

# Vintage 2020 — observations from the AWRI helpdesk

By Adrian Coulter, Geoff Cowey, Marcel Essling, Tony Hoare, Matt Holdstock, Mardi Longbottom, Con Simos and Mark Krstic, The Australian Wine Research Institute, PO Box 197, Glen Osmond, South Australia 5064 **Mark Krstic**



***The AWRI helpdesk responds to technical issues encountered by Australian grapegrowers and winemakers, identifies the root causes of problems and provides research-based, practical, up-to-date solutions. Monitoring the technical issues encountered across the nation's wine regions over the growing season is a useful way to identify when information or assistance is required, at either a regional or national level. Support is then provided via eBulletins, the AWRI website, webinars or face-to-face extension events. This article examines some of the conditions experienced across the nation during vintage 2020 and the growing season leading up to it, and some of the technical challenges encountered.***

## VINTAGE 2020 – FULL OF CHALLENGES

In Australia, vintage 2020 was one of the most challenging in modern times, with drought, bushfires and COVID-19 restrictions having an impact on vintage operations, yield and wine production. The staff at the AWRI wish to express their support for all grapegrowers and winemakers who have been adversely affected and will continue to assist their recovery towards a successful 2021 season.

## IDENTIFYING KEY TECHNICAL ISSUES

The AWRI helpdesk provides confidential advice and support to Australian grapegrowers and winemakers and is in a unique position to track the technical issues that emerge each vintage. During vintage 2020 (between 1 January and 1 May) the helpdesk received more than 1850 enquiries (Figure 1, see page 40), more than double the average amount for this time period. Unsurprisingly, 76% of these queries related to bushfires and smoke taint.

## PRE-VINTAGE – THE GROWING SEASON

In 2019, Australia's rainfall was 40% below average, making it the driest year since records began in 1900. Many parts of Queensland and northern NSW had been in drought for several years and received significantly below average rainfall during the growing season. In vineyards, decisions had to be made on how best to allocate the available water and some businesses needed to enter

the water market. Where soils were very dry and insufficient water was able to be applied through the growing season, the amount of harvested fruit was significantly reduced.

Other meteorological factors affected yield in regions across south-eastern Australia. Early spring frosts associated with the absence of rainfall and cloud cover were experienced, as well as hail in some areas. During flowering, strong winds or hot weather had a negative impact on fruit set in some regions. Cooler growing season temperatures were experienced in Tasmania, the Limestone Coast and generally across Western Australia. Yields in Western Australia were affected by the cool and cloudy conditions experienced in the previous spring, which may have affected bud fruitfulness. Western Australia also experienced a dry and warm summer with an earlier harvest than normal.

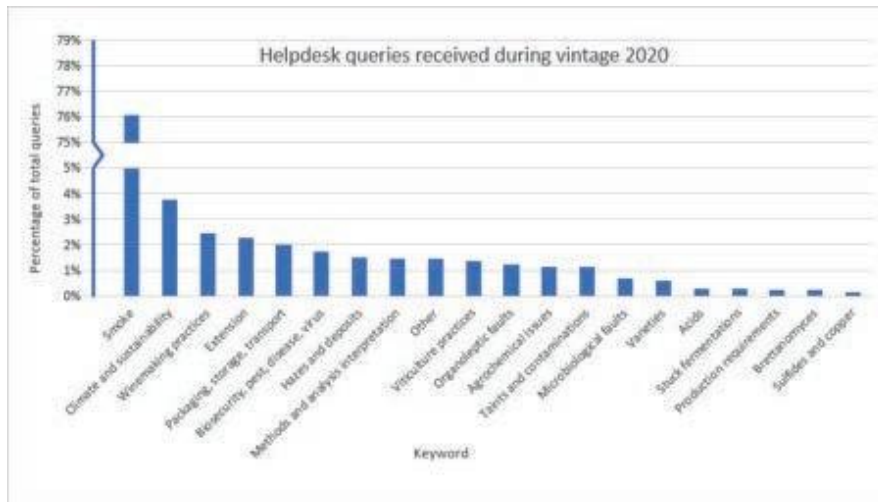
## BUSHFIRES

The largest number of queries received this season were about bushfires and smoke taint. The unprecedented bushfire season was brought about by hot temperatures in spring and summer after a prolonged drought across the eastern states. Major bushfire events occurred across all states and territories of Australia, starting from September 2019 in some regions, intensifying towards the end of spring and continuing from summer through to March 2020. In mid-January 2020, a wave of heavy rain brought some

relief, but it was not until mid-February, with the help of extremely heavy rain, that most of the fires began to be contained. The fires were concentrated in areas within South Australia, New South Wales and Victoria and burned an estimated 11.9 million hectares (this figure excludes 6.8 million hectares from scrub fires that occur annually within the Northern Territory). This area dwarfs the 1.3 million hectares burnt in the 2003 Victorian bushfires, or the 187,000 hectares burnt in Tasmania in 2019. In addition to the areas directly burnt by the fires, nearby wine regions were heavily affected by the smoke generated from these bushfires. In some regions, the first fires occurred well before

## AT A GLANCE

- Drought conditions affected much of south-eastern Australia, reducing yields in many regions.
- Some regions were affected by frost, hail or windy conditions — all of which had an impact on flowering/fruitset and reduced yield.
- Bushfires occurred across many winegrowing regions, with smoke affecting grapes in SA, NSW, the ACT and Victoria.
- COVID-19 restrictions caused logistical issues during harvest and affected cellar doors and associated venues through closures and lack of tourists.



