

# GRAPE PRESS

Winter 2018

The Quarterly Newsletter of the VIRGINIA VINEYARDS ASSOCIATION

Vol. 34 No. 4



Rafael Sanchez

**GROWER OF THE YEAR:** Grape Press caught up with Bill Tonkins (shown here, left, during the 2018 harvest), to talk about his role as vineyard manager at Veritas Vineyard & Winery. See the Q&A with Bill on page 5.

## Understanding Fruit Rot Is Key to Minimizing It

By Dr. Bruce Zoecklein  
*Professor Emeritus, Virginia Tech*

Soren Kierkegaard reminded us that life must be lived forward but can only be understood looking backward. In 1985, the year I arrived in Virginia, the mere rumor of an approaching hurricane would send most growers to the field to begin harvest. Those few who dared to let fruit hang must have had the motto — if you are not living life on the edge you are taking up too much room.

Generally, we have learned that delaying harvest until optimum maturity pays off, even when the rot potential due to rain is great. Such choices are not easy or clear cut and may represent the dichotomy of being

approximately right vs. precisely wrong.

We have evolved since 1985, but wet harvests and fruit rots remain. Those that believe that they cannot face yet another year of annual events, such as our summer rains, perhaps should not be growing grapes in Virginia.

Our goal must be to enhance our understanding of the constraints to producing fine wines in our region. I believe that luck is the residue of design. Having a viticulture and winemaking HACCP plan (hazard analysis critical control point) can aid in minimizing the negative influences of fruit rot both in the field and in the winery (see *Enology Notes* at

See *FRUIT ROT* on page 9

President's Corner

## Use 2018 as A Learning Experience

By Nate Walsh  
*Walsh Family Wine*

It's hard to know what to write about after a season like 2018. We're a few months on the other side of what for many of us was the most difficult and frustrating season of our careers. It was an attack on things we often generalize as being mutually exclusive: quantity and quality.

Whatever sanity I possess is predicated by my fondness for "learning from" experiences such as this. I feel I learned more this year than in any previous vintage, both about winegrowing in Virginia and about decision-making when faced with such difficult options.

I learned that my definition of "worst" levels of rainfall, in terms of total mm during particularly sensitive periods for the vine, was in fact not

See *PRESIDENT* on page 2

### INSIDE

#### Discovering Terroir

Jim Law looks at traveling the long road to finding an identity.

PAGE 4

#### Nominations Are Open

Know someone who deserves to be VVA's next Grower of the Year?

PAGE 8

#### Be Regulation Savvy

It pays to be familiar with all required fees and inspections for your vineyard.

PAGE 12

# VVA BOARD 2018

*President*

**Nate Walsh**

nate@walshfamilywine.com

*Vice President*

**Todd Henkle**

todd@lostcreekwinery.com

*Secretary*

**Jim Benefiel**

jwbenefiel@aol.com

*At-Large Board Members*

**Skip Causey**

scausey@dreeshomes.com

**Carrington King**

carringtonking@gmail.com

*Advisor*

**Dr. Tony K. Wolf**

vitis@vt.edu

*Business Manager*

**Tracy Kirkman**

vavineyardsassoc@gmail.com

*Grape Press/Website Editors*

**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:**

Jim Law, Dean Triplett,

James S. Turpin, Dr. Bruce

Zoecklein

  
**VIRGINIA VINEYARDS  
ASSOCIATION**

## PRESIDENT'S CORNER (cont.)

# Take Time to Analyze the Season

*PRESIDENT, from page 1*

the worst at all. I learned that I have some philosophical issues with the level of spray material required to push fruit to ripeness, or near-enough ripeness, in a year like this, or even about the definition of what constitutes relative ripeness. I learned that the differences between our "better" and "worse" sites were as emphasized as ever this year, which is not something I would have predicted.

Financially this was a difficult year for our growers, and that's as good a motivation as any for aiming a magnifying glass at our current approaches to site selection, or varietal selection, and our farming in general, and thinking about where we can continue to improve and mitigate risks.

In a way, it is finding ways to succeed in years such as this that will determine the health and growth of the industry.

Unfavorable weather often underscores problems we would prefer to ignore: mismatched varietals, poor sites, a laxness

of vineyard management. Which isn't to say that our decisions are to blame for difficulties in years like this, but bad weather, in all its forms, helps to highlight problem areas and force us to improve. Or maybe this is all just my way of looking for the silver lining.

It also strikes me that it is years like this that help highlight the importance of continued Virginia-focused research in winegrowing.

This edition of Grape Press will be released in the final weeks of 2018, as the VVA is preparing to open up registration for our Winter Technical Meeting on Feb. 21-23 in Charlottesville (*see page 8 for details*). More than ever, I would argue that after a frustrating season it

is important and healthy for our industry to get together to decompress a bit, and focus on what we can do to mitigate this kind of loss in the future.

Meeting in February is a poignant time for grape growers — we're at a good distance to reflect on the previous vintage, and also already planning for the season that is upcoming.



**NATE WALSH**

## The VVA Website Helps You Stay Current!

Who's selling grapes or equipment on the VVA Exchange page? Are there viticulture workshops I should know about? Stay up to date by visiting **virginiavineyardsassociation.org**, which now offers more features, resources and tools for grape growers in the Commonwealth.

And if you'd like to see your vineyard showcased on the website, send us a photo of your vines, your grapes or your harvest. Photos can be emailed to **cgarsson@gmail.com** along with details about the photo and who gets the credit for taking it (please be sure you have the rights to have the photo published).



The Virginia Vineyards Association (VVA) provides Grape Press for general information purposes only. The views and opinions expressed here do not necessarily reflect any official position or policy of the VVA and are not a VVA endorsement of products, practices or services. Before adopting any practices discussed here or purchasing any product or service, users should exercise due diligence and seek professional advice when appropriate.

## ▶ NORTHERN VA.: “Early varieties did fairly well in our region ...”

By Dean Triplett  
*Greenstone Vineyard*

The first snowfall of the year, about 5 inches worth, hit on Nov. 15, but the season came to an official end for me on Sunday, Nov. 11, with the first hard freeze. The vineyards have been put to rest and it's time to reflect a bit about the season we just lived through.

