

Australian Wine Industry Technical Conference

Adelaide, July 2025



Executive Summary

Purpose of the document

I travelled to the AWITC with a scholarship from the Great Wine Capitals (Hawke's Bay), with the aim to gather as much information as possible to share with those in the Hawke's Bay wine industry. This document is the result - a combination of my notes along with photographs of some of the posters that described recent research findings.

I'd love to hear any feedback you may have, especially if you found some of this information useful or decided to try a new technique.

Rachel Garnham, rachel@rachelgarnham.com

Key Findings

Viticulture - I attended the Winepro conference in Blenheim last year and noticed the same trend at the AWITC - technology. There are a range of [autonomous vehicles](#) available for vineyard work, along with [systems](#) that provide layers of data for vineyard management decision making. A number of these companies are [based in New Zealand](#) and being used by Hawke's Bay companies (eg Craggy Range and Vinarchy).

Winemaking - The world of wine additives is always evolving and I have included notes on two that may help mitigate the effects of climate change on wine quality (yeasts for bioacidification and MLF bacteria for high alcohol wines). For those that propagate their MLF bacteria, Peter Costello's findings that doing so alongside non *Saccharomyces* yeast can give enhanced results should be of interest and worthy of further research. The poster section of the conference is a fantastic opportunity to see the latest research and included a new, quick method for YAN testing and how to form 'struck flint' characters in Chardonnay.

Sustainability - The sustainability workshop I attended confirmed that New Zealand has a much longer history and with greater engagement in winemaking and viticulture sustainability than seen in Australia. The consumer wants to be guided when it comes to buying sustainable products and it must be easy to do the right thing. Those companies

that export know that sustainability has become more important in the procurement process - especially in the UK, Nordic countries and Canada. Those wanting lessons in sustainability may find the notes from the talk by Andree Piddington from Yealands inspirational.

Business - The conference started on a depressing note with talks about the challenging international wine industry but finished on an engaging talk about positioning your organisation for success, with a focus on emergency and succession planning.

Sales and Marketing - The trend here was zero and mid alcohol wines (with information about consumer engagement with these products) along with drinking less alcohol (and what the wine industry can do to respond to this trend).

Particular Interest for the Hawke's Bay Wine Industry

Three talks that have relevance for the local industry and are topics that may be worthy of more research

1. Phillipa Harrison (MD for Tourism Australia) *Wine Tourism*, this talk on the importance of wine tourism in bringing people into the regions and their 'ultimate winery experiences' may include ideas for different experiences that visitors (eg cruise ships) can discover in Hawke's Bay.
2. Alex Beckett (Mintel, London) *Learning from the Competition*. Alex gave food and drink insights that would be useful for those wanting to make alternative or wine based products.
3. Stewart Mclachlan (Marsden Jacob Associates) *Water - Staying Competitive*. Water allocation and use is an increasingly important consideration for grapegrowers and learning from the experience of the Australians on water management and markets would be valuable.

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AWRI Resources

Did you know - While the [AWRI library](#) has a members only section, they also have a range of free resources available to anyone, including (click on the blue writing to get the link) -

[AWRI staff publications](#) – access any AWRI published article free of charge

[Information packs](#) – curated lists of recommended reading on oenology, viticulture and sustainability topics

[Technical Review](#) – the AWRI's own technical publication, which includes updates on AWRI research and a curated selection of current grape and wine literature from around the world.

[Proceedings of Australian Wine Industry Technical Conferences \(2019 and earlier\).](#)

Viticulture

Scale Insects

Research from Dr Chris Ward from the AWRI.

- With scale insects multiple species can be present within clusters and many species are visually similar.
- The main species in Australian vineyards were believed to be Grapevine scale and Frosted scale.
- Insecticides are only effective at the crawler stage, as both above types of scale have only 1 life cycle per year they can be targeted at the same time.
- DNA testing was done on scale samples taken from vineyards throughout Australia and found *Parthenolecanium corni* (European fruit scale) present (previously thought to be absent from Australia). This species has multiple life cycles per year and is evading control.

Takeaway message - it is important to know exactly what pests are present in vineyards to be able to have better control.

[More information \(journal article\)](#)

Water - Staying Competitive

Stewart Mclachlan, Marsden Jacob Associates

MARSDEN JACOB ASSOCIATES

Making water work for the wine industry

A changing climate will mean hotter and drier conditions – the future will be competitive

Not all water is equal – source and reliability matter.

Wine industry faces competition – other crops may outbid you.

Markets are a tool – use them to manage cost and risk.

Think strategically – position your vineyard to stay competitive

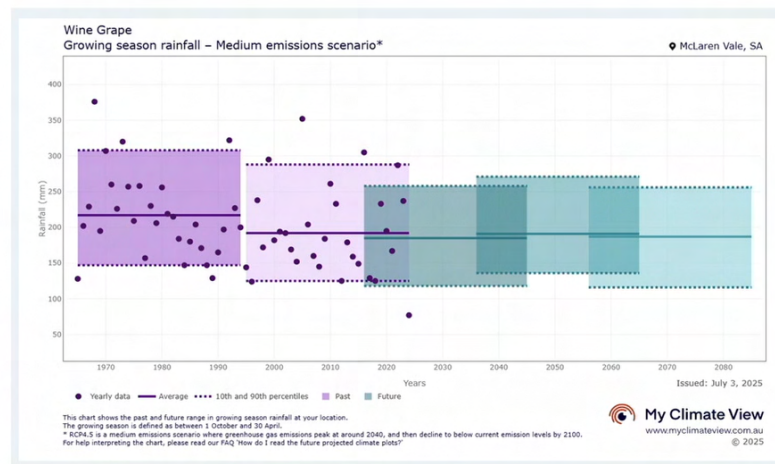
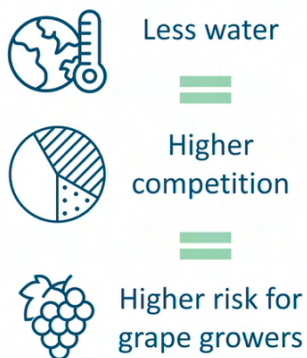
Shape the future wisely.



| 2 |

MARSDEN JACOB ASSOCIATES

A changing climate will mean hotter and drier conditions



Shape the future wisely.

| 3 |

What does being “competitive for water” mean?



- Securing enough water at the right time.
- Paying a sustainable price compared to other crops.



- Maximising quality and yield from each megalitre.



- Adapting to water availability and price risks due to changing climate conditions.



Shape the future wisely.

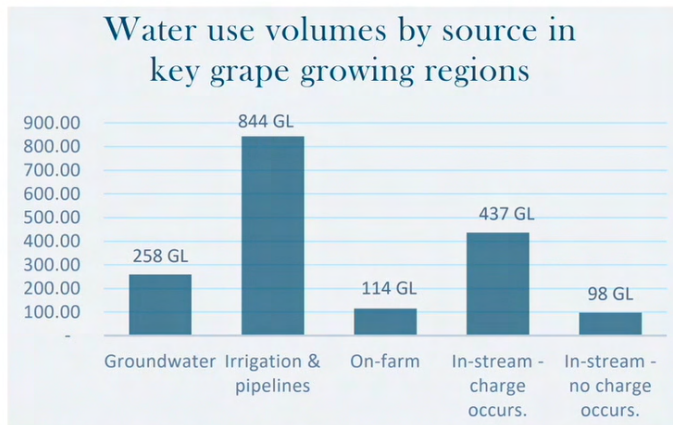
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Grapes rely on diverse water sources

Not all water is equal:

- Access
- Reliability
- Quality
- Cost

Cost differences between sources can be significant



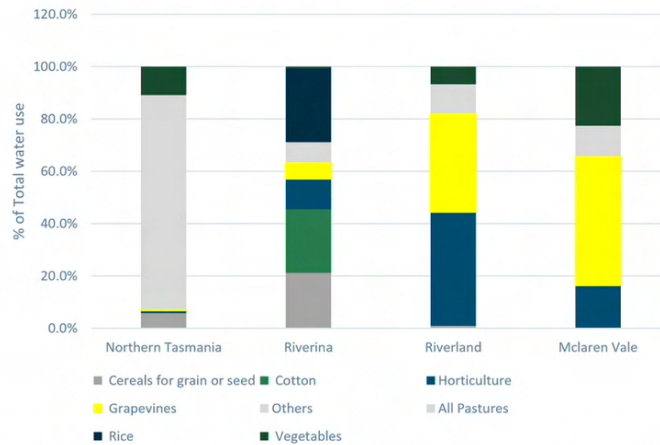
Source: ABS: Water Use on Australian Farms 2020-21 – Hunter, South Australia, Riverina, Tasmania, Central Tablelands, Peel-Harvey

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| 5 |

The wine industry are competing with other water users

- Competition can be region specific
- Some industries can pay more for water, especially during dry period
- Wine growers face growing competition from all crops



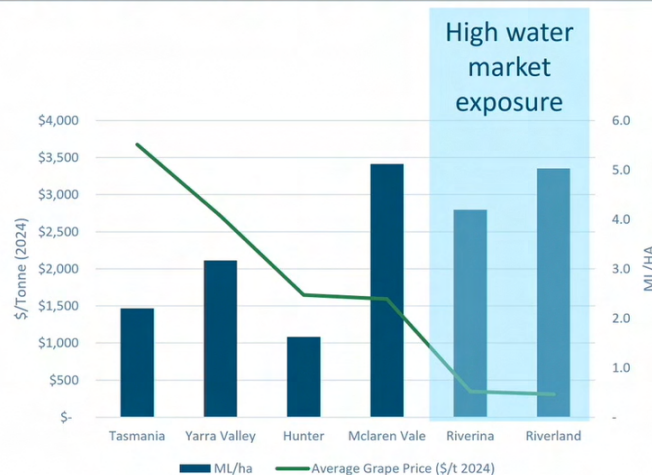
Source: ABS: Water Use on Australian Farms 2020-21

