Production Considerations with Rot Compromised Fruit

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The following are considerations to keep in mind in a season where the threat of fruit rot is high. Details regarding each item listed are provided in previous *Enology Notes* found at www.vtwines.info.

- Sanitation. Have an effective sanitation program. Monitor the effectiveness of your sanitation activities.
- Fruit culling: Cull as much fruit rot out as possible in the field. There is no way of determining the acceptable incidence level of fruit rot. The level of rot metabolites, tissue damage, and biotic load determine the impact on wine.
- Spray residues. Last season we had an issue with spray residues and the impact on fermentation. Winemakers should know what sprays were used, when and who applied those materials.
- Fruit sorting: Sort fruit and cull 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 determine how much rot is acceptable. The best rule of thumb: no rot is acceptable.
- Rinse fruit: You may consider rinsing the fruit with water if the fruit delivered to the winery is high in rot. That will help to lower some of the sour rot metabolites and late season spray residues. This is not practical for large volumes. This practice can slightly lower the Brix level slightly as a result of dilution.
- Muté production/cryoextraction: A small quantity of muté produced from non-degraded fruit can help recover lost aroma and aroma intensity resulting from rots.
- Dehydration: Only extremely "clean" fruit should be used for this style of wine production.
- Pressing: Whole cluster press whites by discarding the initial juice (first approximately 15 gallons/Ton). Press very lightly and take press fractions.
- 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. pH effects every aspect of a wine: biological stability, color and stability, oxidative stability.
- Degree of browning. Look at the degree of white juice browning. Rapid browning is an indication of presence of laccase. Rapid chilling lowers laccase activity. Bentonite can lower (but not eliminate) the laccase concentration.
- 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. Lowering the pH is more effective than simply adding high concentrations of sulfur dioxide. High levels of sulfur dioxide can bind thiamine, an important yeast nutrient.

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

- Tannin addition: You could add enological tannin. That would help clarify the juice and bind with some of the rot-produced enzymes. Tannins can act as oxygen buffers, may bind some rot metabolites 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. Use enzymes on the juice only and avoid maceration enzymes for reds.

- PVPP: Add PVPP inline to the juice if there is a high level of grape tissue degradation. Rack PVPP off prior to fermentation.

- Ascorbic acid: For varieties where the oxidation potential is large for white grapes consider ascorbic acid addition to the juice (See Enology Notes for details).

- Test YAN: Test the YAN (yeast assimilable nitrogen) content and make adjustments accordingly. Rots deplete YAN. Note that rots also lower the micronutrient levels. As such, the addition of a complex nutrient formulation, not simply DAP, is wise. See Enology Notes index.

- Measure the NTUs: You want to ferment fairly-clean juice. Measure the NTUs (nephelos turbidity units) if you can. If you measure, you will want about 100 to 150. Again, if the juice is not clarifying, you may want to add enzymes or more tannin. Don't add them together.

- Yeast selection. Be careful with cultured yeast selection. Some strains of commercial yeast are much better than others when rot metabolites are present, YAN and micronutrients are low, etc.

- Inoculation: Inoculate with a high volume of a vigorous, not too N-dependent yeast. Use more than the standard 24 g/hL or 2 lb/1000 gallons. Make sure the starter is properly hydrated, 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. Note that co-fermentation does not mean co-inoculation (inoculation together). If you do not desire an MLF, 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.

- Multiple racking. At least use mid-fermentation racking of reds and whites: Rack as often as possible during fermentation. This helps to remove wine from the primary lees. Frequent racking and possibly delestage for reds may be desirable.

- Consider short vatting reds, avoid cold soak and extended post-fermentation maceration. Use short vatting, and possibly délestage, to help remove fermenting wine from lees. Ferment in the presence of non-toasted wood and carefully review the steps listed above. If cold soak is done it should only occur with clean fruit. A cultured yeast should be added after adjustment to the cold soak temperature to avoid temperature shock.

- Ferment with oak. For reds ferment in the presence of oak (not toasted) and oxygenation will increase both color and color stability.

- Post fermentation racking. Rack immediately post-fermentation, reds and whites.