After talking to a number of growers and winemakers in my region, the general consensus is that we've all seen better years. “Difficult” might sum it up nicely, come to think of it.

After a long, wet slog through the summer trying to keep ahead of the rampant growth, disease threats, insect issues and more, we got to a soggy September.

Early varieties did fairly well in our region. Later varieties were more problematic. There will be lots of rosé made this year in the northern region. If they're handled well, I think we'll see a number of very nice Virginia rosé wines from this vintage. Hopefully it can all be sold!

I attended the Loudoun Wine Growers Association fall meeting on Nov. 5 at North Gate Vineyard. I was fortunate enough to sit on a panel discussion of viticulturists to discuss the past season and lessons learned.

On the panel with me was Tremain Hatch, Viticulture Extension Agent, Virginia Tech; Ben Sedlins, vineyard manager at Walsh Family Wine; Mike Newland, owner of Sycamore Springs Vineyard; and Joy Ting, enologist and coordinator at the Virginia Winemakers Research Exchange. Mike printed up a very nice synopsis of the season that he's given me permission to summarize.

On May 10, a hail storm moved through the Bluemont/Purcellville area. Several vineyards experienced damage to the young growth. Northgate lost between 40 and 60 percent of the new growth/crop in several of their varieties. As the vines recovered, Mike noticed foliar stress, particularly in the Viognier. Applications of Megafol and Tracite were made one to three weeks after the event. In hindsight, Mike feels that he should have applied

the foliar treatments sooner, so as to give the new growth more opportunity to take up the nutrients.

Fruit set was impacted by the rain we had during bloom. Poorly filled clusters and shot berries were common in the vineyards he managed. Mike also noticed higher than normal Grape Berry Moth damage this year in some of his vineyards. (I had the same problem in sections of my vineyard, primarily near wooded edges of my property). He applied the initial GBM insecticide at the first post-bloom spray. Mike feels that striking the first generation of GBM when they're first noticed will go a long way in protecting the clusters from damage from subsequent generations. He plans on spraying no later than the tail end of pre-bloom next year if the situation seems to be repeating itself.

Mike experienced the same Downy Mildew problems that we all did. He feels that while Potassium Phosphite (Prophyt, Phostrol, etc.) showed some reach back effect on established DM spores, he feels that it needs to be used in conjunction with another DM fungicide with a different mode of action to be really effective for Downy.

In really wet years like 2018, sometimes three different chemicals used in the same spray might make sense economically.

With all the rain at veraison came Botrytis infection in split berries. He usually targets bloom, bunch closure and veraison sprays but feels this year they just couldn't overcome the conditions. Berries swelled and split, and thin lines of Botrytis infection formed along the splits.

Judicious leaf pulling in the fruit zone early on gave good exposure to sun, wind and spray treatments. Mike feels this was the main reason he was able to control Botrytis to the degree he did.

Mike noticed Spotted Wing Drosophila damage in some varieties that grew quickly. He feels careful scouting of the vines is paramount in detecting their presence. Spraying when they are first noticed is required, otherwise damage can quickly get out of hand. Mike plans on applying two preventative targeted sprays for this pest, one at bunch closure

and one at veraison.

I think it's safe to say that Mike's experiences were shared by the vast majority of those of us on the panel and in the audience. Ben works in close conjunction with Mike and echoed many of his observations. Ben's vineyard was one particularly hard hit by the May hail storms.

Joy has had the interesting opportunity to see the progression of harvest in Virginia, starting in the southern portion of the state and moving northward. Many of the vineyards in the southern regions, which normally harvest earlier than we do, were able to get many of their reds in before the really bad weather arrived.

As they harvested in the central region, it was kind of a mixed bag. Some mid-season reds were brought in more or less in time at varying degrees of ripeness. Others got caught up in the rain. Those of us in the northern portion of the state, normally being some of the last to harvest in any year, got hit with the full effects of the weather.

Joy observed that in spite of the unfortunate weather, she's seeing signs that the wines statewide may be better than many initially thought likely. Doug Fabboli of Fabboli Cellars made the comment that perhaps living through the harvest of 2011 helped us fare better in 2018. Lessons learned.

Looking forward to next season makes me scratch my head. Should we anticipate a season wetter than what we'd call “normal”?

If so, should we be a bit more aggressive in our early season leaf/shoot thinning? Will the bad weather at bloom this past year cause poor fruit set in 2019? Should we rough prune differently because of this possibility?

How aggressive do we get with insect issues? (This one's always a huge problem for me especially when sustainability is taken into consideration).

As always, there are more questions at this point than answers. Though the weather and climate are changing around us, in some ways I guess some things never change. Here's to grape growing in the mid-Atlantic, a wonderful Christmas and New Year to us all, and to a kinder 2019!

# Discovering Terroir in Virginia

By Jim Law  
Linden Vineyards

**G**eographical identification plays a critical role in wine distinction and marketing: Virginia wine, Loudoun County, Middleburg AVA. All make for easy and convenient messaging and packaging. But what are the boots on the ground (or in the mud as was the case in 2018) uncovering?

We've now been growing grapes and making wine in the modern phase of Virginia wine for over 40 years. While in the history of winegrowing this is a blip, for me it is, well, a lifetime. It is an impossible task to understand a virgin terroir in such a short time frame, but we can lay the framework for subsequent generations.

Terroir discovery can be broken down to three phases.

**1. No Terroir:** There's no there there. Either the land is not well suited for grape growing, or the wrong varieties are planted, or the management is inappropriate, or a combination of all three. The land is solely a vehicle for production where low inputs (labor) and high yields are required for success, which is measured by profitability. In this case, grapes become a commodity and a wine's identity revolves around variety rather than place.

High capacity soils (fertility and water availability) are ideal for these production vineyards, but creative and interventionist management is often a necessity due to excessive vine vigor. Examples include divided trellising, frequent hedging, extreme leaf pulling and copious spraying.

In the cellar the grapes provide the canvas on which the winemaker's hand paints the picture using additives and clever techniques. Varietal character is the goal and the winemaker's signature defines the wine.

