

EPISODE # 21 PROFESSOR TONY WOLF, DIRECTOR of AGRICULTURAL RESEARCH & EXTENSION CENTER VIRGINIA TECH UNIVERSITY.

SPEAKERS

Fred Reno, Tony Wolf,

Fred Reno

Tony, welcome to my Podcast, and thank you for taking the time to meet with me today.

Tony Wolf

My pleasure, Fred, I want to take a moment to just say thank you for having me on, you've got a distinguished list of guests who have gone ahead of me, it's nice to follow in their footsteps with this, just by way of correction, this is one of actually a number of Experiment Stations operated by the University. I wouldn't want them to think that I'm overall Director of the whole Experiment Station.

Fred Reno

Well, that's true we're in Winchester today, folks in Northern Virginia. Well, as I like to start at the beginning, give me a little bit about your background and why you chose to pursue a career in viticulture.

Tony Wolf

Yeah, that's a common question that I'm asked. I come from a family that has nothing to do with farming or grape growing other than an arbor in the backyard. I was raised by my father in particular, who is very much a horticulturist and is a scientist by career. He really exposed me to a lot of different things, including horticulture, grape growing and winemaking. And that was at a fairly early age. Though, as I moved into college, I went in the direction of plant sciences and horticulture, and I actually had a little vineyard of my own. Very, very small vineyard, I should say, just 12 vines, but I gravitated towards viticulture I think because of the family interest in wines, again, just on a home basis. And then I really gravitated towards the science of it as well. I had the opportunity as an undergraduate to work on an experiment station for two summers similar to where I'm working now. I was introduced to experimental field plot design. And you know, how a scientist goes through asking questions about the kind of work and the answers that we want to derive from the projects. And I really thought this would be one way of getting into grape growing and research. At the same time, I didn't have land. I had no means of really purchasing a vineyard. So, taking the academic route, gave me an opportunity to pursue an interest in research as well. You don't really go at it with the idea that I'm going to be an extension specialist, but that comes with it as well. So, you do research to

answer questions that are confronting the industry, but then you have to do something with those answers. And that's the extension part of what we do.

Fred Reno

So, you chose to work though in Virginia in the Mid Atlantic area as opposed to any other wine growing region in the country. What drove that?

Tony Wolf

Yeah, well, the first 18 years of my life I grew up about 20 miles from here. So, the Mid Atlantic is home to me. There was a feeling of familiarity there with what I would be getting into, and I wanted to be in viticulture, you know, you sort of make a decision whether you're going to go into viticulture or enology, and I chose the plant science part of it. I liked the viticulture part of it, although the winemaking is certainly of interest. And then as I looked around the country, I applied to graduate schools out west, but I was fortunate to be able to train here in the East, Pennsylvania and then at Cornell University in New York. You know, sometimes decisions are made for you. I was two years into my Ph. D. program when the job opened up here in Virginia. Okay, so my advisor told me about it, I applied, and interviewed, and I thought, this looks like something that would be very interesting. I had sort of a peripheral understanding of what was going on in Virginia with the industry. This was in the early 80s. I looked at Virginia Tech. And I thought, My God, these people really know what they're doing. They're hiring a viticulturist; they're hiring an enologist two different people. Bruce Zoecklein was hired, in fact just a little bit earlier than me, he said, this university is really putting really putting something into the educational research program that's going to support this industry. There was also funding to work with here. There was what at the time was called the wine advisory board. It goes by a different name now, but that was a board that generated money from the sale of Virginia wine that could then support marketing and promotion, but also research activities. There wasn't a lot of other states that were doing that. So, it was a confluence of a number of things. The job was open. I applied for it and was accepted, then I had to hurry my PhD program a lot. I kind of shaved a year off of it. But my advisor says, it's probably going to be better for you to go ahead and get this job then stay another year with graduate school. It worked out well in that regard.

Fred Reno

Well, that sounds like everything came together at the right time in the right moment.

Tony Wolf

Yeah.

Fred Reno

So, I'm a little curious, you said something that made me think and that was you mentioned Cornell University. Would you say the Cornell itself, as far as the east is concerned, is somewhat similar, at least in its embryonic stages of what UC Davis became in California? I'd like to know a little bit about that component, Cornell?

