Growing Pinot Noir in the Eastern U.S.

At a meeting in June in SE PA a grower asked me if a post-veraison fruit zone only direct spray of stylet oil (SO) would help to reduce the incidence of last season rot on Pinot Noir (PN). The logic being that SO would help to smother any residual late season (diffuse) powdery mildew infections and also provide a layer of protection over the berry skin since SO is essential paraffin wax. I thought this was an interesting idea and presented it to my more knowledgeable colleagues at Cornell, Dr. Wayne Wilcox and Alice Wise (Long Island viticulturist). I have taken the time to summarize their very enlightening comments and added some of my own (of course!).

This essential problem is keeping PN disease-free and getting it ripe in wet and cool seasons which we often experience from Ontario to Virginia. There is quite a simple relationship in wine growing and it goes like this… warm and dry makes great wines, cool and wet makes, well, not as great wines and sometimes downright ugly ones. Remember 2003? It was an ugly vintage. Of the past eight vintages, 99, 01, 02 and 05 have been relatively dry and warm years that have produced good PN. There is a very strong correlation between post-veraison weather and the production of fine PN. One could argue the same is true in Burgundy and Oregon, the two most recognized PN producing regions.

The question is…what can we do in the cool/wet years to mitigate the typical PN meltdown at 20 brix? What exactly is causing this to happen and is there any viticultural practices that we can engage to prevent it and extend the ripening season? Can we learn any useful methods from our PN brethren in Burgundy and Oregon?

First it must be clear that fine PN cannot be produced from underripe grapes. The flavors and phenolics must reach full development. To a lesser degree alcohol and color must attain commercially and critically acceptable levels. Temperature plays a very key role in most of these processes. PN is an early maturing red variety that benefits from growing in cooler areas. The tricky balance is to find a warm site in a cool region and figure out the connection between warm vintages and grape integrity and quality. There are many different styles of PN but there are also clear quality benchmarks for a very fine example of the variety.

The meltdown phenomenon usually occurs before full berry maturity is achieved thus reducing the potential quality of the wine. I have seen plenty of PN turn to mush on the vines and it is not a pretty sight or smell. A complex of rot organisms is at work – botrytis, ripe, sour, bitter rots. The bees get into the mix and the birds and it is a real mess. The worst wines are those that the grapes present the biggest challenge to the wine

maker. As a grower I always thought it ironic that in the best vintages we grew great grapes and it was easy for the winery to make a great wine and they got all the credit. In crappy vintages guess who got the blame? These are the years when a truly able wine maker earns his or her merit badges.

In cool and wet years rot prone varieties like Pinot Noir, Pinot Gris, Chardonnay and Riesling must all be farmed at the absolute viticulture maximum. If you elect to grow these varieties you accept this responsibility. And because the ultimate quality of the vintage is determined primarily after veraison, all the viticulture prior to veraison must be performed with the assumption that the weather may be lousy after veraison. It is called worst case scenario viticulture (hurricane, frost, hail, etc.). With weather timing and amount are all important. Burgundy and Bordeaux have lower Sept-Oct average precipitation than we do and they do not have hurricane events. This makes all the difference when growing delicate varieties like PN.

Do calcium sprays help make berries more resistant to fungal infections by strengthening cell walls? I'm not sure if I have ever seen any research evidence of this cause-effect but a lot of growers in Oregon sprayed calcium supplements. Alice applied calcium last year (trying to arrest boron toxicity) but didn't notice any additional rot resistance. Wayne is skeptical of this relationship. I have puzzled over the possible effect of diffuse powdery mildew as a set up for the rots but Wayne does not think there is a connection since powdery does not infect fruit after bunch close. I think I have seen powdery mildew fruit infections after this threshold and wonder about the implications of fruit that is damaged earlier in the season?