**2. Functional Terroir:** Balanced vines make balanced wine. To even begin to consider terroir influences in a wine, certain fundamentals are required in matching vines, soils and climate. Pre-plant decisions dictate the vineyard's success. Less propitious terrain is avoided.

A balanced vineyard is one in which the allotted trellising space is filled with minimal hedging required. Shoot tips cease growth around véraison. Leaf, lateral and crop removal is in the realm of fine-tuning rather than a major operation.

**"The potential promise of great wine can be obsessive, but it is perhaps the fastest path for a new region to find its identity."**

Ripening occurs in the "sweet spot" of mid-September to mid-October when the days are warm and the nights are cool. Grape chemistry is correct, meaning only in extreme weather conditions would sugar or acid manipulations be considered. This allows for the evolution from science and numbers-based winemaking to palate-based

decision-making. One can discover a wine's terroir by letting only the vineyard speak.

**3. Ethereal Terroir:** A wine consistently exhibits unique aromas, flavors, and texture that no other wine can duplicate. Most of us are still in the process of finding our functional terroir, but after many years of working with certain exceptional blocks there begins an acknowledgment of inherent uniqueness. This requires decades of diligent, "nose to the grindstone" attention.

Some of us are getting a glimpse of ethereal terroir possibilities. When we do, it drives us to make economically unwise viticultural decisions such as removing healthy, but qualitatively underperforming vines only to replant in a better way.

The potential promise of great wine can be obsessive, but it is perhaps the fastest path for a new region to find its identity.

**WINCHESTER EQUIPMENT COMPANY**  
Agricultural, Construction, Material Handling Equipment

*Cima* Since 1957 **Rinieri**

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

GROWER OF THE YEAR

# Bill Tonkins: Keeping Track And Staying Ahead in the Field



Photos by Chris Garsson

“Weather is a challenge, but it is also what makes VA wines interesting.”

**B**ill Tonkins, vineyard manager at Veritas Vineyard & Winery, Afton, was honored in February as the Virginia Vineyard Association’s 2018 Grower of the Year. A past president of the VVA and a gubernatorial appointee to the Virginia Wine Board, Bill moved to Afton, Va., in 2008 with his wife, Diane, after a long and successful career in the British Army. Since becoming vineyard manager in 2010, he has overseen the growth of Veritas, an award-winning winery, from 20 to 55 acres of vines, in addition to managing other vineyards for Veritas and planting his own vineyard of Petit Verdot grapes, which he lovingly calls Aftonshire. Recently, Grape Press visited Bill at Veritas (above) to discuss his second career as a viticulturist.

**What do you like most about what you do?**

I just love the opportunity to be outside and the fact that I live in a most beautiful part of the world. I’ve driven a desk for most of my life and traveled all over the world, but this keeps me fit, and I have lived nowhere more beautiful than here. The changing seasons are something to behold, and there is always something new to see and do to keep things under control. In particular, I like having a great team working for me who willingly get on and do what is needed.

**What’s a typical day like in the vineyard?**

As Dr. (Tony) Wolf would say, it depends. I start my day by visiting members of my team

just to check that they are OK and have a full plate of tasks and everything they need to do the tasks that I have set. I am most focused on the spray program, and I get involved with ordering the chemicals and decisions on what and when to spray, which — weather permitting — is daily throughout the growing season. I also do my fair share of machine work, spraying, hedging and leaf removal. I thoroughly enjoy pruning. It can be very satisfying, particularly cane pruning where you select the best cane to lay down and ensure that there are replacement buds for renewal canes.

**Veritas has grown to be pretty large. Do you have any trouble keeping up?**

I find that the larger we get, the more my

role changes from actually doing the tasks to one of ensuring that they get done, and it is a matter of having enough people to get things done when they need to be done. Mechanization has helped, and we have a wonderful leaf remover now. But there are times when we need to remove suckers, or shoot thin, or shoot position, that we just do not have enough people when needed. And yes, we do have trouble keeping up at these times.

**How have your labor needs changed over the years? And how do you recruit vineyard workers?**

We are fortunate enough to have a core of seven full-time vineyard workers and they are truly magnificent. I will augment them as necessary during times for sucker removal, etc., but on the whole we can manage and we are able to bring in up to six tons a day during harvest, which suits Emily (Pelton), the winemaker. But when we need to bring more in due to advancing hurricanes, it can be a problem because everyone else is doing the same thing.

**Your first career was in the British Army. How did you happen to come to the U.S.?**

It was timing. Patricia (his sister) and Andrew (Hodson) bought this farm, and at the time they purchased it, there was a vacancy for a British Army Exchange Officer in Harrisburg, Pa., as the technical advisor to the U.S. Defense Distribution Centre Commander. I thought, that would be nice, to get to see more of them, so I took the appointment there. They planted in 2000.

They started off with 12 acres, and that

*See GROWER on page 6*

# Meeting Challenges in the Field

*GROWER, from page 5*

was their goal, to have only 12 acres. They planted mainly Bordeaux varieties of red grapes: Cab Franc, Merlot, Petit Verdot and Malbec. They also planted Sauvignon Blanc, Chardonnay and Viognier, and some Tannat and Traminette.

**What do you remember about those first few years?**

Well, in those years, Di and I would just come down on weekends to help lay out the vineyard. We helped Patricia lay out the one behind the farmhouse, which is called the Tonkins vineyard. Diane would drive the tractor, I would pound the posts. I learned a lot in that year about just how to lay out a vineyard. We also got involved in planting the vines, and I remember helping to plant the Merlot up on the KenMar field there when I first came in. This is named after Andrew's

parents, Kenneth and Marjory.

Also, back then, when Mark Chien was the viticulturist at Penn State, Patricia and Andrew would come up and stay with us in Pennsylvania and we would go to meetings that Mark organized. The Eastern Wine Expo happened to be up there in Lancaster County, and I would go along with them to those meetings. I got interested in grape growing from there.

I have literally done everything that there is to be done at one time or another. And I still get involved in repairing a wire or putting in a new anchor wire or something like that. I remember going and borrowing our first auger from Chris Hill. And we learned how to put it on a tractor, drill holes, and that type of thing.