Tony Wolf

Yeah, the viticulture program was not as large as the UC Davis program, obviously, in terms of faculty members, but it was one of the few institutions in the US that had specifically a viticulturist pomology. Viticulture pomology is the science of growing home fruit, apples, and pears. It was actually a separate department. And so, they had faculty that were involved as viticulturist and plant physiologist, and I knew that I could get a good education there. Cornell had a good name, still has a good name for itself as a as an academic institution. As far as on the east it was and probably still is the premier viticulture program. They have a four-year teaching program in viticulture, which is unique. Certainly, you know, when you go further north into Canada, there's some big programs too, but Cornell's is well known.

Fred Reno

Well, that's interesting to know, because I was thinking about that as you were talking. I'm sure my audience would like to know, explain what the extension service does for the industry and what and how it utilizes the research and the areas and things that you do itself.

Tony Wolf

So, let's break it down a little bit, because many of your listeners are probably unclear, actually. Where's the research? Where's the extension? And where's the teaching? I tell people I work at Virginia Tech. The first question they ask is, what do you teach? Because they have this impression a professor is somebody that teaches in front of the class and Okay, well, we do that too. But we're land-grant institution, we have all three missions, research, extension, and instruction or teaching the Cooperative Extension. It's an old institution. It was congressionally mandated in 1914. So, it's over 100 years old Cooperative Extension services, including the Virginia Cooperative Extension have been around for quite a while. They're different things to different people. When I was a kid, I was in 4H, well, 4H is part of extension. But now I'm in the area called Agriculture and Natural Resources. That's the part of cooperative extension that I'm associated with. But I'm also part of the Virginia Agricultural Experiment Station, so I have a research and an extension appointment. When I get a paycheck, at the end of the month, part of my pay is Cooperative Extension funding, part of it is agriculture, experimentation. None of it is related to teaching which is actually a different stream of money. But I have sort of wander a little bit here and gotten away from what you're asking so I'm considered an extension specialist. I have statewide responsibilities in the area of viticulture, grape growing. We have other people here at the Experiment Station at our research station who have responsibilities as specialists for tree fruits for entomology, fruit entomology, and insect issues.

We have pathologists here, all of us are specialists. So, we have statewide responsibilities and regional, national, and global to the extent that we do that. The Cooperative Extension also has a baseline of support at the county and municipal level as well. So, when people talk about an extension agent, that's usually the local resource that somebody may use as a homeowner, you can take in a problem like a disease you might have on your plants and get some help and identify what that is.

Fred Reno

so, I was wondering, could a current winery vineyard owner or a prospective winery, can they just call you or the extension and say, I want you to take a look at this property, and then you respond?

Tony Wolf

Yeah, actually, that's a really good question. That's one of the things that we encourage people to do, particularly as they get in and explore the industry. We encourage them to work with their local Extension agents. They help a lot in terms of saying, okay, you have a site that is probably good for grape growing, at least it's a decent site. Or maybe no, you don't want to grow grapes here, it's down by a river. It's going to be a frost pocket. It's going to have winter injury we'll think about something else you can do with your property. The local extension agents are also really helpful with submission of samples, disease samples that come in, for example, that can be submitted to the lab on campus at Virginia Tech, to help identify what's going on soil sampling, all of that stuff, training for pesticide applicator certification, that's all done through the local offices, we don't do that here. People that know me, do routinely get in touch with me by email and phone calls, and I don't turn them away, you know, if they've got a problem that I can help with, I help them. But we really like to work with the local agents in that regard first. So, to back up a little bit I have the role of being an extension specialist. And that's really dissemination of information and knowledge to the user. I think your broader question also concerns the research that I do, right. And so that's, that's part of it and they go, ideally, they're seamless, the research moves directly into the extension, delivery of that information as well. So, again, I have both responsibilities. There's a whole other question about how do you decide what to research?

Fred Reno Well, you know, one of the things that is a bit confusing to the wine public, and quite honestly, to the wine trade, to a large extent, is hybrids versus vinifera. Admittedly, I had very little understanding or exposure to hybrids in my career, because I spent the bulk of it in California. But having now moved to Virginia, in the last couple of years, I've become really a big fan of let's say, Seyval Blanc, personally. From your vantage point, talk a little bit about what the difference is. So, people understand between not just character of the grape but growing a hybrid versus growing a vinifera here in Virginia.

