

Vintage 2015 - observations from the AWRI helpdesk

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The AWRI helpdesk provides technical support to Australia's grapegrowers and winemakers and monitors technical trends across the nation's wine regions. During vintage 2015, helpdesk enquiries were again dominated by issues related to weather events, in particular rain and bushfires. The helpdesk responds to individual queries on a confidential basis, but also provides the latest information to industry via eBulletins, the AWRI website, webinars and face-to-face extension events.

- Vintage 2015 was characterised by an early start across Australia's wine regions.
- Many regions experienced a rapid and compressed vintage.
- Wet weather caused bunch rots in some regions.
- Bushfires occurred in South Australia, Victoria and Western Australia.
- Despite the challenges, the overall fruit and wine quality has been good to exceptional.

IDENTIFYING KEY TECHNICAL ISSUES

The close relationship between the AWRI helpdesk and industry places it in a unique position to capture knowledge associated with the technical issues encountered each vintage across Australia. This allows the team to observe, react to and communicate any emerging issues to Australia's grapegrowers and winemakers; to develop and deliver extension content; to implement any required emergency response; and to communicate ideas for new research projects to the AWRI research team. This report provides an overview of the major technical issues encountered within the Australian wine industry during vintage 2015.

Helpdesk activity started early in vintage 2015, and did not slow down until early April. More than 700 enquiries were received between 1 January and 1 May and 60 investigations were conducted during this period, slightly lower figures than during the same time in 2014. A summary of the most frequent topics where queries were received during vintage 2015 is shown in Figure 1. Requests for articles from the AWRI library were at a high level over the vintage period, with more than 850 requests received (100 more than last year). More than 60% of the articles requested were on winemaking topics and nearly 30% related to viticulture.

CONDITIONS DURING THE GROWING SEASON

Low rainfall

The 2014-15 growing season was characterised by lower than average rainfall in many grapegrowing regions. This reinforced the need for careful monitoring of soil moisture, especially early in the season when irrigation is not usually applied. Higher than normal irrigation volumes and a lack of rain to flush salt from the soil profile caused an increase in reports of salt damage to the canopy. Salt toxicity symptoms can include browning of the leaf margins due to chloride toxicity and inky staining of the interior of the leaves due to sodium. Fruit with high salt levels is often described as having a dull and soapy (as well as salty) character.

Queries received during vintage 2015

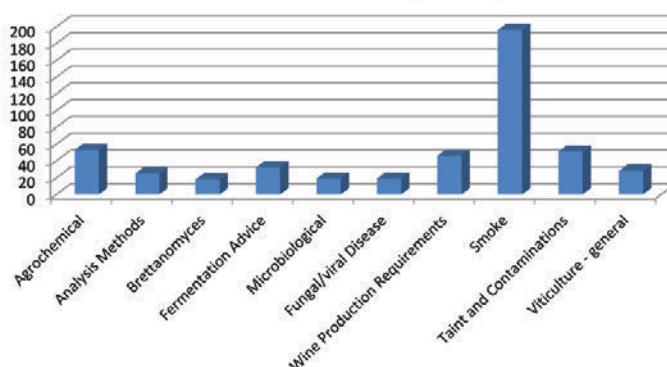


Figure 1. Breakdown of the top 10 areas where queries were received by the AWRI helpdesk during vintage 2015.

For growers concerned about salt levels, the best time to apply leaching irrigation is at the start of spring when the soil profile is at its fullest following winter rainfall.

Restricted spring growth (RSG)

A number of vineyards across south-eastern Australia showed symptoms of poor shoot growth and poor yield development during spring, typically described as 'restricted spring growth'. This issue may be caused by a range of factors including soil variations across a vineyard; micro-climatic conditions (e.g. frost hollows); weather conditions that affect budburst; lack of soil moisture at budburst and early in the growing season; viruses/bud mites/rust mites or fungal diseases. After responding to a number of individual enquiries about this issue, the helpdesk team developed a new fact sheet on the causes and management of RSG and distributed an eBulletin in early December 2014.

Bunch stem necrosis (BSN)

Cases of BSN were reported across many regions this season. BSN is a physiological disorder of bunches that usually becomes obvious post-veraison. Early symptoms are areas of brown dead tissue on the rachis and/or pedicels which grow and girdle the rachis. The affected parts of the bunch then either dry out or drop off. In some cases part of the bunch can be affected, while the rest of the bunch develops normally. Bunches with BSN break easily from the vine and can fall off ahead of the harvester (Figure 2).

