



WHITE & ROSÉ WINEMAKING WITH GRAPES CONTAINING ROT

1. ROT ASSESSMENT

- Visual Test
 - o Count # of infected clusters/vine = incidence (expressed as percentage)
 - o Number of berries/cluster = severity
 - < 5% incidence, no problem
 - 5-20% treat with care-consider severity
 - >20% extreme measures to save fruit
- Quantitative Test for Laccase Activity
 - o Place three samples of juice in a glass and cover with a watch-glass
 - Sample One - Control
 - Sample Two - Add SO₂ and leave on the desktop
 - Sample Three - Add SO₂ and store in the refrigerator
 - o Let sit one day and compare the color and quality. If laccase is present on the samples, the samples on the bench should be browner than the refrigerated samples, and they may have an oily film on the surface.
 - o Evaluate the samples and repeat during the fermentation and aging process

2. SO₂ MANAGEMENT

- The active enzyme in a *Botrytis* infection is laccase. This enzyme requires molecular oxygen to work, turning the white grape phenolic compounds brown. SO₂ is an O₂ scavenger and can help inhibit the enzymes action. 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. *Should you add more than 50ppm of SO₂, you will deactivate the thiamine, so you need to be diligent with your fermentation nutrition management.*
 - o Field addition: 30 PPM to grapes
 - o At reception in hopper: 20-30 PPM
 - o In press: 20-30 PPM
 - o 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. If MLF is not desired, consider the use of Bactiless™.

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.

- Scottzyme 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 Scott'Tan™ FT Blanc, can be very beneficial; it is a potent antioxidant 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. Consider whole cluster pressing under a CO₂ blanket, and taste press fractions to determine cut.
- 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 can occur with the laccase infection, thus the use of some Caséinate de potassium or Polycel 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 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.
- **Freshprotect** is a blend of PVPP and bentonite. 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 the beginning of cold settling. Dosage is 30-60 mL/hL (1.2-2.2L/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 gall) may improve flavors and filtration.
- **Bentostab** is a deproteinizing bentonite that may also have the ability to adsorb moldy characteristics. Dosage rate for trials is 50-100g/hL (4.2-8.4lb/1000 gal). Bentostab must be prepared 3 hours prior to use.

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

Rack off the lees as soon as settling goals are achieved. Protect from oxygen.

8. YEAST

- Select yeasts that are low VA producers as well as low nutrient demanding strains, that express good fruit character and ferment well under clarified conditions (QA23, CVW5, Cross Evolution, K1 (V1116), Rhône 4600 or VIN13).

9. FERMENTATION NUTRIENT CONSIDERATIONS

- Go Ferm Protect Evolution should be used during the rehydration phase to provide essential vitamins and minerals to support a healthy fermentation. Go Ferm Protect Evolution supplies enough survival factors that an oxygen addition can be avoided.
- Use Fermaid O® or K depending on your nutritional goals.
- Avoid the use of DAP, which can favor sulfide off-odors and flavors.

10. FERMENTATION & RACKING

- Fermentation temperature should be kept between 60-68°F - this will promote fruit flavors and minimize yeast stress.
- Rack off fermentation lees as soon as possible and repeat the quantitative laccase test.

11. AGING

- If laccase activity is still present, further protection and action may be required.

12. FILTRATION CONSIDERATIONS

- Consider the use of either Scottzyme KS or Lallzyme MMX to assist with clarification and filtration.

OTHER CONSIDERATIONS

- The use of an inline nitrogen gas sparing stone can help reduce dissolved oxygen.
- Dry ice in the picking bins helps lower the temperature (slowing the activity of the laccase enzyme) and excludes oxygen.