**When did you get interested in wine?**

As a child, I was brought up with wine. My parents were in the armed forces, and I spent

most of life out in Europe during the Cold War. And we would drink wine with meals. It wasn't necessarily very good wine — I can remember Liebfraumilch, Mateus Rose, Blue Nun, and wines like that. These were all wines that my mother had in the fridge. As children, although it's quite alien here in America to allow children to drink wine, we would have wine with our meals. And then in 1983, Diane and I took a real interest in wine, and we would have cheese and wine parties. We would research the wines we gave to our guests and that was fun.

And one thing I'll never forget: as a junior officer, being put in charge of the mess wine cellar. A daunting task for a young officer especially when you are working for Brigadier General Lord Vivien whose father fought at Waterloo. And he had expensive tastes. Our mess bills were very expensive

*See GROWER on page 7*

## Wonderful nurseries™

### IF YOU WANT THE BEST, BUY FROM THE BEST.

Every day, Wonderful Nurseries follows the philosophy that testing is believing. It's why we confidently offer the cleanest vines in the industry. In line with our "Growers First" philosophy, we have designed every element of our advanced processes & facilities to bring our grower partners peace of mind. This includes our intensive vine testing program, with 100% scion testing for internal mother blocks annually. Our in-house ISO Certified testing lab and built-in safeguards help accomplish this task. When it comes to getting the best in value, selection and cleanliness, Wonderful Nurseries delivers every time, vine after vine.

**RELY ON THE INDUSTRY'S MOST TESTED VINES - 100% TESTED MOTHER BLOCKS**



**SERVING THE WINE, TABLE GRAPE, RAISIN AND PISTACHIO INDUSTRIES**



[WonderfulNurseries.com](http://WonderfulNurseries.com)

661.758.4777

P.O. Box 279, 27920 McCombs Ave., Wasco, California 93280

© 2018 Wonderful Nurseries LLC. All rights reserved. WONDERFUL, WONDERFUL NURSERIES and the accompanying logos are trademarks of Wonderful Nurseries LLC or its affiliates.

GROWER, from page 6

at that time. The British Army always had a great selection of Ports and wines. I would always say to Andrew that I've been a member of the best country club in the world. And really, our messes have always had good wine cellars.

As for viticulture. I've always been interested in being outside. I had driven a desk for the last 30-odd years before that, but I've always enjoyed being outside. If there's been any success in it, it's because Veritas had people like Chris Hill and Lucie Morton to advise them. I think if I can do one thing well, it's to follow instructions, although Di would disagree! I do go out of my way to do what I'm told but sometimes you get told after things go wrong. And I say if you had only said so, I would have done it right the first time. But there you go.

### What resources were most important to you in getting started?

I started here in the vineyard in 2010, and then in 2011, I was president of the VVA. Getting involved with the VVA in whatever capacity you can I thought was very beneficial because if I had a question, I'd pick up the phone and call Tony Wolf and ask him. And he knew who I was, and he'd do the best to answer the question. And the same with all of his staff, whether it be Mizuho Nita on diseases or someone else. And they were so understanding — they don't treat you like an idiot. I can't overemphasize the importance of being involved with the VVA.

Also, Patricia and Andrew helped. If I need something, I've got it. Andrew always introduces me as the field marshal. And he says often, "Bill used to work for the government you know; so money is no object." And there is no doubt about it, that you can spend a lot of money just managing the vineyard.

### What are your favorite varieties to grow?

Well the easiest variety to grow is Petit Manseng. Whenever I have had a shortage of labor or a shortage of time, it is an area I'll neglect. I allow it to sort of overgrow, and I will leave the leaf removal to last. Because of the grape and the thick skin and the high acid, it is not a problem, and we make great wine at the end of the day. And I am excited by the fact that people are starting to make dessert wine out of it.

The least favorite to grow, but the most interesting is the Viognier. It's my least favorite to grow because I'm not getting consistent yields. But what makes it interesting is that every year we will go out and have a little get-together, select some canes. Chris Hill will come over and Andrew



"I thoroughly enjoy pruning. It can be very satisfying, particularly cane pruning ..."

and Emily will join us, and we'll check for bud necrosis and see what we think we're going to get and how we should prune it — whether to leave as many buds as we can, or not, as the case may be — whether we should have two cordons or one cordon. And invariably, we're wrong.

We've been down about 60 percent of our primary buds some years and we still got a great yield. Some years we might get four tons an acre and the next year we might get half a ton an acre. Over at Ridge Run, I'm doing cane pruning, and we have two cordons, and we're laying down four canes as opposed to just the two canes.

Here (at Veritas), we were going to cane prune everything, and have it just three feet apart. But we've moved to five-foot spacing for Viognier and cordon trained the vines. This is so we can spur prune the vines and keep more shoots than necessary. The problem is that afterward you have to go through and thin out the shoots that don't have any fruit clusters on them.

And we do all right. In poor years, because of the way we manage the fruit zone, we are probably getting on average two tons a year. So, if anything, that is my least favorite, but it is the most interesting.

### How about the reds?

My favorite to drink is Cab Franc. I just love Cab Franc. I drink wine regularly and as far as I'm concerned, Cab Franc is a very quaffable wine on a day-to-day basis. But as far as growing is concerned, Petit Verdot has to be my favorite variety because I grow it in my own Aftonshire vineyard, and I think I've mastered it. We did have a lot of problems with PV early on, a lot of problems with rain,

with berries splitting, a lot of problem with rot, all of those things. But I think we've mastered it now.

### How were you able to master it?

The Spotted Wing *Drosophila* has been a real problem, but once we started managing them with insecticide and stayed on top of the spray program, the rots did not spread as they had in the past. I was always very reluctant to use insecticides, but I think they're better than any fungicide for combatting the spread of rot, particularly as a result of wetness.

And it is not as though I am recklessly doing it. I have bees within 100 yards of my vines, and the trouble with bees is that if you allow fruit to get damaged, then the insects are in there. But if you keep it clean, from the outset, there is nothing for them to go in the vineyard for, and they stay away. This year is a prime example. We've had all this rain, all this threat from berry splitting and rot spreading, and just by keeping on top of the fruit, my bees have been fine.

