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# Tracking technical trends

## Introduction

The AWRI helpdesk provides technical support across viticulture, winemaking, environment, health, regulatory and trade matters to the Australian grape and wine industry. Industry personnel can contact the helpdesk by phone or email to ask for advice or to seek help solving a problem. Around 2,000 queries are received each year, approximately 80% of which are winemaking related. About 200 of the queries received each year turn into investigations that require sensory, chemical or microbiological analysis to identify the problem. These confidential services are funded by the Australian Grape and Wine Authority and delivered free of charge to Australian levy payers.

As well as dealing with immediate technical problems, the helpdesk team draws on an extensive collection of information gathered at the AWRI over the past 22 years but only recently migrated into a single searchable database. That database can now be mined to identify both long- and short-term technical trends nationwide. This article provides some examples of the how this valuable historical resource can be used.

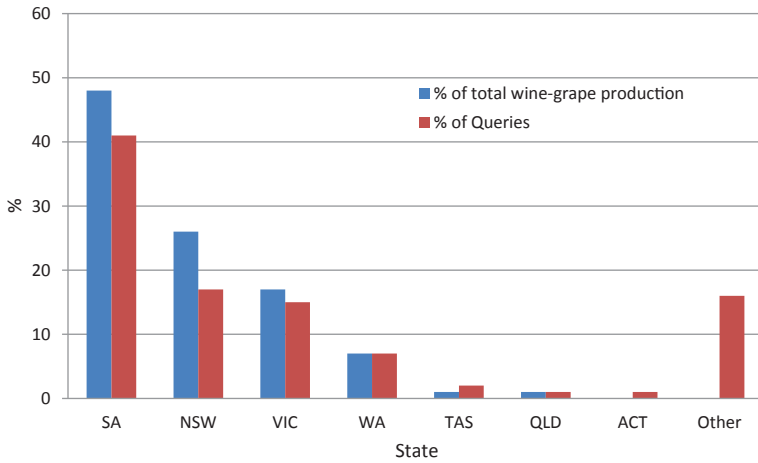
## Source of queries received

Figures 1 and 2 show the distribution of queries received during the 2014 financial year segmented by state and by wine producer tonnage size, respectively. Note that Figure 2 only includes queries taken from wine companies. These figures show that helpdesk queries come from all states, in numbers approximately proportional to wine-grape production, and from the smallest to the largest wine companies.

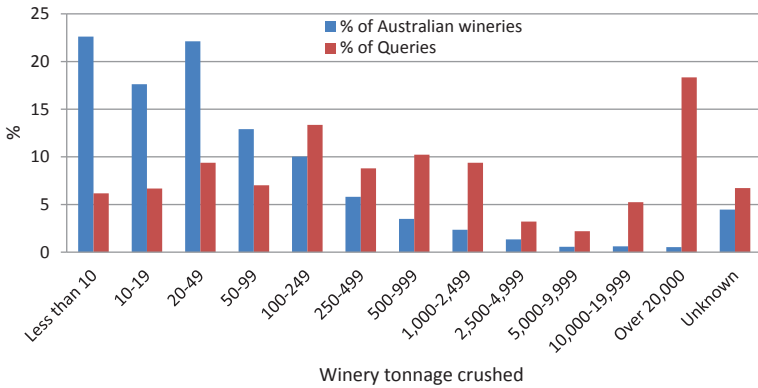
The annual number of winemaking queries received since the inception of the helpdesk in 1998 has remained relatively constant until present day (Figure 3).

## Categorising queries

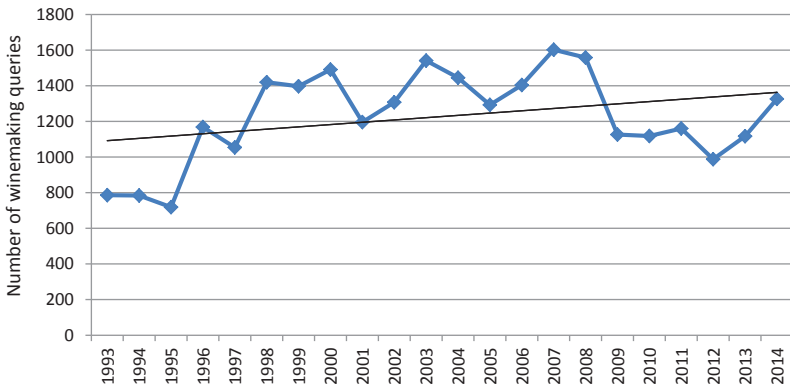
Helpdesk queries are assigned to 60 different 'keywords' describing their nature. The number of queries observed under each category is then compared to historical 'normal' levels that have been collected over greater than 20 years. For example, 'cold stability' issues might appear high in the month of July, but comparison against historical records reveals that cold stability issues are usually high during this period as it is a time when winemakers are stabilising wine. This process allows national, state and regional trends or anomalies to be identified in real time which in turn allows for prompt response and targeted extension activities where appropriate.