Wayne was rather emphatic in his view that stylet oil will not provide any measure of protection again rots, stating that oils should only be sprayed late in the season to clean up powdery mildew infection and lower inoculum levels going into next season. Instead, practicing a sound disease management program is the best preventative strategy including a full load of botrytis sprays and the best possible canopy and crop management practices. Alice concurs on the rot sprays. Get in there with fruit zone directed botrytis sprays and wash down the clusters with the best materials.

As to the question of PN's particular susceptibility to rots this probably has some genetic basis but certainly is exacerbated by the variety's thin skin. Down the road there may be a genomic solution to the PN problem but I wouldn't count on it in our lifetime.

Dilution of juice through the berry skin may be another variable to consider. In all great wine growing we strive to remove water from the root zone at critical times of the year (after bloom and veraison, for example) but it is thought that fruit quality is dramatically upset by post-veraison rain that enters the berries via the roots and vascular system. Some recent preliminary research by Dr. Markus Keller at Washington State University suggests that water may be entering through the skin of the berry and not the pedicel. Perhaps if the berry could be better shield from water it would absorb less and juice integrity could be maintained (umbrellas, anyone?). Some growers have pulled and

positioned leaves in such as way as to form a curtain over the fruit zone. This is clearly a method that needs more research but it is worth thinking about.

Canopy management is critical to growing fine wine on the climatic edge with disease-prone variety. It just has to be right all throughout the growing season. The spray program is ultra-critical in support of canopy management. And, with PN especially, fruit zone management, both spatial and yields, is so important. If you are trying to grow the best PN possible on average vine densities (between 30-40 ft2

Finally, concentrators may be the real solution to our rainy years. I noted that Robert Parker, Jr. endorsed the use of this technology, which has been widely adopted in Europe by even the greatest wine estates in his recent book. If grapes can be harvest free of defect then concentrators can remove excess water and help to amplify the flavors. I do not pretend to understand the complexities of this technology. Clearly it must be practiced correctly.

The best wine growers in Oregon and Burgundy sort fruit at least once, some times as often as three times prior to reaching the fermenter – in the field, before the destemmer, after the destemmer, even in good vintages. With a delicate variety like PN, only the good grapes should go into the wine.

1. calcium sprays - some growers believe it in. I sprayed Ca:N last summer to try and arrest the boron toxicity in my vyd. Did it help, I have no idea. I think the N helped but I'm not sure about the Ca. Paul Chu had recommended applying Ca to tie up B. But some growers feel that application of Ca strengthens cell walls.

2. fruit set cluster-zone-directed powdery mildew spray - I think these low level PM infections, not visible, are entirely possible here given the extreme PM pressure. I don't think of Pinot Noir as particularly sensitive but who can say that this isn't a factor in fruit degradation?

3. plenty o' botrytis sprays at all the recommended times

4. Stylet Oil - Wayne can describe his findings with more clarity but from my field experience I would not buy into JMS having any effective on Botrytis. Would a cluster spray affect Brix? My guess is no. But later in the season it will supposedly affect the waxy bloom. Wayne, would this predispose the fruit to infection?

We tested Oxidate pretty extensively on fruit rot, both sour rot and botrytis infections. It definitely dried up the botrytis sporulation on the surface of the berry. But we started our sprays at the first sign of infection, used plenty of water, high rates, recommended no. apps and, as Wayne predicted, the fungus regrew readily.

I have tasted incredible PNs from Ontario and the Finger Lakes. These are two regions that can hang their hats on the variety. They may even have more potential to make varietally correct PN than Oregon, which has too much sunshine. In special areas in Pennsylvania which I would call PN “sweet spots” the variety can be grown and

wonderful wines can be made. I have tried 2005 PNs from Chaddsford, Pinnacle Ridge and Blair and they are all superb.

PN is a metaphor for all the grapes we grow in the Eastern U.S. All can be compromised by our bad weather it's just that a bad PN is truly an unpleasant drinking experience. So if we can figure out how to get PN ripe, then it should not be very hard to apply the same lessons to all varieties and all of a sudden eastern viticulture has some real traction and consistent quality to show of to consumers.

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