### You maintain a pretty rigorous fungicide spray schedule as well, right?

I can't afford to lose a spray. People talk about waiting until you get Powdery Mildew, but I can't afford to do that because I know it will take a week to spray the entire vineyard anyway. So I spray every 7 to 10 days whether it needs it or not. I'm a just-in-case man, not a just-in-time man. The military taught me that.

This year we did very well. Our yields were as good as any other year. The only fruit we were down on this year is the Traminette. I don't know why, I think it was just poor fruit

See GROWER on page 8

GROWER, from page 7

set. We also lost just over an acre of Cab Franc and the reason is that we had other fruit with more of a priority to bring in, so we just left that out. It is in a vineyard that doesn't always produce the best Cab Franc, and so therefore it wasn't a priority. So out of our 55 acres, we lost one.

**After this year, are you more confident about letting fruit hang through late-season storms?**

Yes, and in 2015, we were brave and let it hang through the storm. But we were fortunate enough that we got some very nice weather after it. Sometimes you get lucky. This year, we didn't. We got one storm after another.

**So, is weather the greatest challenge in Virginia wine viticulture?**

Yes, but it is also what makes Virginia wine interesting. Because wines from California, wines from Argentina, wines from Chile — where they don't have the problem with rain—are the same every year. High alcohol, hot wines, whereas in Virginia, every year is different. And it makes it far more interesting. So, if I would say one thing, weather is a challenge, but it is also what makes VA wines interesting.

**What's your favorite memory of life in the vineyard?**

Laying out the vineyards. You can look out on top of Bold Mountain, and up there I tried to follow the contour of the land. If you follow the contour, it's not a straight block. For example, on the northern slope, I just kept the vineyard on the slope, so it's not a perfect square by any means. It just follows that contour. And I can remember doing the Cabernet Franc on the south-facing slope and following the contour of the land there by eye. And then I stood down at the bottom, some 350 feet lower, and looked up. You can just see that line following the top of the hill and it's quite beautiful.

And I can remember, standing there with my 30-foot pole, guiding this 80-year old gentleman with his D-8 tractor who was ripping the rows. He couldn't see my flags because the bulldozer was so big. So I would stand at one end and he would drive straight toward me, ripping the row. And I did that with this guy for two days and in the end, we put all the posts in and it was just great. That's probably the most satisfying thing. Standing down here and looking up and thinking, yeah, I got that right.

# VVA Members Gear Up For an Educational Winter

The Virginia Vineyards Association will hold its annual Winter Technical Meeting Feb. 21-23 in Charlottesville

**What:** The Winter Technical offers workshops over three days and opportunities to meet and socialize with fellow grape growers, educators and industry reps.

**Where:** The Charlottesville Omni Hotel. A block of rooms is reserved for members, who should book by Jan. 21 to obtain the special rate. Call 434-971-5500 or [click here](#). Be sure to mention that you're attending the VVA meeting.

**Agenda:** The schedule is slated to include a grape disease management workshop conducted by Dr. Mizuho Nita of Virginia Tech on Feb. 21; presentations on a number of topics on Feb. 22-23, including avoiding winter injury, climate predictions, mealybugs, retraining cold-injured Merlot vines, and research updates; a 6:30 p.m. wine reception on Feb. 22; a VVA member business meeting and luncheon on Feb. 23; and a special grapevine pruning workshop on Feb. 20-21 (see below).

**Meeting registration:** Registration will open the first week of January. Dues must be paid by the end of January in order to receive the member rate for the meeting. To register and for more details as they become available, go to the [VVA website](#).



## Nominations Open for 2019 Grower of the Year

The Virginia Vineyards Association is seeking nominations for the 2019 Grower of the Year, which will be presented at its Winter Technical Meeting on Feb. 22.

The recipient must be an active VVA member with at least seven years of experience managing or operating a commercial vineyard of at least five acres. The nominee must be an active participant in the Virginia viticulture community with a track record of service to our industry, and the nominee must have the respect of his or her peers.

Please submit nominations to [info@virginiavineyardsassociation.org](mailto:info@virginiavineyardsassociation.org) by Jan. 10.



## Italian Consultant to Lead a 'Conservative Grapevine Pruning' Workshop Feb. 20-21

**What:** Alessandro Zanutta, an Italian consultant and expert with dormant grapevine pruning, will introduce us to "conservative pruning" of grapevines. The conservative pruning techniques are used in many viticultural areas of the world (such as Italy, France and California) thanks to its benefits in terms of vine longevity and production quality. Conservative pruning considers dormant pruning to be one of the most important practices of grapevine management, determining vine health and grape quality. It differs from standard pruning as it is based on the concepts of respecting the natural branching structure of the plant and the continuity of the sap flow, separating pruning cuts (and wood desiccation zones) from the main vascular transport tissues. The prevalence of trunk and cordon diseases is reduced through the application of small cuts and protective measures with this annual operation.

**Who should attend:** The workshop will benefit those who prune grapevines and those who wish to learn how small changes in the way we've done things for years might pay long-term dividends.

**Where and when:** The workshop will be held Feb. 20-21 at King Family Vineyards in Crozet immediately prior to the Virginia Vineyards Association's Winter Technical Meeting on Feb. 21-23 in Charlottesville. There will be both indoor and field aspects to the workshop, which is limited to 40 people. Additional details, registration information and costs will be announced on the [VVA website](#) as they become available.



# How to Prevent, Mitigate Fruit Rot

FRUIT ROT, from page 1

www.vtwines.info).

An understanding of the nature of fungal degradation and fungal metabolites is essential to crafting fine wines in a warm and humid growing environment such as ours.

Grapes are susceptible to a number of fungal complexes, including bitter rot, black rot, sour rot, ripe rot and *Botrytis cinerea*. Temperature, moisture, insects, and the presence of fruit wounds have a strong influence on a kaleidoscope of potential fruit rots and what organisms dominate. In addition to yield losses, fungi can negatively impact a wide range of grape, and therefore, wine parameters, including color, aroma and flavor properties.

*Botrytis* infection followed by warm, sunny, windy weather can cause berries to dehydrate, increasing the sugar concentration. This is the so-called *pourriture noble*, or noble rot. In our environment secondary infection by other microbes usually follows. Under wet conditions, molds such as *Penicillium*, *Mucor*, and *Aspergillus* spp., as well as other fungi and yeast, may overgrow *Botrytis*; referred to in France as vulgar rot (*pourriture vulgaire*).

