



The Australian Wine Research building, Urrbrae (circa 1970s).  
Credit: Australian Wine Research Institute

# AWRI: Celebrating 70 years and innovating for the future

By **Mark Krstic**, Managing Director, AWRI

## A time for reflection

This year the Australian Wine Research Institute is celebrating 70 years since its establishment. As the seventh Managing Director of this organisation, for me this significant milestone marks a moment for reflection – on where we've come from, our activities today and where we're heading.

From the time of its founding, AWRI has always had its eyes firmly on using science to solve practical problems for the Australian wine industry. Its unique position as a research organisation dedicated to one industry, and without the additional requirements of a university or government body, has allowed it to deliver focused, agile, relevant science over its lifespan and to communicate that science directly with the producers

it exists to support. Right from the start, AWRI's founders saw it as forming part of the international community of grape and wine research and conducting research on all steps from grapegrowing through to wine production.

“We aim to set up an institute comparable, in principle if not in size, with those of the wine industries of France, Spain, Portugal, Germany and California. The new research will take in viticulture – types of grapes to be grown, soil, treatment of vines and vine diseases – as well as the winemaking side.”

Mr Michael Auld, AWRI's first Chair, *The Sunday Advertiser*, 23 June 1955.

AWRI's first Managing Director, John Fornachon, began his career in wine research seeking to solve spoilage problems in fortified Australian wines exported to the UK. His groundbreaking research on lactic acid bacteria, followed by work on flor yeasts, built his reputation and ensured he was well placed to take up the leadership role when the Australian wine industry secured funding for a standalone dedicated institute, via the Wine Research Act (1955). He then grew the AWRI over its first decade, moving it into its own premises and expanding research into areas including grape sampling and quality; lead contamination in wine; identifying and selecting the best strains of wine yeast and bacteria; hydrogen sulfide generation; bitterness, colour and flavour compounds; and analytical methods.





The Australian Wine Research Institute building (2019). Credit: Dr Eric Wilkes

Following in Fornachon's footsteps, six other Managing Directors have since led the AWRI, with expertise across wine chemistry, biochemistry, food technology, microbiology, molecular biology, plant physiology and viticulture. All of these leaders have had a clear shared purpose –to deliver innovative wine science and support to the Australian wine industry, while collaborating with other respected research institutions around Australia and across the globe.

### Scientific discoveries with impact

Looking back at seven decades of AWRI's world-leading grape and wine science, it is hard to choose which scientific achievements to highlight. And rather than do this myself, I thought I would instead ask some of the most senior members of our industry about the scientific advances that have truly made a difference to grape and wine production in Australia. It was humbling to have them remind me that so many practices that are taken for granted in modern Australian winemaking have

their roots in past AWRI-led science and innovation. Techniques such as use of pure yeast strains, pH management, closure choice and avoidance of taints or faults are very much standard practice today, but nevertheless grounded in earlier AWRI work. Some of the specific achievements these industry legends highlighted include:

- Development of analytical methods for a wide variety of grape and wine components and understanding of their role in wine, including volatile sulfur compounds, rotundone, aroma compounds and flavour precursors, wine hazes, phenolics and a range of taints
- Optimisation of malolactic fermentation and commercialisation of superior malolactic bacteria strains
- Understanding and management of protein instability
- Measurement of phenolics, proteins and tannins in wine and understanding their impact and management
- Understanding of mechanisms for formation and prevention of browning and pinking in wines
- Measuring the prevalence of *Brettanomyces* characters in Australian red wines over time, identifying different *Brettanomyces* strains and their SO<sub>2</sub> tolerance, developing control strategies and mapping the *Brettanomyces* genome

