Inspiring innovation.

ENARTIS NEWS
2019 POWDERY MILDEW UPDATE
REMEDIATION AND CONSIDERATIONS

2019 HARVEST UPDATE

For many winegrowing areas in the Western United States, powdery mildew pressure has been severe for much of the 2019 growing season due to the relatively "mild" temperatures we have experienced. Mild weather leads to an increased incidence of powdery mildew growth in vineyards, with optimum growing conditions between 70 to 85°F (21 to 30°C), hence the moniker "Fair Weather Fungus." Wettable powdered sulfur (and other fungicides) are commonly used as a protectant, however, when optimum growing conditions persist, and there is compounded overwintering inoculum present in the vineyard, even the best management program can fail to control the disease. If these ideal conditions are coupled with a more susceptible varietal like Chardonnay or Cabernet Sauvignon, infections can cause extreme economic and qualitative losses. If this describes your growing situation this year, Enartis USA is here to help by providing the proper tools and resources to make the best decisions to combat powdery mildew incidence.

VINEYARD CONSIDERATIONS

- **Overwintering risk:** Powdery mildew survives winter as dormant mycelium in the buds of the vine and can also survive as a fruiting structure in the bark or leaf litter. If your vineyard had powdery mildew last year it will likely have it this year.
- **Disease control:** Canopy management, such as leaf pulling, is often used to open the canopy up to let in light and air circulation. Open canopies allow for improved fungicide spray efficiency and coverage. Improper canopy management can lead to denser canopies with higher relative humidity, increasing disease incidence and severity.
- **Sulfur considerations:** Late season sulfur sprays can pose issues as fruit comes into the winery, with high disease pressure areas likely having increased levels of residues on berries at the time of harvest.

MUST AROMA AND CHEMICAL ALTERATIONS

Powdery mildew infected fruit can cause detrimental chemical and aroma alterations to wine. Rigorous acceptance levels and remediation protocols should be in place to reduce wine matrix alterations. Incidence of 9% infection rate and higher can cause the following winemaking issues:

- Reduction in harvest yield
- Increased susceptibility to secondary infection
- Elevated acetic acid
- Elevated mycotoxins and biogenic amines
- Moldy, earthy, mushroom and green off-aromas

- Nutrient and vitamin depletion
- Higher protein instability
- Higher pH and potassium levels
- Higher phenolic content, lower anthocyanins
- Wines lacking mid-palate, volume and balance
- Increased fungicide residues and subsequent increase in fermentation sulfides (H_2S, Mercaptans, etc.)

MANAGING FUNGICIDE RESIDUES

Elemental sulfur is one of the most effective and economical phytosanitary agents for combating powdery mildew. High disease pressure late in the season can lead to later applications and increase residues in must. Sulfur residues exceeding 10 µg/g (1 mg/kg) in must are associated with increased risk of the formation of negative volatile sulfur aromas during fermentation. Cold settling for whites and rosé wines can remove a large portion of these residues, and enological products like yeast hulls, and inactivated yeast can help react with some of these residues.

Copper sulfate is commonly used in organic viticulture to combat bunch rot and associated secondary infections. This practice can lead to the accumulation of metals in soil and residuals in must, catalyzing oxidation reactions and negatively impacting wine quality. In white wines, cold settling and utilizing enological fining agents such as PVI/PVP (polyvinylimidazole/polyvinylpyrrolidone) can help remove metals and oxidized phenols.

KEY WINEMAKING STEPS

- Hand harvest and sort contaminated grapes in the vineyard
- Utilize combinations of ascorbic acid, potassium metabisulfite and enological tannins to limit oxidative enzymes from secondary infections
- Limit skin contact to reduce extraction of off-flavors
- Remove any spoilage microbes as soon as possible with EnartisStab Micro M
- In white and rosé wines, promote fast clarification to reduce off-flavors utilizing enzymes

PROTOCOLS AND RESOURCES

Powdery mildew winemaking protocols for white, rosé and red wines can be found in the link below along with a more in-depth webinar on the topic.

Compromised Fruit: Botrytis Bunch Rot and Powdery Mildew

For more information call Enartis Wine Services at (707) 838-6312 ext. 4 or contact your technical sales rep.