Wounds and breakdown of grape skins provide substrates for the growth of yeasts and bacteria, and may produce a condition called *pourriture acide*, or what we know as sour rot.

Sour rot is generally a complex of microorganisms from various species: *Alternanaria*, *Aspergillus*, *Cladosporium*, *Diplodia*, *Penicillium*, *Rhizopus yeast*, *Acetobacter* and other bacteria.

The pungent odor of sour rot comes from acetic acid produced by the *Acetobacter bacteria*. Sour rot is strongly influenced by the presence of *Drosophila* fruit flies and berry wounds.

Ripe rot is a bunch rot caused by species of the fungus *Colletotrichum*. This malady occurs predominantly in regions such as Virginia that have warm, wet conditions during the later stages of fruit maturation. Ripe rot causes shriveling and fruit collapse. As the disease progresses, reddish brown circles develop on the fruit. These circular lesions grow in size, eventually covering the entire berry. Fungal bodies contain small pink-colored spores.

In addition to the typical visual disease symptoms, ripe rot degrades fruit color and produces various volatile and non-volatile

## Comparison Between Virginia Riesling Musts

Parameter	'Clean' Grapes	<i>Botrytis cinerea</i>	Sour Rot
Brix	18.5	21	≥ 16.0
Titrateable Acidity (g/L)	8.0	6.5	5.0
Tartaric + Malic acid (g/L)	7.2	5.2	4.4
pH	3.3	3.5	> 3.4
Gluconic acid (g/L)	0.5	1-5	≥ .5
Acetic acid (g/L)	0	1.1	≥ 1.5
Glycerol (g/L)	Trace	1-10	Trace
Ethanol (% v/v)	0	0-trace	≥ 0.2%
Laccase (µg/mL)	Trace	0.1-8	trace to 0.5
Glucan (mg/L)	0	247	65

Source: Zoecklein et al., 2000

compounds that can significantly taint the resultant wines.

### Effects of Fruit Rot On Fruit and Wine Chemistry

It is safe to say that for most Virginia winemakers fruit rot in 2018 caused a certain limited amount of stress, much in the same vein that the Pacific Ocean contains a certain limited amount of water.

Early on we evaluated the effect of several fruit rots on the chemistry of Virginia-grown grapes. As can be noted in the chart above, fruit rots can have significant influence on must composition.

A universal question arises — how much rot does it take to detrimentally impact wine quality?

The answer is complicated due to the variations in rots and the incidence (percentage of clusters with visual rot), severity (percentage of rot per cluster) and the production of metabolites. The determination of potential impact of rot is best made based on the analysis of metabolites.

### Some Important Rot Metabolites

#### ► Laccase and Other Oxidizing Enzymes

Rots can produce a substantial array of enzymes, such as laccase, esterase, lipase,

and those that break down pectin, the cellular glue, such as cutinase, polygalacturonase, glucanase, cellulase, phospholipidase. Each of these can oxidize must and wine components including aroma/flavor and phenolic compounds.

My lab demonstrated that the yeast species and strains associated with sour rot possessed the ability to break down grape aroma compounds (McMahon *et al.*, 1999). The enzyme laccase produced by *Botrytis cinerea* presents a particular hindrance for winemakers because, unlike most enzymes, it is resistant to sulfur dioxide, cannot easily be removed, and is active in the presence of alcohol, including in bottled wines.

Fungal enzymes can cause the oxidation of a large variety of phenolic compounds including anthocyanins and tannins, releasing other phenolic compounds. Ripe rot, for example, produces wines that are particularly bitter as a result of grape skin breakdown and release of phenolic compounds.

Additionally, oxidizing enzymes produced by fruit rots destroy a wine's reductive strength. Reductive strength is essentially a measure of the ability of a wine to age well.

Reductive strength and longevity are an

See FRUIT ROT on page 10

# Ways to Guard Fruit and Juice

*FRUIT ROT, from page 9*

important wine quality feature (See Enology Notes #169).

## ► Glycerol

Glycerol is a type of alcohol produced by molds. Owing to its relatively-high specific gravity (density), it may contribute to the overall perception of wine body or fullness when fruit glycerol levels are high. Most of the glycerol produced by molds will remain inside the defective berry despite berry dehydration and heat, due to the fact that glycerol is not particularly volatile.

Glycerol itself possesses no significant problem for the winemaker but can be used as a barometer of fruit rot. Musts from healthy berries usually contain less than 1 g/L of glycerol, while musts from infected berries contain 5-30 g/L glycerol, depending on the nature of the rot.

## ► Gluconic Acid

Rot-infected fruit can contain a relatively high (25 g/L) level of gluconic acid as a result of glucose metabolism. Since this acid is not utilized by yeast or bacteria, it may be used as an indicator of fruit deterioration. Gluconic acid levels in “clean” fruit, and in wines made from clean fruit, are near 0.5 g/L, whereas in wines produced from fruit infected with *B. cinerea*, levels range from 1 to 5 g/L.

The ratio of glycerol to gluconic acid indicates the “quality” of the rot. Higher ratios indicated the growth of true noble rot, whereas lower ratios generally suggest sour rot or ripe rot complexes.

## ► Acetic Acid

Acetic acid or vinegar is a normal byproduct of yeast and bacteria. When acetic acid bacteria and yeast are combined with fungal growth, high levels of this volatile acidity can be produced.

Rot complexes may show significant variations in acetic acid content in the fruit. Acetic acid is volatile at normal vineyard temperatures and can be detected by scent during a vineyard stroll.

In some cases, fruit enters the winery showing limited visual rot, only to have excessive acetic acid produced during fermentation due to the large concentrations of bacteria.

Several species of *Lactobacillus* present are very efficient in converting grape sugars to acetic acid, thus raising the spoilage

characteristics of the wine excessively, even prior to the completion of alcoholic fermentation! We have seen that occur this season.

## ► Ethyl Acetate

The volatile character or “acetic nose” is not exclusively the result of acetic acid production. Esters, most specifically ethyl acetate, contribute significantly to this defect. Ethyl acetate formation by yeast can create the characteristic odor of “finger nail polish remover.”