- Understanding the influence of yeast strains on wine flavour and the commercialisation of superior strains
- Development and commercialisation of interspecific hybrid yeasts with unique winemaking properties
- Genomic sequencing of more than 200 wine yeasts and 85 wine bacteria, understanding their role in conventional and 'wild' fermentations and regional differences
- Mapping of grapevine genomes and clonal variation for key grape varieties and working towards the world-first clonal identification testing service
- Identification of compounds responsible for mousy taint and provision of advice for prevention
- Understanding of the origin and management of minty/eucalyptus flavours in some wines
- Investigations of flavour scalping from wine packaging
- Understanding of factors contributing to reductive characters in canned wines
- Comparison of Chinese vs Western sensory descriptors used by consumers
- Completion of the first large consumer preference mapping study
- The AWRI closure trial that helped so many wineries confidently move to using screw cap technology. ▶



Staff at the Australian Wine Research Institute – Angus Forgan, Dr Paul Henschke (2010). Credit: Australian Wine Research Institute

- The identification of smoke taint marker compounds and diagnostic methods to help grape and wine producers following bushfire events.

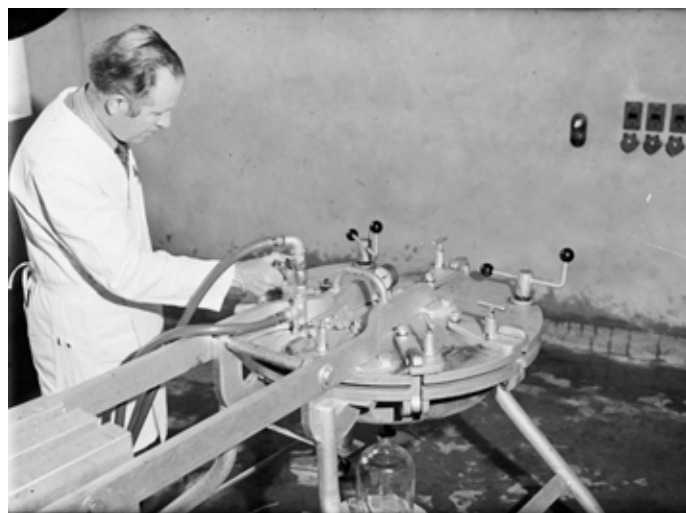
## Spirit of collaboration

A key aspect of all AWRI's scientific achievements is collaboration. An industry-focused research organisation can only perform relevant research when it has an excellent understanding of industry challenges and opportunities, combined with the trust of industry personnel. None of our research has been done in isolation – we work closely with Australian grape and wine producers, drawing on their expertise and accessing samples or equipment, to ensure all our experiments relate as closely as possible to industry practice. We also have a strong record of collaborating with other researchers and institutions around the world, bringing the latest findings to Australia and sometimes conducting our own research to validate those findings under local Australian conditions.

## Advice and services for our industry

AWRI's purpose is not just about research excellence. Sitting alongside our world-class research scientists is a team of grape and wine experts whose work focuses on providing the services and technical support needed by Australia's grapegrowers and winemakers. This includes a direct 'first responder' role in dealing with technical or regulatory problems encountered during grapegrowing and winemaking, a communication

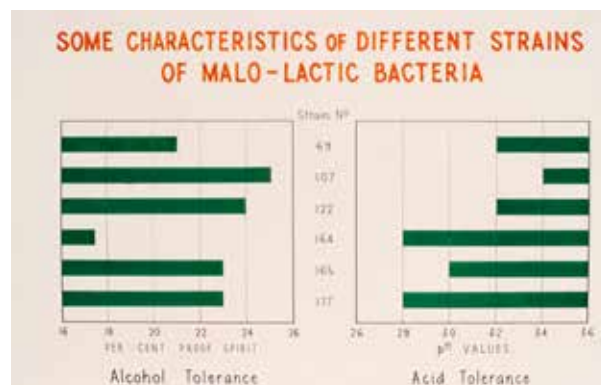
role in translating and sharing the latest scientific discoveries, and an education role in delivering workshops, webinars and courses that continue to build the technical skills and knowledge of Australian grape and wine producers. AWRI's ethic of service to the Australian wine industry dates back right to its founding, built on the need to solve industry problems and use industry issues as prompts for new research projects. This joint purpose was described by AWRI's second Managing