**Figure 1.** All queries received by the AWRI helpdesk in 2013/2014 by state, compared to wine-grape production



**Figure 2.** All queries received by the AWRI helpdesk from wineries in 2013/2014 broken down by winery tonnage crushed compared to the distribution of Australian wineries by tonnage crushed



**Figure 3.** Annual number of winemaking queries from 1993 to 2014

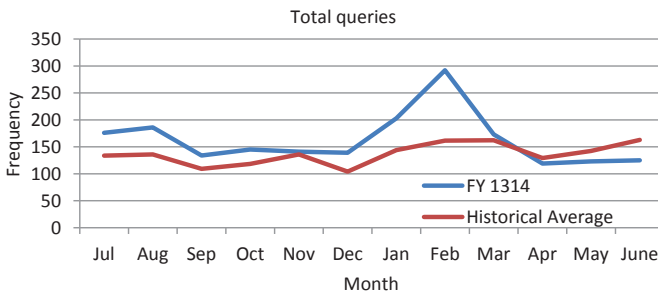
The assignment of keywords followed a review of the type and nature of the queries received over an extended period of time. Each keyword must be used at least 20 times per year so that valid trends can be observed. Examples of keywords include:

- ‘Authenticity/Provenance’, which is used where a grower or winery suspects their grapes or wine have been substituted
- ‘Filtration’, which includes queries regarding difficulties encountered during filtration, advice on filter types and conducting filtration and the consequences of filtering or not filtering a wine
- ‘Pest-Fungal/Viral’, which includes queries received on issues related to downy or powdery mildew, *Botrytis* and other fungal or viral vineyard diseases
- ‘Requirements’, which includes queries regarding advice on export requirements, maximum residue limits or general wine production requirements. Recent changes to requirements for wine export to China, particularly regarding manganese levels in wine, fall into this category.

### Examining query data

When looking at the data with an annual or monthly perspective, trends become quite easily apparent. Figure 4 shows the queries received per month for the 2013/14 financial year. An increase in the number of queries in January and February compared to the historical average is quite obvious. A closer examination of the keywords then reveals that this trend was mainly caused by an increase in queries related to the keyword ‘smoke taint’, due to the bushfires across South Australia and Victoria during January and February (Figure 5).

Trends can also be observed by individual state. As an example, Figure 6 shows the percentage of enquiries received from Victoria for that state’s top ten query keywords compared to national levels from July 2013 to June 2014. Victoria had more than double the proportion

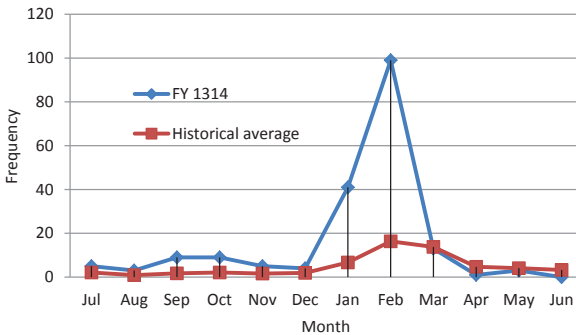


**Figure 4.** Frequency of queries by month during the 2013–2014 financial year compared to the historical monthly average calculated for the period 2010–2014

