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The Quarterly Newsletter of the VIRGINIA VINEYARDS ASSOCIATION

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Courtesy of Derek Questell

CHECKING CHICKWEED: Rolling back chickweed in the vineyard could uncover cutworms (above), notes Derek Questell, vineyard manager of Blenheim Vineyards. He provides the details for Grape Press. Page 5.

President's Corner

Looking Toward the Future

By Nate Walsh
Walsh Family Wine

The Virginia Vineyards Association sponsors a number of significant events and activities, but I doubt that any are more important to our members than our summer and winter technical meetings. These meetings are put on with extensive assistance from Virginia Cooperative Extension and are meant to be a source of technical information and updates, which we hope will continue to improve, expand, and inspire our industry.

The benefits of these technical meetings come from a combination of research presentations, seasonal updates, tastings, and networking opportunities for the vineyard owners and staff that participate. For the past 20 years, the Winter Technical and Summer Technical meetings have been the most popular

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INSIDE

It's In the Bag

The ingenious method one vineyard used to plant vines in restrictive root bags.

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State Updates

From building codes to well testing, here's a rundown of legislative issues that are relevant to grape growers.

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Banana Wine?

Andrew Hodson travels to Africa to assess farmers' chances of using bananas to make wine. Here's what he learned.

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Chris Hill: A Life Among Va. Vines

Chris Hill, the recipient of the VVA's Lifetime Achievement Award this year, is a longtime grower and vineyard consultant. He took time out recently to talk to Grape Press about his life in Virginia viticulture.

How did you get interested in viticulture in the first place?

Chris: I had a degree in sociology, went into the Army, did some social work after the Army, and then decided, oh, I'll never make any money, so I'm going to study something I really like. So I went back to college for horticulture. I went to Virginia Tech and got another bachelor's and a master's degree in horticulture.

And in my last year, I had the opportunity to take all these electives, so I took wines and vines, and beekeeping. That last

semester was really fun.

My wife and I owned some property outside Charlottesville, so I was going to work in horticulture, somehow. Since I had taken two classes in viticulture I knew more than some of the people just starting to put in grapes. I knew two classes more. We were a pathetic lot. I had a temporary job with the extension service, and some friends of mine wanted to start a vineyard in the worst way, so we started a vineyard at a farm called Glendower.

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Our New Website Is Up and Running!

We're now virginiavineyardsassociation.org, with more features, resources and tools. See **Page 10** for a quick tour.

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**VIRGINIA VINEYARDS
ASSOCIATION**

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and most successful of the VVA's activities.

Additionally, the VVA strives to offer a number of other services, primarily focused on communicating pertinent information to growers, providing a marketplace for grape and equipment sales, offering resources for education and training, and ensuring there is a grower-focused voice in the room for any pertinent wine industry legislation.

Currently, the VVA Board is exploring ways in which we can be more efficient, more communicative, and more helpful to our membership. We are looking at the needs of our industry to determine whether there are aspects of grape growing in Virginia that the VVA is not currently focused on, but should be.

Our industry has been steadily growing, and I think everyone would agree that the Virginia wine industry of 2020 will be significantly different than that of 2000 — or even 2010. While

the broad goals and techniques of winegrowing don't change much from year to year, the industry and the research do and, as a result, our collective knowledge grows and grows.

Prior to the 2019 Winter Technical Meeting, which will be held in Charlottesville in February, the VVA will have four Board positions up for election: President, Treasurer, and our two At-Large seats. I mention the goals of the VVA, as well as these positions, because I feel that the next few years, with the pace at which our industry is progressing, will open up a number of opportunities for the VVA to assist our industry in new ways. As always, we are interested in feedback from our members, and a more active position on the VVA Board gives you an opportunity to help chart the overall direction. If you would like to learn more about what a VVA Board position entails, please reach out to me or to our business manager.

I hope everyone's season is going well.

Nate Walsh

IN MEMORIAM

DENNIS DUNNE HORTON

A letter from VVA President Nate Walsh to our members:

Dennis Dunne Horton was one of the true pioneers of the Virginia wine industry, and it was with great sadness that we received news of his passing on June 19 at his home in Aroda, Va.

An Air Force and Vietnam veteran, Dennis, with his wife Sharon, moved to Virginia in 1977 and planted their first vineyard in 1989. That initial planting included eight acres of Norton, five acres of Vidal Blanc and five acres of Cabernet Franc. Horton Vineyards is located in Gordonsville.

Annette Boyd, of the Virginia Wine Board Marketing Office, noted that Dennis and Sharon's farm winery was the first in Virginia to plant Viognier, as well as several other grape varieties. In an interview with Southern Foodways Alliance, which Annette unearthed, Dennis discussed his experimentation with grapes in Virginia.

"I was one of the first in the area or in that timeframe to start planting in Viognier and to plant other grapes that had not been planted, but I thought they were more suitable for a grape-growing area as Virginia," he said, taking note of the Commonwealth's characteristic heat and humidity.

"And some of them proved to be successful," he added. "It's not that everything I put in the ground did what it was supposed to do; some of them didn't. But Viognier was one, Tannat is

another one, Petit Manseng is another one, and recently I introduced Pinotage, which is a South African grape."

Nebbiolo, Norton and Rkatsiteli are additional grape varieties that Dennis is credited with first growing and producing wine from in Virginia. While Norton is native to Virginia, it was pulled up during Prohibition. Dennis took cuttings from a friend at Stone Hill Winery in Hermann, Mo., and had them rooted in New York for planting at his vineyard.

Dennis is survived by his wife, Sharon Elaine Eldringhoff Horton; a daughter, Shannon Lee Horton, of Aroda, and one grandchild, Caitlin Elizabeth Horton of Aroda.

