SCOTT LABORATORIES

OPTIMIZING WHITE & ROSÉ WINE FROM UNDERRIPE FRUIT

UNDERRIPE FRUIT MANAGEMENT

WHITES & ROSÉ

Among the many factors that influence grape ripeness are cultivar, vineyard management practices, climate and weather, soil, and the overall health of the vine. Other factors that may affect picking decisions are disease incidence, berry damage by birds, insects and animals, current and potential weather conditions, and logistics. At a minimum, a ripeness assessment can be based on the sugar:acid balance and the phenolic maturity of the grapes.

In some circumstances, we may have to harvest before the grapes have reached the desired maturity. When dealing with underripe red fruit or grapes that taste vegetal due to the level of pyrazines and aldehydes, alternative and/or additional winemaking practices may be needed. Unripe fruit can result in limited extractability of the skin tannins due to thicker berry skins. It may also result in unripe seed tannins, lighter color, unbalanced mouthfeel, and diminished aromatic potential. The berry chemistry may also pose a challenge. The organic acid profile may affect fermentation choices. In underripe grapes the YAN may not be sufficient to conduct a healthy and secure fermentation.

TIPS FOR DEALING WITH UNDERRIPE GRAPES

- Analysis is key:
  - Pre-fermentation analysis allows you to design your fermentation protocols to optimize resulting wine quality.
  - Conduct a berry sensory assessment and evaluate fruit condition.
- Eliminate MOG; leaves are high in pyrazines.
- Sort the fruit and separate into different lots if necessary.
- Treat the fruit gently throughout the process.
- Eliminate the grape solids as quickly as possible.
- Ferment at a temperature that produces fruity secondary metabolites.
- Avoid using DAP as that will diminish the production of fruity flavors and can promote the production of volatile sulfur compounds which will heighten the green flavors.
- Choose yeast and bacteria that optimize fruity flavors.
- Manage the acid profile.
- Mix the tank during the later stages of fermentation to keep the yeast in suspension.
- LalVigne™ can help if underripe fruit is common in certain vineyard blocks.

1480 Cader Lane / Petaluma, CA 94954 / (707) 765-6666 / scottlab.com

SCOTT LABORATORIES

UNDERRIPE FRUIT MANAGEMENT
WHITES & ROSÉ

VINEYARD SAMPLING

- Random sampling is key; avoid the first five vines per row
- Sample alternate sides of row
- Sample at least 200 berries from each block or 20 clusters (half from each side)
- Methodically sample 5 berries per cluster
  - 1 berry each from right and left wing
  - 1 berry each from central shadowed area and sunny area
  - 1 berry from the tip

If the alternate side is looking and tasting different, then sample each side separately and evaluate independently.

BERRY SENSORY ANALYSIS

Conducting a rigorous berry sensory assessment helps to overcome variability in the vineyard and lets you evaluate the fruit prior to its arrival at the winery.

The ICV method of berry sensory evaluation was developed by Jacques Rosseau and has been adopted globally. This method evaluates berries from four perspectives:

1. Visual and tactile sensations
   a. Evaluate color, berry firmness and ease of stalk removal
2. Pulp assessment
   a. Determines pulp firmness and adhesion to skin, sweetness, acidity and flavor (herbaceousness/fruity)
2. Skin tasting/maturity
   a. Crushability, acidity, tannic intensity, drying, astringency and aroma
2. Seed tasting/maturity
   a. Crushability, color, tannic intensity, astringency and bitterness

Each parameter is judged on a 4 point scale so that there is are averages. A full description of the method can be found online.

SCOTT LABORATORIES

UNDERRIPE FRUIT MANAGEMENT

WHITES & ROSÉ

WINEMAKING STAGE	GOAL	ADDITION	ADDITION RATE	NOTES
Harvest & Transport	Sort in the vineyard to remove as much of the under-ripe fruit, and MOG as possible.	Normal SO_2 addition. Consider the use of Inodose Granules in the picking bins. Dry ice can also be used to lower temperature of fruit.	This is depending on pH. It should be adapted accordingly.	In addition to your berry analysis, conduct a berry sensory assessment focusing on aromatic ripeness and acid profiles. If fruit contains >5% rot, follow rot protocol.
Fruit Reception & Grape Processing	Secondary sorting and fast processing is key.	Inodose Granules	As appropriate for the pH.	Appropriate SO_2 management offers some protection from oxidative browning.
	Enological clarification enzymes help to break down grape pectin chains. This allows you to treat the fruit gentler and press at a lower pressure so the pyrazines are minimally extracted from the skins.	Scottzyme® Cinn-Free or Lallzyme Cuvée Blanc™ can be used before pressing.	Scottzyme® Cinn-Free: 20-30 mL/ton Lallzyme Cuvée Blanc: 15-20 mL/ton	Try to allow at least 2 hours of enzyme contact prior to pressing.
Pressing	Protect from any oxidative damage by pressing under a CO_2 blanket. Pressing to the lowest pressure is critical as 95% of the pyrazines are found in the grape skins. Consider destemming to eliminate the rachis. Separate (and possibly eliminate) the first 10 gallons per ton as the initial free run juice will contain dust and dirt from the vineyard and is high in vineyard spray residues. Taste your press cuts; evaluate and treat separately if required.			
Static Settling/Juice Clarification	Clarification	NaCalit® PORE-TEC	50-100 g/hL	Bench trials should be conducted to determine the correct product and dosage. Remember to review the quality and quantity of lees as well as the impact on clarification, aromas and mouthfeel. Flotation and centrifugation can be used instead of static settling.
	Clarification & Oxidation Control	Freshprotect	20-100 g/hL	
	Clarification & Removal of Harsh Phenolics	Inocolle with Gelocolle	30-60 mL/hL of each. Gelocolle is added 1 hour after Inocolle.	
		Colle Perle with Gelocolle	80-150 mL/hL of each. Gelcolle is added 1 hour after Colle Perle.	
	Removal of Bitterness	Polycel	40-80 g/hL	
		Potassium Caséinate with Gelocolle	50-100 g/hL of each. Gelcolle is added 1 hour after Potassium Caséinate.	
		Bentolact S	20-100 g/hL	