Shape the future wisely.

| 6 |

Regions more exposed to water markets face greater risks

- Market-driven water prices
- Competition from higher-value crops
- Reliance on trade can impact returns
- Climate variability increases dependence on markets



Shape the future wisely.

| 7 |

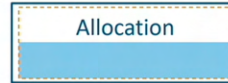
Murray-Darling Basin – water markets 101

- Water rights are tradable
- Two main types of water
- Water entitlement = long-term right
- Water allocation = yearly supply
- Reliability matters

Regulated



Entitlement

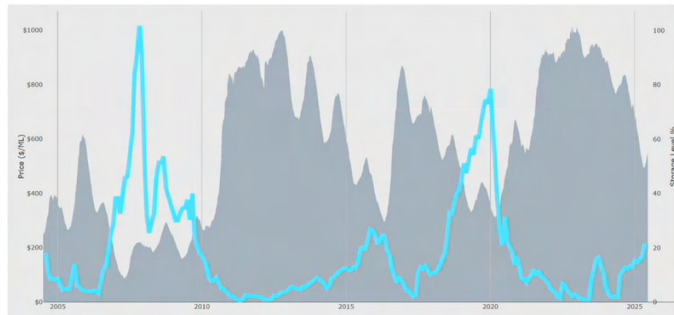


Shape the future wisely.

| 8 |

Water markets help manage climate and supply risks

- Prices respond directly to climate cycles
- Water markets provide flexibility
- Manage production risk
- Smooth out input costs



Source: www.waterflow.io

Using the water market to your advantage

- Different water products can impact your overall spend.
- 100 ML over 3 years purchased 1st of July



	2019/20	2020/21	2021/22	Total Cost
Allocation	\$650/ML	\$ 365	\$ 120	\$113,500
3 year Lease	\$400/ML	\$ 400	\$ 400	\$120,000
Forward	\$630/ML	\$ 330	\$ 160	\$112,000

Using Brackish Groundwater

Paul Petrie

Brackish groundwater is that which contains salts (usually sodium chloride). A lot of brackish groundwater is very salty but some is marginally salty, could this be used as a water source for grapevines in a drought?

Longterm irrigation of brackish groundwater

- Reduced canopy growth
- Decreased yield potential
- Reduced juice quality
- Soil structure breakdown

Factors that influence the above negative effects

- Cultivar and rootstock
- Irrigation type
- Soil type (salts stay in the soil with clay)
- Rainfall.

Trials were conducted with different levels of brackish water irrigation - some alone, some as a mixture with fresh water, also taking into account rainfall.

Key messages about irrigation with moderately saline groundwater

- Best to blend or alternative with alternative water sources
- Incorporate leaching irrigation
- Winter rainfall improves leaching
- It should be used as a temporary solution
- Requires careful monitoring of soils

Detecting Smoke Taint in the Vineyard

Dr Ian Porter, La Trobe University

Smoke taint is a large production risk for the Australian wine industry.

Issue - phenols from smoke produce off flavours in wine, the current grape testing is slow so it is difficult to make a decision close to harvest.

Challenge - how to get a real time solution which links detected phenols in smoke to the resulting taint in wine made from smoke affected grapes.

Solution - WISD (Wine Industry Smoke Detectors). These detectors sit in vineyards and the associated app gives a traffic light rating for potential smoke taint (taking into account distance, variety and winemaking style eg skin on/off).

- Green light = no intervention needed
- Yellow light = mitigation needed, for whites only use free run juice, reds - decrease fermentation on skins time or make into Rosé.
- Red = don't pick

Useful for wineries to make decisions on whether to pick or not and provides a third party decision for contracted vineyards.

[More information](#)

Dr Kerry Wilkinson,

Another smoke taint detection tool is being developed by Dr Kerry Wilkinson. This tool is a real-time sensor that quantifies smoke contamination of grapes, hours or days after the event as it may be some time before people are allowed back to the fire affected region.

[More information \(presentation about latest research around smoke taint from Dr Kerry Wilkinson\)](#)

Technology in Viticulture

Systems for vineyard records and irrigation management - Airborne and Swan.

Kelly Graham - Viticulturist at Josef Chromy, Tasmania

Advice for choosing technology providers - choose one which will provide continual support rather than just selling a product, as it will need work and lots of refining to get it performing the way you want it to. They use 2 platforms to help with vineyard management.

Airborne Logic - platform that produces vineyard maps with layers to show yields, plant counts, water stress, pest and disease problem areas.

Swan - for water and irrigation management.

More information -

- [Airborne Logic website](#)
- [5 minute video from Australian vineyard that uses Airborne](#)
- [6 minute video from Torbreck vineyard that uses Swan](#)

Autonomous Vehicles for Vineyards

Burro with sprayer



Agri Automation (NZ Company)

[Gotrack](#) - retrofit to existing tractor to make it autonomous.

[Burro](#) autonomous

The Burro is an electric, autonomous vehicle that can carry 600kg and tow ~2T. Can be used with a foliar sprayer (48W battery), herbicide sprayer (only sprays green, actively growing weeds) or electric mower.

- Can tow the [UVEX](#) which is a UV-C machine for Powdery Mildew control



Techniques for resting vineyards - Poster

#37

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Techniques for resting vineyards

Paul R. Petrie^{1,2,3}, Gaston Sepulveda¹, Katie Dunne⁴, and Marcos Bonada^{2,5}

¹South Australian Research and Development Institute, ²Flinders University, ³University of Adelaide, ⁴Formerly New South Wales Department of Primary Industries, ⁵Formerly South Australian Research and Development Institute

Context

Grape growers and winemakers periodically encounter conditions when it is more economic not to produce a crop, or to 'rest' their vineyards, than to harvest fruit. These conditions may be due to reduced water allocations for irrigation and associated increases in growing costs or oversupply and depressed prices.

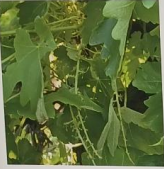


Fig 1. A cluster approximately a week following ethephon application with most of the berries abscised.

Methods

A range of methods for fruit removal to facilitate vineyard resting were trialed on Shiraz in the Riverland. Treatments included a second pruning at EL-19, and the application of calcium nitrate (25 g/L) and/or ethephon (1000 mg/L). Three levels of irrigation (7, 3.5 and 2 ML/ha) were applied to all the yield reduction treatments to better understand the interactions between crop load and potential water savings.

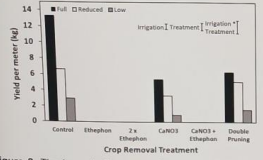


Figure 2. The impact of a range of crop removal treatments and irrigation volume on vine yield (2023 season). Full irrigation 7 ML/ha, reduced irrigation 3.5 ML/ha and low irrigation 2 ML/ha. Calcium Nitrate was applied at EL16, and ethephon was applied at EL29 and EL27 and the second pruning was implemented at EL19. The absence of bars represents zero yield. Error bars represent 5% LSD.

Outcomes

While all the treatments reduced yield, ethephon was the most effective treatment – in two of the three seasons the fruit was completely removed (Figure 2). In the season following the crop removal, the yield of vines treated with ethephon returned to commercial levels (Figure 3) and no residues were detected in the fruit. In the return season the yields of the vines treated with calcium nitrate or double pruning did not match the untreated control.

When irrigation was returned to standard levels, vines from the reduced irrigation treatment that had their crop removed during the previous seasons, recovered better than vines that carried a full crop.

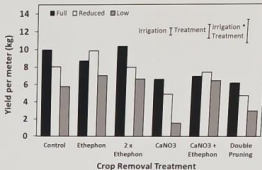


Fig 3. The impact of a range of crop removal treatments and irrigation volume on vine yield in the season (2024) following treatment with no crop removal and full irrigation. Error bars represent 5% LSD.

Conclusion

Ethephon is likely to be a cost-effective option to reduce vineyard yield to close to zero. The cost of the tractor and sprayer is higher than the active ingredient, but the application can be combined with fungicides. The vines with the fruit removed recovered better when the irrigation was returned to the full rate. These techniques provide alternative management options for growers that are looking to minimise input costs when harvesting fruit is not economic or water prices are very high.