He graduated from the University of Maryland with a BS in marketing, and was a member of the Virginia Vineyards Association, the Virginia Winery Association, and a former board member of the Monticello Wine Trail. He was also a member of the Rhone Rangers, the VFW, and St. Isidore the Farmer Catholic Church.

A celebration of Dennis's life will be held July 9 from 4 p.m. to 8 p.m. at the winery. In lieu of flowers, contributions may be made to: PVCC Education Foundation, Memo: Chris Breiner Scholarship, Piedmont Community College, Attn: PVCC Education Foundation, 501 College Drive, Charlottesville, Va. 22902.

I know that many of you knew Dennis and benefitted from his work and his willingness to help fellow vineyard operators. He will be greatly missed.

Nate Walsh

▶ **NORTHERN VA.:** “Drier certainly would be a welcome change of pace.”

By Dean Triplett
Greenstone Vineyard

Starting out the window as I am on June 3, my little pea brain is having a difficult time thinking back to the scene I would have been looking at just barely over one month ago. The end of April was chilly with the vineyard just starting to come to life. Shoots on most of my vines were either a quarter of an inch long or just barely starting to expand.

I went on an early season vacation to the Big Island of Hawaii on May 1. When I got back on May 9, I was greeted by a scene almost as lush as what I had left behind in Hilo. Shoots 10 inches or more were everywhere.

What had started out as a wet and warm/hot early May continued throughout the month.

I've had a total of around 10 inches of rain

during the month. That seems to be about average amongst the growers I've talked with. Some folks, however, got half that amount in a couple of hours. Consequently, the vineyards have exploded!

First, the good news: The replants that my guys put in back in mid-April couldn't be happier. The folks I know who also put in replants or new acreage couldn't be happier. The folks I buy my chemicals from couldn't be happier. I'm lucky enough to have access to a great bunch of vineyard workers who have kept our heads above water in the vines. So we're only a little behind, in an ideal world, from where I'd love to be.

The slightly less than good news: Spraying, or rather finding the breaks in the weather to get out and spray, has been a bit of a struggle. Is it wrong to pray for drought? Probably!

Back in April, I thought we'd be a week to 10 days behind "normal" flowering. Wrong!

Flowering in the early varieties, particularly Merlot and Albarino, started about eight days ago, normal to slightly early.

Fortunately, I have been able to find the holes in the weather to get sprays on and, except for a bit of Black Rot, the vines look clean.

But of course we're now in the Kitchen Sink time of year when all the high-dollar fungicides, along with the old standards, are in the program.

As it happens, the local meteorologists who keep us informed as to all things weather-related are saying we're in for a drier and hotter summer. Drier certainly would be a welcome change of pace.

Buckets and Bags

Several new plantings are going in near my vineyard. I'm not sure who the owners

See *NORTHERN* on page 4

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NORTHERN VA.

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are in a couple of cases. They seem to have picked nice sites and that's always an encouraging sign.

One new planting by Bill Hatch and family at Zephaniah Farm Vineyard was mentioned in my last report. Of the 1,400 replants and new vineyard installed, Bill put in 525 Cabernet Sauvignon vines in restrictive root bags. The fabric bags hold between 5-6 gallons of soil and are 14 inches in diameter. Bill's goal is to develop smaller, less vigorous vines.

Considering how vigorous Cab Sauv is in our soils, I'll be very interested to see how they develop.

Planting vines in the bags is, as you can imagine, quite a bit more labor intensive than normal vine establishment. The neat thing was the technique Bill and his crew came up with to help facilitate the process. They used an auger to dig holes roughly the size of a 5-gallon bucket. They then took a 5-gallon plastic bucket that had its bottom cut off and used it as a sleeve to hold the shape of the bag.

The bucket/sleeve is turned upside down, the bag is slid onto the bucket and the bag on bucket gets placed into the augured hole with the rim of the sleeve and bag, even with the ground. Soil is shoveled back into the bucket, along with the vine, and the whole thing filled to the brim and tamped down. The bucket is then pulled up and out of the ground by its handle leaving behind a freshly planted vine in an evenly filled fabric bag.

Though I don't know if Bill invented this technique, I love it when I hear of growers coming up with creative ways to get around a problem. Being willing to try new things and thinking outside of the box are hallmarks of a good grower!

As of this moment I'd say we're in pretty good shape getting ready for summer. I will be interested in seeing how crop loads have been affected by the wet weather. Downy Mildew will be on everyone's radar moving forward and I wouldn't be the least surprised to see this as a real challenge this year.

One thing I have noticed and some growers have commented on is the increased activity of moles this winter and spring. I've never seen the number and extent of their burrows that I've seen this year.

I can only hope the little guys are down there eating Japanese beetle grubs by the score. It would be nice to have a furry four-legged ally for a change.

Check Out VCE Meetings Near You

Virginia Cooperative Extension has been conducting workshops and information meetings around the state this spring and summer. Here's a list of events still to come:

► July 18, **Sunset Hills Vineyard** (Loudoun County), 1 p.m.
Joint Roundtable with LWA, LWGA, and Virginia Cooperative Extension
Assessing canopy density, sprayer calibration and FSMA
To register, **email Aimee Henkle**.

► July 26, Vineyard Field Trip in the Staunton area
In a farmer-to-farmer learning experience, visit Virginia vineyards (Rockbridge Vineyard and others) with fellow wine growers. Check the **VCE site** for upcoming registration details.

Note: If you are a person with a disability and desire any assistive devices, services or other accommodations to participate in an activity, please contact Tremain Hatch, AHS Jr. AREC, at (540) 232-6032 during business hours of 9 a.m. to 5 p.m. to discuss accommodations 10 days prior to the event.

Want more? Keep up with events of interest to grape growers on the new VVA website.

