

Rapid assessment of grapes prior to harvest to quantify fungal off-flavours and product composition

Project ID: ICHDR6 (PhD)

Harvest decisions are often pressured by harvest, transport and winery logistics and the need to coordinate with ripening of other grape varieties. Vintage compression, late rains and the associated mould growth and off-flavours add to the problem. Rapid objective methods to assess grape quality and mould taints would help decision-making and grading of grapes but currently no methods exist.

This project will develop in-field assessment of grape quality, composition and fungal taint compounds. The work builds upon our expertise for quantifying volatiles linked to grape fungal infection and will extend to volatiles linked to wine faults and taints. New instrumentation will aid growers and winemakers to ensure quality, thereby offering better wine to consumers, but could be applied more broadly to other horticultural crops.

We seek a highly motivated PhD candidate with a high level Honours or Masters qualification or equivalent in viticulture, analytical chemistry or microbiology. The project will be based at the Wagga Wagga campus of Charles Sturt University. The candidate will develop skills/techniques in rapid measures of grape composition employing mass spectroscopy measures of volatile compounds, near and mid infrared spectroscopy, chemometrics and data modelling techniques.

References

- Steel *et al* (2013) Grapevine bunch rots: Impacts on wine composition, quality, and potential procedures for the removal of wine faults. *Journal of Agricultural and Food Chemistry* **61**:5189-206.
- Schmidtke *et al* (2012) Rapid monitoring of grapevine reserves using ATR-FT-IR and chemometrics. *Analytica Chimica Acta* **732**:16-25.
- Sadoughi *et al* (2015) Gas chromatography-mass spectrometry method optimized using response surface modelling for the quantitation of fungal off-flavours in grapes and wine. *Journal of Agricultural and Food Chemistry* **63**:2877-85.

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