Tony Wolf

So, I'd have to say, when I first started here, the discussion about hybrids versus vinifera led to much more polarized discussions to the point of arguments than they do now. I think it's an accepted fact that we're going to have a mix of hybrids and vinifera in the state. And most people understand that and accept it for reasons that I'll go into. Again, if you take yourself back to the late 70s when this industry was really just getting started. There were people in the industry that felt very vehemently that this industry should be based only on vinifera, and you know, the Vinifera Winegrowers Association, for example, was a real organization that, was that Karl Fleming? No, R de de Treville Lawrence was the original, I think, one of the charter members of that society but there were there were a whole group of people that were involved and still are involved. It goes under a different name now. And there were other people in the east. Constantine Frank you probably heard about in the Finger Lakes. He worked at Cornell for a while and actually was a big proponent of Cornell getting involved in growing vinifera, but it took a while. I was the first graduate student actually to go through Cornell that worked with vinifera grapes as far as my dissertation work that was in the 80s. So, it took a while from the 50s when Constantine Frank was there until that point, the same thing in Virginia we can see is taken a while to gain acceptance, for example of hybrids. The problem with growing Vinifera, the fundamental or historically, the biggest problem with Vinifera was their cold tenderness, they are easily injured by cold temperatures. And again, if you think back on the kind of climate that we had in Virginia, in the 80s, and even into the 90s, we had historic low temperatures in January of 85. Again, in February of 94, February of 96, it's like just within a 10-year period, three really bad freezes, where it basically takes grapes back to either the cell level or the ground level or kills them outright if they weren't hilled up with soil for winter protection. That was the big problem with vinifera and people that looked at this rationally said okay, if we can't sustainably grow vinifera then what are our alternatives and hybrids were the logical alternative and still are. So, things like as you mentioned, the Seyval Blanc was very important Vidal Blanc increasingly Chambourcin, and then some newer hybrids, including Traminette, Chardonel. All of those are main players in our industry. Seyval has kind of waned a little bit in popularity because there's some issues with it, but hybrids are and will continue to be important for the industry here.

Fred Reno

Well, I'm a big Cru Beaujolais drinker, and I really have enjoyed some Chambourcin, that if they just take that little back edge off, they really are close to a cru Beaujolais, as far as their flavor profile, and the character. I'm like, wow, these are really interesting wines.

Tony Wolf

The really interesting footnote on hybrids is where we are now and where we will be in another 10 years, 20 years. Because hybrids mean different things to different people. When we think about Seyval and Vidal, we're thinking about a genome. That is, let's say, proportionately

vinifera, and North American or Asian than, *Vitis* species. There's a mix there, and quite a bit of some of the riparian repressors. And some of these other legendary North American species of fruit quality come through the newer hybrids that are being released today, there more out of the European breeding programs than out of the US programs and are based primarily on *vinifera*. They're hybrids in that they have a small component of the genome that is comprised of North American species of grapes. But the breeding programs now are taking a much more rifled approach to which genes they want to incorporate into the progeny. New progeny it's not, don't get me wrong, it's not genetically modified organisms it is classical breeding, but there are ways of selecting the progeny. I mean, there's marker assisted breeding, so that you know what genes you're looking for in the progeny that will confer disease resistance, for example. So, you might have 1000 seedlings from a cross that you can very quickly go through and determine whether the genes for powdery mildew resistance are in that progeny or not, if they're not, you throw it away, you don't grow it for three years. So, this really accelerates the breeding program and the new hybrids that are coming out are at least 85%, *vinifera* genome so they continue to carry a lot of the desirable fruit quality and other core cultural traits. But then they have these added diseases resistance as well.

Fred Reno

That is fascinating, that portrays a really interesting future in winegrowing. I mean, that is fantastic.

Tony Wolf

I made the comment that what we're going to be growing in 2050, may not be here in Virginia at all right now.

Fred Reno

Do you do any of that type of research yourself here?

Tony Wolf

No, I'm not really trained to do that. I would fail miserably as a grape breeder. I don't have the patience. It doesn't really interest me. It's more a long-term project and proposal and it really involves a larger critical mass of people involved it than just one person, where I am involved is with the evaluation of those vines, and if we need to be growing them here in Virginia. So that's what we do we put in a planting last year with some of these new varieties. That's something that we have to do constantly, because there's always new varieties coming on the scene. And they should be evaluated under our growing conditions here.