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Keep Your Chickweed Close And Your Cutworms Closer

By Derek Questell
Blenheim Vineyards

Daily scouting, in my philosophy, is the single most effective practice in viticulture. As a grower, you should work to become an integral part of your vineyard. By learning the intricate details of your vineyard, you'll begin to force your way into its secrets, becoming a key component of the terroir.

Employing the senses and learning to recognize the various nuances throughout your vineyard will help you dial into microclimates, disease hot spots, weed cultures, insect populations, and more. Take these observations a level further to gain a deeper understanding as to why this is the way it is; they all work together in symbiosis or against each other in imbalance.

Earlier this spring, I came across an interesting relationship between *stellaria media*, or common chickweed, and two different cutworm species: *Xestia c-nigrum*, or setaceous Hebrew character larvae, and *Feltia faculifera*, or dingy cutworm larvae.

Cutworms have not been a problem for us here at Blenheim Vineyards, but I hope this information can be useful for other growers in adjusting tactics to reduce cutworm damage.

Background

Stellaria media, or as we know it, common chickweed, is considered by most to be a nuisance and invasive species of weed. Chickweed is a winter annual weed that is adaptable in most environmental conditions. It has a dense growth habit (about 3 to 5 inches tall) that is low mounding and trailing, with growth spanning up to 18 inches.

It can produce new seeds within five weeks of germination and can continue to produce seeds for weeks and months after that. Chickweed can present competition for sunlight to newly planted vines if left unkempt, but nutrients and water should not be an issue due to the differences in root system depths. The root system of chickweed is fibrous and shallow, staying in the topsoil between 1 to 3 inches deep.

What I find most exciting about chickweed is the nonpathogenic fungus that colonizes the plant's root system, known as arbuscular



Courtesy of Derek Questell

Common chickweed is a low-mounding and trailing winter annual weed that is adaptable in most environmental conditions. It has a dense growth habit and spans up to 18 inches.

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mycorrhizal fungi or AMF.

Mycorrhizal fungi are beneficial organisms that inhabit living root systems of plants and form fungal filaments known as hyphae. These filaments grow between the cell walls and cell membranes of the host plant's root system forming a symbiotic relationship; conveniently, grapevines benefit from this same type of mycorrhizal fungi.

The chickweed (host plant) supplies minimal sugars and carbon to the mycorrhiza and, in return, the mycorrhizal fungi increase root system capacity, gaining access to more immobile soil nutrients like phosphorus, calcium, zinc and iron. This beneficial fungus gives chickweed its nutritional qualities and in my opinion makes it ideal for cutworm larvae to consume in preparation for pupation.

The Discovery

Out on an early morning scout of the vines during bud-wwell, I stopped off in the Chardonnay to check the status of new growth. At that time of year, the chickweed grows exponentially so I started to pull a few plants out as I walked. I removed a clump of chickweed that was growing on top of my Chardonnay vine; I then noticed a caterpillar fall out and, with a heart-pounding concern, I realized it was a cutworm. I immediately assumed the worst, thinking this cutworm had devoured our buds.

After an immediate scout of every Chardonnay bud in the one-acre block, all was clear and no damage was observed. I went back to the chickweed clump to try and learn why this cutworm was not climbing to feast upon our freshly budding shoots. I combed through and carefully observed the pattern of life left behind from the cutworm, noticing a few clumps of fresh frass (insect excrement) as well as yellowed sprigs that were stripped of their lower leaves.

When cutworms are active within chickweed, they leave behind ground signs that can be observed from the outside of the plant; I like to call these signs "target indicators." My definition of a "target indicator" is derived from my military background — anything a living being does that reveals its passage, presence, or position to the grower.

Chickweed that has been occupied by a cutworm will show a few external strands of yellowing sprigs in contrast to the green healthy growth not affected by their feeding. Cutworms will feed on the base of the sprigs internal to the plant and their damage causes foliar yellowing.

Over the course of the next few days, I

continued using the yellow chickweed sprigs as my presumptive test to identify previous, or active, host plants. A quick inspection was then conducted to confirm the presence of cutworms.

It was observed that only one cutworm of either species was present and preferred the larger mounds of chickweed, between 12 to 18 inches. By lifting up on the outside growth of the chickweed and rolling it back, a cutworm could be found curled up at the base of the plant.

Employing this method over the course of 10 plants yielded a 50 percent find rate; five out of 10 random plants showing signs of yellowing were found with an active cutworm. The other five plants showed the same signs of cutworm activity, but were previous host plants and did not have an active cutworm.

Recommendation

Given all the observations and information, here are a few recommendations if cutworms are a persistent problem in your vineyard. Use chickweed as a trap crop; try leaving chickweed throughout the understory of your vineyard prior to bud-break and inspect for cutworm activity in late March/early April.

This requires being selective during weed control, leaving at least two to three chickweed plants per panel of trellising. I noticed as we got further into the month of April I started finding fewer cutworms in chickweed and more of their natural predators, *Lycosa gulosa*, Forest Wolf Spiders, instead.

The cutworms were either eaten by the wolf spiders or they made their way back into the soil to pupate before turning into adult moths.

Bacillus thuringiensis, or Bt, is effective against disrupting Lepidoptera larvae from feeding. When Bt is ingested by feeding larvae, it crystallizes in their gut, rapidly multiplies and quickly punctures the intestinal walls, preventing further feeding. This method is effective, but only under ideal conditions since UV light rapidly kills off the Bt bacteria.

An evening spray is the ideal timing since cutworms feed at night. I'm not a fan of the "spray & pray" mentality, especially when there are no signs or symptoms of damage.

If you do sustain cutworm damage on your vines it may be worth scouting your chickweed to see if the cutworms bed down here for the day. If they do, it could be worth target spraying Bt on your chickweed trap crops to hit the cutworms in their home. Plus, the Bt bacteria may stay alive longer due to the shady nature of the chickweed.

Finally, I'm impressed at how well the chickweed creates green mulch over the understory of the vines, shading out any weeds trying to germinate.