Acknowledgements

Tony Trezise, Settlers Bend Farms, Renmark



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Wine
Australia



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of South Australia



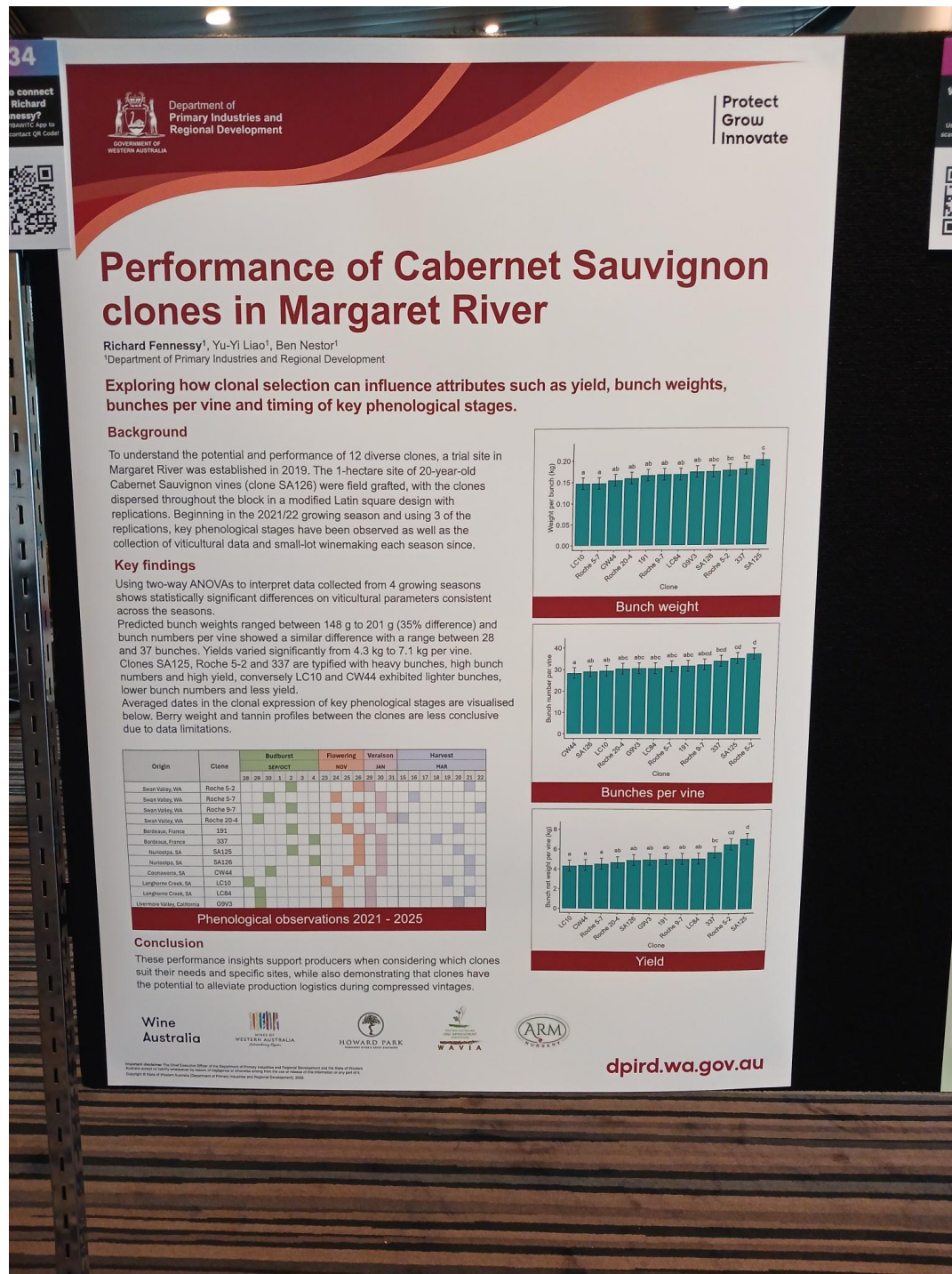
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#38

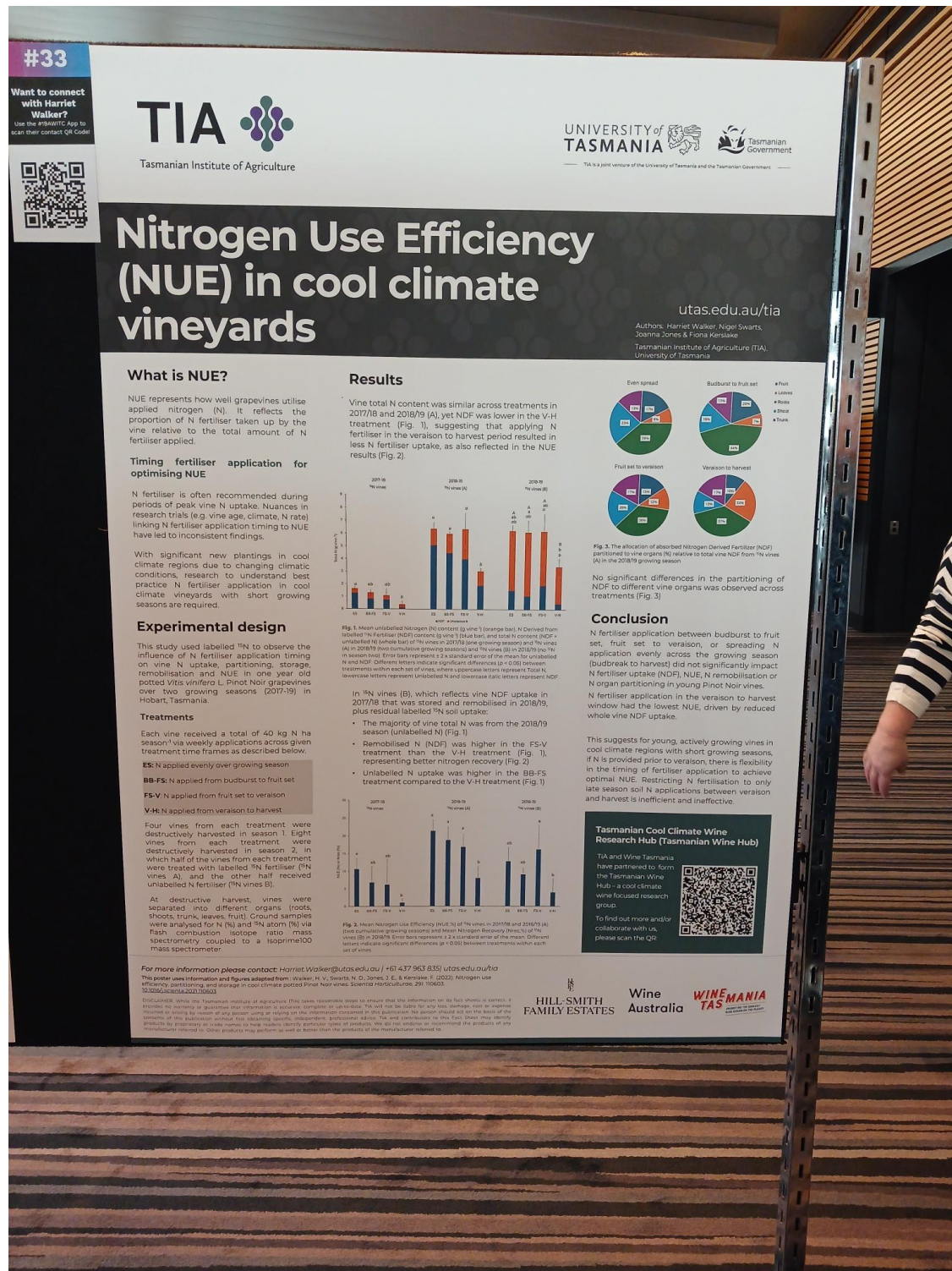
Want to connect with Sylvia Incunato? Use the #38A5TIC App to scan their contact QR Code



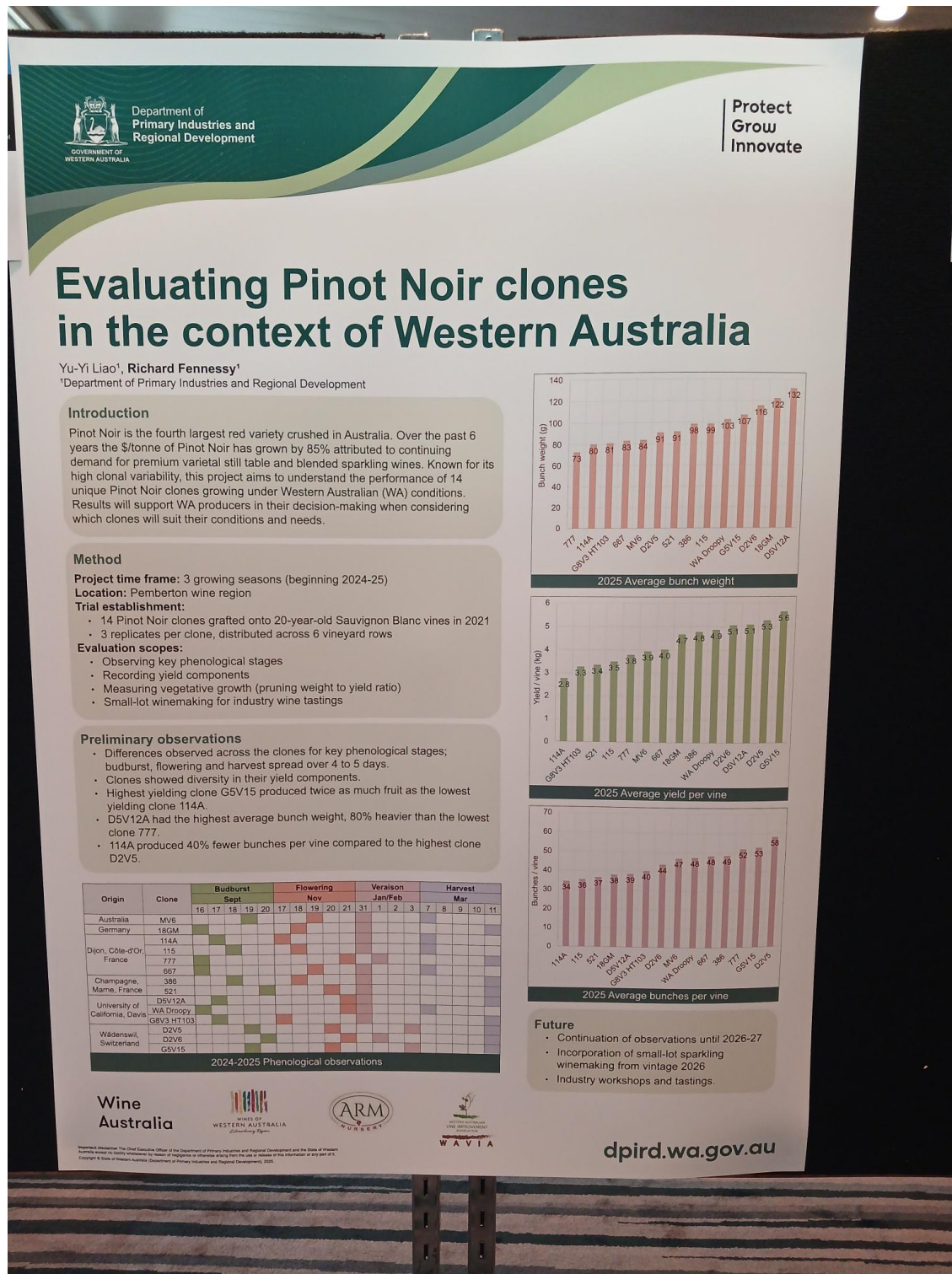
Performance of Cabernet Sauvignon clones in Margaret River - Poster