Large Brister press operated by Ken Pocock (1972). Credit: Australian Wine Research Institute and Dr Bryce Rankine



Staff at the Australian Wine Research Institute - Dr Paul Monk; Dr Pat Williams; Dr Chris Somers; Gary Baldwin; Prof Terry Lee; Dr Bob Simpson (1986). Credit: Australian Wine Research Institute



Some characteristics of malolactic fermentation bacteria, displayed in a bar chart according to acid tolerance or alcohol tolerance (1979). Credit: Australian Wine Research Institute and Dr Bryce Rankine



Full view of automatic sampling apparatus with operator. Credit: Australian Wine Research Institute



Mr Yoji Hayasaka and Mr Leigh Francis operating the Finnigan TSQ 70 gas chromatograph mass spectrometer system (1991). Credit: Australian Wine Research Institute



Director, Dr Waldie W. Forrest, in a predecessor to this journal, back in 1973:

“The functions of the Institute include both research and advisory work and it is important that a balance be maintained between these activities.”

Dr W. W. Forrest,  
*Australian Grapegrower and  
Winemaker*, April 1973

I feel that this is a key aspect that differentiates AWRI from other research providers. We are committed to transferring the very latest knowledge, techniques and technologies to industry practitioners for the benefit of the Australian wine industry.

Over 70 years, the services AWRI provides to our industry have morphed and expanded to incorporate new platforms and respond to changing industry needs. They include:

- The longstanding AWRI helpdesk, which has provided free technical advice and solved problems dating right back to the earliest days of AWRI
- The agrochemical ‘Dog book’, which guides grapegrowers in agrochemical use and helps protect the global reputation of Australian wine
- The Advanced Wine Assessment Course, which has helped train hundreds of wine professionals in wine assessment, setting many on the path of becoming highly respected wine judges both domestically and internationally
- Newer advanced courses in viticulture and wine technology
- Leadership of the technical and membership aspects of Sustainable Winegrowing Australia -the national program underpinning improvements in sustainability across our industry
- Advanced analytical and consulting services provided by Affinity Labs
- Support for the Australian Wine Industry Technical Conference (in partnership with the Australian Society of Viticulture and Oenology), which since 1970 has been our industry’s preeminent technical event



Dr Simon Schmidt plating in the laboratory (2024) Credit: Australian Wine Research Institute

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- Increasing use of digital platforms including online content, webinars, podcasts and social media to convey relevant technical information to new generations of producers.

### Looking to the future

While milestones such as this 70th birthday are significant and worth celebrating, I am very much aware that we cannot rest on the achievements of the past and that AWRI’s legacy of innovation needs to be continually renewed. As our industry faces a range of challenges, including climate pressures, changing consumer demand, international trade uncertainty and declining research funding, AWRI must and will adapt its research priorities and services to ensure it remains relevant and valued by our

industry for another 70 years. This may require changes to our structure or the ways we have done things in the past, but such change is necessary and healthy for any long-lived organisation.

We are already involved in a number of exciting new projects and collaborations tailored to manage and anticipate current and future challenges. Vineyard and winery automation, no- and low-alcohol wine production, climate-adaptive viticulture and an increased focus on efficiency and sustainability are all areas that will pay dividends into the future. We also do not forget that many of the most important scientific breakthroughs come from blue-sky research, and strive to ensure our creative scientists can carve out some time for that type of speculative science. We continue to partner with organisations such as Wine Australia, the University of Adelaide, BioPlatforms Australia, Cooperative Research Centres and other state and federal government agencies to ensure the needs of the Australian wine industry are met.

While identifying the need to change and adapt, I can assure you that AWRI’s core purpose of delivering world-class science and industry support remains our focus as we move forward. We are proud of what we have achieved hand-in-hand with industry over the past 70 years and look forward to facing the future together.

**CW**

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