## ► Galacturonic Acid

Molds can cause an increase in the galacturonic acid content as a result of enzymatic breakdown of cell wall

**“A very small concentration of rot can have a large impact. It is not the incidence of rot, but the level of various rot metabolites that determines the impact on wine quality. The best rule of thumb: no rot is acceptable.”**

components. This acid may be transformed by enzymatic oxidation to form an insoluble salt, calcium mucate. Wineries with calcium levels greater than 40 mg/L in the water used for cleaning tanks and other equipment run the risk that rot-compromised fruit will produce wines with this insoluble salt. We have seen this in Virginia.

## Clarification Difficulties and Instability

Fruit rots can form protective colloids in juices and wines, inhibiting clarification. Pectins (complex sugars that hold plant tissues together) are hydrolyzed or broken down by mold-produced enzymes, with the formation of soluble pectins and glucans (glucose polymers).

In wine, alcohol causes pectin and glucan chains to aggregate, thus inhibiting clarification and filtration. Winemakers

dealing with rot-compromised fruit frequently choose to add pectinolytic enzymes and glucanase enzymes to help abate clarification problems.

## Aroma/Flavor

Wine aroma compounds can be lost as a result of the oxidizing effect of fruit rots. *Zoecklein et al.*, 2000, demonstrated that sour rot reduced the concentration of Riesling grape aroma compounds (terpene alcohols) by 37% and increased the concentration of oxidized aroma compounds (terpene oxides) by 75.9%.

Equally important is the fact that most fruit molds can produce off aromas and flavors. Infected fruit can contribute sensory characteristics such as earthy, vegetal/herbal-like, mushroom and moldy, etc.

Off-flavor compounds include a wide range such as geosmin (the so-called mushroom alcohol) and the ketone 1-octen-3-ol, detectable at extremely low concentrations.

## Practical Considerations

Even though the season is over it may be wise to review the steps utilized to help minimize the effects of fruit rots. (After all, no matter how late it is, it is never as late as it will be later on!)

► Have a viticulture and winemaking HACCP plan.

► Crop level: Avoid over-cropping, which could delay maturity.

► Carefully review your spray programs in the context of your HACCP plan. Some success has been reported by using sulfur dioxide spray (in pH adjusted water) to help limit sour rot. It should be noted that although this material has GRAS status (Generally Regarded as Safe by the Food and Drug Administration), it is not an approved vineyard material. Additionally, some have used ozone treated water as a vineyard spray.

► Control *Drosophila* fruit flies and wounds. Hall et al (2018) reported that insecticides targeting fruit flies significantly reduces sour rot severity.

► Fruit culling: Cull as much visible fruit rot out as possible in the field.

► Sort fruit at the winery: A very small concentration of rot can have a large impact. It is not the incidence of rot, but the level of various rot metabolites that determines the impact on wine quality. The

*See FRUIT ROT on page 11*

### FRUIT ROT, from page 10

best rule of thumb: no rot is acceptable. The current generation of optical sorters allows separation based on color, among other things, which can help eliminate rotted berries.

► **Rinse fruit:** Wineries may consider rinsing the fruit with water (containing a wetting agent) if the fruit delivered to the winery is high in rot. That may aid in lowering some of the rot metabolites. This practice can slightly lower the Brix level as a result of dilution.

► **Muté production/cryoextraction:** Mutés (juice held, or mutéd, from fermentation) can add life and freshness back into the base wine. A small quantity of muté produced from non-degraded fruit can help recover aroma, while masking some of the spoilage and oxidized notes which may have resulted from rots.

► **Pressing:** Whole cluster press whites by discarding the initial juice. Press very lightly and take press fractions. Short vat red grapes.

► **pH adjustment:** Adjust the juice pH — the lower, the better. Expect about 2.0 g/L TA will drop out during fermentation or shortly following completion. High pH values may lead to both biological and oxidative problems.

► **Sulfur dioxide:** Keep the initial sulfur dioxide level low during pressing. You want the low molecular weight tannins to polymerize or bind together. Then raise the sulfur dioxide, depending on the fruit condition and pH.

► **Ascorbic acid:** The addition of ascorbic acid to the juice or wine can limit the extent of oxidation caused by rot-derived enzymes.

► **Test YAN:** Test the YAN (yeast assimilable nitrogen) content and make adjustments accordingly. Rots deplete YAN and micronutrients. As such, the addition of a complex nutrient formulation is wise. Most fruit rots use grape ammonia nitrogen, reducing the levels available for wine yeast metabolism. Additionally, thiamine (vitamin B1), and pyridoxine (vitamin B6) are depleted. This is a primary reason why wines produced from rot-infected grapes generally require supplementation with nitrogen and vitamins to help avoid protracted fermentations, sticking, and possible sulfur-like off odor formation. Low thiamine levels can also be the result of excessive addition of sulfur dioxide to the must, binding and inactivating this important yeast growth promoter.

► **Measure the NTUs for whites:** Ferment fairly-clean juice. Measure the NTUs (nephelos turbidity units) and adjust

to about 100 to 150. If the juice is not clarifying add enzymes or more enological tannin.

► **Cold settle:** Adequate cold settling with the use of pectinolytic enzymes will help lower the level of rot metabolites.

► **Tannin addition:** Enological tannin additions help the juice clarify and bind with some of the rot-produced enzymes. Tannins can act as oxygen buffers and may bind with enough protein to lower the bentonite requirement needed for wine protein stabilization. This is an important consideration for rather delicate varieties such as Pinot Gris and Sauvignon Blanc.

► **Pectinolytic enzymes:** The addition of pectic enzymes aids in clarification, which is particularly important if juice is produced from compromised fruit.

► **Yeast inoculation:** Inoculate with a high volume of a vigorous, not too nitrogen-dependent yeast. Use more than the standard 24 g/hL or 2 lb/1000 gallons. Make sure the starter is properly prepared, and understand that oxygen is a yeast nutrient.

► **Co-ferment:** If you are planning on an MLF co-fermentation, make sure you check with your suppliers regarding yeast and MLF strain compatibility. If you do not desire an MLF (including from indigenous spoilage lactic acid bacteria) consider the use of lysozyme.

