

ROBUST & RELIABLE

STRATEGIES FOR BOTRYTIS MANAGEMENT

According to the Bureau of Meteorology, La Niña is forecasted for vintage 2021 - warm summer conditions with potential for high rainfall across most wine regions. This increases the risk of disease and Botrytis infection. Be alert and act early to reduce your risks and optimise the quality of your wines.

The objective of this protocol is to:

- Remove laccase enzyme early in the process
- Inhibit further growth of Botrytis.
- Fast extraction of juice with minimal skin contact time to reduce mouldy characters and oxidation.
- Protect aroma compounds and colour with potent antioxidants.
- Select yeast and bacteria strains based on robust, safe and reliable fermentation.
- Select yeast nutrition and toxin absorption to optimise fermentation kinetics.
- Enhance aromatics and improve wine structure.
- Treat mouldy and oxidised characters with specialised products.
- Encourage a 'reductive' style of winemaking

With thanks to Amanda Kramer of Winequip WA for preparing this winemaker solutions summary

LALLEMAND AUSTRALIA

T: +61 (8) 8276 1200

E: australiaoffice@lallemand.com

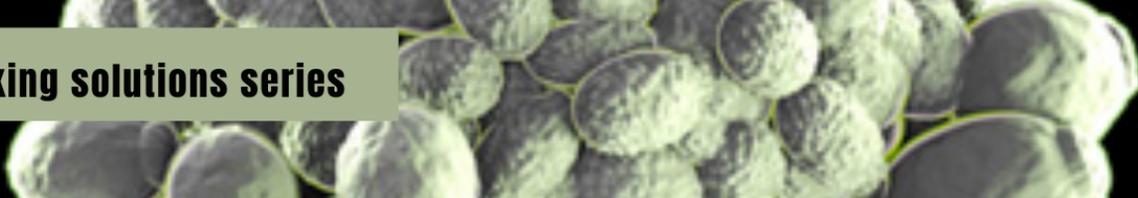
www.lallemandwine.com

WINEQUIP AUSTRALIA

T: 1300 882 850

E: sales@winequip.com.au

www.winequip.com.au



HARVEST & PROCESSING

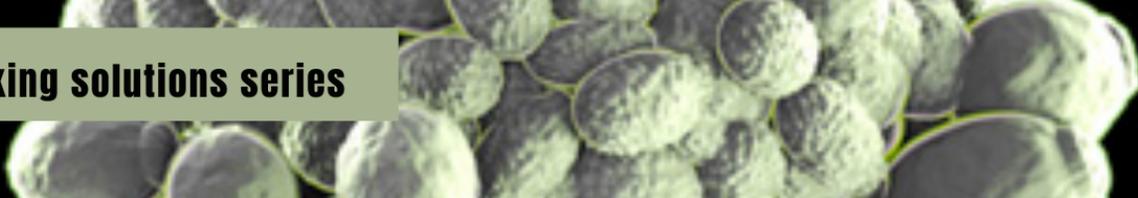
Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
SO ₂	Antimicrobial Antioxidant	PMS	50-200mg/L SO ₂ (Dependent on degree of botrytis infection)	
OPTIONAL Biocontrol	Non-fermenting yeast to prevent further growth of botrytis during transport (for grapes picked <12°C)	IOC Gaia	100-300mg/L (Depending on temperature of must; TSO ₂ <50mg/L)	Option where processing is delayed e.g. some winemakers may only need to control botrytis growth in the picking bins for 6-12 hours if there is an issue with winery processing logistics if all fruit comes in at the same time or transport time is an issue. No organoleptic properties. No competition with yeast.
Aroma Liberating Enzyme	Extraction of grape aroma precursors. Fast juice extraction to limit oxidation. Early pectinase activity accelerates juice clarification.	Rapidase Expression Aroma	20g/t	High quality enzyme. Gentle and fast juice extraction limits oxidation. Liberates varietal aromatics. Allows release of laccase enzyme for early removal.
Antioxidant Gallic Tannin	Bind oxygen to protect flavour compounds and wine structure. Bind and deactivate laccase enzyme. Minimises use of SO ₂ as an antioxidant.	IOC Essential Antioxidant	50-75mg/L (Dependent on degree of laccase activity)	New pure gallic tannin Potent antioxidant. No additional astringency or bitterness up to 200mg/L in juice.
		IOC Tanin Cristallin	75-150mg/L	Traditional gallic tannin.
Optional for transportation of infected grapes:				
Chitosan & Bentonite added to picking bins	Chitosan as an antioxidant. Bentonite binds to laccase.	IOC NoOx	100-600mg/L (*increase pectolytic enzyme at press tray)	Protects juice from oxidation. Chitosan product extremely effective at improving brightness of colour and aromatics. Bentonite may deactivate laccase enzyme

