Winemaking solutions series

ROBUST & RELIABLE

STRATEGIES FOR RED GRAPE 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 colour and tannin with minimal skin contact time to reduce mouldy characters.
- 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.
- Stabilise colour, 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

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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 <15°C)	**IOC Gaia**	100-300mg/L (Depending on temperature of must; TSO_2 <50mg/L)	Option where processing is delayed e.g. transportation or winery congestion. No organoleptic properties. No competition with yeast.
Maceration Enzyme	Extraction of colour and tannin from grape skins. Minimise skin contact time. Cold soak is not recommended due to further Botrytis growth.	**Rapidase** **Extra Colour**	20-30g/t	High quality enzyme. Gentle and fast extraction of colour and polyphenols. Releases laccase enzyme from under skin for more effective removal.
'Sacrificial' Tannin	Bind and deactivate laccase enzyme. Antimicrobial action.	**IOC FT Rouge**	200-400mg/L (Dependent on degree of laccase activity; split addition at crusher and first pumpover)	Highly reactive blend of tannins. Superior quality tannin with reduced astringency and bitterness. Enhances red berry characters.
Antioxidant Tannin	Bind oxygen to protect flavour compounds and wine structure. Bind and deactivate laccase enzyme.	**IOC Essential** **Antioxidant**	50-100mg/L (Dependent on degree of laccase activity; add at crusher)	NEW pure gallic tannin from gall nut. Potent antioxidant. No additional astringency or bitterness at 200mg/L. Reduces SO_2 requirement.

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FERMENTATION (1/2)

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
Yeast	Yeast strain selection based on safe, fast, robust, and reliable fermentation with short lag phase.	**Lalvin EC1118**	250-350mg/L	Reliable and neutral.
		Lalvin Clos	250-350mg/L	Enhanced varietal characters, minerality and complexity.
		Uvaferm HPS	250-350mg/L	Increased body from high polysaccharide production.
		IOC R9008	250-350mg/L	Reduced vegetal characters, glycerol production enhances mouthfeel.
	QTL Yeast strain selection for robust, low to no SO_2 or H_2S production.	**Lalvin ICV OKAY**	250-350mg/L	Clean, fresh aromatics, neutral. Low to no production of SO_2 / H_2S.
		IOC Persy	250-350mg/L	Enhanced varietal and spicey characters. Low to no production of SO_2 / H_2S.
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.
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.

FERMENTATION (2/2)

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
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.
Optional products to manage quality:				
Fermentation Tannin with Specific Inactivated Yeast	Colour stabilisation. Mask vegetal characters. Improve mouthfeel and structure. Antioxidant.	**IOC Bouquet R36 &** **Optimum Red**	50-100g/t & 150-400mg/L	Colour stabilisation, binds laccase, antioxidant. Builds palate weight and structure. Preserves wine quality. Enhances darker fruit and cherry characters. Masks vegetal characters.
		IOC Mann Bouquet R16	75-150g/t	Colour stabilisation, binds laccase, antioxidant. Builds mid-palate structure and mouthfeel in early release, fruit driven wines.
		IOC Full Color	300-400mg/L	NEW product for early release, approachable wines. Advanced colour stabilisation. Marked reduction in vegetal characters and improved dark fruit characters. Enhanced mouthfeel.

PRESS & MLF

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
We recommend testing for laccase activity; treat with IOC Essential Antioxidant as required.				
CO2 gas	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 Alpha**	Standard rate	Masks vegetal characters. Adds complexity to palate.
		Lalvin VP41	Standard rate	Esters produced enhance fruity profile. Polysaccharides build texture.
Bacteria Nutrient	Nutrition for LAB to optimise malic conversion.	**ML Red Boost**	200mg/L	Improves resistance of bacteria to high tannin/polyphenol levels. Specific peptides favour LAB growth for faster MLF in challenging conditions.

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FINING

Addition	Purpose of addition	Recommended Product	Addition Rate	Advantages
We recommend testing for laccase activity; treat with IOC Essential Antioxidant or NoOx as required. **Micro-oxygenation is not recommended without Laccase analysis.**				
Activated Carbon	Remove mouldy characters.	IOC Flavoclean	500-1500mg/L	Specifically selected for its de-odourising ability targeting mouldy characters while retaining colour density.
Clarification Enzyme	Clarify wine and breakdown β-glucans for ease of filtration.	Rapidase Filtration	30-60ml/L	Clarification and breaking down of colloidal compounds. Ease of filtration at bottling.
Fining & Bentonite	Freshen aromatics and colour by removing oxidised compounds. Bind and deactivate laccase enzyme. Antioxidant effect.	IOC NoOx	100-600mg/L (rate dependent on level of oxidation and laccase activity)	Chitosan product extremely effective at improving brightness of colour and aromatics. Bentonite effectively deactivates laccase enzyme. Protects wine from oxidation.

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