Impact of the timing of copper additions on the prevention of reductive aromas in wine

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INTRODUCTION

- Sulfidic/reductive aromas have a negative impact on wine quality.
- Copper (Cu) fining is often used to remove these volatile sulfur compounds (VSCs).
- Removal is not always permanent, VSCs can re-appear post-bottling.
- Timing of copper addition between fermentation and packaging was investigated, with the impact on VSCs assessed over 12 months post-bottling.

METHODOLOGY

WINE
- 2014 Chardonnay (CHA) – sourced immediately after primary fermentation, not previously treated with Cu and still on lees.

TREATMENT
- Two tanks of fermented must – treated with Cu (0.5 mg/L) or no Cu. After cold stabilisation and racking off lees, further treatment of Cu (0.5 mg/L) or no Cu was made prior to adjustment of SO₂ before bottling.

BOTTLING
- Wine was filtered (0.45 μm) and bottled into 375 mL clear, glass bottles under screwcap.

SAMPLE ANALYSIS
- Wine was analysed for VSCs and Cu at set timepoints.

RESULTS

- 80% of Cu added while the wine was on lees was removed by the lees.
- All of the Cu added just prior to bottling remained in the wine.
- Residual Cu post-bottling correlated with a large concentration of H₂S present after 12 months in bottle.
- Interestingly, it took 12 months in bottle for a difference to appear.

CONCLUSION

- Early Cu additions are effective and residual Cu is removed by lees.
- Additions of Cu immediately before bottling may result in higher residual Cu levels and an increase in H₂S several months after bottling.
- The negative impact of Cu additions may not be apparent until 12 months after addition.