The causes of BSN are not fully understood, although there are a number of theories. Some suggest that environmental conditions may be responsible, for example low temperatures at flowering, high rainfall at flowering and/or high rainfall at veraison. Others implicate nutritional imbalances of nitrogen,



Figure 2. Example of bunch stem necrosis (BSN) in Cabernet Sauvignon immediately prior to harvest.

magnesium and calcium. It has also been noted that certain varieties, such as Cabernet Sauvignon, are more susceptible to BSN than others.

If BSN symptoms have been observed it is recommended that growers revisit the nutritional status of the vines and the nutrient history of the block. In particular, if petiole analysis from flowering last year is available, it's worth looking at the magnesium and nitrogen status as these elements have been linked to the disorder.

Hail damage

Hailstorms hit several regions in Western Australia, Victoria and New South Wales from October to December 2014. Damage in the Murray Darling region was estimated by the local industry association at up to \$6 million, with approximately 20,000 tonnes of fruit lost. In some cases the storms were so severe that trellises were blown over or vines were stripped of all their leaves and fruit. Management options varied depending on the extent of the damage. After initial responses to queries from affected growers, additional information was provided via an eBulletin and a new fact sheet on managing grapevines after hail damage.

Bunch rots

Heavy rainfall and humid weather in early January provided conditions that were conducive to development of bunch rots including botrytis. Regions in NSW where vines had reached veraison were particularly affected. Botrytis was surprisingly widespread given the early stage of fruit maturity and affected varieties such as Verdelho that would normally be considered more resistant. The AWRI issued an eBulletin about the risk of bunch rots and presented a webinar and Q&A session on botrytis control to assist affected growers. Heavy rain was also experienced in the Hunter Valley in late January, impacting particularly on the harvest of red varieties.

HARVEST

Early and compressed

In many Australian regions the 2015 harvest was one of the earliest, if not the earliest on record. A warm spring and early budburst was followed by favourable summer conditions and an absence of extended heatwaves (or wet periods) that can often delay maturity. Combined, these factors led to fruit ripening quickly and contributed to generally good to excellent quality.

In many cases, the early vintage was also a compressed vintage, with different varieties maturing at the same time and,

in some cases, red fruit being harvested ahead of white fruit. Such compressions can place considerable strain on harvest and processing infrastructure, with competition for use of crushers, presses, tanks and refrigeration capacity. The AWRI's 'Adapting to difficult vintages' workshop, which has been presented in 19 regions across Australia, provides some strategies for dealing with these conditions in both the winery and vineyard. Climate projections suggest that early and compressed vintages are likely to increase in frequency. As such, a review of the tactics employed in 2015 could provide valuable preparation for future vintages. ▶

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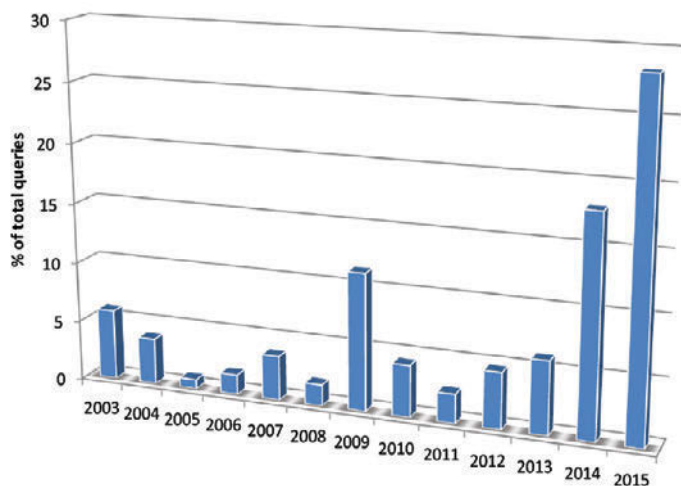


Figure 3. Percentage of queries regarding smoke taint by year, highlighting years 2003, 2009, 2013, 2014 and 2015. Note that the final percentage for 2015 may change by the end of the year.

Bushfires and smoke taint

The single biggest issue that the helpdesk received calls about this vintage was smoke taint (Figure 3). Bushfires occurred in South Australia, Western Australia and Victoria, creating significant concern among growers and winemakers about smoke taint.

