



Vintage 2023 – observations from the AWRI helpdesk

Photo: Barossa Australia

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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 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 channels including eBulletins, the AWRI website, webinars or face-to-face regional extension events. This article examines some of the conditions experienced across the nation leading up to and during vintage 2023, and some of the technical challenges encountered.

VINTAGE 2023 AT A GLANCE

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 2023 (between 1 January and 1 May) the helpdesk received more than 517 enquiries (Figure 1) and conducted 56 small-scale investigations to identify the underlying cause of problems reported by winemakers and growers.

Cool and wet growing season in the east

Australia's third La Niña event in as many years re-developed in early September 2022 and continued through to the end of 2022. A negative Indian Ocean Dipole (IOD) was present in winter and spring which resulted in above-average winter/spring rainfall over parts of southern Australia, as the warmer waters off north-west Australia provided more available moisture to weather systems crossing the country. The Southern Annular Mode (SAM) remained positive throughout spring and summer, also bringing cooler and wetter conditions. The 2023 growing season is now

IN BRIEF

- Australia experienced its third La Niña in a row, causing cooler and wetter conditions and a delayed harvest in the south-eastern wine regions
- Oversupply pressures drove mothballing or resting of some vineyards
- Record rainfall and floods affected both vineyards and wineries
- Weather conditions heightened disease pressure
- Early prescribed fuel reduction burns began in March, coinciding with the delayed harvest
- Producers experienced limited availability and/or increased costs of fungicides, urea, DAP and carbon dioxide
- Wine Australia's national vintage survey estimated a record low Australian winegrape crush of 1.32 million tonnes, 26% below the 10-year average of 1.78 million tonnes, and the lowest reported crush since 2000, driven by both climate and market factors.

the fourth in a row with a positive SAM. The combined cooler and wetter climate drivers, along with high soil moisture content across central and eastern Australia, delayed flowering until December in many regions, which in turn delayed berry development and resulted in a delayed or late harvest. For many regions, this will go down as one of the latest seasons in recent times. The delayed start to the season and cool and wet seasonal conditions, including flooding, also saw increased prevalence of and questions about pest and disease pressures during spring and early summer, with these queries not included as data in Figure 1 as they were received prior to 1 January 2023.

Spring temperatures were below or very much below average across nearly all of mainland Australia. For New South Wales, the spring mean maximum temperature was the fifth-lowest on record (compared to all springs since 1910) and the lowest since 1976, while in Victoria it was the sixth-lowest on record and lowest since 1992. A large number of weather stations across the Murray–Darling Basin had their coolest spring daytime temperatures on record. National mean summer temperatures were only 0.07°C above the 1961–1990 average, but much lower than summer temperatures of more recent times between 1990 and 2020.

Spring rainfall was 112% above the 1961–1990 average for Australia as a whole. Spring was the wettest on record for New South Wales (previous record 2010), Victoria (previous record 1992) and the Murray–Darling Basin as a whole (previous record 2010). Widespread and significant flooding was experienced across large areas of eastern Australia throughout spring. Flood events continued through summer as spring floodwaters travelled through the Murray and Darling River systems in western New South Wales and South Australia. Flooding also affected parts of Queensland and Tasmania.

South-west Western Australia also experienced a cool spring, after a cold winter, but this was followed by a consistent warm summer with minimal rain and no significant heat extremes. This saw maturity occur in line with long-term averages and with low disease pressure, resulting in an optimal vintage.

Flooded vineyards and wineries

The increased rainfall in 2022 caused flooding across central and eastern state wine regions. As floodwaters progressed along the Darling and Murray rivers, vineyards close to the river became submerged. In some instances, severe flooding washed away vineyard

infrastructure, which will require vineyard reestablishment. Where there was persistent flooding, or where floodwaters took time to recede, waterlogging in vineyards became a concern. Rising water tables also resulted in some vineyards affected by rising salinity. Wineries located close to rivers also became flooded, with the helpdesk asked to investigate affected wine stock in both bottles and barrels.