It is now almost mid-June and the chickweed is dying off due to the higher daytime temperatures. This is very helpful and buys much needed time this year since I'm running the understory without any herbicide application. I hope this information can serve useful to some growers out there and aid in preventing continuous cutworm damage.

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Photos by Chris Garsson

Longtime grower and consultant Chris Hill talks Virginia viticulture as he walks through the vineyards of one of his first clients – King Family Vineyards in Crozet.

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How many acres of vines did you plant and what varieties? What year?

We started the vineyard in the fall of 1981. We bought own-rooted Vidal Blanc and Seyval Blanc from Doug Flemer at Ingleside and planted them in November that very fall. It was exciting, and it was a total of two-and-a-half acres. That vineyard was just removed last year, 2017. It had a good run, considering there was a minus-10-degree Fahrenheit event and a minus-17-degree event in its lifetime.

We planted six-and-a-half acres of vinifera the following spring.

Where did you get vines? Did you have

a lot of choices?

No, hell, no. There were very few choices. Everybody always says, ‘Why didn’t you use this rootstock or that clone?’ I said, ‘Well, it didn’t exist.’ For example, 101-14, 420A, Riparia — they just weren’t being produced. There were no Dijon clones of Chardonnay, no ENTAV clones, just vines from California.

Back in the day, we were using SO4 and 5BB and all these really vigorous rootstocks. And people are always asking, ‘Why did you put that Cab Franc on SO4, for goodness sake?’ Well, we didn’t have anything else. And ‘Why do all these vines have Leaf Roll Virus 3?’ Well, the testing wasn’t being done. Even though everything was certified, that and two bucks will get

you a cup of coffee. Things have changed a lot for the better. Thanks in many ways to Lucie Morton’s work in helping to clean up our source material

What was the quality of wine like in those early years, the days when you were basically taking whatever clones and rootstock you could get?

The best growing season I ever had for wine was 1998. We harvested a Cab Franc from Glendower that year that was vinified by Michael Shaps at Jefferson, and that was the best Virginia red wine I have ever had. I’m biased as heck, but it was just outstanding.

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LIFETIME, from page 7

Generally, though, the quality of the wine has gotten better. We've learned, and we continue to learn more about growing wine grapes in our climate, and the winemakers have improved their skills, too.

Even though we get the same amount of rain now, if not more, we know better how to deal with it. Last year's rain was so intense, you sometimes wonder if the fungicides will actually hold up. And I just don't know. I mean, it will rain so much for so long, and I just don't know what the outer limits are in terms of a fungicide's ability to handle disease pressure.

If you get a four-inch rain, after the first two inches, all the protective material has washed off, now you've got an infection period for two more inches of rain and you can't return to the vineyard immediately because it's too wet. So you throw in something, a fungicide with kickback activity and pat yourself on the back, and then you get two more inches of rain, and then another inch on top of that. You just don't know.

When did you decide that a divided canopy would work well in Virginia?

Richard Smart spoke of the Scott Henry system in "Sunlight Into Wine" and discussed many ideas of canopy division in vineyards suffering with excessive vigor and shading from excess canopy. My thinking on canopy division was stimulated by having a vineyard, NO money, and reading Richard Smart. How could I divide my stupidly vigorous, grossly shaded, VSP canopy, without adding more catch wires or any other hardware, which would cost money?

So, instead of dividing off of two cordons, which would need additional wire, I chose to do it off of one cordon, using no lower (below the cordon) catch wires to force down the descending shoots.

Gabriele Rausse had brought us the idea of a downward canopy using the Casarsa training system and Nelson Shaulis had developed the Geneva Double Curtain. These canopies would simply hang out and eventually descend. I initially called the Smart Dyson the Mercedes Benz, because in cross section it looked like the Mercedes Benz emblem.

About the same time I was doing this in 1993, a fellow named John Dyson and Richard Smart were doing the same thing though they had not published the idea. They called it the "ballerina," thinking that in cross section it looked like a ballerina doing a pirouette. I would never have come



up with the system on my own, without reading Richard Smart. So, "ballerina" was good enough for me.

If you are a grape grower, and have not read Richard Smart's work, you will never understand growing grapes, especially on the East Coast of the United States.

It sounds a bit like the "solar collector" you advocate. How does that work?

If your rows are running east/west and are situated on a relatively narrow, south-facing slope, this is the system for you. East/west rows are not optimal for ripening grapes, but their potential can be optimized by making a "ballerina" canopy, with only one side, the south, down, and the northerly portion up, and into a VSP.

This makes for a very thin VSP, which allows for more light intercept onto the foliage of this vertical canopy. The downward shoots, in general, parallel the slope of the south-facing land and make for a very efficient light intercepting surface, with full sunlight striking the canopy from early morning to late afternoon. You can position the shoots off of a single cordon or parallel cordons running down the row side by side, north wire curtain up, south wire curtain down.

Leaf pulling is done vigorously, only on

"The people I have met and worked with, and who have become lifelong friends, are in this group endeavor, to build the Virginia wine industry. It has really been fun to watch our industry develop. I am a very lucky person."

— Chris Hill

the north side. This system is for vigorous vineyards on narrow, south-facing sites. All grapes and all wines benefit from this system on this kind of site.

On the quality issue, has access to better clones helped?

Access to more clones is nice, but adjusting to excess rainfall is better. I was reading something by Markus Keller in a little book on terroir. He's a viticultural plant physiologist from Washington state. Anyway, the book was about terroir, and he said terroir was rain. Dirt has something to do with it, but it isn't the dirt. In Virginia, terroir and the quality of a vintage is about rain.

But doesn't the soil matter?

Not as much as people think it does. Relatively shallow, well-drained soil is good for wine, so the vines are not super lush. Vines on deep soils in mid-July are a real beast. All these leaves will be pumping methoxyypyrazines into the seeds.