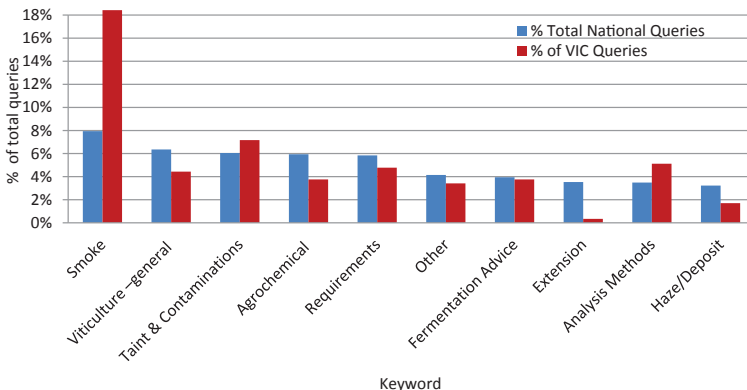
of requests for information on smoke taint compared to Australia as a whole. Queries were received in both October 2013, with early fires that occurred across Victoria and NSW, and also later in January and February 2014 as a result of fires that followed extended heatwave events. This type of analysis can also be extended to the regional level, allowing targeted workshops and communications to be delivered.

### Multi-year trends

Trends observed across multiple years can also provide an interesting perspective. Figure 7 shows that the helpdesk did not receive any queries regarding ‘smoke taint’ prior to the 2003 bushfires. The fires at that time stimulated calls for help from industry which quickly led to a research project that examined smoke-related analysis techniques and management strategies. High numbers of requests for information on smoke can be seen in years where Australia was affected by major bushfire events (2003, 2009 and 2014).



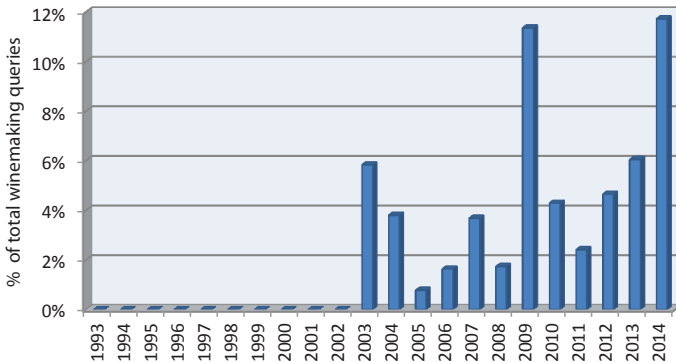
**Figure 5.** Frequency of queries by month for the keyword ‘smoke taint’ during the 2013–2014 financial year compared to the historical monthly average calculated for the period 2010–2014



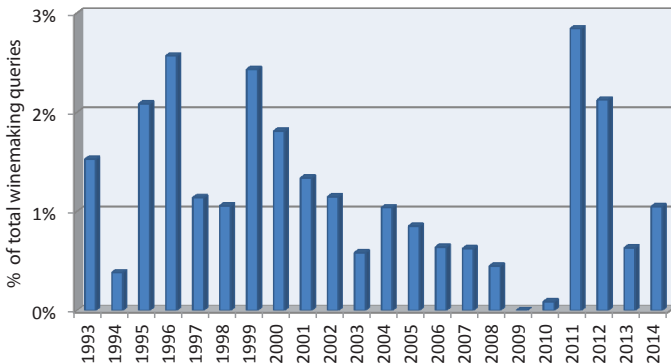
**Figure 6.** Proportion of queries against ten keywords from Victoria compared to proportion of national queries, during the 2013–2014 financial year

Similar trends can be observed during cooler and wet vintages for fungal or mould-related queries. Figure 8 highlights the two recent 2010–11 and 2011–12 La Niña events which resulted in particularly wet vintages. These vintages saw a rise in queries regarding management of *Botrytis* in grapes and wine. This same trend was also seen in the last very wet vintage prior to that, in 1999. Predicting issues that are likely to be prevalent in a particular vintage allows the appropriate information to be packaged and delivered to growers and winemakers.

An example of non weather-related trends is the keyword ‘closures’ which includes queries relating to closure choice (natural, synthetic, screwcap, crown, glass or other) and effects of wine ageing under different closures and leakage issues (but not closure-related taints or post bottling oxidation). The topic of closures was very much a concern from 2001 to 2006 which coincided with the time the AWRI released its first publication on its 1999 closure



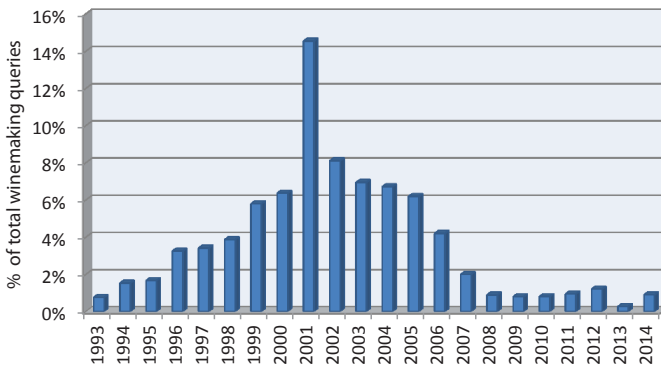
**Figure 7.** Proportion of winemaking queries by calendar year for the keyword ‘smoke taint’