The effects of waterlogging occur when a grapevine’s root zone becomes saturated and the air between the soil particles is replaced by water. Grapevine roots require oxygen for respiration, and a lack of oxygen over an extended period can result in root death and eventually vine death. The absence of oxygen in the soil and around the roots triggers a cascade of physical, biological and chemical processes, the results of which can also have a negative effect on vine performance. To assist growers dealing with waterlogged vineyards, the AWRI produced a new fact sheet providing advice on monitoring and remediation.

Increased disease pressure

The wet seasonal conditions and widespread flooding saw increased queries about the control of downy mildew and botrytis. ▶

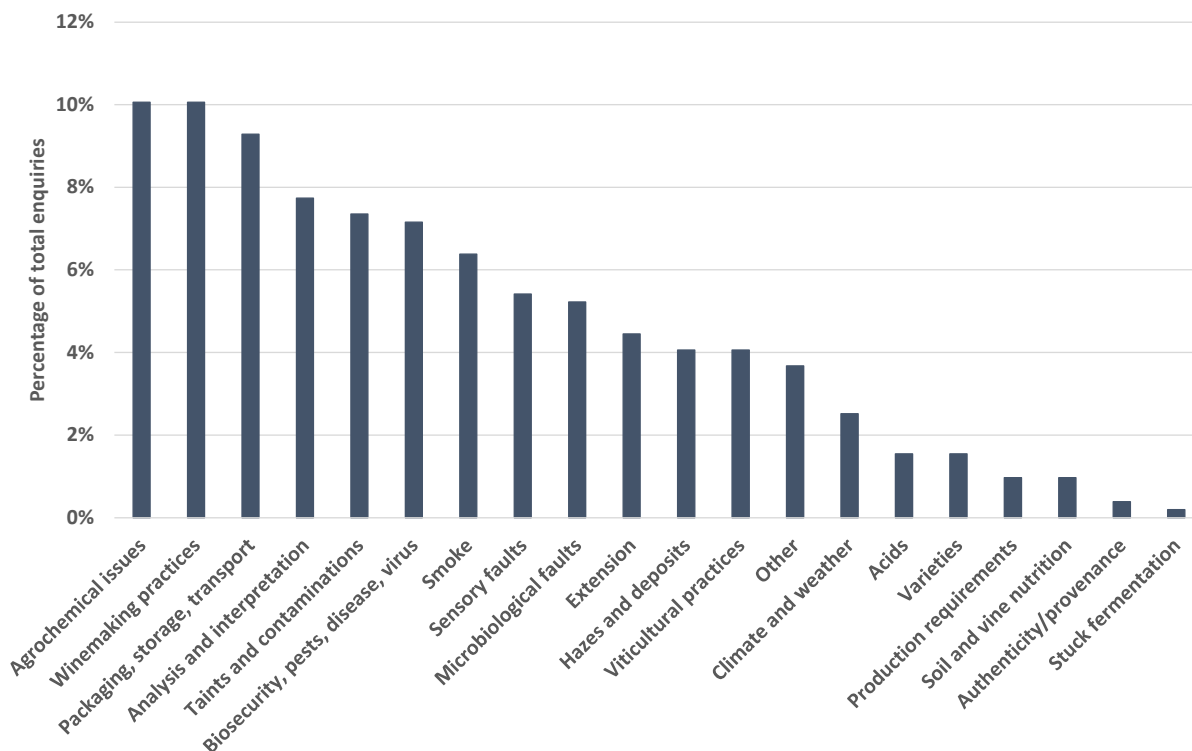


Figure 1. Winemaking and viticulture enquiries received by the AWRI helpdesk between 1 January and 1 May 2023, organised by keywords. Enquiry numbers are represented as a percentage of the total winemaking and viticulture enquiries during the vintage period, where the total number was 517

Applications for emergency use or temporary permits for agrochemicals were prepared and communicated through the AWRI's Agrochemicals project. Several eBulletins warning about disease pressure, downy mildew and fungal diseases were distributed at the start and mid-way through the season and a webinar was presented on managing botrytis in the vineyard.

