

Since 1955, The Australian Wine Research Institute has been supporting Australian grape and wine producers with the development and adoption of innovative practices. Working alongside producers, we aim to improve production for a positive outcome economically, socially and environmentally. To achieve our aims we have developed a successful business model that is unique in the world. This model is supported with a team of dedicated and highly skilled professionals, sourced from around the world. The AWRI model includes world-class research and development, information and knowledge extension, and commercial services.

Science at your service

At the AWRI, your business is our passion.

For over 50 years we've made it our mission to give you the best information and research our specialists can offer.

From agrochemicals to wine taint, our job is to find out what you need to know to grow the best quality grapes and make the best quality wine.

Our research is rigorous. Our search for solutions is resolute. We work with you to apply the best science, technology and innovation to grapegrowing and winemaking - from **grape** to the **consumers' lips**.

AWRI highlights from **grape**...

No grapegrower is without the 'Dog Book', our user-friendly guide to agrochemical use and meeting maximum residue limits in wine exports. Called 'Agrochemicals registered for use in Australian wine', the guide is available in hard copy from the AWRI or at www.awri.com.au/agrochemicals/agrochemical_booklet

Our researchers continue to use science and state-of-the-art technology to analyse flavour, colour and composition of grapes and wine, to find out which management practices provide the best quality.

Our knowledge has reduced spoilage in Australian fortified and table wines, revealed the importance of pH in the stability of exported wine and developed new ways to tackle wine taints.

New yeasts and pure microbial cultures – developed at the AWRI – have given winemakers more control of fermentation management.

Our R&D has changed the way wineries manage wine instabilities, temperature and oxidation, red wine colour and phenolics.

...to the **consumers' lips**.

Our analysis techniques have given winemakers 'inside information' about wine composition – offering consumers better quality wines with improved flavour.

Improved ratios of free to total SO₂ shows more effective use of sulfur by Australian winemakers, supported by research.

The way bottles are closed ensures wine is delivered to the consumer in the way the winemaker intended, due to our findings.

Our investigations into the smell and taste of wine have identified the sensory drivers of wine quality and style.

The Australian wine sector has built a global reputation for integrity, quality and excellence with the support of our technology and expertise.



Your success, our priority

Striving for the success of the Australian wine sector is at the heart of what we do.

Our priorities are your priorities. Our mission is to help you succeed, with the best science, technology, up-to-date research and information.

Our pursuit of understanding is tenacious and our knowledge is cutting-edge. As world experts in our field, our job is to make science and technology work for you.

Research with results

In 2007, AWRI scientists hit the headlines with a breakthrough. After eight years of dedicated research they had discovered the source of the 'black pepper' aroma in Shiraz: a compound called rotundone. The discovery of the mystery compound was welcomed as one of the most significant finds in red wine flavour and aroma in a generation.

Other key compounds have also been 'unearthed' by our scientists, using state-of-the-art technology and techniques to unravel the composition of wine flavour and aroma.

The minty eucalypt sometimes found in Australian reds has now been traced to a specific compound and there have been significant steps taken forward to give Australian winemakers 'inside information' on how to manage the level of 'eucalyptus' aroma and flavour in wine.

Australian winemakers can use the information we generated on the compounds that contribute to bottle-aged characters in white wine, and our unraveling of the complex chemistry involved in the formation of 'fruity, apple and quince' aromas.

Our scientists have also tracked down sources of potential 'off-flavours' in wine – such as those that give a 'fungal must' or 'plastic-like' off-flavours. We work closely with wine producers to ensure negative aromas and flavours are avoided.

In 2008, AWRI scientists were responsible for another world first: the genome sequence of a wine yeast. This analysis will provide a powerful resource for wine yeast strain development and ultimately give winemakers greater control over the wine they produce. Our work to date with wine yeasts has given producers an understanding that different yeasts produce wines with different chemical composition - which can mean sensory differences. Research at the AWRI is also showing that optimising the nutrient balance in grape juice is an important tool for the production of cleaner, more flavoursome wines.

Moving ahead

Over the next five years, the AWRI is targeting four key areas, to provide the Australian wine sector with the right research and expertise to succeed.

1. Grape and wine composition

AWRI discoveries have already changed the way winemakers practice their craft: breakthroughs in the identification of volatile compounds and phenolics are helping create wines with defined characteristics, to meet market demand.

Our quest to understand more about the link between grape chemistry and wine flavour will continue.

