

WHITE AND ROSÉ WINES

Compromised Fruit: Powdery Mildew

VARIETY	TYPE OF WINE
White and Rosé Varieties	Incidence of 9% or more powdery mildew and associated secondary infections.
CHALLENGES	OBJECTIVE
<ul style="list-style-type: none"> • Oxidation • Off-aromas and flavors • Stuck fermentation • High protein instability • High pH and potassium • High phenolic content • Microbial instabilities 	Mitigate the detrimental wine matrix alterations from fruit compromised by powdery mildew.

KEY WINEMAKING STEPS WHEN DEALING WITH POWDERY MILDEW AFFECTED GRAPES:

1. Hand harvest and sort contaminated grapes in the vineyard
2. Use adequate antioxidant and antioxidase protection to limit browning, color loss and aroma oxidation
3. Reduce skin contact to limit extraction of off-flavors; whole cluster press and separate out press fractions (first ten gallons is full of fungus metabolites)
4. Control any spoilage microbes as early as possible
5. Fast clarification and settling
6. Supplement must with amino acids and ammonia to ensure complete healthy fermentation
7. Press early and select yeast with low nitrogen requirements and fast, complete fermentation kinetics
8. Balance wine mouthfeel with mannoproteins and fermentation tannins
9. Late application of certain fungicides can increase elemental sulfur and metal content (Cu); analyze for metals and use **Stabyl Met** (PVI/PVP) to fine out heavy metals

RECOMMENDED VINQUIRY ANALYSIS

STAGE	ANALYSIS	INTERPERTATION
Juice	Core Juice Panel Potassium Metals: Cu & Fe Ammonia and Amino Nitrogen	Analyze nutrient status and potential risk of reduction with application of late sulfur sprays in the vineyard.
After MLF	Glucans	Presence of glucans effect wine filterability and viscosity. EnartisZym Elevage is recommended to improve filterability if results are positive. (Associated with secondary infections)
	Volatile Acidity	Acetic Acid <ul style="list-style-type: none"> • Normal range in dry table wine: 400 mg/L • Higher is indicative of spoilage from secondary infections

The above is achieved to the best of our knowledge and experience.
The industrial application of the advice provided does not imply any responsibility on the part of our company.

PROTOCOL

WINEMAKING STAGE	OBJECTIVE	ENARTIS RECOMMENDATIONS	DOSAGE
Harvest	Antioxidant	Effergran: Effervescent, granulated potassium metabisulfite. Direct addition into gondolas if machine harvested. 1g of Effergran = 0.40 g of SO ₂	125 g/gondolas (5 tons)
		and AST: Potassium metabisulfite 50% L-ascorbic acid 30% Gallic tannin 20%. 10 g/hL (0.8 lb/1000 gal) of AST provides around 28 mg/L of SO ₂ and 30 mg/L of ascorbic acid. (At reception)	100-200 g/ton
Processing and Settling	Antioxidant	EnartisTan Antibotrytis: Gallic, di-gallic, ellagic and condensed tannins.	50-200 g/ton
	Enzyme	EnartisZym Arom MP: Pectinase and hemicellulase enzyme for increased aromatics and proactive protein stabilization.	30 g/ton
	Antimicrobial	EnartisStab Micro M: Pre-activated chitosan from <i>Aspergillus niger</i> with purified yeast hulls.	80 g/ton
Inoculation	Organic Nitrogen, Yeast Survival Factors	Nutriferm Energy: Contains amino acids, organic nitrogen, micronutrients, vitamins, mineral salts and survival factors which are immediately available to meet these requirements. <i>Add at inoculum rehydration.</i>	20 g/hL
	Yeast (select one)	EnartisFerm Es181 Enartis Top 15	20 g/hL
Fermentation	Yeast Derivatives	EnartisPro Blanco: Inactivated yeast with sulfur containing peptides. Improves mouthfeel, promotes varietal aroma.	20-40 g/hL
1/3 Fermentation	Oxidative Fining	Claril SP: Bentonite 50%, PVPP 20%, caseinate 15%, and silica 15%. Remove oxidized compounds and off-flavors.	30-60 g/hL
	Inorganic Nitrogen, Yeast Nutrients	Nutriferm Advance: DAP, inactivated yeast and cellulose.	20-40 g/hL

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Malolactic Fermentation	Malolactic Bacteria	EnartisML Silver: <i>Oenococcus oeni</i> that ensures ML fermentation under difficult conditions due to high alcohol and polyphenol content.	Volume dependent
	Nutrients	Nutriform ML: Amino acids, vitamins, polysaccharides, cellulose and co-factors.	20-30 g/hL
Maturation	Antioxidant Antimicrobial	Winy: Potassium metabisulfite.	0.5 ppm Molecular SO ₂
	Antimicrobial	EnartisStab Micro: Pre-activated chitosan from <i>Aspergillus niger</i> .	10 g/hL
	Filterability	EnartisZym Elevage: Pectolytic enzyme preparation with significant β-glucanase activity.	5 g/hL
Finishing	Mouthfeel Structure	Enartis maturation and finishing tannins, Surli Velvet (soluble yeast mannoproteins)	Trial Dependent

For more information about how to treat powdery mildew infected grapes and wine, please contact Enartis Wine Services at (707) 838-6312 ext. 4.

CITATIONS:

Lopez Pinar, A., Rauhut, D., Ruehl, E., & Buettner, A. (2017). Effects of bunch rot (*Botrytis cinerea*) and powdery mildew (*Erysiphe necator*) fungal diseases on wine aroma. *Frontiers in chemistry*, 5, 20.

Steel, C. C., Blackman, J. W., & Schmidtke, L. M. (2013). Grapevine bunch rots: impacts on wine composition, quality, and potential procedures for the removal of wine faults. *Journal of agricultural and food chemistry*, 61(22), 5189-5206.