



RED WINEMAKING WITH GRAPES AFFECTED BY SMOKE TAIN

Smoke taint is the result of absorption of guaiacol, 4-methylguaiacol and a host of other compounds into the grape skins, vines, and leaves. Wines that have been produced from smoke tainted grapes can have aroma descriptors such as: ashy, burnt bacon, wet ashtray, and campfire. Red wines tend to be more prone to smoke taint issues due to the prolonged skin contact during fermentation. There is no known cure for smoke taint, but the below winemaking suggestions can help to minimize the smoky character in the finished wine.

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 our website (www.scottlab.com).

2. Enzymes - Most of the smoky character is found in the grape skins so skin contact should be as brief as possible.

- Use Scottzyme® Color Pro or Lallzyme EX™ at grape reception or at crusher to maximize and expedite 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 smoke characters in wine.

3. Tannins – Use of fermentation tannins can help to build structure quickly.

- Use 200-500 ppm Scott'Tan™ 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 Scott'Tan™ Uva'Tan may be used to increase catechin tannin.
- Do not work the grapes too much. The enzyme will increase extraction.

4. Yeast

- Select yeast strains that maximize fruit expression and build mouthfeel (e.g. Enoferm CSM™, Lalvin ICV GRE™, Lalvin ICV D21®, Lalvin L2056® or NT50).

5. Yeast Inoculation

- Inoculate yeast at 25 g/hL (2 lb/1000 gallons).
- Rehydrate yeast with Go-Ferm® or Go-Ferm Protect®.

6. Yeast Derivatives

- Additions of natural yeast derivatives such as Opti-RED® or ICV 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.

7. Fermentation Nutrient Additions

- Measure yeast assimilable nitrogen (YAN) in the must. Use Fermaid K™ and/or Fermaid O™ (depending on Brix/YAN).
- Exercise caution with diammonium phosphate (DAP). DAP may favor the formation of sulfide off-flavors which can, in turn, emphasize smoky characters. In very low nitrogen must, DAP should only be used in association with a complete yeast nutrient (e.g. Fermaid K).
- Yeast cell walls are highly absorptive so an addition of 2 lb/1000 gal of Nutrient Vit End™ or SIY Cell Hulls™ during fermentation can potentially bind some of the smoky aromas.

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.
- Pressing at the lowest possible pressure is critical (1 bar maximum).
- Keep press wine separate from free-run.

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

- When the wine is at 1-2°Brix, an application of 1 g/hL of Reduless® can help reduce some of the excessive smoky characters. Rack after 72 hours.
- Treat wine with 10-15 g/hL of Noblesse.
- Rack again 2 days later.

11. Malolactic Bacteria Selection

- Choose strains noted for mouthfeel enhancement such as Lalvin MBR VP41® or Enoferm 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 either following a co-inoculation protocol or inoculate as soon as alcoholic fermentation has completed.

12. SO₂ Levels Post Fermentation

- Increase SO₂ levels 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.
- Avoid toasted barrels and other toasted oak products, as they can increase the smoky characteristics.

If you still have unwanted smoke character, bench trials with the following products are worth trying:

- ICV Noblesse
- Reduless
- Nutrient Vit End
- Caseine Soluble (better for whites)
- Polycacel (better for whites/can destabilize color)
- Polycel (better for whites/can destabilize color)
- Deodorizing carbon (not available from Scott Laboratories)

Many customers have also had success treating the wines with reverse osmosis followed with a Noblesse application to rebuild structure.

Note: Smoke related characteristics can evolve over time, so early consumption is recommended whenever possible.