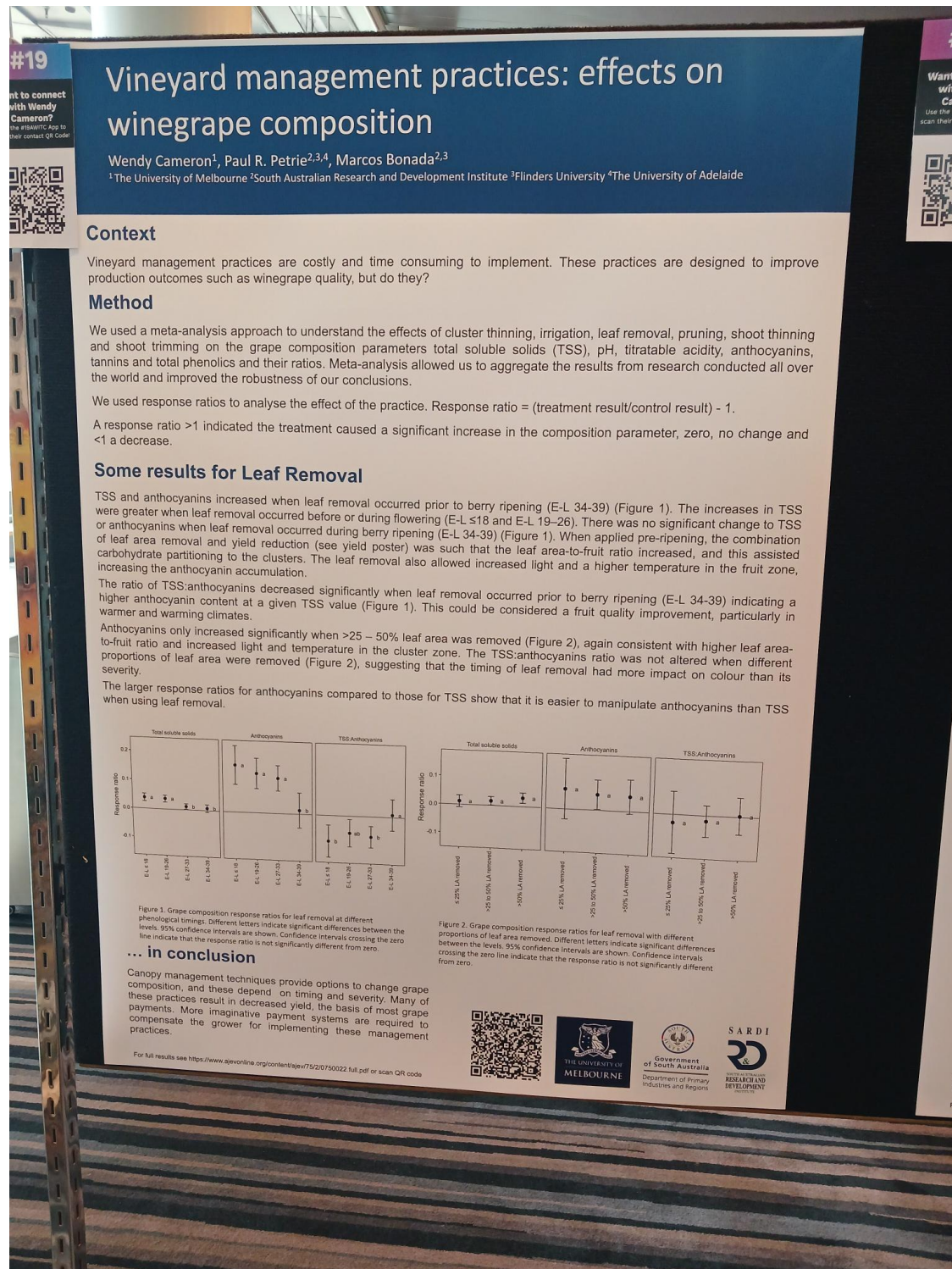
Nitrogen use efficiency (NUE) in cool climate vineyards - Poster



Evaluating Pinot Noir clones in the context of Western Australia - Poster



Vineyard management practices: effects on winegrape composition - Poster



IoT bunch weight measurement in real time - Poster

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IoT Bunch weight measurement in real time

Authors

Amanda Mader
Dr. Mason Erkelenz

1 Introduction

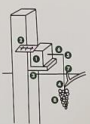
Winegrowing businesses face the critical challenge of meeting contracted fruit weight (yield) requirements for wineries. Traditional methods of estimating fruit weight are notoriously inaccurate, labour and time consuming that often result in discrepancies of up to 30% of the harvested weight. This inaccuracy leads to significant issues such as under or over-ordering consumables and winegrape wastage, even rejection. Ripen Tech has developed a groundbreaking IoT device that weights fruit in real-time while still on the vine.

2 Aims

The aim is to empower Winegrowing businesses to monitor daily and hourly, fruit weight to accurately track and predict yield, understand the impacts of irrigation and heatwaves, improve water use efficiency, increase yield, avoid fruit loss and select an optimum harvest date to enhance fruit quality.

3 Method

A sensor platform that captures the weight of the bunch via a load cell over time. It provides data via the cellular network to the grower in real time on any internet connected device.



- 1 Box - IoT Sensor
- 2 Solar and Lithium Battery Power
- 3 Fixture Point
- 4 Bunch Fixture Point
- 5 Load Cell Fixture Point
- 6 Load Cell
- 7 Line
- 8 Grape Bunch

4 Results

Figure 1 - Tracking yield - Bunch weight (g) in two differing undervine management treatments with applied irrigations.

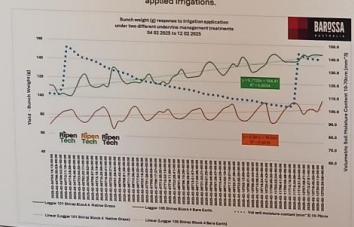


Figure 2 - Tracking bunch weight (g) with grape maturity (Brix) in selection of an optimal harvest date.

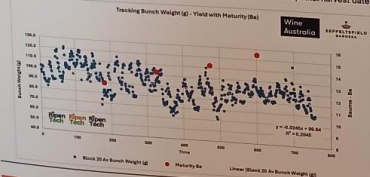


Figure 3 - Monitoring in real time - Live bunch weight gain (g) with rainfall uptake of 10 mm. 01/03/2023

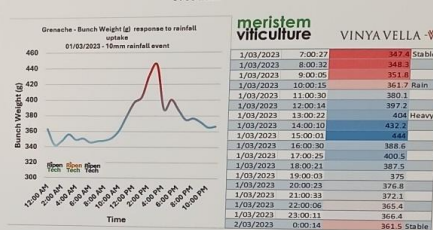


Figure 4 - Yield - Bunch weight (g) recovery post heatwave with timely irrigation applications.

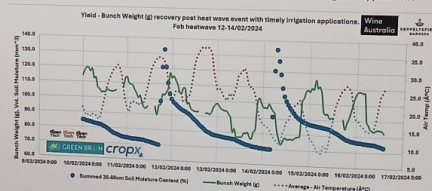
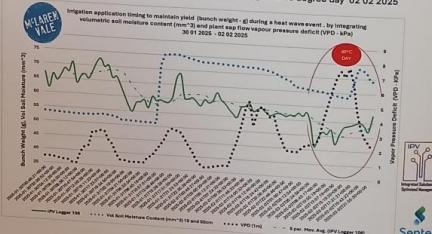


Figure 5 - Monitoring yield and water use. The use of bunch weight (g) and plant sap flow (Vapour Pressure Deficit, VPD) to optimise pulse irrigation timing on a 40 degree day 02/02/2025



5 Conclusion

Hourly data transmission provides growers up-to-date information, enabling informed management decisions. Key features of this technology include:

- Real-time analytics for fruit weight.
- Valuable insights into fruit performance during varying environmental conditions.
- Real-time understanding of irrigation impacts.
- Enhanced water use efficiency.