But suppose your vines aren't as vigorous, because they're on a shallow, stoney, shaley, poor soil. Jim Law might call it "Hardscrabble."

You can put the vines closer together, and if the soil is shallow enough, they'll compete with each other. And as they compete with each other you have even less

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vigor and less methoxy pyrazine to mask during later ripening. So reduction in vigor is a good thing.

But the important thing is the post-veraison rainfall we often get. Post-veraison, water doesn't come up through the vascular system to the berry, it comes in where the berries are attached to the cluster by a little stem. That is where the water comes in, at that attachment, so the more water that goes inside that berry, the less color you have and the less luxurious the wine is.

Now, combine that with high levels of methoxy pyrazine and you do not make a good red wine.

So if soil not so important, and somebody comes to you as a consultant, what do you tell them to look at?

Well, so I like how much sunshine the site gets. And a little slope is good, because some of that water that causes vigor will run off. And then I look at the site's elevation. Will the altitude protect the vines from cold damage in mid-winter and spring frosts?

What's the biggest change you've seen in Virginia viticulture?

Canopy division, leaf pulling, that sort of thing. For my money, vine spacing in the row, vine spacing between the rows, doesn't mean very much to the ultimate wine quality.

But the care of the individual vine is huge. So you need to have, during the growing season, sunlight into the canopy and into the fruit zone. And then, there's the issue of how one uses fungicides.

And other things: control of certain insects. I said before, when Tony Wolf first came on the scene, none of us knew what a grape berry moth was. I mean, we all had them, and they were just killing us. But they are little rascals and nobody paid enough attention to notice them and so Tony came in and said some of that rot you are getting — you have a hole in the berry (from grape berry moths), and as veraison occurs, juice is leaking out of the hole.

The berry continues developing, but that hole in it is leaking sugar water down the inside of your grape cluster, and that cluster is surrounded by all these leaves which have kept the clusters wet since the last big thunderstorm. So now you have diluted juice, in your methoxy pyrazine-laden clusters, and the clusters are starting to break down — well, to rot actually. Now, let's make wine from that. And, we did.

So then, we started to combat the grape berry moth, and that was probably the first big step.

And then thinner canopies was the next step. And then learning to plant varieties according to their cold-hardiness. So if it was really cold-hardy, you would put it lower. And if not as cold hardy, you would put it higher.

What challenges do you see ahead for Virginia viticulture?

Non-native invasives, like the spotted lanternfly. And non-native invasives across the board will just continue to come. You know, we are still part of the Columbian exchange that started back in 1492. And so, managing insects will be a big thing. The more insect pests you get, the more you want to use insecticide.

Right now, we've been able to really limit the amount of broad-spectrum insecticide we use. For instance, with Japanese beetles, we take a boom sprayer and raise it up over the top of the canopy, and without any air blast behind it, just

"In Virginia, terroir and the quality of a vintage is about rain."

— Chris Hill

spray lightly over the top of the canopy. So we can use a broad range of insecticides because we are greatly limiting the target zone. And it's 100 percent effective.

For a small vineyard, for Japanese beetles, use a backpack sprayer that's dedicated to insecticide and just spray the top of the canopy. Don't be using an air blast sprayer to spray the whole canopy. At the same time, try to get away from Sevin and Danitol. It's not good for your vineyard because these broad-spectrum insecticides kill the beneficial, predatory insects.

What about global warming? Is it affecting Virginia?

I am worried about that, but not the warming part. Our weather has always been variable, but it may be leaning toward getting wetter and that would be problematic. I can take anything but too much moisture. We just set a record for the wettest May. These records, man, the records get you.

I'm not worried about temperature, though everyone else should be. It's the extra rain.

What did you enjoy most about being in viticulture and wine?

Oh, it was the people. I like wine and food and the telling of stories and, so, it was perfect. I have met incredible people. People who will try to help you any way they can. No one felt threatened about sharing observations and ideas.

The people I have met and worked with, and who have become lifelong friends, are in this group endeavor, to build the Virginia wine industry. It has really been fun to watch our industry develop. I am a very lucky person.

Can you tell us about your years as president of the VVA?

My tenure as president of the VVA went from approximately 1990 to 1993. Ann Heidig was the president before me and she was a big help in my assuming the responsibilities of president. Fernando Franco, Ed Hobson and Chris Pearmund followed me, and they greatly improved anything I might have helped start.

Being president allowed me to serve on the Virginia Wine Advisory Board, now the Virginia Wine Board. That was fun and allowed me to get to know people from other aspects of our industry.

The aspect I found most interesting was the research being conducted by Virginia Tech on our industry's behalf. The scientific study of viticulture and its attending aspects of entomology, plant physiology and plant pathology, all for the sake of winemaking, is a very absorbing study.

I can confidently say, that if you serve on the VVA board, you will naturally become a better grape grower. And, if you don't care about growing better wine grapes, why are you here?

Editor's Note: Chris Hill has played a significant role in the establishment and growth of dozens of vineyards around the Commonwealth. He also helped a number of aspiring viticulturists who took his classes at Piedmont Virginia Community College, which offers certificate programs in viticulture and enology. He taught at the Charlottesville-based community college for a decade, ending in 2015.

In 2005, he was the first recipient of the VVA's Grower of the Year award. Chris was presented with the VVA's Lifetime Achievement Award at its Winter Technical Meeting in Charlottesville in February.

VVA Launches New Website!

More features, more tools, more info now available to members

The Virginia Vineyards Association launched its new website, <https://virginiavineyardsassociation.org>, in early May to better serve our members with more complete and updated information, resources and tools.

What's new on the .org site? Highlights include:

- ▶ An expanded list of viticulture resources, making it easier to find what you need.

