

Vintage 2022 – observations from the AWRI helpdesk

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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 trends in 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 2022 and the growing season leading up to it, and some of the technical challenges encountered.

IDENTIFYING KEY TECHNICAL ISSUES

The AWRI helpdesk, funded by Wine Australia, provides free, 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 2022 (between 1 January and 1 May) the helpdesk received more than 400 enquiries (Figure 1) and conducted 35 small-scale investigations to identify the underlying cause of the technical issues reported by winemakers and growers.

WET SEASONAL CONDITIONS IN EASTERN AUSTRALIA, WARMER CONDITIONS IN THE SOUTH AND WEST

Winter rainfall in 2021 was above average in inland New South Wales, most of Victoria and southern South Australia, and in the south-west of Western Australia. For the second year running a La Niña system was declared by the Bureau of Meteorology for the winegrowing season; however, unlike 2020 where the La Niña was declared early in spring (29 September) and peaked in late January 2021, this season's La Niña was declared much later on 23 November 2021 and remained strong throughout both summer and autumn. In Western Australia, the Indian Ocean Dipole (IOD) was in a weak negative mode throughout winter and spring, and in eastern Australia, the Southern Annular Mode (SAM) was in a positive phase, all of which also contributed to high rainfall during the season.

November was the wettest month on record for NSW, ACT and SA. The rainfall

through winter and spring saw already high soil moisture levels and water storage levels increase further, and the additional rain resulted in significant and widespread flooding in south-east Queensland and parts of NSW. Persistent heavy rainfall occurred again in late February and March 2022 which resulted in flooding in some regions and vineyards. In many cases where vines had been flooded, fruit had already been harvested.

In contrast, the east coast of Tasmania had the state's fourth driest and fifth warmest summer on record due to a positive SAM which caused persistent high-pressure systems to the south and west of Tasmania, keeping rain and cold fronts away from the state. While having a wet winter, Western Australian regions had bursts of early heatwaves followed by a very dry summer and Limestone Coast regions also avoided summer rain events, which contributed to ideal ripening conditions for many of these regions this season.

The wet winter and spring and late La Niña event for summer resulted in queries regarding both non-chemical and agrochemical options for control of fungal diseases, including powdery and downy mildews, in these conditions. Packaged information produced in the 2021 season during similar conditions was redistributed through an eBulletin early in the season and before the La Niña event was officially declared. A reminder that phosphorous acid should not be applied to fruit destined for export wines was communicated and a new webpage on this chemical was created. An 'Ask the AWRI' column, published in the

IN BRIEF

■ Above average winter rainfall, a negative Indian Ocean Dipole (IOD), a positive Southern Annular Mode (SAM) and a late La Niña event all contributed to high rainfall during the season and a generally cooler and longer growing season in many regions.

■ Cool conditions, wind and hail resulted in uneven fruit set and lower yields in affected regions.

■ Wet conditions saw higher vigour canopies and risks of pests and disease.

■ Mild seasonal conditions across the country led to a vintage of exceptional fruit quality, generally of higher acidity and lower sugar maturity but with lower yields.

■ Wine Australia's national vintage survey estimated an Australian wine-grape crush of 1.73 million tonnes, 2 per cent below the 10-year average and 13.5 per cent below last year's record crush of 2.01 million tonnes

Grapegrower & Winemaker, sister publication to the *Wine & Viticulture Journal*, described how to best manage unruly canopies to prevent fungal diseases (Dixon 2022) and a second on how to get the most out of copper sprays (Essling and Schwarz 2022).

The wet conditions in the east contributed to Australia having the coolest November since 1999, generally 2°C below average, and in many regions a longer or delayed season. The cooler spring and summer saw some concerns about the efficacy of sulfur sprays under such conditions, as the vapour activity of sulfur is reduced at lower temperatures (15°C and below). However, good control can still be achieved at these temperatures, using low label rates with good spray coverage. Sulfur product labels recommend higher rates when there is high disease pressure or in cooler climates but, this should also be considered in the context of the impact of sulfur on beneficial biological agents. Those managing vineyards conventionally can choose from a long list of registered agrochemical options to protect against powdery mildew, as detailed in the AWRI 'Dog book'. Fewer options are available for organically managed vineyards, however, potassium bicarbonate can be used as an alternative to sulfur. Despite the wettest autumn in NSW since 1990, Australia overall recorded its third warmest autumn on record, which allowed grape ripening to occur much later this season for many regions, achieving flavour ripeness but in many cases without high sugar maturity.

