

# Taking the smoke out: winemaking remediation options for smoke-affected juice and wine

# AWRI

Julie Culbert<sup>1</sup>, WenWen Jiang<sup>1</sup>, Eleanor Bilogrevic<sup>1</sup>, Desireé Likos<sup>1</sup>, Leigh Francis<sup>1</sup>, Mark Krstic<sup>1</sup>, Markus Herderich<sup>1</sup>, Con Simos<sup>1</sup>

<sup>1</sup>The Australian Wine Research Institute, PO Box 197, Glen Osmond (Adelaide) SA 5064, Australia

Corresponding author's email: [julie.culbert@awri.com.au](mailto:julie.culbert@awri.com.au)

## Background and industry challenge



Bushfires result in



Financial losses due to smoke-affected grapes and wine

Volatile phenols and phenolic glycosides are the major marker compounds implicated in smoke taint

**Can we remediate smoke-affected juice and wine?**



## Outcomes of remediation methods evaluated

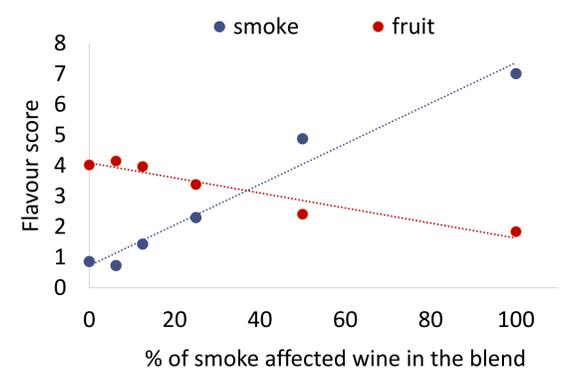
### Activated carbon fining (juice/wine)

- Smoke compounds decreased in a dose-dependent manner
- Balancing act between reducing 'smoky' characters while maintaining desirable aroma and flavours: higher doses can result in stripped, un-wine-like product
- Large variation among carbon products in their capacity to removal volatile phenols and glycosides
- More effective in juice than wine and in white than rosé or full-bodied red wine

For more information on selecting the right carbon visit AWITC poster #100

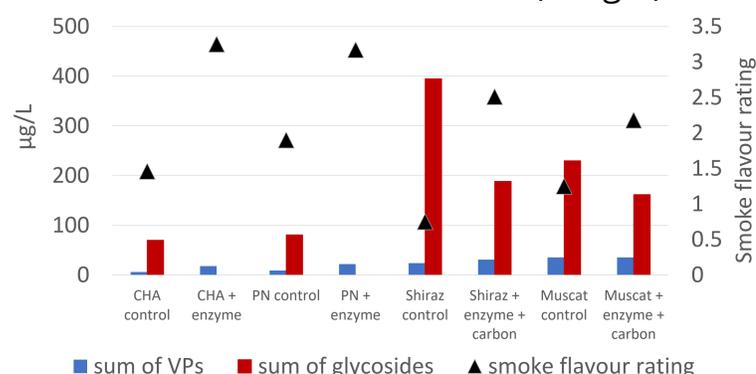
### Wine dilution

- 'Smoky' characters were reduced and overall fruit flavour increased in a smoke-affected Pinot Noir rosé wine when it was diluted with a non-smoke-affected Pinot Noir rosé wine



### Glycosidase treatment of wine

- Phenolic glycosides decreased while volatile phenols and 'smoky' flavour increased
- 'Smoky' flavour was still evident in Shiraz and Muscat wines which underwent additional carbon treatment (0.5 g/L)



### Nanofiltration of wine

- Uses similar commercially available technology to that used for alcohol reduction
- Did not reduce smoke compounds or 'smoky' sensory attributes
- Resin optimisation is required to make this a feasible option for remediation

### Untoasted oak chips added to wine

- Did not reduce smoke compounds
- The potential to mask smoke taint or smoke characters in wine warrants further investigation

## More information



The AWRI's smoke taint page contains valuable resources including fact sheets on remediation

## Conclusions

Of all techniques evaluated, none was able to fully remediate smoke characters in juice or wine. The best option was a combination of treatments, most notably fining with activated carbon (juice and/or wine) followed by dilution with a non-smoke-affected wine. Decisions about applying remediation treatments should be considered on a case-by-case basis and the best option will depend on smoke exposure levels, wine variety and style, the availability of non-smoke-affected wine for blending, time to market and ultimately cost.