SCOTT LABORATORIES

UNDERRIPE FRUIT MANAGEMENT

WHITES & ROSÉ

WINEMAKING STAGE	GOAL	ADDITION	ADDITION RATE	NOTES
Acid Management	In addition to your standard acid chemistry analysis, run a separate malic acid and tartaric acid (or a predictive acid) panel so that you can determine the final acid balance. If malic is high, it can be managed in the juice and the wine phases. For full details, see managing malic acid protocol.			
Alcoholic Fermentation	Begin the alcoholic fermentation as soon as possible. Use a yeast strain that will start quickly, while complementing your juice chemistry and desired wine style.	Cross Evolution™, CVW5, Anchor's Alchemy I, Lalvin 71-B®, Exotics Mosaic, ICV Opale 2.0™, K1 (V1116)™ or QA23™. Biodiva is a non-*Sacc* that will build mouthfeel and produce aromas.	25 g/hL	Some yeast can metabolize malic acid. Strains that build mouthfeel will help to integrate the acid. Maintain a fermentation temperature from 60 - 72°F. This will promote good fruit flavors. Minimize yeast stress and allow fermentation to finish in a timely manner.
	If MLF is desired, co-inoculation with bacteria 24-48 hours post yeast inoculation is recommended to help maintain fruit flavors.	Beta Co-Inoc	Per packet directions	
	Aromatic tannins added at the onset of fermentation may help elevate fruity and floral aromas.	Scott'Tan™ FT Blanc Citrus	2-15 g/hL	Best if used in conjunction with a yeast strain with B-glycosidase activity.
		Feelwood! Sweet and Fresh Oak Chips	0.5-1 g/L	
Fermentation Nutrition & Inactivated Yeast	Make sure that the yeast has the nutrients (macro and micro) available to conduct a rapid and clean fermentation. Nutrients may be deficient due to clarification and pre fermentation processing.	Go-Ferm Protect Evolution® during rehydration	30 g/hL	This is to protect and stimulate the cells, minimizing the lag phase. High sterol and unsaturated fatty acids levels in Goferm Protect Evolution eliminate the need for O2 additions.
	At the onset of fermentation (2-3 brix drop)	Fermaid® O	10-40 g/hL depending on YAN	Nourishes yeast and promote fruit driven wines.
	At 1/3 sugar depletion	Fermaid® K or O	10-40 g/hL depending on YAN	Replaces the nitrogen used during the yeast growth phase.
		Stimula Chardonnay	40 g/hL	Used by the yeast to produce esters. Promote fruit expression to overcome underripe notes.
	Add anytime, earlier is preferred	Opti-WHITE®	25-50 g/hL	Integration of acidity

SCOTT LABORATORIES

UNDERRIPE FRUIT MANAGEMENT

WHITES & ROSÉ

WINEMAKING STAGE	GOAL	ADDITION	ADDITION RATE	NOTES
Racking	Let gross lees settle for 24-48 hours and then rack to a clean tank. Keep press fraction separate for as long as necessary. If vegetal character still persists, add 10 g/hL of ICV Noblesse®. Rack under a CO_2 blanket if needed.			
Malolactic Fermentation	If MLF Is desired make sure you conduct post fermentation analysis so that you use a compatible MLF strain. Inoculate as soon as possible, even if wine is slightly sweet, but looks like it is going to complete alcoholic fermentation.	Opti'MALO Blanc™	20 g/hL	This will provide the bacteria with essential nutrients so that the MLF can be conducted in a timely manner.
		Alpha™ or MBR 31®	1 g/hL	These strains conduct a fast ML, optimizing fruitiness and balance.
		Beta™ or PN4™		These strains will enhance the complexity of the wines providing a nice buttery note.
Post Fermentation Management, Fining & Aging	Manage topping and SO_2 treating regime. Conduct trials with cellaring tannins due to their structure building and anti-oxidant qualities. If wines are harsh in the mouth then gelatin and PVPP trials can be run.	Scott'Tan™ FT Blanc Citrus	Bench trials can be conducted to determine dose based on wine style and desired outcome.	
		Gelatins: Colle Perle and Inocolle		
		PVPP: Polycel		
Filtration	The wine may have filtration issues if complex polysaccharides are present (glucans, pectins, etc). It may be useful to conduct a filterability test. If the filterability test fails and the wine is clean then you may wish to conduct trials with Scottzyme® KS, or Lallzyme MMX™. The MMX may take up to 6 weeks to break down the glucans. Review our guide on managing filtration.			
Finishing & Packaging	Trial Scott'Tan™ Royal or Radiance which are designed to bring out elegance, complexity and balance. Due to their production process they can be used up to 48 hours before bottling. If added softness is required, then Flashgum R Liquide or UltiMA Soft may be beneficial. Protect your aromas from oxidation throughout the packaging process.			

Last updated 8/14/2020

1480 Cader Lane / Petaluma, CA 94954 / (707) 765-6666 / scottlab.com