HAIL

On 28 October 2021 severe hailstorms affected a 30km strip through central Barossa Valley and into parts of Eden Valley, the Adelaide Hills and the Riverland when vines were at growth stages between E-L 11 and 18. A second hailstorm, accompanied by strong winds, occurred in the Riverland on 6 November when vines were around growth stages E-L 29 to 31, and again later on 11 January 2022. From 3 January the Canberra District and the Riverina were affected by several days of thunderstorms, strong winds and hail, when vines were around growth stages E-L 29 and E-L 35 to 38, respectively. Hail was also reported in Great Western (Victoria) on 2 December, Orange (NSW) and parts of Tasmania. After the first hail event, the AWRI helpdesk produced several AWRI eBulletins and delivered webinars to provide growers with advice on dealing with hail damage. Several affected regions and sites were visited to assess damage, consult with vineyard management teams

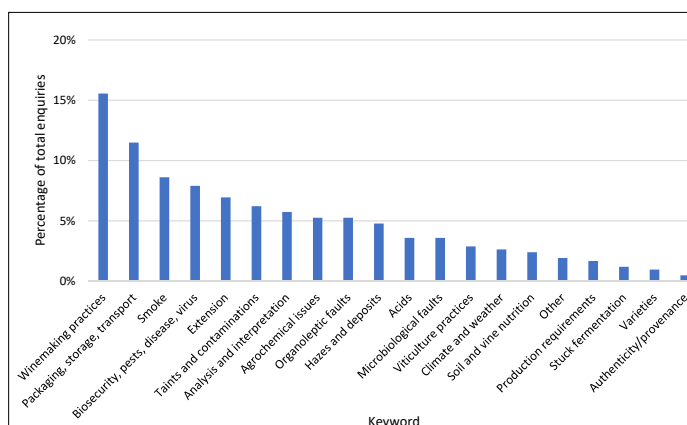


Figure 1. Winemaking and viticulture enquiries received by the AWRI helpdesk during vintage 2022 (1 January to 1 May 2022), organised by keywords. Enquiry numbers are represented as a percentage of the total national wine and viticulture enquiries, where the total number was 418.

and provide direct information about the implications of various hail recovery strategies being considered. Follow-up assessments of the vines towards the end of the season were conducted to learn lessons about recovery from hail after such events. Regional associations, researchers and industry leaders were consulted to develop region-specific best management practices for hail recovery and the AWRI fact sheet 'Managing grapevines after hail damage' was updated. These resources can be found on the AWRI's 'Climate and weather tools' webpage.

VINEYARD PESTS

Vineyard scale was a concern in several regions this season. An apparent greater proportion of frosted scale and soft brown scale rather than the typical grapevine scale was suspected, with these scale types having different control measures, including biological agents. A number of viticulture investigations were conducted to confirm the types of scale prevalent this season across four of the regions. The wetter season also resulted in higher-than-average numbers of pest and disease queries, both in regard to their control in the vineyard, their impact on MOG levels during harvest and their ability to cause taints in wine. Pests observed this year included slugs, snails, caterpillars, grasshoppers, moths, millipedes, native stink bugs and aromatic weeds such as Lincoln weed (where weeds had grown into canopies).

GRAPE COMPOSITION

The generally cooler conditions led to higher natural acidity and lower sugar/potential alcohol concentrations, particularly in earlier

picked white varieties. For red varieties, acidity was higher than in warmer years and for some wines this resulted in higher-than-usual pH increases during malolactic fermentation, while still retaining high levels of titratable acidity. For those affected by cool, wet and windy conditions during flowering that resulted in uneven fruit set or those affected by later hail events, yields were generally lower.

BUSHFIRES AND PLANNED BURNS

Smoke taint remained a concern in the west, with the drier conditions contributing to a number of early-season bushfires around Dunsborough, Denmark and Margaret River. Fires were also reported in Wrattobully and Lucindale in SA and Pipers River in Tasmania. Many were predominantly short-period grass fires with minimal observed impact on fruit.

Due to the generally wetter year and additional vegetative growth, several states again brought forward prescribed burns into early autumn, which caused concern for some growers whose fruit remained on the vine due to the delayed season. The AWRI again worked with state and regional bodies to provide accurate information on controlled burns and their impact on viticulture to support communications with organisations conducting prescribed burns.

