

## Guidelines to reduce smoke taint in grapes and wine

*Research and Development*



**Climate change is raising average global temperatures, bringing with it longer drought periods and the increased risk of regular fires.**

Bush fires near vineyards can result in wines with undesirable sensory characters, such as smoky, burnt, ashy or medicinal, usually described as 'smoke tainted'. Most consumers respond negatively to smoke tainted wines. Below is a number of steps that can be taken in the vineyard and winery to minimize the sensory impacts of smoke exposure.

### Grape management:

**If possible, hand harvest the grapes.**

**WHY?** This reduces the breaking of skins because volatile phenols are more concentrated in skins.

**Remove all leaves.**

**WHY?** Leaves contain higher volatile phenol concentrates than grapes.

**Rinse harvested grapes and allow grapes to drain and dry.**

**WHY?** It will not affect the volatiles already in grapes, but it will help to remove excess ash that contribute to the astray taste.

**Cool down the grapes to at least 10°C (50°F).**

**WHY?** There is less extraction of phenols at cooler temperatures.

**Limit skin contact.** For white wines do whole bunch pressing and keep press fractions separate from free run juice. Add Pinnacle Zym Clarify+ only after pressing to free run juice to improve clarification and settling. Only use "purified from glycosidases" enzymes.

**WHY?** Many of the volatile phenols occur in a non-odorous glycosylated form that can become odorous when the sugar is hydrolysed from the phenols.

**For red wine limit skin maceration time, do not cold soak and do not do extended skin contact after fermentation. Do not use extraction enzymes.**

**WHY?** It is to prevent extracting more volatile phenols from the skin.

**One can also do a pre-fermentation fining with activated carbon in white juice (carbon will remove red colour in red juice). Activated carbon can partly remove some of the volatile phenols from free run and hard press juice.**

**WHY?** Some activated carbon products are better at removing phenolic glycosides, and the removal occurs better in juice than wine.

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### Fermentation:

**For white wine fermentations use the yeast Pinnacle Fructo (30 g/hL) and for red wines use the yeast Pinnacle Red Select (30 g/hL).**

**WHY?** One may need to use aromatic yeast (masking effect), fast fermenting (to limit skin contact in red wines) that does not have glycosidase activity and does not absorb red colour.

**Feed the yeast by adding complex yeast food Pinnacle FermiTop (25-40 g/hL) after about a third of fermentation to enhance aroma and complexity of the wines.**

**WHY?** This can help in the masking effect of the smoke taint volatile phenols.

**Add Pinnacle Absolute MP (5g/hL).**

**WHY?** To reduce green characters and to shorten the wine ageing step.

**Consider the addition of Pinnacle HT Tan (1-5 g/hL).**

**WHY?** The addition of oak and tannin through the addition of lactones, vanillin and hydroxymethylfurfural can increase complexity and thereby mask the smoky taint.

**Rack off lees early.**

**WHY?** Some off-aromas bound to lees and can be eliminated by racking off early.

**One can consider doing reverse osmosis of the wine.**

**WHY?** This technique has been proven to be effective in removing large percentage of smoke-derived volatile phenols. However, it also removes oak-derived volatile phenols and fruity flavours.

**Use a malolactic starter culture like Pinnacle MaloSafe (1g/hL).**

**WHY?** Do not do spontaneous MLF as most naturally occurring bacteria may contain activities that can enhance the smoke taint aroma.

**Market the wine for early consumption.**

**WHY?** Because wines that were acceptable for consumers at bottling could become non-acceptable 12 months down the line.

**Do not blend smoke tainted wines with non-smoke tainted wines.**

**WHY?** Since fruity aromas associated with young wines can diminish over time and thus lose their masking effect and you can end up with a bigger volume problematic wine.

### Please note:

Currently there is no single method that universally solves the problem of smoke taint, this protocol outlines the tools available that can help to minimise the negative impacts of smoke taint.

Please **contact your local AB Biotek technical support** for further information.