The Australian Wine Research Institute

Fact Sheet
ANALYSIS

Grape sampling, processing and transport following vineyard smoke exposure

Introduction

Following a smoke event, the AWRI recommends the following approach to assessing the risk of smoke taint:

- submitting potentially affected grapes to an analytical laboratory for analysis of volatile phenols and non-volatile smoke taint precursors
- at the same time conducting a small-scale ferment that can be used for sensory assessment (using the AWRI's small-lot fermentation method).

It is preferable to collect grapes for analysis at 9-11 Baume (16-20 Brix) and conduct the mini-ferment in parallel. Then, once the fermentation is complete (five to eight days), results from sensory assessment of the mini-ferment wine can be combined with the analytical results and interpretation for the grapes, giving maximum information to help support harvest or wine processing decisions.

This fact sheet provides detailed instructions on how to collect grape samples, package them and transport them to an analytical laboratory for smoke taint analysis. In some cases, regional associations may play a role in coordinating sample submissions.

Collecting grape samples

Prior research has indicated that the vine-to-vine variability of free volatile phenol compounds across an individual vineyard is high; it is therefore important to ensure that a representative sample is collected from across the entire vineyard. A random 30-bunch sample is recommended to be collected from across the vineyard, with only one bunch per vine to be collected. Where there are multiple blocks of the same variety on a single property, producers may wish to select a sub-set of blocks for testing.

Figure 1. A diagrammatic representation of randomly selecting 30 positions across an individual vineyard to select one bunch per vine.

Once all 30 bunches have been collected, strip approximately half the berries off each bunch and place them in a large container. Mix the berries thoroughly, and from this container collect, bag and label a sample of berries weighing approximately 500 grams. Avoid leaves and matter other than grapes (MOG). Zip-lock bags are ideal for this purpose.

Figure 2. Plucking berries from bunches into a typical 'kitty litter' tray prior to mixing and sub-sampling 500 grams for storing in a zip-lock plastic bag.

Required treatment and documentation

If the grape sample is coming from a known Phylloxera Infested Zone (PIZ) or a Phylloxera Risk Zone (PRZ) and is bound for a laboratory in a Phylloxera Exclusion Zone (PEZ), then according to Procedure C in the National Phylloxera Management Protocol, the following treatments and documentation are required:

- Samples must undergo disinfestation by a procedure that involves freezing at -18°C for at least 24 hours, prior to packing on cold packs for transport. (Note that dry ice is considered a hazard by some transport companies.)
- A relevant Plant Heath Certificate (PHC) must be completed and sent with the grapes. A PHC, is available from the relevant State Department of Agriculture/Primary Industries. Samples from a PIZ or PRZ shipped without a relevant PHC cannot be processed and will be destroyed.
- If samples are being shipped to South Australia, a Plant Material Movement and Declaration Form must be completed to ensure the laboratory complies with its CA12 certification granted by Primary Industries and Resources of South Australia (PIRSA).

For grape samples sampled in Phylloxera Exclusion Zone (PEZ) bound for a laboratory in a PEZ, the following treatment and documentation are required:

- Samples must undergo disinfestation by a procedure that involves freezing at -18°C for at least 24 hours, prior to packing on cold packs for transport.
- A PHC is not required from these zones.
- If samples are being shipped to South Australia, a Plant Material Movement and Declaration Form must be completed to ensure the laboratory complies with its CA12 certification granted by Primary Industries and Resources of South Australia (PIRSA).

Packaging and transport of samples to an analytical facility

All grape samples should be double bagged in appropriately sized zip lock bags then placed in a standard -18°C freezer for at least 24 hours prior to being dispatched to an analytical laboratory.

Individual samples should be well packaged, so that there is no possibility of sample leakage or cross-contamination. Both the inner and outer bag need to be clearly labelled with adhesive labels stating the grower's name and address as well as variety and block details. It is important to include the grape variety because interpretation of the analytical results will vary depending on the variety.

Frozen samples must be securely packaged in a polystyrene box and kept cool (e.g. with ice packs). The polystyrene box should be taped up securely and sent to the laboratory as soon as possible via overnight courier. Samples should be sent early in the working week (i.e. Monday or Tuesday) to ensure they arrive in suitable condition for analysis. All documentation should be placed in an addressed envelope and securely taped to the outside of the polystyrene box.

A log of samples dispatched and a copy of all documentation should be kept until all samples are accounted for and diagnostic testing has been completed.

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Reference and further reading

National Phylloxera Management Protocol. Available from: https://planthealthaustralia.com.au/wp-content/uploads/2013/03/Phylloxera-management-protocol-2009-draft.pdf

Contact

For further information, please contact the AWRI helpdesk team.

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Smoke taint resources:

https://www.awri.com.au/industry_support/winemaking_resources/smoke-taint/

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