Fred Reno

I'm curious about something I had just thought about this. hybrids versus vinifera for a second, what is the crop load like? Will hybrids give you a larger crop? Or is that just a farming practice?

Tony Wolf

Not necessarily, but of quality? You know, there are some varieties like the Vidal Blanc that I know some of our producers are doing a good job producing seven tons an acre, You know, it's a white variety, you're not really looking for necessarily a lot of concentration, you're not looking for depth of color or intensity of color in it because it's a white variety. And it has enough pronounced flavor that at that cropping level you're not losing that it's still there. There are vinifera varieties, which have the same tendency for over cropping, there's a variety called Mourvèdre, which I like, which does I think fairly well in Virginia, very late budburst, late ripening, but it produces this incredibly large crop, you really have to go in pretty rigorously and drop the crop on it in order to have any quality with it at all.

Fred Reno

Well, I've become a big fan of Petit Manseng. And as I understand it, you can grow four to five tons per acre and get really high-quality wine.

Tony Wolf

Yeah, Petit Manseng is a variety that is sort of self-limiting in terms of the yield, it doesn't tend to over produce, like some varieties will. In fact, I brought Petit Manseng in Virginia back in in the 80s from Cornell actually from the breeding program. It wasn't in the breeding program at Cornell, but they had it in their in their vineyard at Cornell. They had introduced it from repository in Bordeaux. It comes from South of France, but Bordeaux had it and they got it to Cornell. So, we brought that into Virginia in the late 80s, as part of the original variety planting that we had here, that same planting, we had Chardone, as a hybrid. We had Vidal as a benchmark variety. Tannat came out of that, Petit Manseng and we had Viognier in that as well. But the industry had already gotten a jump on Viognier there were some other ones that we had some did well, some did not do as well, but that's why you do variety evaluations to see how they're going to fare.

Fred Reno

you mentioned Tannat now that is pretty susceptible to frost and cold though, is it not?

Tony Wolf

It's a cold tender variety. Yeah. And that's the problem with a lot of varieties like Nebbiolo and Mourvèdre. A lot of those varieties, particularly those that come from more southern parts of Europe, are fairly cold tender.

Fred Reno

I had a vintner say to me early on when I first moved here. And I'd love your opinion on this. He said, Fred, it's entirely possible that the best vineyards in Virginia haven't even been planted yet. That resonated with me. I thought about that. And then of course, he gravitated towards, and I have a lot of people talking about Shenandoah Valley having a lot of potential long term because it's drier I guess, and yeah, cooler in the summer, what do you think about that comment.

Tony Wolf

If we divorce, viticulture, from the rest of wine sales, and everything, you know, then I think the Shenandoah Valley and some of the higher elevations on the Blue Ridge could be very good sites for grape growing, I know you've talked to some people already who have explained the value of going higher in elevation from a daytime temperature standpoint. Those steeper slopes, thinner soils tend to have less water holding capacity as well, is still may rain there a lot, but they tend to drain faster and lose some of that water more rapidly than those colluvial soils. You know, at the bottom of the hill, there's some value in doing that, if you're operating a winery as well, as long as you can get people to come to that winery. That's going to be part of the game here, though, as well.

Fred Reno

Oh, I see. So, you need to have that direct to consumer because of the scale.

Tony Wolf

And historically, I think that the Shenandoah Valley was viewed as we're one Ridge over from the Washington DC area and we don't get the consumer trade and the traffic out here that somebody on the east slopes of the Blue Ridge would and I think there's some truth to that if you just look at the number of vineyards and wineries that we have out here it's growing. But it's been a little of maybe a back eddy compared to the Piedmont region of Virginia. But there's actually very good sites here. You're correct. You're in the driest portion of the state where you're sitting right now the northern Shenandoah Valley is the driest area. What does that mean in terms of overall, we still get 36, 37 inches of rainfall per year versus 45 or so and maybe in southeast Virginia. So, it's, it's still a lot of rain. When you compare us to an arid region like Central Valley of California or Yakima Valley of Washington. We're pretty wet.