- ▶ An updated VVA Exchange page, where you can now upload a photo to accompany your classified ad (Exchange postings are free for all VVA members).

- ▶ An easy way to register for VVA events.

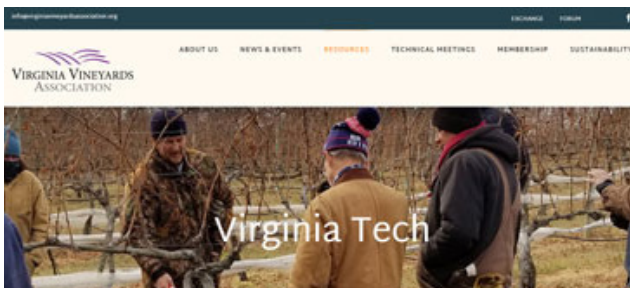
- ▶ The relaunching of the VVA Forum, where growers can connect, ask questions and get answers.

- ▶ A continually updated and expanded list of news and events of interest to growers.

- ▶ Continued access to the Sustainability Workbook.

While much of the site is public, some features, like posting on the Exchange and viewing the Forum, are for VVA members only, so if you're a member and haven't already done so, log in, bookmark it, and explore all that it has to offer.

If you have difficulty logging in, please contact us at: info@virginiavineyardsassociation.org. We hope this new site will become a valuable asset to all Virginia growers and prospective growers.



Show Off Your Vineyard!

To showcase Virginia vineyards, we're looking for photos of your vines, your grapes or your harvest that can be displayed on a rotating basis on the new VVA website. Here are some guidelines:

1. Include the name of your vineyard and town so they can be added to the site, and, if relevant, specify the varietal pictured (harvesting Chardonnay, etc.).
2. We'll try to work with any image; most helpful are photos with a minimum resolution of 72 pixels per inch and minimum width of 10 inches — larger is always better.
3. For each photo, tell us who gets the credit for taking the photo, and please be sure that you have the rights to have the photo published.
4. Email photos (or any questions) to Grape Press at cgarsson@gmail.com. Thank you!

virginiavineyardsassociation.org

A Look at Legislative Issues On the Horizon for Grape Growers

By James S. Turpin

Lobbyist, Virginia Wineries Association

Even though the General Assembly has completed its work, there remain a number of important issues requiring attention and activity. These include application of the building code to buildings used for agribusiness, changes to the franchise act, and a new round of water testing by the Virginia Department of Health.

In addition, the industry continues to implement the new Virginia Wine Collective, which represents the Commonwealth's wineries and vineyards. In addition to finalizing its structure, the membership of the Collective will be reviewing the current legislative policy leading to the development of legislative positions prior to the 2019 session.

Building Code

The House and Senate Committees on General Laws have asked Virginia Cooperative Extension to look at the issue of local building codes impacting farm structures, such as farm wineries.

The review is being led by Virginia Cooperative Extension's Dr. Martha Walker. The stakeholders include the Virginia Wine Collective, representatives of the agribusiness industry as well as state and local government.

After identifying affected stakeholders, the interim discussion will focus on the following:

- ▶ Being proactive in addressing local government concerns.
- ▶ Exploring what is realistic for such buildings based on projected costs.
- ▶ Determining if there is an applicable level of building code that might be appropriate.
- ▶ Defining what would be included in such

a code.

The focus will be on current conditions, hopes and expectations for revisions, hosting of a facilitated discussion, and development of a summary to the respective committees.

After a series of surveys, interviews, and focus groups, the stakeholders met on June 12. The focus of the discussion was a proposal developed by Albemarle County in cooperation with the Monticello Wine Trail and supported by the wine industry. Progress was made at the initial meeting but questions remained regarding definition as well as the scope and type of uses of buildings.

The group is scheduled to receive a summary in July and will meet again on Sept. 11 to continue discussions and draft a report to be submitted to the General Assembly in November.

Franchise Act

The second issue involved changes to

the Franchise Act. As passed, the new law makes wine distribution more similar to beer distribution. It changes the definition of how territories are assigned and enforced. We were successful in delaying the effective date until July 1, 2018, giving the Virginia Alcoholic Beverage Control Authority (ABC) more time to implement the new law.

ABC has developed policy in how the law will be implemented. The proposed changes appear to be relatively minor. However, it is likely that this issue will be revisited in the 2019 session with pressure to establish exclusive territories similar to the Beer Franchise Act.

Well Testing

Finally, the Virginia Department of Health has begun a series of tests of wells used for commercial purposes. While the testing appears to be within the department's statutory authority, there appears to be a new focus on the industry.

If you are approached, please let the Virginia Wineries Association (VWA) know. The association's staff can give you advice on how to work with the Department.

Structural Changes

The wine industry's new approach to government relations, the Virginia Wine Collective, began life at the end of March.

The Collective, which will be administered by the VWA, represents the Commonwealth's wineries and vineyards. It will include the legislative leadership of the VWA, the former Virginia Wine Council, and the Virginia Vineyards Association.

The VVA has named four members to the Collective's Board. They are Nate Walsh, Carrington King, Skip Causey and Tom Kelly.

These changes will enable the industry to consolidate its efforts and better focus on advocating for the industry in an effective manner.

Over the course of the summer, the Collective will be updating its legislative policy. If you are a member of the Collective, please take the time to review the policy and submit changes or ideas about how it can be expanded to better address vineyard issues. This will be followed by the development of legislative positions prior to the beginning of the 2019 session.

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A Journey for Banana Wine

Va. vineyard owner travels to Africa to explore a co-op's options

By Andrew Hodson
Veritas Vineyard & Winery

Last summer, I traveled to Malawi — the “warm heart of Africa” — on a mission funded to help a cooperative of farmers improve their production of banana wine. The trip, funded by an international non-profit organization, Cultivating New Frontiers in Agriculture (CNFA), taught me a lot — about bananas, of course, and about improvising to make up for scarce or nonexistent resources. Mostly, though, it taught me the meaning of the word “poverty,” and how crushing its influence can be.

