

# Innovative solutions to managing smoke risk in the Victorian wine industry – testing barrier sprays in controlled smoke tents



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Research Institute

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## Key components of the activity:

01

Produce smoke-affected grapes and wines in a controlled manner using a smoking chamber

02

Evaluate coating grape with chitosan (pre-smoking) for its ability to reduce the uptake of smoke compounds

03

Conduct sensory evaluation of wines produced using an expert sensory panel

04

Investigate blending of the smoke-affected wines produced with an unaffected wine as a tool for remediation of smoke taint

# Smoking trials - vintage 2019



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## Victorian Chardonnay, Pinot Noir and Shiraz

Grapes sourced from Great Western and Faraday and smoked in a controlled manner using a smoking chamber

Seven treatments:

- Chardonnay control (i.e. non-smoked)
- Chardonnay smoked
- Pinot Noir control (i.e. non-smoked)
- Pinot Noir smoked
- Shiraz control (i.e. non smoked)
- Shiraz coated with chitosan and smoked
- Shiraz smoked



Location	Variety	Smoking duration (min)*	Average smoke density (% obs/m)
Great Western	Shiraz rep 1	52	18.0
Great Western	Shiraz rep 2	52	17.2
Faraday	Chardonnay	70	12.3
Faraday	Pinot Noir	67	7.4

\* Time was increased to adjust for lower dosage rates

# Chemical and sensory evaluation of wines

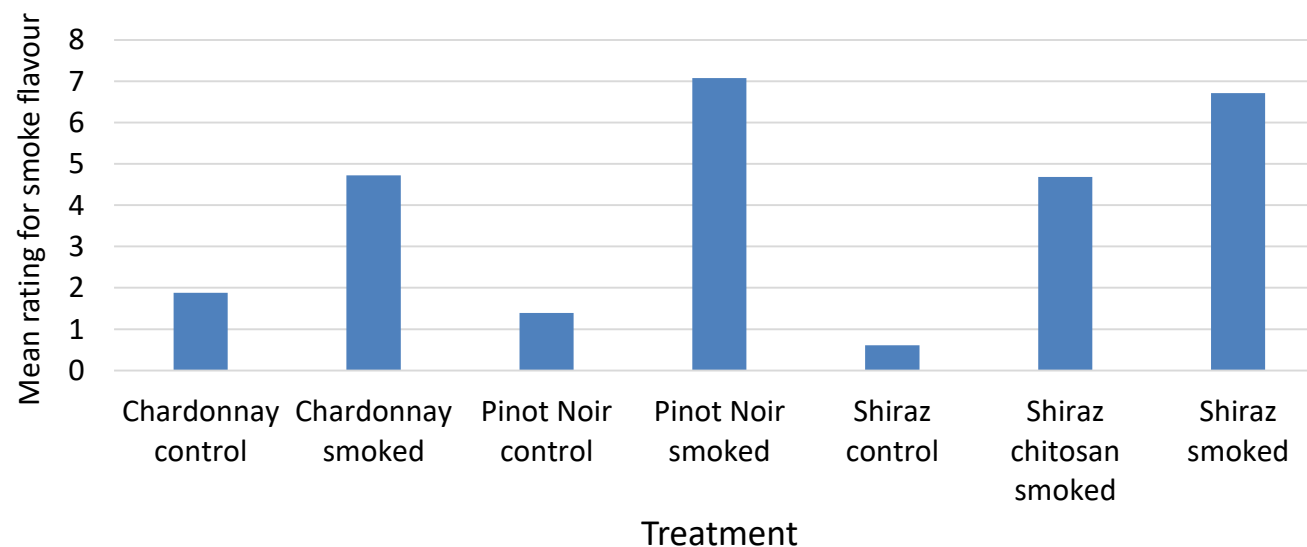


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## Total smoke compounds present in the wines

Sample name	Total smoke glycosides ( $\mu\text{g/L}$ )	Total smoke volatile phenols ( $\mu\text{g/L}$ )
Chardonnay control	<1	<1
Chardonnay smoked	19	13
Pinot Noir control	2	3
Pinot Noir smoked	29	45
Shiraz control	11	27
Shiraz coated with chitosan and smoked	78	94
Shiraz smoked	122	134

## Mean ratings for 'smoke' flavour in each of the wines



- ❖ Smoking trials successfully resulted in the generation of smoke-affected wines, a result which was confirmed by chemical analysis and sensory evaluation
- ❖ Application of chitosan to grapes prior to smoke exposure was found to reduce the uptake of smoke molecules into the grapes
  - The wine produced from the chitosan-treated Shiraz grapes was still considered to be smoke-affected, but to a lesser extent
- ❖ Wines produced as part of this project were not used in dilution studies as smoke-exposed grapes from a natural bushfire event during vintage 2019 were sourced and made into wine
  - Blending or dilution with unaffected wine can be an effective option for remediation of smoke-affected wine
- ❖ These wines extend the AWRI's collection of smoke-affected wines
  - They provide an additional resource for future remediation studies
  - They are also suitable training material for viticulturists and winemakers who attend future extension events on smoke taint

# Acknowledgements



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- WIC Winemaking Services (Urrbrae, South Australia)
- Members of the AWRI's sensory quality panel

