



Smoke taint – practical management options for grapegrowers and winemakers



Background

The exposure of vineyards and grapes to smoke may result in wines with undesirable sensory characteristics, such as smoky, burnt, bacon, medicinal or ash, usually described as ‘smoke tainted’. Consumers have been shown to respond negatively to smoke tainted wines. The compounds in smoke primarily responsible for the taint are the free volatile phenols (e.g. guaiacol, 4-methylguaiacol, *o*-cresol, *p*-cresol, *m*-cresol, etc). These compounds are produced and released into the atmosphere when lignin in wood is burnt. This fact sheet aims to summarise the most up-to-date advice on how to manage smoke taint in the vineyard and minimise the extraction in the winery.

What are the options for managing smoke-exposed fruit?

Following smoke exposure of grapevines, a number of techniques can be employed in both the vineyard and winery to minimise the sensory impact of undesirable smoke-derived aromas, flavours and compounds in wine. These techniques are summarised in the table below and are more effective when used in combination rather than individually. However, it should be noted that while these techniques may help reduce the extraction and expression of smoke taint compounds, they are unlikely to eliminate the problem completely.



Table 1. Summary of techniques to reduce smoke-related aromas, flavours and compounds during handling and processing of grapes and wine. Table adapted from Brodison (2013).

Management option	Technical explanation
Hand harvest fruit	Minimise breaking or rupturing of skins as long as possible
Exclude leaf material	Leaf material can contribute smoke-related characteristics when in contact with fruit and juice
Maintain integrity of harvested fruit	Avoid fruit maceration and skin contact with juice as this can lead to higher concentrations of smoke-related compounds.
Keep fruit cool	Fruit processed at 10°C had less extraction of smoke-related compounds than fruit processed at 25°C.
Whole bunch press	Whole bunch pressing has been shown to reduce extraction of smoke-derived compounds particularly in white grapes.
Separate press fractions	Ferment free run juice and press fractions separately. There is less extraction of phenolic contaminants from smoke in the first 400 L/t fractions, especially when combined with fruit cooling.
Conduct trials with fining agents	Fining with carbon is very effective especially in large concentrations although it is unselective and will have a negative impact on overall aroma and flavour.
Minimise fermentation time on skins	Fermentation that reduces skin contact time can reduce smoke aromas and flavours.
Consider addition of oak chips and tannin	Oak chips can reduce intensity of smoke characteristics through increased wine complexity.
Reverse osmosis of wine	Reverse osmosis can be effective in removing smoke taint compounds; however the taint might return in the wine over time.
Market for quick sale	Smoke-related characteristics can evolve in bottle as wine ages.

Acknowledgement

This work was supported by Australia's grapegrowers and winemakers through their investment body Wine Australia, with matching funds from the Australian Government. It was also supported by the Victorian Department of Economic Development, Jobs, Transport and Resources. The AWRI is a member of the Wine Innovation Cluster.



References and further reading

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