Sour Rot in 2011 Vintage

With the early-August hit of birds in the vineyard, and the late-August and September hurricanes, there has been a higher incidence rate of sour rot than in previous years. Sour rot occurs in an open wound of grape berries where yeast and bacteria can utilize the grapes’ resources. Specifically, several grape yeasts and bacteria including several *Zygosaccharomyces* species and acetic acid bacteria cause the sour rot infection (Barata et al, 2008). Like many grape diseases, sour rot is not specific to one genus and species of bacteria, and it’s difficult for winemakers to know how to deal with such infections.

In the past, I have always been a proponent of getting rid of sour rot infected fruit. I’m not sure the amount of resources required to make a “commercial” wine are worth the outcome. However, that is not up for me to decide. But be forewarned that grapes that come in smelling like acetic acid (vinegar) will produce a wine that smells and tastes like acetic acid. Sour rot grapes often produce a wine that is reminiscent of vinegar with a sharp acetic acid taste in the finish, as well as high volatile acidity (VA).

In the past I have been asked why measuring VA is important – here is a reason. In those years in which sour rot is more prevalent, monitoring your VA is a must. Remember that there are legal limits to VA – 1.1 g/L acetic acid for white wines, 1.2 g/L acetic acid for red wines. However, most people can sense the vinegar taste at 0.8 to 0.9 g/L acetic acid, regardless of variety, and wines at those levels typically require some remediation. Additionally, even if the VA is less than 0.8 g/L acetic acid, the threat of ethyl acetate production (nail polish or glue smell) is pertinent. There is no way to treat ethyl acetate in a wine.

If you choose to ferment grapes that have a high prevalence of sour rot (I would refer to my previous paper on *Fermenting with Botrytis 101* as to whether or not it is worth it), there are some things that I would recommend for the fermentation, and keeping in mind that you can choose whichever solutions will fit your production:

- **Always sort fruit as best as you can.** Keep in mind that grapes with more than 60% of an infection may be a lost cause for commercial wines.

- **Choose a strong yeast strain – particularly a *Saccharomyces bayanus* strain.** Talk to your supplier for their recommendations on a yeast that can survive and thrive in higher acetic acid conditions. *S. bayanus* strains ferment fast so you must monitor fermentations religiously. They will get really hot, and hopefully blow off some of that acetic acid while out-competing the native yeast and baceteria on the infected clusters.

- **Maintain the appropriate nutrient strategy during fermentation.** Get your YAN reading and refer to the supplier guidelines for low, medium, or high YAN levels (depending on what the YAN reading provided). Do not follow generic nutrient strategies. You want the healthiest fermentation as possible in these situations to keep the problem (e.g. sour rot) at bay.
• **Manage SO₂ levels, oxygen exposure, and sanitation through fermentation.** Again, refer to those guidelines I wrote previously in *Fermenting with Botrytis 101*. SO₂ is only an antimicrobial agent at 0.5 to 0.8 mg/L (molecular). This means that monitoring the pH and understanding its relationship to SO₂ integration is important. Keeping oxygen exposure to a minimum will keep sour rot bacteria and yeast levels low, as they need oxygen to break down and spoil grapes. Sanitation is keep to ensure you are not cross contaminating good fruit with infected fruit, and maintaining any spoilage to only those wines that came in with rotted fruit.

• **Add some tannins prior to fermentation, particularly ones that will add to mouthfeel.** Suppliers should have some recommendations for fermentation tannins. Sour rot tends to thin the structure of wines, as well as enhance the sensation of astringency and bitterness, depending on the variety. These tannins will help build structure and integrate into the wine while it is fermenting.

• **Add some tannins after fermentation to build structure, soften the acetic acid, and freshen the wine.** Again, ask your supplier for recommendations. Some suppliers produce tannins that will bind up some of the acetic acid character to minimize the harshness on the palate.

• **Add polysaccharide or inactivated yeast products to soften the finish.** The finish is a large problem with sour rotted wines, as acetic acid is quite harsh on the palate. This is a good example in which tannin and polysaccharide integration can work well. Polysaccharides typically round out the finish and smooth the mouthfeel. To build structure in an otherwise thin wine, this would be a good place to use them. Ask your supplier for some samples prior to buying, as there is no magic bullet with polysaccharides (or tannins). Sometimes they work, sometimes they don’t, and you want to buy the one that fulfills a smooth, round mouthfeel character in the finish, minimizes the harshness of acetic acid, and is cost effective.

• **Use reverse osmosis (RO) after fermentation and MLF is complete to minimize the VA.** This is one of the advantages of an RO system. Running the wine through an RO filter will pull out some of the acetic acid and bring the concentration back below threshold. For Pennsylvania, talk to Richard Carey at rcarey@vitisresearch.com or contact Wine Secrets (www.winesecrets.com, 888-656-5553).

• **Blend wines.** Be careful not to infect good fruit or wine with an infected lot. (Refer above to the note about sanitation.) Blending is an essential tool for a winemaker and may help minimize some of the off-flavors of a varietal wine caused by sour rot.

• **Sterile filter the wine to ensure bottle stability.** Use a 0.45 μm absolute (not nominal) filter prior to bottling.
Bruce Zoecklein has previously recommended “light whole-cluster pressing, thermo-vinification, separating press fractions, cryoextraction, and post-fermentation heat treatments.”

These are challenging vintages that will undoubtedly keep you up at night as a winemaker. It is key to remember that you can work with this. I like to remind winemakers to look at their wine portfolio and ask yourself: “Where will this wine fit into what I have to sell this year?” Create a plan for the wine and then work with it patiently. Know your time and financial restraints before going into the fermentation. Processes like RO can be quite expensive, and it may not be economical to ferment a wine that is heavily infected with sour rot. But these decisions should be made prior to receiving the grapes.

It is also important to remember that things like excessive oak flavor or mixing a high VA wine into a sangria mixture is not going to subdue the acetic acid character. These options do not actually mask the acetic acid flavor. They create a very odd, low quality wine that is not familiar to the wine consumer. I do not recommend this strategy.

References:

Fermenting with Botrytis 101 - Available at:
http://extension.psu.edu/enology/wine-production/producing-wine-with-sub-optimal-fruit-1

Bruce Zoecklein’s Enology Notes #24 Available at:
http://www.fst.vt.edu/extension/enology/EN/24.html


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