

WHITE WINEMAKING WITH GRAPES CONTAINING ROT

1. Rot Assessment

- Visual Test
 - Count # of infected clusters/vine = incidence (expressed as percentage)
 - Number of berries/cluster = severity
 - < 5% incidence, no problem
 - 5-20% treat with care-consider severity
 - >20% extreme measures to save fruit
- Oxidation Protection – Quick O₂ test
 - Place sample of juice in beaker on bench
 - Let sit 1-2 days for browning
 - Evaluate for additional treatment
 - Check throughout fermentation

2. SO₂ Management

- The active enzyme in a *Botrytis* infection is polyphenol oxidase or laccase. This enzyme requires molecular oxygen to work, turning the wine brown. SO₂ is an O₂ scavenger and can help inhibit the enzyme. When *Botrytis* is present sour rot is usually associated. SO₂ also reduces the bacteria and spoilage from this condition.
- Harvest grapes and add SO₂ as soon as possible. SO₂ should be added to harvest bins if picked by machine. In grapes that are heavily infected additional SO₂ should be considered according to this guide.
 - Field Addition: 30 PPM to grapes
 - At Reception in Hopper: 20-30 PPM
 - In Press: 20-30 PPM
 - At Cold Settling: 20-30 PPM

Consider Inodose SO₂ Granules or Tablets for ease of use.

3. Lysozyme

- Use 200 PPM Lyso-Easy or Lysovin to inhibit the growth of lactic acid bacteria in the juice.

4. Enzymes

The use of enzymes is valuable, but do not use skin maceration enzymes. Winemakers should limit skin contact. We recommend using Scottzyme Cinn-Free before pressing or Scottzyme KS after pressing.

- Cinn-Free would be dosed at the high end of normal recommendation at 30 mL/ton.

5. Tannins

- Additions of gall nut tannin, such as those found in FT Blanc, can be very beneficial; it is a potent anti-oxidant capable of limiting the effects of laccase.
 - When infected grapes will travel long distances or be otherwise held-up for delivery FT Blanc can be added in the field at 1/3 -1/2 pound per ton (170-250 PPM).
 - FT Blanc can be added at crusher at 200 PPM if no previous addition was made in field. Larger dosages may be required if grapes are heavily infected. This may result in bitterness but the bitterness can be fined with gelatin later. The best option is quick delivery dissolving the tannin and dripping it in at the crusher for even distribution.

6. Pressing

- Pressing with the lowest possible pressure is critical.
- Pre-treatment of the fruit with enzymes such as Scottzyme Cinn-Free helps to achieve greater yield with less pressure.
- Consider eliminating press wine or treating separately. By keeping the press juice separate you can ferment it, and treat it as wine with Scottzyme KS.
- Scottzyme KS also works very well after pressing to remove mold character.

7. Settling Agents – selection determined by bench trial or previous experience

- Browning will occur with the laccase infection, thus the use of some potassium caseinate or PVPP in the settling juice may be beneficial. **Polycacel** (prepared casein and PVPP blend) can be added to the juice. If using enzymes on cold juice (<55°F) wait 24 hours prior to adding Polycacel. For juice temperatures ranging between 55-62°F wait 12-18 hours and 62°F 6-8 hours. The dosage should be determined with bench trials but 30-70 g/hL will be the range, 2 hour preparation time.
- **Viniprotect** is a blend of PVPP, bentonite, gum arabic, and micropulverized cellulose. It was specifically formulated to help minimize problems associated with the oxidation of polyphenols including color, bitterness and herbaceousness in oxygen sensitive juice. Requires 1 hour preparation time. Dosage is 20-100 g/hL (1.7-8.3 lb/1000 gal)
- **Bentolact S** is a blend of activated bentonite and soluble casein. An addition during cold settling will help reduce potential for oxidation, protect against laccase activity and may reduce overall amount of bentonite needed for protein stability. Requires three hour preparation time. Dosage is 20 – 100 g/hL (1.7 – 8.4 lb/1000 gal) depending on bench trial. Some winemakers use bentonite.
- **Inocolle** is a liquid gelatin that will treat astringent must with harsh phenolics and moldy, off-odors. It has excellent flocculating and rapid settling properties and should be added at beginning of cold settling. Dosage is 30-60 mL/hL (1.2-2.2 L/1000 gal) and should be determined by bench trial.
- **Colle Perle** is also a liquid gelatin that targets harsh tannins but when used in press juice has excellent clarifying and rapid settling properties. When added at the beginning of cold settling after bench trials with doses of 80-150 mL/hL (3.0-5.7 L/1000 gal) may improve flavors and filtration.

BENCH TRIALS WITH ALL FIVE OF THESE PRODUCTS WILL DETERMINE BEST RESULT FOR LOT OF JUICE.

8. Rack and Inoculate Immediately

- It is very important to use nutrients with infected juice. The fungus utilizes the same nutrients as the yeast. The use of a rehydration nutrient at 1.25 times the yeast dose is recommended. Rehydration Nutrients –**GoFerm or GoFerm Protect**.
- Inoculate yeast at 30 g/hL (2.5 lb/1000 gal) instead of 25 g/hL (2 lb/1000gal). The higher dose will improve kinetics. In these situations a quick fermentation is best. Ferment about 2°C (5°F) higher than normal.
 - 16-18 °C or 60-65°F
 - Lower temps produce more esters but these aromas are also associated with the mushroom characters of mold. They have a synergistic perception relationship.
 - More sulfide compounds (H₂S) are produced at the colder (reduced) temperatures.

CAUTION: NO HIGHER THAN 20°C (68°F)

9. Fermentation Nutrient Additions

- Healthy Fermentations - do not stress yeast.
- Fermaid K and/or Fermaid O for complete nutrition is advised.
- DAP favors formation of sulfide off-flavors, use only in very low N juice.
- OptiMUM WHITE, Opti-WHITE, & Booster Blanc– anti-oxidation protection that also increases mouthfeel and complexity.

10. Yeast and Malolactic Bacteria Selection

- Select yeasts that produce low VA and SO₂ like Rhone 4600, VIN 13, ICV GRE, Cross Evolution, DV10, ICV D21 and QA23. Do not use MLF unfriendly strains like K1 and EC1118.
- Malolactic Bacteria - chose strains tolerant to high SO₂ like MBR VP41 or MBR PN4. For more difficult conditions consider a 1-Step strain or a standard build-up strain.

11. End of Fermentation

- Last ¼ of fermentation watch activity closely.
- If fermentation slows to little CO₂ being produced, blanket with CO₂ gas
- Don't forget to run the O₂ quick test.

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