food — all expenses except personal items). All hotels are three- or four-star facilities.

The cost is based on single vs. double room occupancy as follows: \$3,800 for a single room, per person, and \$3,400 per person for double occupancy. That price does not include transportation to and from France.

The trip will start at the Paris airport (CDG) and will end back in Paris.

■ Registration: Reservations can be made by sending a non-refundable, \$400 deposit for each participant to:

Dr. Bruce Zoecklein, Department of Food Science and Technology, HABB 401J, Virginia Tech, Blacksburg, VA 24060.

No slots will be held without a deposit check.

This is the 10th technical tour that we have conducted. Previous travels have included Bordeaux, Provence, the Loire, the Rhone, Burgundy Champaign, Alsace, Italy and Germany.

Several write-ups about our Technical Study Tours are posted at www.vtwines.info under my Enology Notes: AOC's of Provence, Enology Notes #138; Languedoc, the Rhone, Bandol and Casses, Enology Notes #152; Spain and Bordeaux, Enology Notes #164; Loire Valley, Enology Notes #75.

For additional information or questions regarding this tour, contact me at bzoeckle@vt.edu or call me at 540-998-9025.

Support the VVA!

The Virginia Vineyards Association is a member-run organization, so we're only as good as our volunteers. We need your help in all aspects of our work.

As a start, consider volunteering for any of our committees:

- Communications
- Sustainability Workbook
 - Education
 - Legislative
 - Research

Participating in the VVA is one of the best ways to learn more about your fellow growers and the art and science of viticulture.

Interested?

Email us at VaVineyardsAssoc@gmail.com