

RED WINEMAKING WITH UNDERRIPE GRAPES

Possible problems associated with underripe red grapes:

- Low pigment potential
- Underripe tannins
- Decreased fruity aromas
- Higher risk of herbaceous and bitter characters
- pH and acid imbalances

Winemaking suggestions to combat these issues:

1. SO₂ Management at Fermentation

- As long as the fruit is not compromised (berries damaged via rot or pest) follow your standard SO₂ protocol.
- For compromised fruit please see rot protocol on website (www.scottlab.com).

2. Enzymes

- Use Scottzyme Color Pro or Lallzyme EX at the low range of dosage recommendations at grape reception or at crusher to maximize pigment extraction.
- Allow 8-12 hours of contact time with enzymes before adding any fermentation tannins.
- **Note: Cold soak and/or extended maceration are not advised because they may increase green characters in wine made from underripe fruit.**

3. Tannins

- Use 200-500 ppm FT Rouge or FT Rouge Soft, adding half at the crusher and the balance at the first or second pump-over.
- 50-400 ppm of Uva'Tan may be used to increase catechin tannin.
- Do not work the grapes too much. The enzyme will increase extraction.

4. Yeast Derivatives

- Additions of natural yeast derivatives such as Opti-RED or Noblesse can have a positive impact on the colloidal balance of the wine. An addition of 227 g/ton of Opti-RED at the onset of fermentation provides early polysaccharide availability for complexing with polyphenols as soon as they are released and diffused. This early complexing can result in red wines with more intense color, rounder mouthfeel and better tannin integration. A subsequent addition of Opti-RED or Noblesse towards the end of fermentation allows the winemaker to shape harsh polyphenols into smoother, more approachable tannins.

5. Yeast Inoculation

- Inoculate yeast at 25 g/hL (2 lb/1000gal).
- Rehydrate yeast with Go-Ferm or Go-Ferm Protect. This is important for underripe fruit which may be low in nutrients.

6. Yeast

- Select yeast strains that reduce the vegetal perception, express good fruit character and build mouthfeel (e.g. CSM, ICV GRE, BDX or ICV D254)

7. Fermentation Nutrient Additions

- Measure yeast assimilable nitrogen (YAN) in the must. Must derived from unripe fruit is commonly YAN deficient.
- 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 must DAP should only be used in association with a complete yeast nutrient (e.g. Fermaid K).

8. Maceration and Rackings

- Shorten maceration (skin/seed contact) to 4 days instead of 6-8 days.
- If you have a Guth agitator, agitate the juice twice a day underneath the cap.
- Rack off lees halfway through fermentation – delestage (rack and return with seed removal) between 18-15°Brix, if possible. The less contact you have with underripe seeds the better off you will be.
- Pressing at the lowest possible pressure is critical (1 bar maximum).
- Keep press wine separate from free run.
- Harsh phenolics in the press fraction may be reduced through use of Colle Perle or by lees aging using Noblesse.

9. Temperature Control

- Temperature management is important. Keep the must at 75°F (maximum) 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

- 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. SO₂ levels Post Fermentation

- Increase SO₂ levels up once MLF is finished. Do not leave the wine unprotected!

13. Additional tools

- Grape tannins such as Uva'Tan and Uva'Tan Soft can also help compensate for tannin deficiencies.
- Cellaring tannins such as Tannin Estate and Tannin Complex can aid in filling tannin voids.
- 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 8).
- 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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