**Figure 1. Queries received by the AWRI helpdesk during vintage 2020 (1 January to 1 May 2020), classified by frequently used keywords. Query numbers are represented as a percentage of total national queries.**

veraison, and continuous smoke drift was experienced from numerous other fires over the following months. Smoke plumes were even tracked using satellite imagery crossing the Pacific to countries such as New Zealand, and further afield to Chile and Argentina. Factoring in the impact of smoke taint, Wine Australia has estimated that fire and smoke damage will equate to a loss of 60,000 tonnes, or 4%, of the national grape crop this vintage.

Wine Australia, Australian Grape & Wine and the AWRI, backed by the Australian Government and state and regional wine bodies, coordinated an emergency response. Twenty-nine bushfire-related events were staged by the AWRI to provide support for bushfire-affected regions, with more than 1400 people attending these events. Events included Q&A events, sensory assessment training sessions to perceive smoke compounds in wines and workshops to set up regional smoke taint sensory assessment panels of local winemakers trained to identify smoke in 'bucket' ferments performed in the

region. This provided a capability for key regional associations and the wider regional community to have their mini-ferments screened to identify smoke-affected fruit in a timely manner.

The AWRI helpdesk, AWRI Commercial Services, state governments and state and regional wine associations coordinated efforts in setting up a centralised sample submission process across the country, which fast-tracked the transportation of a significant number of grape samples to analytical laboratories. This process greatly improved logistics and enabled producers to use analytical results in their decision-making.

Research trials were initiated in the Hunter Valley and Adelaide Hills wine regions to examine the impact of smoke exposure from bushfires that occurred at early stages of vine development at green pea/pre-veraison stage (E-L stage 31).

The long-term impact on grapevines that were burnt, damaged or exposed to high temperatures is yet to be ascertained. The initial green growth observed on vines after being exposed

to flames and high temperature can be short-lived if there is underlying damage to the vines' vascular system. To support growers with damaged vineyards, a fact sheet was produced on recovery of grapevines after fire and seven webinars were presented covering evaluation, management, recovery and replanting of fire-damage vineyards, including vineyard infrastructure, such as replacement of burnt posts, trellis and irrigation systems.

The helpdesk received more than 1400 queries relating to smoke taint and interpreted 3919 smoke analytical results for grapegrowers between 23 December 2019 and 1 May 2020. More than 70 different grape varieties were submitted for smoke analysis from 47 different wine regions. More than 75% of the samples submitted were grape maturity samples analysed to give producers information to make production decisions on whether to harvest fruit, based on evidence of smoke exposure.

Some of the questions asked by grapegrowers and winemakers who contacted the helpdesk included:

- how and when to sample grapes for analysis, how to perform 'bucket' ferments and how to make decisions on whether to harvest
- whether there is a smoke taint sensory threshold level and what are acceptable levels of smoke compounds in grapes and wine
- processing options if deciding to harvest fruit with low-level smoke exposure, including questions on new enzymes/yeasts/lees/other fining agents being promoted in the market
- smoke taint removal/remediation option for low-level smoke-affected fruit (e.g. dilution/blending, carbon fining, reverse osmosis)
- the relationship between the concentration of smoke taint compounds in grapes and the concentration in wine
- how to assess fire and heat damage of burnt vines
- how to assess the risk of smoke taint following smoke exposure — the impact of the distance from a fire, length of the exposure, timing of exposure in season and exposure to smoke from multiple bushfires
- release of smoke compounds from slightly smoke-affected base wines



Image courtesy Damien Warr, Windows Estate, Margaret River.



into sparkling wine during secondary fermentation, smoke impact in fortified wine styles, whether smoke compounds contaminate oak barrels, the impact of oak maturation on smoke taint perception and development of smoke compounds during bottle ageing

- alternate uses for smoke-affected grapes and wine, such as distillation for hand sanitiser or brandy spirit.

Five new fact sheets relating to bushfires and smoke were produced covering grapevine recovery after fire, sensory impacts of smoke, managing smoke-affected vineyards, remediation of smoke-affected wine by dilution and treating smoke-affected juice or wine with activated carbon. There were more than 11,000 unique visits to the AWRI smoke homepage or downloads of smoke-relevant fact sheets during the period. Fire and smoke-related webinars received 1800 views on YouTube after their delivery.