Fred Reno

It's been remarkable I mean; I'm backing up here. But it's been remarkable to see what Ankita Ridge has done with Pinot Noir. This is world quality Pinot Noir they're producing. Now, granted, it's in small quantities. But it is the wine that I have used in the past when I was in California, thinking about coming to Virginia, when I talked to people who are skeptics of Virginia wine, and I open a bottle Ankida Ridge Pinot Noir and pour it for them. And they go,

that's from Virginia. Yeah, I go. Yeah, that's from Virginia. Is there potential for that to happen? A bit larger for Pinot Noir in this state?

Tony Wolf

You have to really want to grow Pinot Noir. And I know that you do. Yeah, I think there's potential you're going to have to find a good site and, Ankida Ridge did that as a small vineyard, I know they produce Chardonnay as well, if I've been to that site, and, and they do a good job. Their overall vineyard management is very good. They do have the advantage of having good relative elevation as well as good absolute elevation. So that puts them into a little bit of a cooler zone than somebody down 1000 feet lower than them. And that for Pinot Noir is probably very important.

Fred Reno

What about the grape Gamay, true gamay, Beaujolais? I mean.

Tony Wolf

I don't know if it's really been tried here,

Fred Reno

They put a quarter of an acre in up at Ankida Ridge, and they're on granite which is the traditional soil base for the Beaujolais region in France. I'm thinking to myself, well Gamay would be interesting, but I don't know the property of Gamay, as far as growing the grape itself, and how disease prone it may or may not be. It may be just like all other vinifera for all I know.

Tony Wolf

Yeah, I don't have enough experience with Gamay to really say whether it would do well here. I kind of put it into the same category as Pinot Noir and some of these other what I would call somewhat fragile varieties and unfortunately Nebbiolo falls into that, Barbera, Grenache. I love Grenache, but it does not hold up very well. And we do have some experience with it. It just doesn't hold up very well when we get rains. And in September and October before it's harvested. That was sort the beauty of Petit Manseng, you know, it doesn't produce a Pinot Noir though. So, it's totally different grape. But it's what we call a wet weather grape. It does reasonably well under the kind of growing conditions that we have, which can sometimes include tropical storms and hurricanes coinciding with harvests, we really have to be looking at that as to you know, what's going to do well here and particularly with changeable climate, and more.

Fred Reno

That's what I was going to say, as a viticulture scientist, what do you think about climate change? What have you seen and what are the predictions for Virginia,

Tony Wolf

I'll start with what I've seen, and again, I can go back, because I've been in this area, my whole life, essentially, I can go back as far as the 60s and say, we used to have pretty cold winters. It was an unusual winter that we could not go out and skate on ponds shortly after the first of the year, well, that's pretty much unheard of today. I would say since the 80s, we've really gotten to a point where the winters are perceptibly warmer on average. Of course, it's not the averages that affect grape growers it's the extremes. But on average, the winter temperatures have been increasing, particularly after the turn of the century. We just we don't even have the single degree or single digit temperatures here at the station, for example that we used to have in the 80s and 90s, and even subzero talking Fahrenheit, but subzero temperatures that we'd have here at the station. There are other things that can be measured in that we've anecdotally seen advance of budburst by two weeks or so maybe that might be a bit of a stretch, but 10 days anyway, for a given variety, like Chardonnay always used to be April 21st, we could count on that. Now it's earlier than April 21st here at Winchester. We're not necessarily seeing higher daytime temperatures. But accumulated heat units, particularly in during the night phase of the day are warm. We're seeing a warming of nighttime temperatures that can be tabulated and summed over time. The other thing and this is strictly anecdotal, I've not found good data, I haven't looked very hard, but I haven't found the data to support this. But the intensity of storms seems to be greater that we're getting. There's a lot more moisture being dumped at one-time, three-inch rains—four inches rain, sometimes over 12-to-24-hour period. And that is something that meteorologists and climatologists do talk about I mean, obviously warmer air is going to hold more moisture, when it is released that can be more violent in terms of the release of that energy. Same way with winds and tornadoes, tornadic events, and hurricanes. I mean, again, sort of anecdotal, but the frequency of hurricanes is, unfortunately increasing. But Virginia last year, we essentially, I don't think we really had any that impacted Virginia, given the number that we had last year, most of them hit the Gulf Coast and, didn't really make it up to Virginia, other than maybe some lingering rains, but we've seen evidence of climate change. And, again, when we talk, the climatologists are saying this is what we can expect in the Mid Atlantic increased heat and increased wetness. We're already in a wet zone. I mean, our climate, in the Köppen classification of climate regions, we're continental, humid, subtropical. And people don't like to think about us as being subtropical, but we are. That's how we're classified. It's not tropical, it's subtropical.