6 Acknowledgements

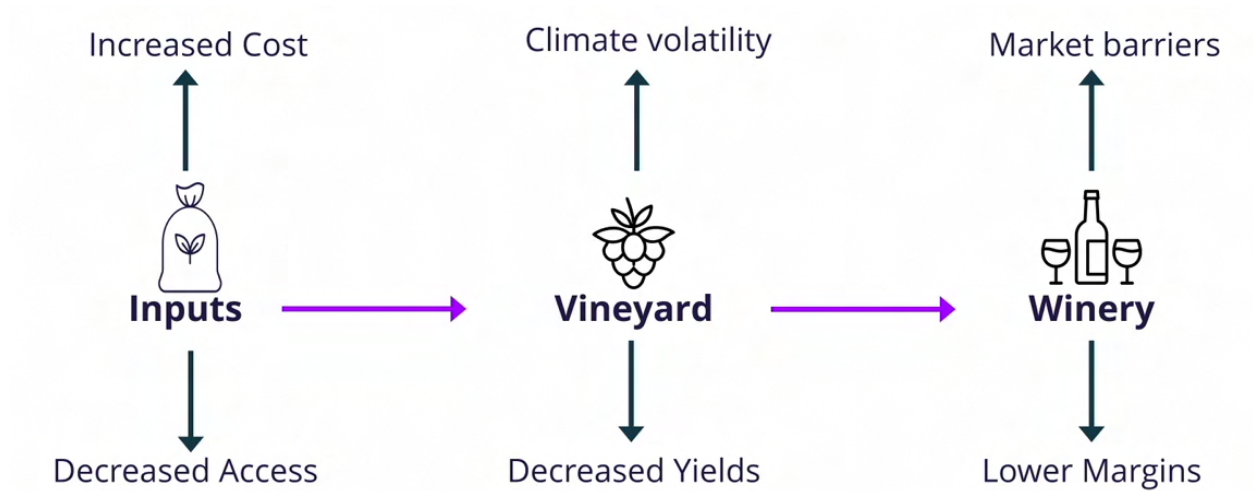
Wine Australia,
Barossa Australia,
Eden Hall,
Meristem Viticulture - (Vinya Vela)
MWVGA,
Seppeltsfeld

Crop X - Green Brain
Integrated Precision Viticulture
Ripen Tech
Sentek

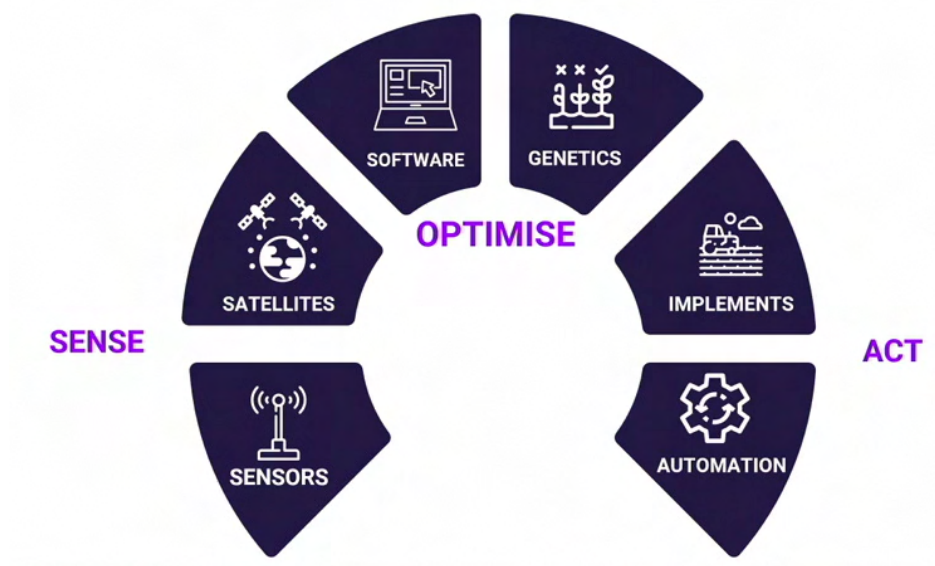
From the Sentient Vineyard to the Circular Winery

Michael Macolino - MD of Recode Ventures

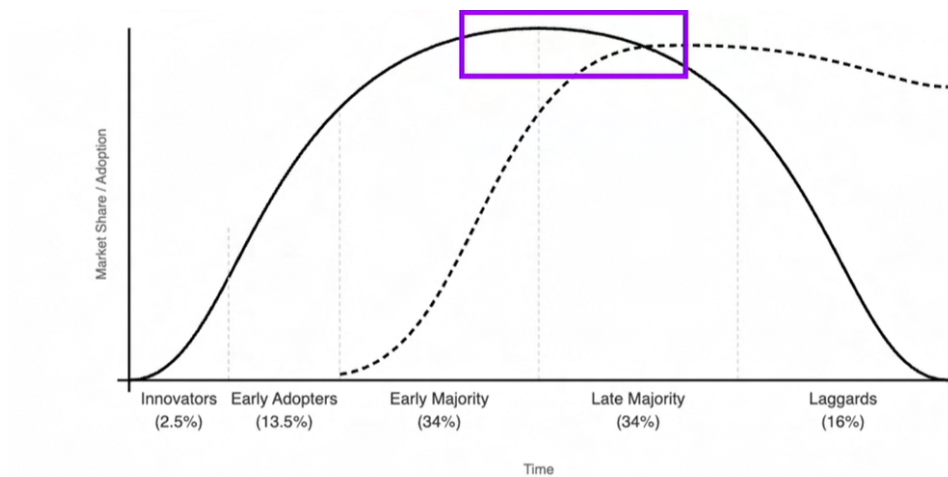
Current industry drivers - Inputs = decreased options for crop protectants, increased cost of fertiliser and energy. Winery = increased energy and labour costs. Across vineyard and winery = increased compliance and sustainability requirements.



Agri-Tech Foundations

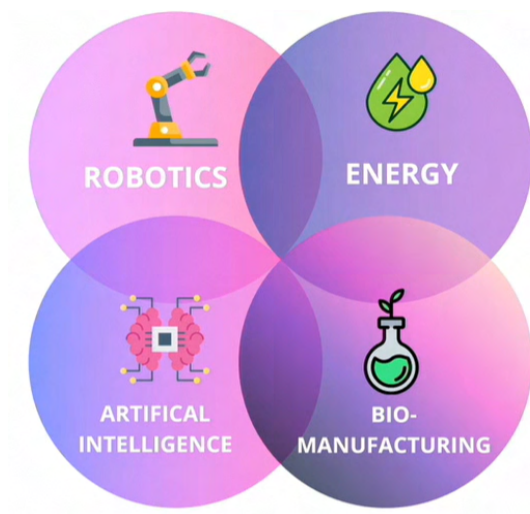


Next Agri-Tech evolution

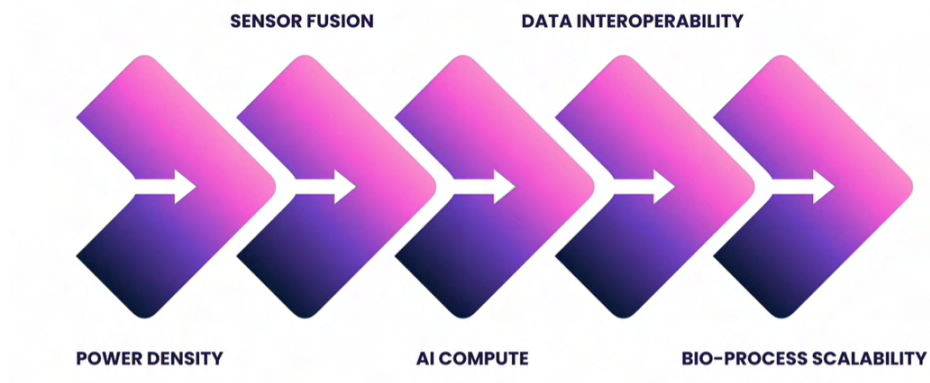


We're currently in the purple box. In many vineyards there is some technology that is being used. But as you move up the adoption curve there is an increasing misalignment between technology and the business model. People have been promised much more than what can be delivered.

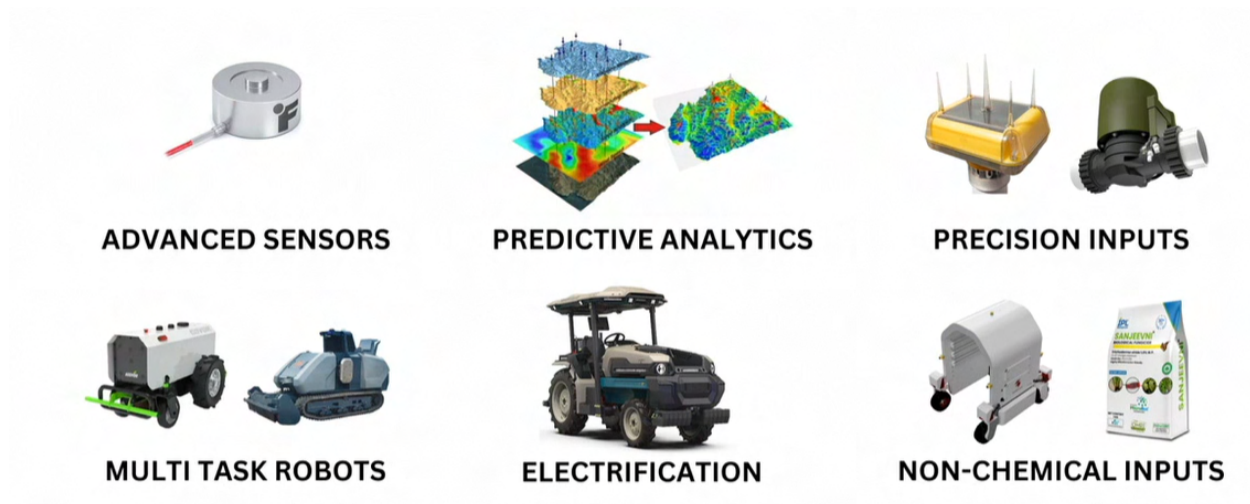
The solid line represents Agri-Tech 1.0, the dotted line Agri-Tech 2.0 - the next generation of technology. This will be built on 4 platforms, which are aligned, converging and amplify each other. These are being developed across all industries, not just agriculture. For example, AI in the last 2-3 years has greatly increased its ability to provide the sensing, perception and acting capabilities of robots in the field.



