




Botrytis or other rot infected grapes


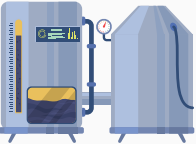


High humidity or frequent rain along with cooler temperatures can result in humid environments which are ideal conditions for fungal disease development. Grapes are more vulnerable if there are any points of entry for the fungal spores (grapes in tight bunches or punctured by birds/insects), leading to whole bunches being affected. If the flowers are affected, the fungus can stay dormant in the grape and re-emerge after véraison. Varieties with tight bunches or thin skins are most at risk: Semillon, Sauvignon Blanc, Pinot Noir and many others.

Fungis, such as *Botrytis cinerea* or other rots can negatively impact wine quality. They can cause significant damage to fruit in terms of yield and drop of wine quality (color, body and aroma/flavor). Oxidative browning, degradation of color and aromatic compounds, as well as clarification and possibly filtration challenges can occur. *Botrytis* releases the laccase enzyme, and with oxygen, will cause oxidative spoilage or it can cause moldy-like flavors in wine. Techniques involving oxygen minimization or elimination are key in such situations.

Key Points

- Minimize harvesting of *Botrytis* infected grapes and sort diseased grapes.
- Harvest the grapes at the coolest time of the day (just before sunrise). Ideal is less than 15 °C.
- Prefermentation and post fermentation analysis (chemical and microbiological) lead to good winemaking decisions.
- Limit mechanical extractions during pre-fermentative stages.
- Protect grapes, must and juice from oxidation to reduce the impact of the laccase enzyme as juice is very sensitive to this enzyme. Consider the use of gas, dry ice or a sparging stone.
- Keep free run and press fractions separate until you have determined the risk.
- Adjust SO₂ addition relative to the level of contamination and consider fractionated additions, **the use of bioprotection tools** helps to reduce sulfite additions.
- Minimize time between harvest and yeast inoculation.
- Manage the AF carefully (good yeast rehydration practices and proper nutrition strategy)
- Separate heavy fermentation lees rapidly, as the lees contain most of the laccase.
- Do not blend laccase positive and laccase negative wines.
- Protect the wines from O₂ exposure and microbial development.

Winemaking	Steps	Our biological options:
Harvest & Transport of fruit 	Sort in the vineyard to remove as much of the compromised fruit as feasible. Start to protect from oxygen damage and microbial activity.	INITIA™ , a non- <i>Saccharomyces</i> yeast that acts as an antioxidant and an anti-microbial agent, can be added to the picked fruit to scavenge oxygen and help out-compete the indigenous flora. Dose: 20 g per 100 kg.
Fruit reception & grape processing 	<p>Secondary sorting and fast processing is key. Juice is very sensitive to moldy flavors and the damaging effects of laccase.</p> <p>Enological enzymes help to break down grape pectin chains, resulting in a faster and easier release of liquid from the pulp, the area less affected by the fungus. It leads to gentler handling of the fruit and pressing at lower pressure. Pressing at the lowest pressure is critical. Extract as gently as possible, limiting mechanical actions.</p> <p>Microbial control at this stage is essential to minimize any additional degradation of wine quality.</p> <p>Protect the juice from oxidative damage.</p> <p>Static Settling and juice clarification: The goal is to have a fast, clean and efficient clarification, removing as much as possible of the laccase, oxidized compounds and moldy aromas/flavors. To optimize fruity flavors, clarify to <100 NTU's.</p>	<p>Lallzyme Cuvee Blanc™ (2 g/hL) or Lallzyme HP™ (2 mL/hL) can be used before pressing.</p> <p>Add 20 g/hL BACTILESS™ which inhibits VA-causing acetic and lactic acid bacteria. Add BACTILESS™ directly to the juice after pressing. If MLF is desired, BACTILESS™ should not be used.</p> <p>Add Glutastar™ at 30 g/hL to the press pan or as soon as possible after pressing. Glutastar™ scavenges quinones – oxidative compounds that can intensify the damage caused by laccase. The addition of Glutastar™ will help protect and preserve color and aroma compounds.</p> <p>Lallzyme C-Max™ (1 g/hL).</p>
Fermentations 	<p>The use of specific inactivated yeast can help to build palate volume, and further stabilize aromas.</p> <p>Begin the alcoholic fermentation as soon as possible. Use a yeast strain that will start quickly.</p>	<p>Opti-Mum WHITE™ (30 g/hL).</p> <p>LALVIN QA23™, Uvaferm Exence™, LALVIN RHÔNE 4600™. If elevated SO₂ is a concern then use the non-SO₂, low H₂S and acetaldehyde strains LALVIN ICV OKAY™, or ICV Opale 2.0™. (25-35 g/hL).</p>

Winemaking	Steps	Our biological options:
Fermentations (cont'd) 	Favor nutrients based on complex/organic nutrients. Manage fermentation temperature between 15 and 18 °C, to maintain a proper rate of fermentation.	Go-Ferm Protect Evolution™ during rehydration (30 g/hl) Fermaid O™ after yeast inoculation (10-30 g/hl) Fermaid E™, Fermaid O™, Stimula Chardonnay™ at 1/3 sugar depletion or Stimula Sauvignon blanc™ at start of fermentation (10-30 g/hL)
Racking 	Let gross lees settle for 24-48 hours and then rack to a clean tank. Do not blend laccase positive and laccase negative wines. It is important to minimize contact with the gross lees.	
Post fermentation Management & Aging 	Protect wine from oxygen. Manage topping and SO ₂ treating regime. Using a specific inactivated yeast with high antioxidant properties can protect against further oxidation during storage, racking, cold stabilization and transportation by scavenging any dissolved oxygen. Microbial control at is still essential to minimize any additional degradation of wine quality.	Pure-Lees Longevity (20-40 g/hL) BACTILESS™ which inhibits VA-causing acetic and lactic acid bacteria (20 g/hL)
Transport 	Continue to protect the wine from oxidation, protect color and retain the aromas, especially thiols.	Add Pure-Lees™ Longevity at 20g/hL

Contact us if you wish to discuss this protocol further or adapt it to your process.

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