► **Fermentation temperature:** Begin the fermentation at a slightly warmer temperature to help lower the concentration of undesirable aroma characters, and to assure a rapid yeast fermentation.

► **Mid-fermentation racking:** Rack mid-

fermentation. This helps to remove wine from the primary lees.

► **Rack immediately post-fermentation.**

► **Consider short vatting reds** (separating the skins from the juice during the early stages of fermentation), avoid cold soak and extended post-fermentation maceration. Use short vatting, and possibly délestage, to help remove fermenting wine from lees.

► **Fining agents.** Addition of fining agents such as PVPP to the juice or young wine will help to remove oxidized phenols. Other agents can be used to lower the concentration of some rot-derived volatile metabolites. These agents include deodorizing carbons, caseinate, bentonite, etc.

### References

Hall, M., G. Loeb and W. Wilcox. (2018). Fruit flies play a role in sour rot complex. *Wines and Vines*, January.

McMahon, H., B. Zoecklein, K. Fugelsang and Y. Jasinski. (1999). Quantification of glycosidase activities in selected yeasts and lactic acid bacteria. *J. Industrial Microbio and Biochem.* 23: 198-2003.

Sadoughi, N. (2016). Effect of Ripe Rot of Grapes (*Colletotrichum* spp.) on the Chemical Composition and Off-Flavour Compounds in Grapes and Wine. Thesis National Wine and Grape Industry Centre. School of Agricultural and Wine Sciences Charles Sturt University.

Zoecklein, B., J.W. Williams, and S.E. Duncan. (2000). Effect of sour rot on the composition of White Riesling (*Vitis vinifera* L.) grapes. *Small Fruit Review*. Vol 1. 63-77.

### Winemaking Consultant

[www.winemakingconsultant.com](http://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](mailto:winemakingconsultant@gmail.com)

Winemaking solutions focusing on:

Winery and vineyard start-ups

Still and sparkling wines

General winery issues

**Food Science Degree – Virginia Tech**

# Do You Know What's Expected of You?

## Be Familiar with State and Federal Regulations

By James S. Turpin  
Virginia Wine Collective,  
Virginia Wineries Association

**O**urs is a highly regulated industry. Whether you are a grower or a winery of any size, your operations are subject to a wide variety of taxes, fees, and regulations from a number of agencies. Some you might expect, others might be a surprise.

Just because you have not been inspected does not mean that you are not subject to these rules, fees, or regulations. Believing that you are too small or that no one knows about you is not an excuse. Failure to be prepared and comply can be costly.

As an example, recently a Virginia winery was fined over \$10,000 by the Occupational Safety and Health Administration for a variety of violations. Many of these had nothing to do with worker safety, but instead involved record keeping.

As our industry becomes larger and more visible, we attract more attention. You need to be prepared.

Here are some examples of the 29 tests, fees, or regulations from nine different agencies. This is not all inclusive. It merely represents some higher profile examples.

If you are a winery, you are probably already aware of both the number and variety of rules and regulations administered by the Virginia Alcoholic Beverage Control Authority (VABC).

After an initial approval from the Federal Tax and Trade Bureau (TTB), the granting of the actual license is done by VABC. These include license renewals, excise tax reports, inventory reports, operational issues such as license and staff postings, current ownership information, building modifications, advertising restrictions, and off-site remotes.

These are just some examples. If you have any questions, reach out to your local agent. Quarterly or annual taxes are due to both TTB and Virginia ABC. This includes excise and state sales taxes.

If you self-distribute, you should be aware of the Virginia Winery Distribution Company (VWDC) rules and process. This includes record keeping and designated spaces, as well as product registration.

Whether you are a vineyard or a winery, you are subject to a number of regulations under the jurisdiction of the Virginia

Department of Agriculture and Consumer Services (VDACS). On the vineyard side, these include pesticide regulation including record keeping, training, application safety, and storage. For wineries, VDACS has responsibility for prepared food sold at the winery if there is no restaurant license.

Finally, VDACS can do operational inspections on behalf of the Federal Food and Drug Administration (FDA). However, in some cases, the FDA can conduct its own inspections for the Food Safety Modernization Act and the Bioterrorism Preparedness and Response Act. Generally, FDA inspections should be considered more serious and intense than those conducted by VDACS.

The role of the Virginia Department of Health has been increasing. Among its responsibilities are well inspections and drinking water safety; septic field approval and inspections; and food safety inspections if you hold a restaurant license. The Department of Health is structured on a regional basis creating different emphases and levels of enforcement.

Labor issues are another important level of regulation. These are administered by the Virginia Department of Labor. Among the areas of responsibility are worker safety as well as wage and hour requirements. This includes enforcement of some migrant workforce rules and regulations.

However, primary jurisdiction for immigration-related issues remains at the federal level.

The Virginia Department of Taxation is

**“... Whatever the agency, the key is to be organized, be prepared, and maintain good records. Remember, if something is not recorded in writing, it did not happen.”**

responsible for the collection of sales and use taxes including certain local taxes. These can be filed electronically. The Department also collects payroll taxes including withholding for income taxes and unemployment. Even if you use a payroll service, you are still responsible for the timely payment of all taxes.

Finally, the Virginia Department of Transportation (VDOT) is responsible for enforcement of truck weights. This is important if you are a grower moving grapes to wineries. VDOT is also responsible for enforcement of the farm use plates which are limited to mileage and uses.

These are only examples and not an all-inclusive list of the wide variety of rules and regulations that govern the vineyard and winery industry. I have also not addressed any local regulations.

The bottom line — whatever the agency, the key is to be organized, be prepared, and maintain good records. Remember, if something is not recorded in writing, it did not happen.

### WINCHESTER EQUIPMENT COMPANY

Agricultural, Construction, Material Handling Equipment

Since 1957

#### VINEYARD TRACTORS AND SPRAYERS

New Holland - Kubota - Durand Wayland

**Tim Gano**

Cell: (540) 533-5667

121 Indian Hollow Road Winchester, VA 22603

540-667-2244

[www.winchesterequipment.com](http://www.winchesterequipment.com)