Technology Drivers



The sentient vineyard - a vineyard that can sense its own condition, predict its future state and act on future predictions autonomously. Eg multiple advanced sensors provide robust, multi-layered data (predictive analysis) that AI uses to determine irrigation requirements, then precision inputs of irrigation being turned on and off when required.

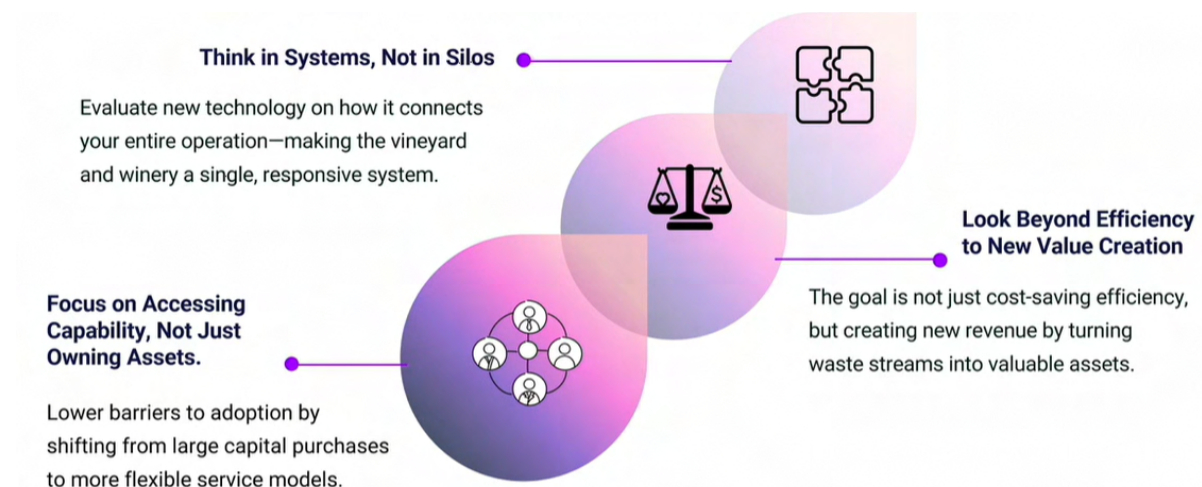


The Circular Winery



More sensors across the winery and vineyard. More real time fermentation analysis and control (based on AI and historical data). Then the waste stream of grape marc can have the carbohydrates extracted and a bio-reactor can grow microbes. The microbes can be used in the vineyard as fertiliser, or may excrete enzymes and proteins that are used to reduce pest and disease issues (this may be only 3-5 years in the future). This will improve the sustainability of the winery and vineyard.

Principles for the future



All images are from the presentation from Michael Macolino, more information about his work can be found on his [website](#).

Winemaking

Lallemand Product Trials

Nebbiolo Rose

Yeast trial. 3 yeast - EC1118, Ruby and Alchemy IV. Ruby gave more stonefruit, Alchemy IV increased berry fruit concentration, both gave a rounder mouthfeel than the EC1118.

Nutrient trial. Stimula Chardonnay, add nutrient ~ $\frac{1}{3}$ way through the ferment for increased ester expression, trial wine was fruity with strong strawberry characters.

Shiraz

Nutrient trial. Stimula Syrah, add at the start of ferment to increase thiol expression. Wine was more textural, better length and darker fruits than the control.

MLF bacteria trial. VP41 (*Oenococcus oeni*) and ML Prime (*Lactobacillus plantarum*, can't make VA). The ML Prime wine was more textural with higher concentration of dark red fruits.

More information -

[Lallemand website](#)

Maurivin Products

[Obsession](#) (for red wines) - a non-*Saccharomyces* yeast, helps with colour and mouthfeel, masks green and gives a lower alcohol conversion. However, inoculation temperature of 25-30 degrees C, addition rate of 400ppm and has an alcohol tolerance of 6-7% so will need to do a sequential inoculation with a strong *Saccharomyces cerevisiae* (eg EC1118).

[Celebrate](#) yeast - a cross between *Saccharomyces cerevisiae* and *Saccharomyces mikatae* used for Chardonnay or secondary fermentation of sparkling wines. Intensifies fruitiness in Chardonnay and for both styles of wine gives yeast autolysis characters early (~6 months).

Pinnacle Wine Products

[Absolute MP](#) - mannoprotein to help with mouthfeel, can add 2 days pre-bottling as it won't affect filtration, good for No/Low alcohol wines or to provide 'sweet spot.'

MLF bacteria - [MLF Robust](#) for high alcohol wines, [MLF Extreme](#) for low pH and cold temperatures.

Oak Solutions Group

[Tru/tan](#) - tannins derived from oak. Range of tannin powder to add at different stages of the winemaking process - crush, fermentation, ageing, pre-bottling. Some organic producers wanting to keep low SO2 levels are adding tannin when doing transfers to bind with any dissolved oxygen picked up in the process.

Trials of tannin addition to Marlborough Sauvignon Blanc to adjust mouthfeel (30ppm addition rate).

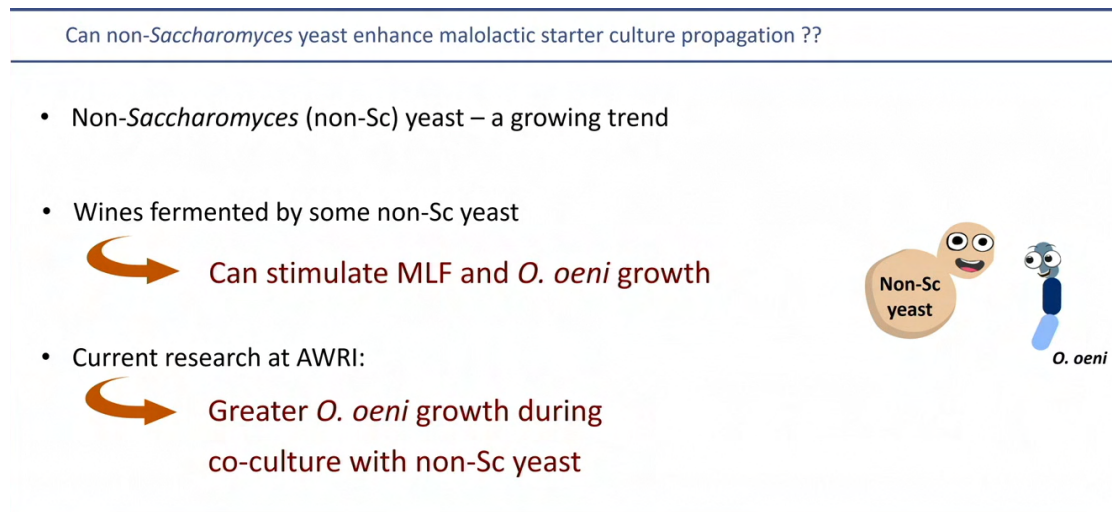
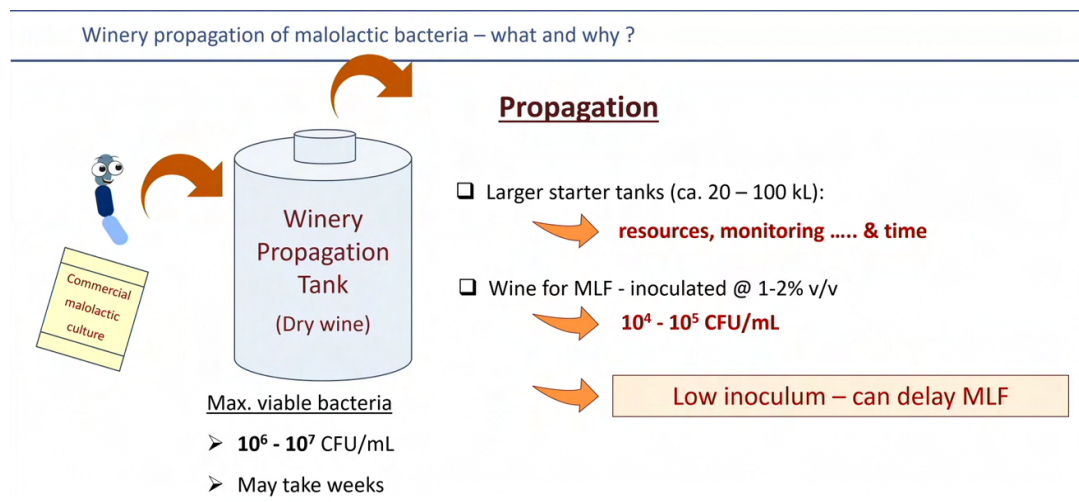
MLF - Enhancing Propagation

Dr Peter Costello, AWRI

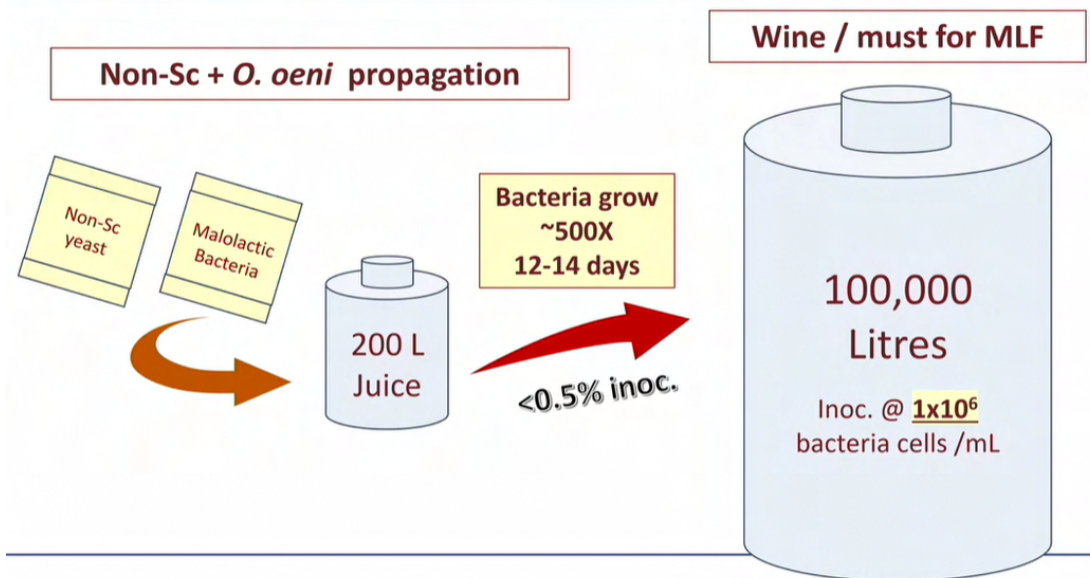
MLF occurs when the number of lactic acid bacteria in the wine reaches a population of 1,000,000 cells/mL.