Fred Reno

Well, if there's a way that characterize Virginia, and I know it's a large state, and we have different growing regions, but is there a way that characterize what terroir means to Virginia? In the classic sense of the word? Or is that just a euphemism that everybody throws out?

Tony Wolf

Well, yeah, I know that some of your folks on your Podcast have addressed that question. And I would I would address it the same way that it's a bit broad when you say Virginia, how do you define Virginia's terroir, if you look at the big drivers of terroir, that is climate, its variety, and its soils, those three things are the big issues and you can do that maybe at the state level, at least for climate and vintage, most of our vintage effect, their the effects of in a given year can be felt throughout the state. It might be a hot dry year like 2010, it might be an extremely wet year like 2018. those are vintage effects which make an indelible mark on the wines produced those years if you tried some of the 2010 wines. You know, they taste more comparable to a West Coast wine for a given variety because we were so hot and dry that year. 2018 was the year a lot of people just shifted gears and say okay, they might not make as much red wine this year as maybe 2019. 2019 was a great year. So vintage trumps everything else really in Virginia. That's definitely the case. I don't think we're sophisticated enough in our industry here to really say with generic sense of the word how soils affect wine quality, we know that the water holding capacity of the soil is important, the drainage of the soil, we know that certain soils like green stone and granite for more well-structured soils, perhaps than heavy clay soil. And that's important from the standpoint of grape growing and ultimately wine quality potential. But I would be hard pressed to say that I could give you a wine that was produced on limestone derived soil compared to sandstone derived or granite derived all other things being equal and say this is the difference imparted by those soil parent rock materials in Virginia. But there are other things that blur the lines too. Obviously, we have wineries that might be purchasing fruit from other locations and then blending it in. And then everything goes out the window at that point in terms of trying to say this is the place, you know, to take terroir back to the description of the place where the grapes are grown, and the wine is made. I could maybe start to say that with our research vineyard here. But when you try to apply that more broadly to the whole state or an AVA or in the first AVA of Virginia, the Shenandoah Valley, Northern Shenandoah Valley, that's still a big area. And we have here on our property, we have sandstone derived soils, limestone derived soils and further west shale derived soils. How does that impact the wine quality? We're learning but I don't think we're quite there yet.

Fred Reno

Well, if I hear what you're saying, also, we're such a young industry here in Virginia that we don't really have vineyard sites that have been there for decades, that we can then subscribe a particular character to the wine that comes from that vineyard.

Tony Wolf

Yeah, I think we're starting to when if you keep it to a decade and yes, we do have some and you have interviewed a couple of people.

Fred Reno

what would be the oldest vinifera vine that you are aware of in Virginia, let's say for instance,

Tony Wolf

there may be some that were planted in the 80s, possibly the early 90s. You know, and I think some of our places down in Orange County and Albemarle County, Fauquier County, Linden has some pretty old vines there. One of the problems with some of those older vines, though, is that they start to pick up some of the infirmities of age, if you will. So, there's some virus problems like leaf roll that can impact the vines. There are fungal, wood rotting fungi that can affect the structure of the vine and lead to deterioration of the vine, leaf roll has been a really big problem, though, over the years. So that particular virus is a problem because like any virus once the vines are infected, you can't eradicate the virus, you pull out the vines and plant something different. And so, we've gotten into that practice now with some of these older vineyards, they realize that yeah, that used to be a good vineyard, but it's no longer a good vineyard. It's not making the highest quality wine anymore. So, we need to plant something different there.

Fred Reno

Well, that leads to another question I have I think you've answered. So, what is the general life expectancy of a Virginia vine?

Tony Wolf

Well, it used to be that the IRS would say 25 years that was the investment period. Okay, that's the lifespan of the trellis using standard building materials, pressure treated wood and steel wire. And that was about what we would expect with grapevines, 25 years. So, I think that's quite possible to do that. If you have a good site and they're well managed vines, you do a certain amount of upkeep with replanting now and then when you have a problem, you know, you lose a vine to this or that you replant but, 25 years would be.