Bacterial inflorescence rot

Cases of necrosis and rot of inflorescences were also reported this season. These symptoms could be caused by a physiological disorder or fungal infection, but could also be the result of bacterial inflorescence rot (BIR), which is caused by the bacterium *Pseudomonas syringae* pv. *syringae* (PSS). This is a low-risk pathogen in dry and warm seasons, but its development and spread are favoured by wet conditions such as those experienced this year. A fact sheet and eBulletin were produced to raise awareness about this disease, with information on testing and steps to take when pruning affected vines. Actions to open the canopy and promote airflow were encouraged.

Mothballing/vine resting

This year several regions requested information and assistance regarding mothballing or resting vineyards as a way of addressing the impacts of over-supply pressures. Viticulturists attended regional meetings on this topic in the Riverland and Langhorne Creek and an 'Ask the AWRI' article — published in the *Grapewiner & Winemaker*, sister publication to the *Wine & Viticulture Journal* — summarised key information for producers. The application of ethephon and calcium nitrate to reduce yield were investigated and permits were obtained from the regulatory agency to facilitate their use.

Prescribed fuel reduction burns

Due to the generally wetter year and additional vegetative growth, several states again brought forward prescribed fuel reduction burns to early-to-mid-March, which caused concern for growers whose fruit remained on the vine due to the delayed season. We continue to assist state and regional associations to communicate with forest and fire management authorities about the dangers of controlled burns, especially in a year like this

one where the harvest window was delayed due to the colder and wetter conditions.

Winemaking practices

Queries on how to perform a range of different winemaking practices were higher than usual this season but with no particular trend in terms of topics. Queries covered practices including malolactic conversion in wines with high acidity; yeast assimilable nitrogen (YAN) and nitrogen alternatives; timing of tannin additions; amber wines and skin contact in white wine production; sherry production; fortification; NOLO wine production; addition of oxygen during fermentation; hyperoxidation; clarification and settling issues; yeast culture propagation; and use of agents such as dimethyl dicarbonate (DMDC).

Limited nitrogen in vineyard and winery

Queries about the availability and increased cost of nitrogen fertiliser and additives (urea in the vineyard and diammonium phosphate in the winery) were received from both growers and winemakers. Many food and agricultural sectors had to deal with reduced availability and/or increased cost of nitrogen-based fertilisers and additives for the second year in a row. Australia imports 90% of its nitrogen-based chemicals from India, Morocco and China. Reduced worldwide production of these chemicals due to natural gas being redirected for energy needs has resulted in major export nations such as China and Russia placing restrictions on exports of urea to control prices in their domestic markets. This has increased prices on the international market by a factor of three to four since December 2019. Suppliers were contacted to discuss supply and demand factors and researchers were consulted to discuss alternatives and management techniques. Recommendations were then communicated to the grape and wine sector through two 'Ask the AWRI' columns.

Limited carbon dioxide

Carbon dioxide (CO₂ or dry ice) was also in short supply this season and around double the usual price. This coincided with the shutdown of the Torrens Island B power station in Adelaide, previously the biggest supplier of CO₂ to producers in SA, which also had flow-on effects in other states.

HARVEST OVERVIEW – SMALLER VINTAGE BUT OF EXCEPTIONAL QUALITY

Wine Australia's national vintage survey estimated a record low Australian winegrape crush of 1.32 million tonnes, 26% below the 10-year average of 1.78 million tonnes, driven by both climate and market drivers (Wine Australia 2023, and Peter Bailey's article on page 76). The lower crush is expected to help with wine reserves from the previous seasons. One positive outcome of this year's cool and late growing season in the east is that most grapes ripened to moderate sugar levels, ensuring moderate alcohols, fine, intense fruit flavours and high, balancing natural acid. Western Australia recorded another optimal growing season and vintage.

LOOKING TOWARDS VINTAGE 2024

Winter 2023 has been much drier than normal for Queensland and the east coast and wetter throughout South Australia and Victoria. Water reserves are still high following three years of wetter conditions. The ENSO outlook is currently on El Niño ALERT, meaning there is approximately a 70% chance of El Niño forming in 2023. There is also a higher chance of a positive IOD during winter. A positive IOD typically suppresses winter and spring rainfall over much of Australia, and if it occurs with El Niño, it can exacerbate the drying effect (BOM Climate Outlook July-September 2023).

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REFERENCES AND FURTHER READING

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