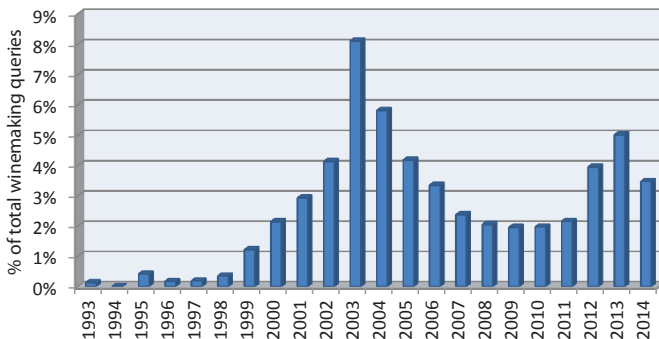
**Figure 8.** Proportion of winemaking queries by calendar year for the keyword ‘moulds’

trial, and also the increased adoption of the screwcap as a bottle closure within the Australian wine sector. This could reflect both a push and a pull trend, in that once information was disseminated about closures this might have triggered more queries to be received, but also shows a decline in queries in this area from 2006 onwards, perhaps reflecting the widespread adoption of screw caps as well as success in disseminating information in this area.

Another key issue during the early 2000s was the incidence of *Brettanomyces* character in Australian wine. Awareness of the issue was relatively low prior to 1999, and then ramped up quite quickly. Control measures first published by the AWRI in 2003 and a comprehensive program of associated workshops and seminars facilitated their adoption by Australian producers, with a subsequent decline in queries (Figure 10) and also a decline in 4-ethyl



**Figure 9.** Proportion of winemaking queries by calendar year for the keyword ‘closures’



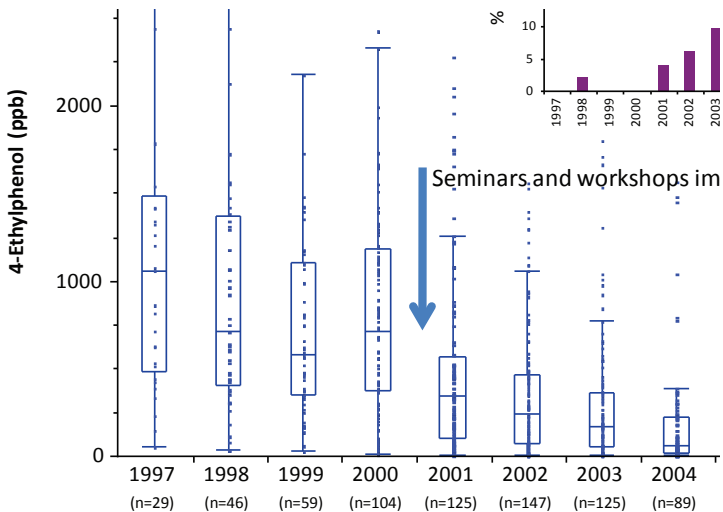
**Figure 10.** Proportion of winemaking queries by calendar year for the keyword ‘*Brettanomyces*’

phenol levels (Figure 11). Interestingly queries regarding Brett began to increase again in 2012 and 2013, which triggered the AWRI to revisit the issue and deliver more information to producers. Research is also continuing at the AWRI to understand *Brettanomyces* at the genomic level and stay ahead of any strains that might develop resistance to the current control strategies.

### Keeping track of trends

The AWRI helpdesk not only provides advice and solutions for Australian grapegrowers and winemakers but can also identify industry trends occurring in real time. With trends able to be monitored at a state and regional level, many associations, growers and winemakers are now calling the helpdesk for regular updates on current technical issues in their state or region, helping them to stay ahead of the curve in adopting appropriate management strategies.

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**Figure 11.** Declining 4-ethylphenol concentration in Australian Cabernet Sauvignon wines from five regions, with (inset) a corresponding increase in wines measured with 'not detectable' (n.d.) concentrations of 4-ethylphenol