SCOTT LABORATORIES
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WHITE WINEMAKING WITH UNDERRIPE GRAPES

Possible problems associated with underripe white grapes:

- Low potential for fruity aromas
- Higher risk of herbaceous and bitter characters
- pH and acid imbalances

Winemaking suggestions to combat these issues:

1. SO_2 Management at Fruit Reception

- As long as the fruit is not compromised (berries damaged via rot or pests) follow your standard SO_2 protocol.
- For compromised fruit please see rot protocol on website (www.scottlab.com).

2. Enzymes

- Use Scottzyme Cinn-Free or Cuvée Blanc at the low range of dosage recommendations at grape reception or at crusher to maximize juice yields.
- If possible, allow at least 2 hours of contact time with enzymes before pressing.

3. Pressing

- Pressing with the lowest possible pressure is critical.
- Pre-treatment of the fruit with enzymes such as Scottzyme Cinn-Free helps to achieve greater yield with less pressure.
- Consider eliminating press wine or treating separately.

4. Settling Agents – selection determined by bench trials or previous experience

- **Bentolact S** is a blend of activated bentonite and soluble casein. An addition during settling can help reduce bitterness associated with underripe fruit and/or heavy press fractions. It may also reduce overall amount of bentonite needed for protein stability. Bench trials are recommended with typical dosages in juice of 20-100 g/hL (1.7-8.4 lbs/1000 gallons). Product preparation takes about 3 hours. Note: Some winemakers use bentonite alone.
- A 10-20 ppm addition of **Polycel** (PVPP and cellulose) may also be used if the mouthfeel of the juice is harsh. One hour preparation time required.
- **Colle Perle** is a liquid gelatin which is normally used to target harsh tannins. When used in white press juice, however, it has excellent clarifying and rapid settling properties. It may also be added at the beginning of cold settling to improve flavors and filtration. Bench trials are recommended at dosage levels between 80-150 mL/hL (3.0-5.7 L/1000 gallons).
- **Viniprotect** is a blend of PVPP, bentonite, gum arabic, and micropulverized cellulose. An addition during settling can help minimize problems associated with oxidation of polyphenols including color, bitterness, and herbaceousness. One hour preparation time with dosage at 20-100 g/hL (1.7-8.6 lb/1000 gal)
- **Cold Mix Sparkolloid** at a dosage of 12.5-25 g/hL (1.0-2.0 lb/1000 gal) can be used on its own or in conjunction with other fining agents to help settle and compact the juice lees.

BENCH TRIALS WITH ALL FIVE OF THESE PRODUCTS WILL DETERMINE BEST RESULT FOR EACH LOT OF JUICE.

Rack and Inoculate Immediately

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5. Yeast Derivatives

- Additions of natural yeast derivatives such as Opti-WHITE or Noblesse can have a positive impact on the colloidal balance of the wine. An addition of 25-50 g/hL of Opti-WHITE at the onset of fermentation provides early polysaccharide availability that can increase mouthfeel, improve fresh aromas and help avoid browning from oxidation. A second addition of Opti-WHITE or Noblesse towards the end of fermentation can reduce bitter or astringent characters.

6. Yeast Inoculation

- Inoculate yeast at 25 g/hL (2 lb/1000gal).
- Rehydrate yeast with Go-Ferm or Go-Ferm Protect. This is especially important as underripe fruit can be nutrient deficient.

7. Yeast

- Select yeast strains that reduce the vegetal perception, express good fruit character and build mouthfeel (e.g. Cross Evolution, ICV GRE, ICV D47 or Rhône 4600).

8. Fermentation Nutrient Additions

- Measure yeast assimilable nitrogen (YAN) in the juice. Juice derived from unripe fruit is possibly low in YAN.
- Use Fermaid K and/or Fermaid O (depending on your Brix and YAN levels).
- Exercise caution with DAP. DAP may favor the formation of sulfide off-flavors which can, in turn, emphasize vegetal characters. In very low nitrogen juice DAP should only be used in association with a complete yeast nutrient (e.g. Fermaid K).

9. Temperature Control

- Temperature management is important. Keep the juice at 61-64°F (16.5-18°C) to promote fruit driven aromas and maintain healthy yeast.

10. End of Alcoholic Fermentation

- Rack 24 hours after fermentation is finished.
- Rack again 2 days later.
- If persistent vegetal characters exist, try a 10 g/hL addition of Noblesse.

11. Malolactic Bacteria Selection

- If conducting malolactic fermentation choose strains noted for mouthfeel enhancement such as MBR VP41 or Alpha and rehydrate in Acti-ML or use in conjunction with Opti'Malo Plus nutrient. Using 1-Step strains like 1-Step VP41 or 1-Step Alpha works very well and may improve success.
- Inoculate as soon as possible.

12. SO_2 Levels Post Fermentation

- Increase SO_2 levels once MLF is finished. Do not leave the wine unprotected!

13. Additional tools

- The toasted character of some finishing tannins such as Tannin Riche and Tannin Riche Extra can help reduce the perception of green characters.
- For removal of harsh phenolics often associated with underripe fruit, try Colle Perle or even an addition of Noblesse (see point 5).
- For more information on protocols dealing with underripe fruit please see Dominique Delteil's protocol on the website (www.scottlab.com).

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