

The Australian Wine Industry Technical Conference

Grose C

July 2022

1 Introduction

The 18th Australian Wine Industry Technical Conference (AWITC) was held in Adelaide from 26 to 29 June 2022 and is held every 3 years. The AWITC conference combines an extensive programme of plenary sessions and workshops presenting the latest initiatives on viticulture and winemaking and an extensive trade exhibition show casing technology innovation.

Conference statistics:

- 1200 delegates, up 20% on 2019
- 49 plenary sessions, 37 workshops, 150 posters
- 3100 m² of trade exhibits and 163 individual trade exhibitors
- The next 19th AWITC and Tech Exhibition will be held 20–23 July 2025 in Adelaide.

A summary of conference highlights is presented in this report.

The main purpose for attending the conference was to present a poster “Producer friendly colour analysis of Pinot noir berries”, which showcased work carried out by Muriel Yvon, The New Zealand Institute for Plant and Food Research Limited (PFR) and the PFR team in collaboration with Marama Labs, analysing grape berry, juice and wine samples taken from 12 vineyards in three New Zealand regions and spanning three vintages. This work provides industry with easier and more accurate tools to objectively assess grape and wine composition.

2 AWITC conference highlights

2.1 Poster displays

There were 150 posters on display at the AWITC conference covering a vast array of topics ranging from the environment, climate change to grape and wine aroma, flavour, phenolics and colour to winery technologies, presenting the latest work from a large number of different research facilities.

There was a high level of interest shown in the research poster “Producer friendly colour analysis of Pinot noir berries” PFR presented at the conference in collaboration with Marama Labs (Figure 1).

2.1.1 Poster summary

In an effort to encourage New Zealand producers to undertake grape colour measurement to develop style, vineyard and vintage benchmarks, PFR has devised and tested refinements to the established Australian Wine Research Institute (AWRI) grape berry analysis protocols. In collaboration with Marama Labs (developers of the CloudSpec instrument), PFR has also assessed the role that the CloudSpec™ instrument might play in facilitating colour measurement in grapes. Initial refinement of the reference AWRI method and further streamlining of the berry analysis method as well as introducing CloudSpec technology provides a significant advance in making grape quality assessment more accessible to Pinot noir winemakers in New Zealand. The poster presented at the conference can be viewed in the Appendix and a link to Marama Labs on LinkedIn <https://www.linkedin.com/feed/update/urn:li:activity:6953007229134385152/>.

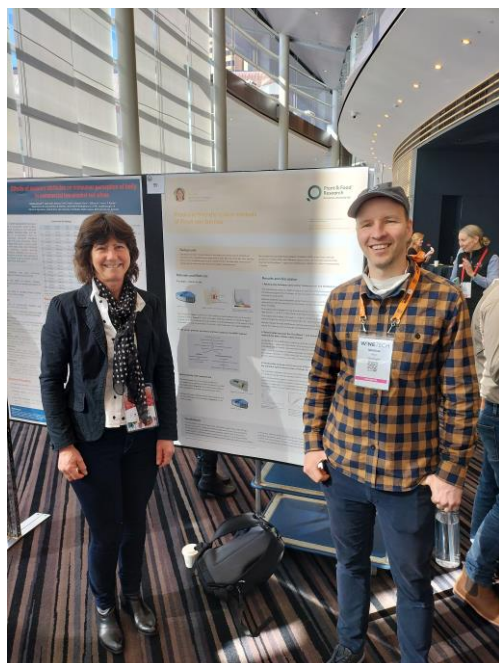


Figure 1. Claire Grose (PFR) and Matthias Meyer (Marama Labs) presenting the research poster at the Australian Wine Technical Conference 2022, held in Adelaide, 26–29 June 2022.

2.2 State of the Australian wine industry

The conference opened with an industry update. The Australian wine industry is going through difficult times with the loss of important export markets to China. The effective closure of the Chinese market in early 2021 due to the imposition of anti-dumping duties, coupled with the impacts of the COVID-19 pandemic have dramatically changed the trading landscape internationally and domestically for the Australian wine industry. Losing the Chinese market resulted in a 40% loss in volume of Australian wine exports in a very short timeframe. The focus is now on developing and growing new export markets, which will take time to implement. In the short term, as a result of lost export markets, there is an oversupply of grapes, winery tanks are full, bulk wine prices are at an all-time low and grape growers risk losing contracts or contracts are not being renewed. Despite difficult times for the Australian industry, the conference sessions that followed addressed innovative ways to help mitigate climate change, grow new markets at premium price points, improve sustainability practices and understand consumer preferences, in particular Gen Y and the millennials in an effort to grow wine sales.