In the end, the experience proved bittersweet, and more bitter than sweet, as the best I could do was to recommend that no more money be spent on the project simply because of the pitiable poverty of this tiny African nation.

It started, though, with smiles.

When I told people that I was going to Africa to help in the production of banana wine, they either laughed or looked at me as if I was joking. And yes, I suppose there is something funny about bananas that makes us laugh.

Perhaps it is their shape. Sunny and yellow, they look like a smile. A lead comedian in a vaudeville show is the “top banana,” and someone losing it was said to be “going bananas.” And how many laughs have been occasioned by the sight of someone slipping on a banana skin?

What really interested me though was how little I actually knew about those lovely yellow fruits that we take for granted.

As viticulturists we have an inherent interest in plants, and we know all about *vitis vinifera*. In fact, few agriculturalists know more about clones than wine grape growers.

Well, as you might not have imagined, bananas have far fewer varieties than grapes. There are green, yellow, red, purple, brown and, of course, black bananas, but colors can be deceiving. I asked ampelographer Lucie Morton if there were any banana ampelographers, having found many references to banana research from Montpellier where Lucie did her seminal work, but alas, no such luck. I found ProMusa the most easily accessed source of information about bananas.

It turns out that there are about 90 species



Photos courtesy of Andrew Hodson

Author Andrew Hodson, back row, at left, traveled to Malawi to try to help the farmers in the Mslauchi Co-Op realize their goal of using bananas to make wine for sale.

of bananas, compared to about 900 grape varieties. The point is that bananas have much less biodiversity than grapes — a big problem when it comes to disease resistance.

A banana is an edible fruit — botanically a berry — produced by several kinds of large herbaceous flowering plants. The banana plant is actually the largest herbaceous flowering plant in the world; most grow to 10 feet, some as high as 23 feet or more. The “trunk” is composed of the sheath of the leaves often referred to as a false stem or “pseudostem.”

Below ground the plant grows from a structure referred to as a “corm,” which is a type of rhizome. Bananas can grow in a wide variety of soils and need a soil depth of only 15 inches.

At a point when leaf growth is mature, the corm develops a flower spike or inflorescence that grows up inside the pseudostem that eventually emerges at the top of the plant. Each pseudostem produces a single inflorescence also known as the “banana heart” from which the banana fruits will develop.

The banana fruit is a rich source of

carbohydrates, but only 12 percent of the carbohydrate content is sugar, roughly equal parts fructose and glucose. The greener, less-ripe bananas contain higher levels of starch and, consequently, have a “starchier” taste. On the other hand, yellow bananas taste sweeter due to higher sugar concentrations.

Furthermore, during the ripening process the banana produces ethylene, a plant hormone that signals the production of amylase and pectinase enzymes that break down the pectin and starch, causing the banana to soften as it ripens.

The primary component of the aroma of fresh bananas is isoamyl acetate (also known as banana oil), which, along with several other compounds such as butyl acetate as well as iso-butyl acetate, are significant contributors to banana flavor.

Carbonic maceration is associated with production of these amyl and butyl acetates that so characteristically give good old Nouveau Beaujolais those banana and Kirsch

See *BANANA* on page 13



Production costs and lack of proper equipment were two of the factors that led author Andrew Hodson to recommend that additional investments in banana wine wouldn't be feasible.

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flavors.

The Warm Heart of Africa

Malawi is among the world's least-developed countries. Originally a British protectorate, the country was called Nyasaland because almost one-third of the country is taken up by Lake Nyasa (Nyasa being the local name for "lake"). Largely rural and agricultural-based, Malawi's biggest challenges are poverty, corruption and HIV/AIDS. Given these life conditions, it is no wonder that farmers are looking to cultivate new frontiers in agriculture.

Bananas have been used in Africa — mostly in Nigeria to make beer and wine. However, I was able to find only a single operation in Nigeria that was flourishing from production of banana beer, though there is some research from South Africa on using genetically modified yeasts to break down the starch in bananas during fermentation.

So with that background I did my best to determine how I could be most effective in my visit to the Mslauchi co-operative, a group of eight male and seven female farmers that was formed in 2010 with the help of a grant from One Village One Product to promote collective marketing among Malawi farmers.

The Co-Op started out making honey and then diversified into banana wine, which the group produced manually using locally available materials. In 2015, the Co-Op received a grant of \$5,000 from Sustainable Land Management that was used to procure processing equipment such as pots and containers, sieves, and raw materials like

bananas and honey.

However, the Co-Op's members had never been formally trained in wine production, and the wine they produced using indigenous knowledge was substandard.

Before I left I tried to order basic bulk chemicals like potassium metabisulfite, citric acid, sodium hydroxide in Lilongwe, the Malawi capital, knowing that Mwanza, my destination in Malawi, was a four-hour drive from the capital

No such luck. The response I got was that these materials could be purchased only after I arrived in Lilongwe. I took hydrometers, a refractometer, and my own small supply of basic chemicals, some yeasts and enzymes together with a handy-dandy, inexpensive portable pH meter. I wanted to create a shared sense of purpose so I bought a bunch of T-Shirts — bright blue with Mslauchi Co Op printed on each shirt.

Making Wine From Bananas

When I was in medicine, we knew that there was always a gulf between what should happen in theory and what happens in reality.

So it was with the Mslauchi Co Op, in which all participants had day jobs and worked at the Co-Op only in their time off. And although in theory there should have been between 7.5 to 10 grams of sugar, my refractometer measured 2 Brix, which doubled to 4 when we boiled the bananas.

No one in the co-op owned a refrigerator, so we stored the yeast and enzymes in a local butcher's shop. The equipment consisted mostly of plastic 15-gallon buckets; no hydrometers, no thermometers, not even a hot plate.