JUICE PROTECTION & FINING

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
We recommend testing for laccase activity; treat with IOC Essential Antioxidant as required. Separate press fractions and treat individually.				
CO₂ gas cover & SO₂	Protect your juice from potential oxidation from the press tray throughout winemaking process.			
Pectolytic Enzyme	Early addition of fast acting pectinase for fast clarification.	Rapidase Clear Extreme	20-30mg/L	Superior enzyme for juice clarification in difficult conditions.
Antioxidant Gallic Tannin	Bind oxygen to protect flavour compounds and wine structure. Bind and deactivate laccase enzyme. Minimises use of SO ₂ as an antioxidant.	IOC Essential Antioxidant	50mg/L (Dependent on degree of laccase activity)	New pure gallic tannin Potent antioxidant. No additional astringency or bitterness up to 200mg/L in juice.
Fining & Antioxidant	Freshen and enhance aromatics and colour by removing oxidised compounds. Bind and deactivate laccase enzyme. Antioxidant effect.	IOC NoOx	100-600mg/L (*addition post- pectin negative test).	Chitosan product extremely effective at improving brightness of colour and aromatics. Bentonite effectively deactivates laccase enzyme and clarifies. Protects wine from oxidation.
	Fine astringent phenols. Improve colour and aromatics.	Inofine V	50-300mg/L	Fine astringent and bitter characters. Brighten colour.
Activated Carbon	Remove mouldy characters from juice.	Flavoclean	500-1500mg/L	Specifically selected for its de-odourising ability targeting mouldy characters

Minimise cold settling time; further bentonite addition may aid in deactivating laccase enzyme

Clean rack under CO₂ gas cover.



FLOTATION

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
We recommend flotation to minimise oxidation potential by getting your juice to fermentation stage faster.				
CO₂ gas	Protect your wine from potential oxidation throughout winemaking process.			
Flotation Bentonite	Improves efficiency of flotation process. Effectively removes solids and compacts floc.	BentUp	300-600mg/L (*addition post-pectin negative test).	Inhibits laccase enzyme. Improves flotation process to remove solids and compact floc.
Activated Chitosan	Effective flotation adjuvant.	QiUp XC	50-100mg/L	Highly charged for fast, effective flotation. Antioxidant effect. Animal friendly, certified organic.
Clean rack under CO₂ gas cover.				

FERMENTATION

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
Glutathione Antioxidant	Bioavailable glutathione promotes aromatic freshness due to mitigating oxidation.	Glutastar	300mg/L	'The king of antioxidants' The highest allowable glutathione content product on the market. Enriched with polysaccharides to enhance mouthfeel and fullness. Preservation of aromatic expression during maturation.
Yeast	Yeast strain selection based on robust, safe, and reliable fermentation with short lag phase.	Lalvin EC1118	250-350mg/L	Reliable and neutral.
		Lalvin QA23	250-350mg/L	Enhanced varietal characters and complexity.
	QTL Yeast strain selection for robust, low to no SO ₂ or H ₂ S production.	Lalvin ICV OKAY	250-350mg/L	Clean, fresh aromatics, neutral. Low to no production of SO ₂ / H ₂ S.
		IOC BE Thiols	250-350mg/L	Enhanced thiolitic characters. Low to no production of SO ₂ / H ₂ S.
		IOC BE Fruits	250-350mg/L	Enhanced fruity ester production. Low to no production of SO ₂ / H ₂ S.
Rehydration Nutrient	Maximise fermentation security, yeast viability and vitality.	GoFerm Protect Evolution	300-400mg/L	Ergosterols and vitamins increase yeast vitality and viability. Increased alcohol tolerance.
Yeast Nutrient	Complex yeast nutrient to ensure a clean and successful completion of fermentation.	Fermaid O	200-600mg/L	High level of and most diverse composition of amino acids. Compensates for deficiencies in organic nitrogen and micronutrients in must. Certified Organic.
	Contact your sales representative for recommended rates based on YAN analysis	Fermaid AT	200-600mg/L	A blend of complex organic and inorganic nitrogen and fortified with thiamine. Increases biomass of yeast cells.
Detoxifying Inactivated Yeast	Bind compounds toxic to yeast (compounds produced by fungus & others such as fungicides).	Nutrient Vit End	300-400mg/L	Highly absorptive and detoxifying properties. Contains some nutrients to help complete fermentation.