MLF in Australian red wine

- 24% natural/wild
- 76% inoculated - 34% direct inoculation with commercial MLF culture, 66% propagated/cross seeded.



Enhancing bacterial propagation – a potential scenario



The above has only been trialled in the laboratory, further trials will be done on a commercial scale. This enhanced bacterial propagation gives - greater bacterial growth and inoculation capacity and is <1% the cost of direct inoculation.

(Note that the non-Saccharomyces may have fermented the juice in the propagation tank to only ~7% alcohol, but at a 0.5% inoculation rate this may add 0.2-0.3g/L RS to the 100,000L tank).

Yeasts for wine bioacidification - Poster

Amandine Deroite, Jessica Noble, Céline Raynal, Marion Bastien, José-Maria Heras, Anne Ortiz-Julien, Eveline Bartowsky **Emails:** aderolite@lallemand.com;
ebartowsky@lallemand.com

Yeasts for wine bioacidification

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Context



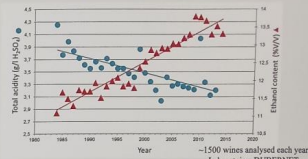
Climate change: how to mitigate the global warming effect on winemaking?

Global warming brings new challenges in winemaking. It causes an increase in sugar concentration and pH in grape must, leading to higher alcohol, loss of freshness and wines stability issues. As winemakers are turning their back to chemical inputs in favor of biological tools, bioacidification yeasts are a great solution

By 30 years

- Potential alcohol +1.5 - 2 % vol.
- Total acidity -1 g H₂SO₄/L
- Earlier harvest -18 days

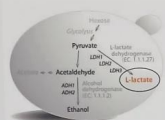
Evolution of the alcohol and acidity content of the wines:
A trend that is confirmed



Lachancea thermotolerans

A specific metabolism

- L. thermotolerans* produces lactic acid from pyruvate
- Reaction catalyzed by LDH1, LDH2 and LDH3
- Metabolic pathway parallel to ethanol production
- Lowers pH to provide freshness



Sgourou et al., 2020 from KEGG PDB - Heterolactic fermentation of sugar in *L. thermotolerans* metabolism

A phenotypic diversity among this specie



- Lactic acid production between 1.8g/L to 12g/L in a 94 L strains study in Chardonnay
- Differences due to the expression of LDH2 (Sgourou et al. 2020; Gatto et al. 2020)

Selection of LEVEL² LAKTIATM

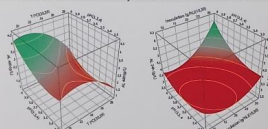
- Selected in the Rioja region in Spain from Tempranillo
- Commercially available since 2018
- Consistency in lactic acid production levels
- Up to 11.5 g/L of lactic acid production in optimal conditions.

How can we manage lactic acid production?

Impact of environmental conditions



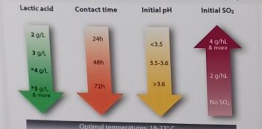
Lab trial to better understand the impact of environmental conditions: Box Behnken experimental design



- Initial pH $\nearrow$: lactic acid production $\nearrow$
- Inoculation rate $\nearrow$: lactic acid production $\nearrow$
- Temperature $\nearrow$: faster lactic acid production, but lower final value

Response surface plot representing Level² LaktiaTM lactic acid production variation after 48h of fermentation in Merlot (548 N°V) against pH (3.2-4), inoculation rate (10⁶-10⁸ U/L), and temperature (20°C-28°C)

Since 2018, 70 trials were conducted on 16 different grape varieties in 5 countries



Lactic acid production & key environmental factors in red winemaking at 25g/L

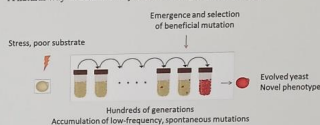
Inoculation rate of Level² Laktia

29 trials in red winemaking conditions

Saccharomyces cerevisiae

Directed evolution

A natural way to obtain new yeasts with improved phenotypes

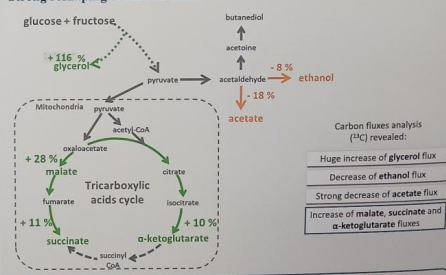


What we wanted: a yeast strain with lower ethanol yield and higher glycerol yield avoiding undesirable effects

Stress choice is very important:

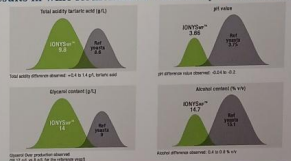
- Improvement of osmotic stress thanks to KCl
- Aim: improve glycerol yield, as it is an osmoprotectant
- As a side effect, decrease ethanol yield

Strong reshaping of carbon fluxes



What we got: a yeast strain with lower ethanol yield, higher glycerol yield and higher production of positive organic acids

Results in wine fermentation - summary of 33 trials worldwide



Conclusions

Bioacidification yeasts are a promising tool to limit chemical inputs. Both specific *Saccharomyces cerevisiae* and Non-*Saccharomyces cerevisiae* can be used and produce various organic acids such as succinic and lactic acids. The tasting of wines fermented by such strains exhibit a better integration of the acidity, balanced by the glycerol production, compared to tartaric acid addition for instance.

References

- Barties, J., Medeiros, C., Medeiros, D., Heras, J., Al-Najjar, A., Kuri, A., Schreiner, L., Vagstad, M., Zolotarev, A., Medeiros, D., Tost, D., 2023. Impact of yeast selection on the quality of wine: a review. *Food Microbiology*, 110, 104000.
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- Gatto, M., Costantini, F., Costantini, F., Pizzarello, S., Latorre, P., Basso, R., Tost, D., Al-Najjar, A., Kuri, A., Schreiner, L., Vagstad, M., Zolotarev, A., Medeiros, D., Tost, D., 2023. Impact of yeast selection on the quality of wine: a review. *Food Microbiology*, 110, 104000.
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Protective capacity of red wine pigments against bitartrate crystallization is retained during ageing - Poster

The protective capacity of red wine pigments against bitartrate crystallisation is retained during ageing

AWRI

Keren Bindon¹, Tim Reilly¹, Song Qi¹, Zhanshu Deng², Christopher Ford², Eric Wilkes¹

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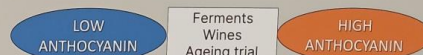
Background and Aims:

This study investigated how red wine pigments, particularly monomeric anthocyanins, influence potassium bitartrate (KHT) crystallisation and cold stability in red wines, both during fermentation and ageing.

- Warm-climate red wines may exhibit cold instability due to low acidity and high potassium levels.
- Cold stabilisation is not routinely applied to red wines because polyphenols are thought to provide natural protection from potassium bitartrate (KHT) crystallisation.
- Monomeric anthocyanins have been identified as the primary polyphenols involved in this protective effect.

Experimental Design:

- Two batches of Shiraz grapes from the Riverland (SA), one high, and one low in anthocyanin, were fermented and monitored.



- Key metrics included anthocyanin and polymeric pigment concentrations, cold stability (mini-contact test), and unstable KHT crystal formation over time.
- A separate accelerated ageing experiment (4 weeks at 38°C) tested pigment degradation and changes in cold stability.

Fermentation of high- and low-phenolic fruit

- High- and low-anthocyanin grape batches produced ferments and wines with corresponding differences in anthocyanin and polymeric pigment (Figure 1. a and b).
- Monomeric anthocyanin dropped continually up to 60 days.
- High-anthocyanin wines retained cold stability longer, even though both batches had equivalent potassium and tartaric acid levels after pressing at 10 days (Figure 1. c and d).
- Cold instability initially decreased in both batches, apparently becoming stable between 30 and 40 days.
- Cold instability reappeared in low-anthocyanin wines after 40 days, while high-anthocyanin wines remained stable.

Ageing effects on pigments and cold stability

- Tartaric acid was added to destabilise the high- and low-anthocyanin wines as they were close to being cold-stable.
- Accelerated ageing reduced malvidin-3-glucoside (Figure 2. a)
- Polymeric pigment increased with accelerated ageing only in the high-anthocyanin wine (Figure 2. b)
- Cold stability slightly decreased after accelerated ageing, with a more pronounced effect in low-anthocyanin wines (Figure 2. c).
- High-anthocyanin wines had greater protective capacity against KHT crystallisation with higher acid and accelerated ageing.
- This suggests that the pigments derived from anthocyanins retain their capacity to inhibit KHT crystallisation.