Fred Reno

do hybrids differ in this regard to?

Tony Wolf

No, not really pretty much the same thing. The only thing is that most hybrids would benefit from would be that those occasional really cold winters. The 2013, 2014 winter, got fairly cold in some parts of the state. I said after the turn of the century, we've seen a warming trend, but we still have some of these winters. Occasionally, they're punctuated by even just one night or two nights which is all it takes really to cause damage. So, hybrids would have that benefit of being able to maybe weather the cold, those cold events better than vinifera.

Fred Reno

If you were to give me an overall assessment of what you've seen as far as growth in wine quality, wine growing? And where do you think this would be in 2050? I mean, are we going to see dramatic improvement? Or do you think we're going to see marginal improvement?

Tony Wolf

I think we'll see incremental improvement. If we kind of step back on that question a little bit and say, let's take somebody who's been here in the industry for 25 or 30 years, how has their quality improved? And where will it go from here, they've already improved quite a bit over the years, by virtue of having different clones, maybe even different varieties, maybe made a fundamental shift in varieties, the canopy management, disease management, all of those routine vineyard practices that we do, we've made incremental improvements to that over the years. We know more about what impact will have on the fruit and the wine quality potential by doing leaf pulling in a particular time of the season, doing a better job overall, with fungal disease management and insects have always been, you know, problematic at times. But they're not that big of an issue. Fungal diseases, though, have been something that we've had to deal with. And we're doing a better job in that regard. So, I think those incremental improvements will continue. I think that going forward, you know, another 30 years. So, as I said earlier, we may not be growing, we may not be focused on the varieties, 30 years from now that we are now and that could improve what we you know, what we're doing 30 years from now. So that's one audience. Those are the people that have been here for 30 years, the people that are getting in today, have this body of knowledge that they can really get jump started on, they don't have to go through this whole process of repeating mistakes that others have made and learned from. I think, overall, that lifts the quality of all Virginia wines up dramatically. We just not seeing, typically we're not seeing problem wines that are maybe micro, biologically unsound, or the fruit was just harvested way too immature or unripe. We've kind of gotten beyond these learning pains with the new growers. So, there's still some issues, but I think overall, I think most, and I would agree that overall, the quality has improved. Whatever metric you want to use, the wines getting gold medals in competition, the Governor's Cup, the Governor's case wines, I've really been impressed by what they assemble and put together with those. And the wines that I try, I do drink a lot of Virginia wines and get to try a lot. But there's 300 some wineries out there, I have not tried them all,

Fred Reno

I'm trying my best to catch up with them. But I will tell you my opinion, based on everything I've tasted so far, at least 10 to 15%, maybe a bit more of the 300 or so wineries here in Virginia produce as good a quality of wine as anybody in the world, in my opinion, quality. Now, obviously, the varietals we talked about in a lot of cases are different than some of the mainstream varietals that people are talking about. But just from a pure qualitative level, I've been really impressed by what's going on here. Now I reserve the term great wine for what I call the 1/10 of 1% of all the wine produced in the world, and then I go to is it quality? And I

think Virginia is right there. Just right there ready to break out and people need to understand, it's as good a quality here as anywhere coming from around the world.

Tony Wolf

I would agree and I'm sure your listeners would agree and appreciate hearing those comments as well. But I tend to focus on the viticulture improvements, but there's a lot that is going on also in the winery. The whole sorting process with fruit, it's still a challenging environment, it's not an easy walk in the park to grow high quality fruit here, you know, we have advantages to some people to where we don't have the water scarcity issues. Some places in the world have that. So, I think we have to count our blessings and it's a double-edged sword, we can be quite frustrated by years like 2018 but on the other hand, it gives us an opportunity to do things maybe that others don't have in this regard.

Fred Reno

Tony this has been really fascinating. And when I go back to edit, I'm sure a lot of this is going to be really resonate with me but I appreciate you taking sometime today. I'm really glad to know what the extension service does and how they support the Virginia wine growing region. It's just another leg of the stool, isn't it?

Tony Wolf

Yeah, we're just we're one part of it. And it's been a fun ride, as they say, over these last 35 years I've been here. So again, Fred, I appreciate you taking the time to listen to me and ask me questions.

Fred Reno

Thank you.