Our aim is to provide Australian grapegrowers and winemakers with the know-how to define their product with greater accuracy; meet product specifications; continue to improve wine composition and quality; and improve production processes in a targeted way.

2. Grape and wine production

As a wine producing nation, Australia has a reputation for being technologically advanced and innovative: producing wines that constantly over-deliver on value. Our aim is to keep it that way.

To remain competitive, the Australian wine sector is looking for continuous improvements in efficiency, sustainability and profitability. At the AWRI, our research programs are investigating new ways to meet all three objectives, from the vine to the consumer.

3. Wine in Society

The Australian wine sector prides itself on consumer awareness, environmental sustainability and social responsibility.

Together, these three drivers set it apart – positioning Australian producers as competitive, listening to consumers and responding to their demands.

The AWRI plays a key role as the sector's advocate and representative body: its broad range of resources, research and expertise is accessible to the media, government and lobby groups.

The AWRI aims to use its knowledge – embracing consumer, social and environmental issues in addition to science and technology – to maintain Australia's competitive edge.

4. Information and Knowledge Transfer

Australia's grapegrowers and winemakers are known for their uptake of new ideas and technology. At the AWRI, our aim is to keep you informed, up-to-date and ahead of international competition.

Our knowledge is your resource. Our priority is to give you the best information and research in our presentations and publications, in person, in print and on our website.

Research in action

The AWRI Closure Trial started in 1999 and continues to receive world-wide recognition. Today, it remains a benchmark for the assessment of new ways to seal, or close, wine bottles.

Australian winemakers, armed with the results from the AWRI's work, make closure choices to suit the wine and target market. The use and choice of alternative closures allows producers to discover new markets and realise new opportunities.

Consumers have been quick to accept the change and winemakers have reacted fast. The change is the result, however, of a long-term process of innovation, where AWRI scientists have challenged existing ideas.

Thinking differently meant redefining the word 'closure'. Closure does not simply mean a stopper in a bottle. The way a bottle is sealed has an intimate relationship with the wine at a number of levels: it affects its character, aroma, image and marketability.

The AWRI's research has revealed that changing the way a bottle is closed can turn one wine into several different wines, introducing the paradigm of 'winemaking continuing after bottling'.

This greater understanding is not only driving closure development world-wide, but will also allow winemakers to tailor the bottling of individual wines to ensure their optimal development in-bottle, for maximum consumer satisfaction.

Brett used to be an unwanted guest: a spoilsport in wineries world-wide. Then AWRI took up the challenge to assist winemakers to manage Brett in their wineries.

The turning point came in the 1990s. *Brettanomyces* – called Brett for short – became known as an unwelcome yeast that is present in all wineries but has the ability to spoil a good drop of wine.

Consumer testing by the AWRI revealed that drinkers simply do not like 'Bretty' wine.

But the scientists had a plan...

The AWRI's Brett project took an integrated approach. It blended the AWRI's unique combination of expertise in practical winemaking, microbiology, analytical chemistry, sensory evaluation and communication skills to develop and disseminate a control strategy.

At the same time, it pursued and published its discoveries about Brett that were new to wine research and understanding.

As a result, within six years, through the hard work of wineries themselves, typical Brett concentrations dropped by as much as 90% in some varieties and regions and were eradicated from some wines altogether.

The AWRI's breakthrough in tackling Brett has also led to new strategies, putting winemakers in control of quality red wine production.

1.4 million hectares of bushland destroyed. Fires raged across four states and the ACT.

In 2003, Australia experienced one of its worst years for bushfires. Vast areas of land were burnt or contaminated by smoke – including vines in Victoria and New South Wales.

The wine sector needed answers. How did the smoke affect grapes? Could the taint be removed? What did it mean for grapegrowers and winemakers?

Researchers at the AWRI made it their mission to find out, and collaborated with other scientists around Australia. They discovered that the exposure of grapes to smoke as early as veraison – when grapes begin to soften and gain colour – could cause a taint and a drop in the grapes' commercial value.

They also found out where the taint was present: in the skin. This had repercussions for red wine producers in particular – contact with grape skins was unavoidable in the winemaking process.

This collaborative work gave Australia's wine producers information to help them evaluate techniques for the removal of smoky taint and ensure they had the right insurance policy.

Since the taint was classed as a contaminant – according to the AWRI – many grapegrowers had the right to claim compensation.

The AWRI continues to offer analytical services for the detection of smoke taint. Contact customer service on 08 8303 6600 for more information.