2.3 Roadmap for a sustainable industry

Throughout the conference there was a focus on the importance of the wine industry increasing their sustainability credentials to meet growing market demands for wines that are produced sustainably. Addressing climate change, reducing carbon emissions, becoming carbon neutral, regeneration – soil carbon cycle and soil microbial biomass, maximising soil coverage (no bare soil), maximising plant diversity, and maximising living root duration were identified as important steps to improving sustainable practices and mitigating climate change.

2.4 If New Zealand can do it, why can't Australia?

Rob Bramley, Senior Principal Research Scientist, Commonwealth Scientific and Industrial Research Organisation (CSIRO) is using quantitative spatial analysis to better understand regional terroir.

In a recent New Zealand study, CSIRO collected selected metrics on the performance of 600–1100 vineyard blocks over six seasons from grapegrowers and winemakers in the Marlborough region. By using the georeferenced data to underpin interpolated maps of grape yield and harvest date CSIRO were able to clearly identify subregional differences. All the data that contributed to this work were used on a confidential basis. The resulting whole-of-region maps provide a platform for understanding the Marlborough terroir, which may be further enhanced through incorporation of biophysical data (soils & climate) and wine chemical and quantitative sensory analysis.

Rob Bramley suggested that a similar approach could be followed in current Australian terroir and subregionalisation studies, but this has been met with an anecdotal, 'you can't do that!' from the Australian industry. The question Rob Bramley left the conference with was "If New Zealand can do it, why not Australia?"

2.5 Amino acids – influence on wine sensory

Grape amino acid concentrations are often measured in relation to fermentation performance. However, the most abundant amino acid in wine, L-proline, is not metabolised by yeast and is often not considered. L-proline and L-glutamic acid/glutamate concentrations can be found in red wine above their reported sensory detection thresholds. Overlooked by early wine flavour research, the question has remained, could amino acids play a role in wine flavour directly? AWRI undertook a series of experiments assessing the sensory effect of proline and glutamate and their interactions with aroma compounds and polyphenols in red wine. L-proline was found to increase sweetness, viscosity and red fruit flavours, and decrease bitterness and astringency, while glutamic acid imparted umami taste. A blending study, aimed at correcting climate change-induced flavour deficiencies in wines from warm inland regions, using a high proline South Australian Riverland Cabernet Sauvignon wine as a blending component were assessed using consumer testing. The wine blends that contained a high proportion of the proline-rich wine, displayed enhanced flavour and mouthfeel characters. These foundational studies begin to show that proline and glutamate amino acids could help explain desirable 'fruit sweetness', 'savoury', 'fullness' and 'soft tannins' in dry reds.

2.6 Looking to the future

A strong message for the future from the conference was research needs to innovate, co-design and co-invest with a wide range of organisations (nationally and internationally) and engage with industry to solve complex problems such as climate change, changing markets, cutting production costs and increasing sustainability credentials.

Research priorities identified for the future included:

- No or low alcohol (NOLO) wine innovation
- Consumer insights – know your consumers especially Gen Y and Millennials
- Market insights – continue to develop new markets
- New products – develop novel beverages
- Production innovation to reduce costs, solve labour shortages and consistently produce a premium product.

3 Wine Tech – Field trip Barossa Valley

Following the conference I attended the Wine Tech field trip to the Barossa Valley wine region organised by Callaghan Innovation & NZ Trade & Enterprise (Figure 2).



Figure 2. Field trip to the Barossa Valley wine region organised by Callaghan Innovation & NZ Trade & Enterprise.

The field trip began with presentations from Paul Smith, Senior Research & Development Program Manager, Wine Australia. Paul talked about Wine Australia's role to help foster and encourage profitable, resilient and sustainable Australian grape growing and wine businesses by investing in research and development, and growing domestic and international markets. Wine Australia was positive about supporting the establishment of New Zealand AgTech companies in Australia. These New Zealand companies provided innovative solutions to the current challenging times faced by the Australian wine industry.