Face-to-face question and answer seminars were held in the Adelaide Hills and Western Australia to provide advice and information in response to the bushfires. An eBulletin was also distributed in early January, providing additional information for growers and winemakers on dealing with burnt vines and managing the risk of smoke taint.

A number of factors influence the likelihood of a smoke event causing smoke taint in wine. These include the thickness of the smoke, how long it hangs around and, most importantly, the growth stage of the particular grape variety at the time of exposure. This range of factors means that it is not an easy task to assess the level (if any) of damage to fruit following a fire event or to predict what will happen once the fruit is made into wine. Analytical data from testing volatile phenols and their non-volatile glycoside precursors give the best indication as to whether or not fruit has been exposed to smoke. Sensory and chemical analysis of small-scale ferments can assist in assessing the likely impact on final wines, however, this does take additional time to complete.

For vintage 2015 the majority of analytical results were found to be similar to, or only slightly higher than, levels that might be expected for non-smoke exposed vineyards. Consequently, the risk of smoke taint development was considered to be nil or low for most of the samples tested. This is consistent with the fact that many of the vineyards close to the fires of 2015 were exposed to smoke prior to veraison, when risk of uptake of smoke is relatively low for many grape varieties.

A review of the AWRI's response to the 2015 bushfires is being conducted to identify areas where services can be improved and gaps in knowledge about smoke taint could be addressed through further research.

HYDRAULIC OIL CONTAMINATIONS

Every year a number of wineries contact the AWRI helpdesk requesting assistance in dealing with a burst hydraulic oil line which has resulted in fruit and or wine being contaminated. When a hydraulic line ruptures, small or trace amounts of

hydraulic fluid may end up in a harvest bin or hopper. The difficulty lies in determining the presence of trace amounts of oil analytically. The AWRI has developed a method where the suspected hydraulic oil is first tested for a unique marker, and if one can be identified, the potentially contaminated wine is tested for that marker (provided it isn't naturally present in wine). It must be noted that not all hydraulic oils have unique markers, so not all cases of contamination can be identified analytically. Wines where there is evidence or suspicion of hydraulic oil contamination do not meet the requirements of the Australian and New Zealand Food Standards Code (Standard 4.5.1) and it is suggested by the AWRI that such wines be considered unsaleable. The AWRI recommends regular preventative maintenance on critical machinery such as machine harvesters to minimise the risk of hydraulic oil contaminations.

MOST UNUSUAL INFORMATION REQUEST FOR THE VINTAGE (VEGETARIAN OR VEGAN LABELLING)

One repeated request this vintage has concerned appropriate wine for vegetarians and vegans and information on vegetarian or vegan-friendly wine labelling. In 2013 Roy Morgan research showed the number of Australians aged 14+ who agree with the statement, "The food I eat is all, or almost all, vegetarian" had grown from 1,608,000 in 2009 to 1,935,000, or 10% of the population. According to media reports, vegetarian-friendly wines now make up more than 50 percent of wines listed at Tesco, the UK's biggest supermarket chain, with vegan wine numbers a little less. Unfortunately the majority of wines do not contain information on their back label to indicate whether or not they are vegetarian or vegan-friendly.

Vegans, according to dictionary definitions, are individuals who do not eat or use any animal products. Alcohol consumption is an accepted part of the vegan diet; however, when winemaking is carefully considered, not all wine is suitable for vegans. Any wines fined with the animal-derived processing aids casein, potassium caseinate, skim milk, egg albumin/egg white, gelatin and isinglass are not vegan-friendly. Clay-based bentonites are a vegan-friendly alternative fining agent. To aid appropriate buying decisions by vegetarians and vegans, wine producers could consider including information on back labels about the fining agents used.

A SIGN OF VINTAGES TO COME?

In summary, 2015 will be remembered as an early vintage across Australia's wine regions; possibly a sign of things to come as the Australian climate changes. It will also be remembered as a compressed vintage for many, with lessons to be learned on how to allocate harvesting and winemaking resources to cope with fruit coming in over a shorter than usual timeframe.

As with every vintage, there were viticultural and weather-related challenges - but overall the warm and dry conditions that led to the early vintage contributed to excellent grape and wine quality across the majority of regions. Those who were able to adapt to the compressed vintage and allocate resources appropriately reaped the benefits of the fruit quality, ensuring that 2015 wines will be sought-after in years to come.

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