Undeterred, we started off with members of

the co-op showing me how they made wine. It was not their practice to boil the bananas prior to fermentation, so we also made a second batch in which the bananas had been boiled pre-fermentation. We had to cook the bananas on a charcoal fire outside the building. Using a refractometer/hydrometer, I was able to show them that cooking the bananas doubled the sugar level.

Their "recipe" consisted of using one kilogram of sugar to every kilogram of bananas, which meant they were effectively fermenting a banana-flavored sugar solution with a starting Brix between 18-22.

Because of a blight in the north of Malawi, farmers could make more money selling bananas to the supermarkets than they could from making wine from the bananas. Thus, the co-op had to compete with the local retailers to buy bananas from the growers.

Whilst I was there, CFNA paid for the bananas that were bought from the local supermarket, together with the sugar and the yeast (normally used for making bread).

The individuals in the co-op were as friendly as can be — the tag line for Malawi is "the warm heart of Africa." There was basically one spokesperson who was a jailer at the local jail as his day-time job. Although genders were equally represented, the women never participated in the discussions.

We met daily at 9 every morning. The five or six members of the group who attended those meetings were well organized, with a chairwoman, a secretary and a financial officer.

I started at a very basic level doing simple

See BANANA on page 14

Registration Open for Study Tour to Portugal

Bruce Zoecklein, Professor Emeritus, Virginia Tech, and Professor Pascal Durand, University of Burgundy, will lead a seven-day study tour to Northern and Central Portugal beginning Dec. 2. The regions to be visited include Setubal, Alentejo (plus the cork oak forests), Porto, Douro, Alta Douro, Dao, and Bairrada.

In announcing the tour, Dr. Zoecklein noted that Portugal's wine industry has undergone a dramatic modernization since the country joined the European Union in 1986, yet it remains traditionally-based.

Historically, there were two wine industries, one producing Port, the other dry table wines. Today, many are making fine table wines while prestigious Port firms have moved into table wine production as well.

For such a small country, Portugal produces a remarkable diversity of wines, as the contrast from Vinho-Verde to Ports suggests. There are an astounding 230 different grape varieties grown, many ancient and rare. In the Douro alone, there are 38 white and 51 red varieties.

Tour participants will enjoy the vast assortment of wines, foods and cultural difference among the regions of central and northern Portugal. Here are the details provided by Dr. Zoecklein:

► **Dates:** The trip will begin and end in Lisbon, Portugal: Sunday, Dec. 2 to Sunday, Dec. 9. We will meet at a designated hotel on Dec. 2 for the welcome dinner.

► **Cost:** Price includes all in-country expenses (hotel lodging, transport, food, and all other expenses except personal items). All hotels are three- or four-star facilities. The price is based on single vs. double-room occupancy as follows:

\$3,850 for a single room, per person.

\$3,350 for a shared room (two people), per person.

The price does not include transportation to and from Portugal, but does include all other expenses.

► **Registration:** Reservations can be made by sending a non-refundable, \$200 deposit for each participant to:

Dr. Bruce Zoecklein, Department of Food Science and Technology, Room 14, Duck Pond Rd., Virginia Tech, Blacksburg, VA 24060-0418.

Provide the name, mailing address, and email address of each registrant.

The maximum enrollment for this trip is 18 people, on a first-come, first-serve basis. No slots will be held without a deposit check. Registrants will receive a listing of all hotels and a complete itinerary when available.

► **Previous Study Tours:** This will be the 12th Study Tour we have conducted. Previous travels in this series have included Spain, Germany and the many regions of France, including: Bordeaux, Provence, the Loire, the Rhone, Burgundy, Alsace, and Champagne.

Several write-ups providing details regarding the nature of these 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;
- Alsace, Burgundy and Champagne, Enology Notes # 168;
- Other references are available by searching Enology Notes Index under Technical Study tours.

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

BANANA, from Page 13

chemistry, and biology — imagine trying to explain through a translator the word “enzyme.” Using a flip chart and markers, I went through the whole process of winemaking — how to measure things like specific gravity, acid-base balance, fermentation chemistry, fining and wine stabilization. We provided notebooks and pencils and the students sat on wood benches with no backrest and not even a fan in the room. Fortunately, it was winter when I was there so it did not get much above 70 during the day.

We made two batches of wine, one using their usual method and one with the boiled fruit. The final product was sweet, sort of tannish in color, and cloudy. We were unable to bottle the wine we made whilst I was there, and it remained in the plastic buckets, exposed to oxygen and unrefrigerated.

What broke the camel's back for me was that their only source of bottles was to re-use beer and gin bottles. The new bottles had to be shipped from Blantyre, the nearest and second largest city in Malawi at an equivalent cost of roughly \$20 per case before shipping. For comparison, Veritas pays roughly \$10 per case for new bottles, including delivery.

It became clear to me that trying to sell sweet brown cloudy wine in secondhand bottles was a bigger problem than the actual quality of the wine. There was no chance in the local market to sell wine given that beer and gin were cheaper than the asking price of the wine.

The numbers simply did not work. The cost of raw materials was too high. The facilities were completely unsuitable for any form of food production, honey or wine.

It was heartbreaking, but in my report to CFNA, I could not justify spending more money on the cooperative. Truth to tell, the cost of my airfare would have been better spent on providing the Mslauchi Co-Op with electricity, running water and a septic field.

Sometimes things do not work out the way you think they will and sometimes with all the best will in the world they still do not work out. I set out as the optimist but my cynical side claims that the optimist is a person who is not aware of all the facts. I left for Malawi as an optimist and came back a realist.

I am glad we tried and I am glad I got to know the men and women of the Mslauchi Co-Op. Sometimes, though, the best thing you can do is call it quits even when it comes to wine.