WINEMAKING PRACTICES

During the vintage, winemakers raised a number of production queries about different winemaking practices during the vintage, such as fortification, vinegar production, and variations to tank method sparkling wine production. Questions were also received about production techniques for low- and

no-alcohol wines, particularly as companies begin to enter this newer production space and market. These covered not only how to produce these products, but also how to manage some of the associated technical challenges, such as haze prevention, product stabilisation, colour stability and oxidation control, product shelf life and microbial issues including mousiness forming due to the absence of the main preservative — alcohol. Winemakers also appeared to be reviewing their yeast inoculation, yeast scale-up, and nutrient supplementation practices for fermentations this year, possibly as diammonium phosphate (DAP) has increased in price and/or becomes more difficult to source. There was greater discussion about yeast assimilable nitrogen (YAN) analysis, which may now become a more cost effective option rather than standard DAP additions. Winemakers also had queries about oxygen and air addition to ferments.

PACKAGING, STORAGE AND TRANSPORT (LABOUR AND LOGISTICS)

Queries on sulfur dioxide (SO₂) usage, removal, effectiveness, yeast tolerance and alternatives also increased this year. Information on several of these topics was summarised in three 'Ask the AWRI' articles to provide greater industry awareness. One addressed how much SO₂ is required in wines at bottling (Cowey and Coulter 2021), both to inhibit microbiological growth and/or prevent oxidation and if less or more is required for wines intended to be sealed with different closures or aged for different lengths of time. Another addressed lowering SO₂ usage at grape intake using bioprotectants (Cordingley 2021), and a third presented results from a trial that examined the use of sacrificial yeast cultures to decrease SO₂ concentrations, particularly to reduce small amounts of SO₂ in sparkling base wine and juice/must when hydrogen peroxide use is not appropriate (Cordingley 2022).

The COVID-19 pandemic, trade restrictions with China and the Ukraine war collectively increased challenges from cost, supply and delayed transport of wine, additives, dry goods and equipment and continued to put pressures on labour availability in the vineyard and winery. Several investigations this year involved large increases in transit time for containers of wine, increasing in some cases

up to 100 days, with potential impacts on wine quality.

ORGANOLEPTIC ISSUES, TAINTS AND CONTAMINATIONS

Taint queries reflected concern for taints in ferments with large numbers of insects observed this season. Queries about the development of mousy characters in wine were also topical this season but not necessarily related to this year's wine production. Producers across two states had concerns about possible taints from road surfacing or the laying of bitumen along driveways, roadways and work areas during grape ripening. There were also the typical vintage-related occurrences of brine leaks, hydraulic oil or diesel contaminations but, positively, in much lower numbers than previous seasons.

Winemakers who had contracted the virus (SARS-CoV-2) that causes COVID-19 asked the AWRI helpdesk about one of the common symptoms: loss of or distorted sense of smell. A review of the current literature was conducted and the information was packaged in an 'Ask the AWRI' article and the latest reviews added to the AWRI website.

UNHARVESTED GRAPES

As in the 2020 vintage, some growers with vines affected by smoke or fire who did not wish to harvest their fruit for winemaking asked the helpdesk team about options for mechanical harvesting of winegrapes onto the ground, or fruit being pruned off mechanically. A fact sheet on managing smoke-affected vineyards where fruit is not harvested is available on the smoke page of the AWRI website.

DESPITE EVERYTHING, ANOTHER EXCEPTIONAL YEAR

The wetter winter, generally mild seasonal conditions, and a warmer-than-average autumn resulted in a slow ripening season that has seen producers report exceptional fruit quality in many regions. Fruit ripeness has occurred at lower sugar concentrations with a higher natural acidity, albeit with lower yields in some cases. Wine Australia's national vintage survey estimated an Australian winegrape crush of 1.73 million tonnes, two per cent below the 10-year average and

13.5% below last year's record crush of 2.01 million tonnes (Wine Australia 2022).

LOOKING TOWARDS VINTAGE 2023

Unusually, the La Niña continued well into winter 2022 and this, along with a negative Indian Ocean Dipole, has resulted in warmer-than-average waters around northern Australia. This and other localised drivers suggest that winter and spring rainfall is very likely to remain higher than average for much of mainland Australia, but lower for Western Australian regions and south-western Tasmania (BOM Climate Outlook July-September 2022).

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