Optional products to manage quality:

Specific Inactivated Yeast	Improve mouthfeel and structure. Enhance aromatics. Add specific nutrients to promote aromatic composition.	Mann Bouquet B19	100-300mg/L	Strong antioxidant containing glutathione for added protection. Builds palate structure and mouthfeel. Enhances aromatics. Masks vegetal characters. Offers persistence of aromatics in a maturing wine.
		Stimula Sauvignon Blanc	400mg/L Add start of fermentation in place of nutrient.	Addition to Sauvignon Blanc. Optimises uptake of thiolitic precursors. Significantly enhances thiol characters.
		Stimula Chardonnay	400mg/L Add 1/3 way through fermentation in place of nutrient.	Addition to early drink whites. Enhances fruit and floral ester production for fruity style wines.

POST FERMENTATION

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
We recommend testing for laccase activity; treat with IOC Essential Antioxidant, NoOx or bentonite immediately as required.				
CO₂ gas cover & SO₂	Protect your wine from potential oxidation throughout winemaking process.			
Activated Carbon	Remove mouldy characters.	Flavoclean	500-1500mg/L	Specifically selected for its de-odourising ability targeting mouldy characters while retaining colour density.
Fining & Bentonite	Freshen aromatics and colour by removing oxidised compounds. Bind and deactivate laccase enzyme. Antioxidant effect.	NoOx	100-600mg/L	Chitosan product extremely effective at improving brightness of colour and aromatics. Bentonite effectively deactivates laccase enzyme. Protects wine from oxidation.
Fining	Fine astringent phenols. Improve colour and aromatics.	Inofine V	50-300mg/L	Fine astringent and bitter characters. Brighten colour and aromatics.
Clarification Enzyme	Clarify wine and breakdown β -glucans for ease of filtration.	Rapidase Filtration	0.3-0.6 ml/L	Clarification and breaking down of colloidal compounds. Ease of filtration at bottling.

Clean rack off yeast lees as soon as possible; check for laccase activity and treat as required.

MLF

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
We recommend testing for laccase activity; treat with IOC Essential Antioxidant, NoOx or bentonite as required.				
CO₂ gas cover & SO₂	Protect your wine from potential oxidation throughout winemaking process.			
Bacteria	Sequential addition of LAB robust strain tolerant to higher levels of SO ₂ . Fast malic conversion reducing risk of oxidation.	Lalvin VP41 *TSO2 <60mg/L	Standard rate	Esters produced enhance fruity profile. Polysaccharides build texture.
Bacteria Nutrient	Nutrition for LAB to optimise malic conversion.	OPTI-MALO Blanc ML Red Boost	200mg/L Add prior to bacteria	Improves resistance of bacteria under difficult conditions. Specific peptides favour LAB growth for faster MLF in challenging conditions.



LALLEMAND OENOLOGY

Original *by culture*

WINEQUIP



CONTACT YOUR LOCAL PARTNERS AT WINEQUIP AND LALLEMAND

LALLEMAND

Jason Amos :
jamos@lallemand.com

Simon Kinley :
skinley@lallemand.com

Tanya Worontschak :
tworontschak@lallemand.com

Dr Eveline Bartowsky :
ebartowsky@lallemand.com

WINEQUIP

(Western Australia)
Amanda Kramer:
amanda@winequip.com.au

Evan Thompson:
evan@winequip.com.au

WINEQUIP
(South Australia)

Justin Coates:
justin@winequip.com.au

Michael Redman:
michael@winequip.com.au

Rocco Longo
rocco@winequip.com.au

WINEQUIP

(Eastern States)
Rob Gore:
rob@winequip.com.au

Peter Kopiec:
peter@winequip.com.au

WINEQUIP
(Victoria)

Daniel Blenkiron
daniel@winequip.com.au

LALLEMAND AUSTRALIA

T: +61(8) 8276 1200
E: australiaoffice@lallemand.com
www.lallemandwine.com

WINEQUIP AUSTRALIA

T: 1300 882 850
E: sales@winequip.com.au
www.winequip.com.au