Presentations followed from Platfarm who developed a precision agriculture app that creates detailed digital vineyard maps for accurate tracking and directing of vineyard work. Also Foment who offer acceleration to innovative New Zealand tech companies ready to scale up, and then connects them with Australian wine businesses who are positioned to use their products and services.

Platfarm also organise regional Tech and Innovation hubs where emerging Tech companies can meet and share ideas and solutions to common problems faced by establishing companies. This concept is similar to the Marlborough Innovation Day (May 2022) and Marlborough Startup Weekend (June 2022) that Mark Unwin, Marlborough District Council, has initiated.

The Nuriootpa AgTech Demonstration Farm in the Barossa Valley, comprising of 28 hectares of mixed wine grape varieties, apricots and cherries, was visited. The aim of the demonstration farm is to demonstrate to producers the use and value of AgTech solutions to improve their productivity and profitability. Showcased was a micro weather station (Figure 3) where additional solar powered remote monitoring sensors can be added to measure soil moisture and temperature, humidity, rain, wind speed and direction and solar radiation. Also showcased were soil probes (Figure 3) that collect real-time data for soil moisture, salinity and temperature at multiple depths in the soil profile that can inform irrigation regimes.



Figure 3. Examples of a micro weather station (left) and soil moisture probe (right) for real-time irrigation monitoring.

4 Wine Innovation Cluster

Post conference I arranged a visit to AWRI, based at the Wine Innovation Cluster situated at Waite Campus, University of Adelaide (Figure 4). The Wine Innovation Cluster is a partnership between four grape and wine research agencies:

- Australian Wine Research Institute (AWRI)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- South Australian Research & Development Institute (SARDI)
- The University of Adelaide.



Figure 4. Wine Innovation Cluster, University of Adelaide – Waite Campus. The site is shared by four grape and wine research agencies; Australian Wine Research Institute (AWRI), Commonwealth Scientific and Industrial Research Organisation (CSIRO), South Australian Research & Development Institute (SARDI) and University of Adelaide.

Markus Herderich, Group Manager – Research at AWRI discussed their research structure, funding sources and challenges they are currently facing, which are similar to New Zealand's. Major challenges include securing ongoing consistent funding. Eric Wilkes, General Manager – Affinity Labs, showed me around their impressive lab facilities and high tech instruments, some of which are part of a Government-funded hub where instruments are maintained by AWRI's specialised staff but the instruments are also available for use by other research agencies. AWRI have recently rebranded the commercial arm of their lab facilities to Affinity Labs. Affinity Labs not only specialises in grape and wine analysis but has diversified into other food and beverage analysis, for example the brewing industry. This has increased the opportunity to build new revenue streams as a source of funding for AWRI.

5 Research winery

John Gledhill the research winemaker at AWRI showed me around their research winery. The winery is also a teaching winery and shared facility with University of Adelaide. It was an opportunity to view their fruit processing equipment, range of fermenter vessels and volumes, filtration and bottling systems and see first-hand their research winemaking practices (Figure 5). There are possible overlaps in research of mutual benefit to AWRI and the New Zealand wine industry and there was a willingness from the research winemaker for future possible collaborations with PFR and Bragato Research Institute (BRI).



Figure 5. Australian Wine Research Institute (AWRI) research winery. Small-scale crusher destemmer (left) and rotating fermenters on top with press below (right).

6 Key funding sources

- Marlborough Research Centre Trust
- The New Zealand Institute for Plant and Food Research Limited

I would especially like to thank the Marlborough Research Centre Trust for funding this opportunity to attend the AWITC conference in Adelaide.

Appendix

AWITC conference poster



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- The Australian Wir

*In Word document: Double-click on above **icon** to open embedded documents.*

*In PDF: Double-click on relevant **Appendix** in left side  "Attachments" pane.*

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Marlborough Research Centre Trust
Project #2

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PUBLICATION DATA

Grose C. July 2022. The Australian Wine Industry Technical Conference. A Plant & Food Research report prepared for: Marlborough Research Centre Trust. Milestone No. 92200. Contract No. 39694. Job code: P/413003/04. PFR SPTS No. 22807.

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July 2022

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