### COVID-19

In March, technical enquiries began regarding COVID-19, mainly regarding how to operate within recommended restrictions, what to do if a staff member in a vineyard or winery tested positive for the virus, including any specific remediation or cleaning requirements for grape and wine production facilities, and the risk of COVID-19 surviving in wine being produced. A review of cleaning and sanitation agents suitable for winery environments was conducted and an *eBulletin* and webpage produced addressing these questions.

Responding to concerns that travel restrictions would have an impact on the availability of experienced pruners this winter, a series of instructional videos on pruning was produced and a webinar delivered to train staff in the basics of spur and cane pruning. More than 200 people attended the webinar with more than 500 people watching the videos within the first week of release.

### LOOKING TOWARDS VINTAGE 2021

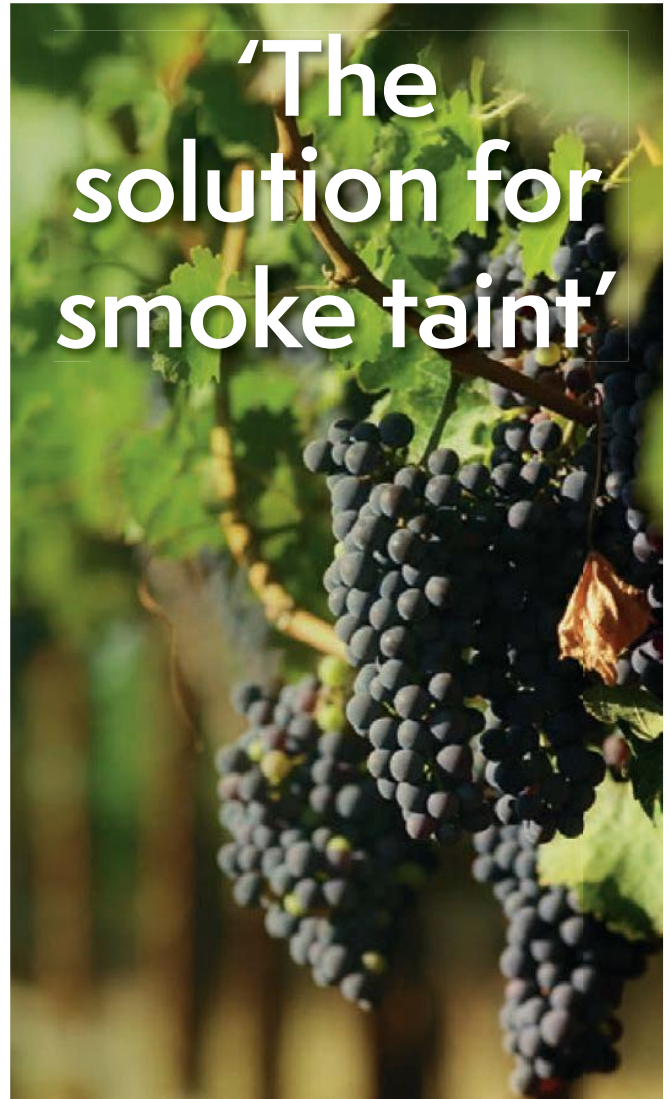
Autumn 2020 started with a rainy period in the south, with a large number of sites in Victoria and Tasmania, and a few in New South Wales, experiencing a record rainfall event for autumn, and for some the wettest autumn in at least 20 years. While large areas have received above average rainfall in one or more months this year, longer-term rainfall deficits still persist in many parts of Australia. According to the Bureau of Meteorology, winter 2020 is expected to be drier than average for Western Australia and for most south-eastern Australian wine regions; however, there is a greater chance of a wetter-than-average spring leading into vintage 2021. This is due to a weak La Niña-like pattern forecasted to emerge by the end of winter and warmer-than-average waters likely in the eastern Indian Ocean.

### ACKNOWLEDGEMENTS

This work is supported by Australia's grapegrowers and winemakers through their investment body, Wine Australia, with matching funds from the Australian Government. The AWRI is a member of the Wine Innovation Cluster in Adelaide, South Australia. The authors thank Ella Robinson for her editorial assistance.

### REFERENCE

Bureau of Meteorology website: [www.bom.gov.au](http://www.bom.gov.au) 



ProVgreen Smoke Taint by Martin Vialatte has been specifically developed to treat musts or finished wines that have been contaminated, due to smoke from bush fires.

Results from commercial volume trials, at vineyards across the Adelaide Hills, Hunter Valley and North East Victoria have proven to be extremely positive, saving production that would have otherwise been considered unusable.

To find out more, contact our Sales team at Grapeworks on 03 9555 5500 or [info@grapeworks.com.au](mailto:info@grapeworks.com.au)

ProVgreen **SMOKE TAINTS** 

**grapeworks**  
CONSUMABLES