

Does pre-veraison smoke exposure of vineyards affect wine flavour?

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Trial scope

Post-veraison smoke exposure of grapes can result in smoke flavour in wine, because volatile phenols in smoke are taken up by grape berries and metabolised, forming glycosides.

But what happens when there is a **single smoke exposure before veraison**?

Can **unripe grapes** take up volatile phenols, form **glycosides**, and produce **smoky wine**?

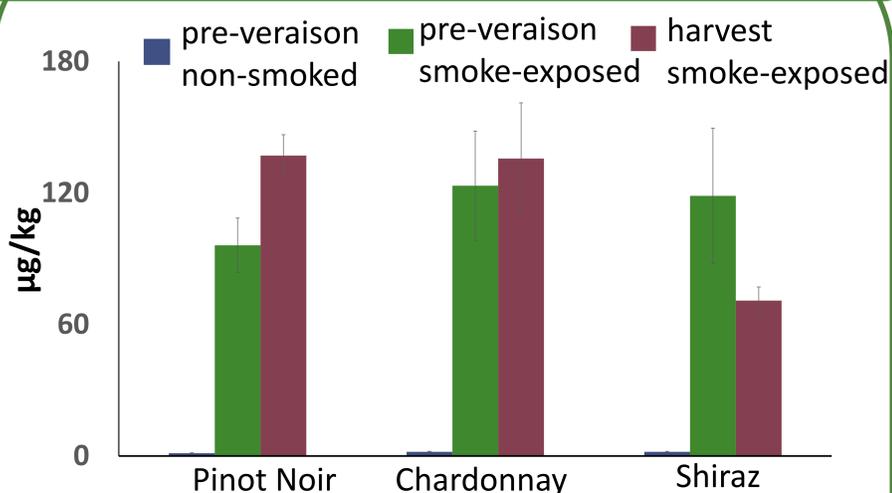


- ❖ A single wildfire event occurred in the Adelaide Hills wine region in December 2019
- ❖ Chardonnay, Pinot Noir and Shiraz grapes were selected from a non-smoke-exposed and a heavily smoke-exposed site (photo shown below)
- ❖ Grape berries were sampled at pre-veraison (E-L 33, average 0.5 g per berry) and harvest (E-L 38, average 1 g per berry)
- ❖ Unoaked wines were made from the mature grapes



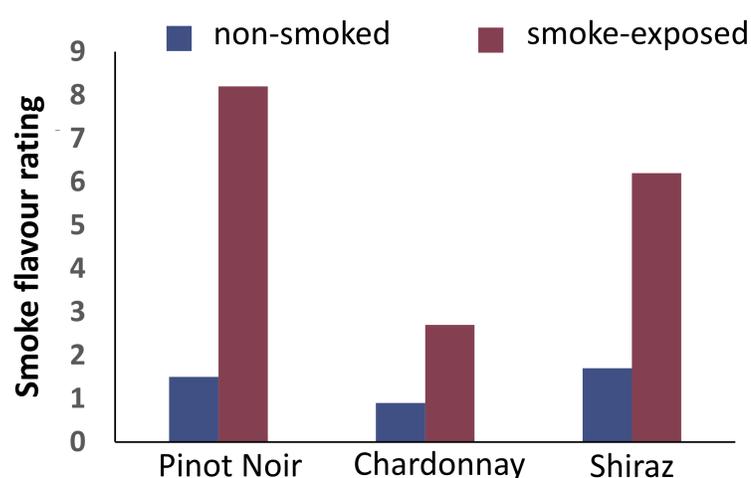
Photo by Peter Leske

Syringol gentiobioside in grapes



- ❖ Key exposure marker, syringol gentiobioside, was elevated in pre-veraison samples compared to non-smoked controls
- ❖ Glycoside concentrations remained high in berries at harvest, despite berry size doubling and no further smoke exposure

Smoke flavour in wine



- ❖ Wine made from pre-veraison smoke-exposed grapes had high smoke flavour intensity
- ❖ Red wines had stronger smoke flavour than Chardonnay

Conclusions

- ❖ Syringol gentiobioside and other phenolic glycosides were elevated in pre-veraison grapes of all three cultivars after smoke exposure
- ❖ Phenolic glycoside concentrations remained high at harvest despite berry size doubling; volatile phenols were also elevated
- ❖ All varieties exposed to smoke pre-veraison had obvious smoke flavour in the resulting wines but the intensity was lower in Chardonnay wines, probably due to the different winemaking techniques used (specifically, less skin contact).

Pre-veraison smoke exposure poses a risk to wine quality