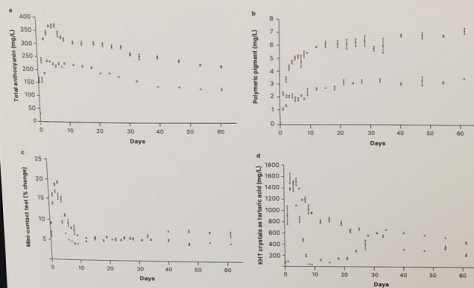


Figure 1. Graphs of anthocyanin concentration (a.), polymeric pigment concentration (b.), change in conductivity/mini-contact test (c.) and KHT crystal concentration during a three-day cold test (d.) over time in low- (blue) and high- (orange) anthocyanin wines

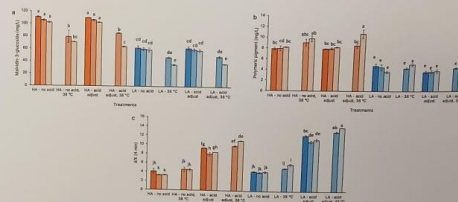


Figure 2. Ageing trial at 22 °C or accelerated (38 °C) for high-anthocyanin (HA, orange) and low-anthocyanin (LA, blue) with no acid addition (no acid) or 2 g/L tartaric acid (acid adjust) showing changes in anthocyanin (malvidin-3-glucoside) concentration (a.), polymeric pigment concentration (b.), cold stability by mini-contact test (where a % change of $\leq 5\%$ indicates cold stability) (c) over 4 weeks where darkest colour is time 0; successive lighter bars showing 2 and 4 weeks (ANOVA, $P < 0.0001$, $n = 3$, different letters indicate a statistically significant difference between treatments).

Conclusions and practical implications:

- Higher concentrations of monomeric anthocyanins were associated with improved resistance to potassium bitartrate crystallisation.
- Cold stability in red wines cannot be predicted solely by tartaric acid and potassium levels, since wines with equivalent tartaric acid and potassium concentrations exhibited divergent cold stability profiles based on anthocyanin concentration.
- Red wines from warmer viticultural zones, where anthocyanin degradation is more prevalent, may require enhanced stabilisation strategies.
- Conversion of monomeric anthocyanins to polymeric forms reduced, but did not eliminate, the protective effect against KHT precipitation.
- Spontaneous cold stabilisation in red wines can occur during fermentation but is susceptible to reversal through pigment degradation or post-fermentation acid additions.
- The timing of tartaric acid additions in reds is therefore critical, since late additions may disrupt natural cold stability.
- Red wines may lose cold stability during ageing, hence monitoring anthocyanin levels in young wines could help winemakers predict and manage future tartrate stability.

This work was supported by Wine Australia, with levies from Australia's grapegrowers and winemakers and matching funds from the Australian Government. The AWRI is a member of the Wine Innovation Cluster in Adelaide, SA.

Acknowledgements: The authors would like to thank Accolade Wines for the donation of high- and low-phenolic grapes, with the support of Alex Schulkin of the AWRI for grape handling. WIC winemaking is acknowledged for the preparation of ferments and wines.

AWRI Wine Australia



VICTORIA UNIVERSITY OF WELLINGTON
TE HERENGA WAKA



VINTESENTIAL



Winechek
PRECISION BASED EXPERTISE

A new age for YAN testing

V. Hughes¹, A. Seabrook, C. Gamble¹, Dr Lee Ann Tejada², Prof Wayne Patrick²
¹Winechek laboratories, ²University of Wellington

Introduction

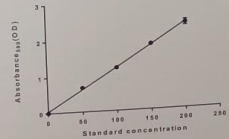
Getting an indication of vineyard nutrition deficiencies enables a winemaker to avoid dealing with stuck and sluggish fermentations. It also allows the winemaker to prevent H₂S formation and maximise fruity aromas in the final wines. Nitrogen is the main growth factor present in grapes for yeast growth and fermentation, and can impact the production of aroma compounds. Its deficiency can lead to the production of hydrogen sulphide (H₂S) and stuck or sluggish fermentations (Jiranek et al 1995). Yeast require nitrogen for cell growth and efficient fermentation. In the first third of fermentation the yeast will build in biomass sufficient to metabolise the level of sugar present. Yeast biomass is also impacted by whether the strain has a high or low nitrogen requirement. Yeast assimilable nitrogen (YAN) can be found in two forms; mineral or organic. In grapes, mineral nitrogen makes up one third of the total nitrogen, whilst the organic fraction makes up two third to three quarters of the grape derived of YAN. Conducting this test requires two measurements and a spectrophotometer which can require laboratory skills, additional cost and time. This project provides insight on to the novel method developed in conjunction with the university of Wellington to create a simple, single reaction that will enable winemakers to measure YAN with the simple addition of a tablet.

Method

The overall goal of this project was to construct a three-enzyme based biosensor to estimate yeast assimilable nitrogen in grape samples with a simple colorimetric readout. The production of a blue pigment by blue pigment synthetase A (BspA) will be employed as the colorimetric readout for the biosensor. BspA will be also used to sense glutamine, which is one of the major components of YAN. And in conjunction with two other enzymes ammonium sensing enzyme, glutamine synthetase will sense and convert ammonium from wine grape samples to glutamine and Arginine sensing enzyme which will sense arginine and their product, plus ammonia. The ammonium will then be feed of the cascade reaction yielding a proprietary blue dye.

Vintessential test kits were used to measure primary amino nitrogen and Ammonia to validate the 3 enzyme cascade.

Table 1. Standard curve correlation of YAN to an increase in absorbance at 560 nm using the cascade reaction discussed here.



Standard Curve



BLUE (560nm)

Results and Conclusion

The YAN biosensor provides a 3 step enzyme cascade correlated to the amount of YAN (both Ammonia and primary amino nitrogen). A tablet format will enable a winemaker to test for YAN easily, with one simple addition of a tablet to a wine or grape sample without the need for the sample to be decolourised. The validation data demonstrates excellent correlation with traditional 2 step measurements for YAN and can be easily employed in the vineyard without the need for advanced testing equipment or scientific expertise. This was developed and will be commercialized in conjunction with the university of Wellington.

Brown et al. <https://doi.org/10.1002/food.1245>

How to form 'struck flint' character in Chardonnay - Poster.

Struck by flint: how to form 'struck flint' character in Chardonnay wine

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AWRI

Background

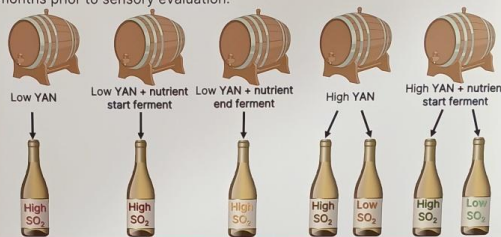
- Many premium and sought after Chardonnay wines exhibit 'struck match/flint/mineral' character.
- Two compounds are thought to be responsible for this character: phenylmethanethiol (PMT) – formed by yeast 2-furanmethanethiol (2-FMT) – toasted oak contact required for formation.
- Little is known about the winemaking techniques required to reliably form these compounds.

Research questions

- Can winemaking techniques impact the formation of PMT and 2-FMT?
- Do these techniques result in higher 'flint' aroma?

Experimental design

Winery-scale barrel-fermentations (using older barrels) were performed with different treatments. After eight months of barrel-ageing post-fermentation, the samples were bottled with different SO₂ additions. Bottles were left for nine months prior to sensory evaluation.



Results

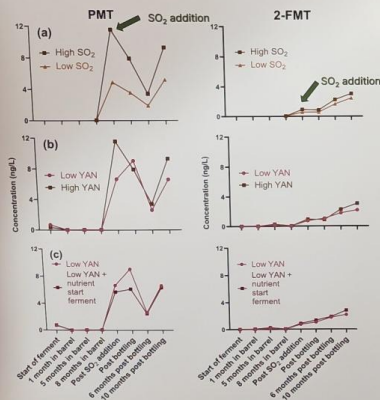


Figure 1. Comparison of the concentration of PMT and 2-FMT after different (a) SO₂ treatments (b) YAN treatments and (c) nutrient treatments.

- High SO₂ additions at bottling had the greatest treatment effect, causing the release of PMT at bottling (Figure 1a).
- Higher YAN additions also promoted the formation of PMT and 2-FMT (Figure 1b).
- Minor differences were seen from nutrient addition (Figure 1c).
- Sensory assessment showed high YAN + nutrient + high SO₂ had the highest flint aroma rating (Figure 2 – dark green dots).
- A correlation was found between flint aroma intensity rating and PMT concentration (Figure 2).
- No correlation was found between flint aroma intensity and 2-FMT (Figure 2).

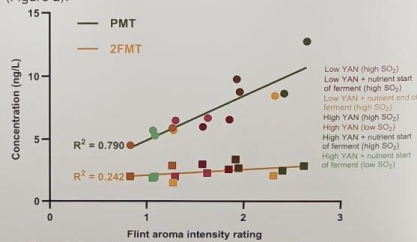


Figure 2. The relationship between flint aroma rating and the concentration of PMT (green line) and 2-FMT (yellow line).

Take home messages

- High SO₂ addition at bottling had the greatest effect on the formation of PMT.
- The concentration of PMT correlated to the intensity rating for 'flint' aroma.

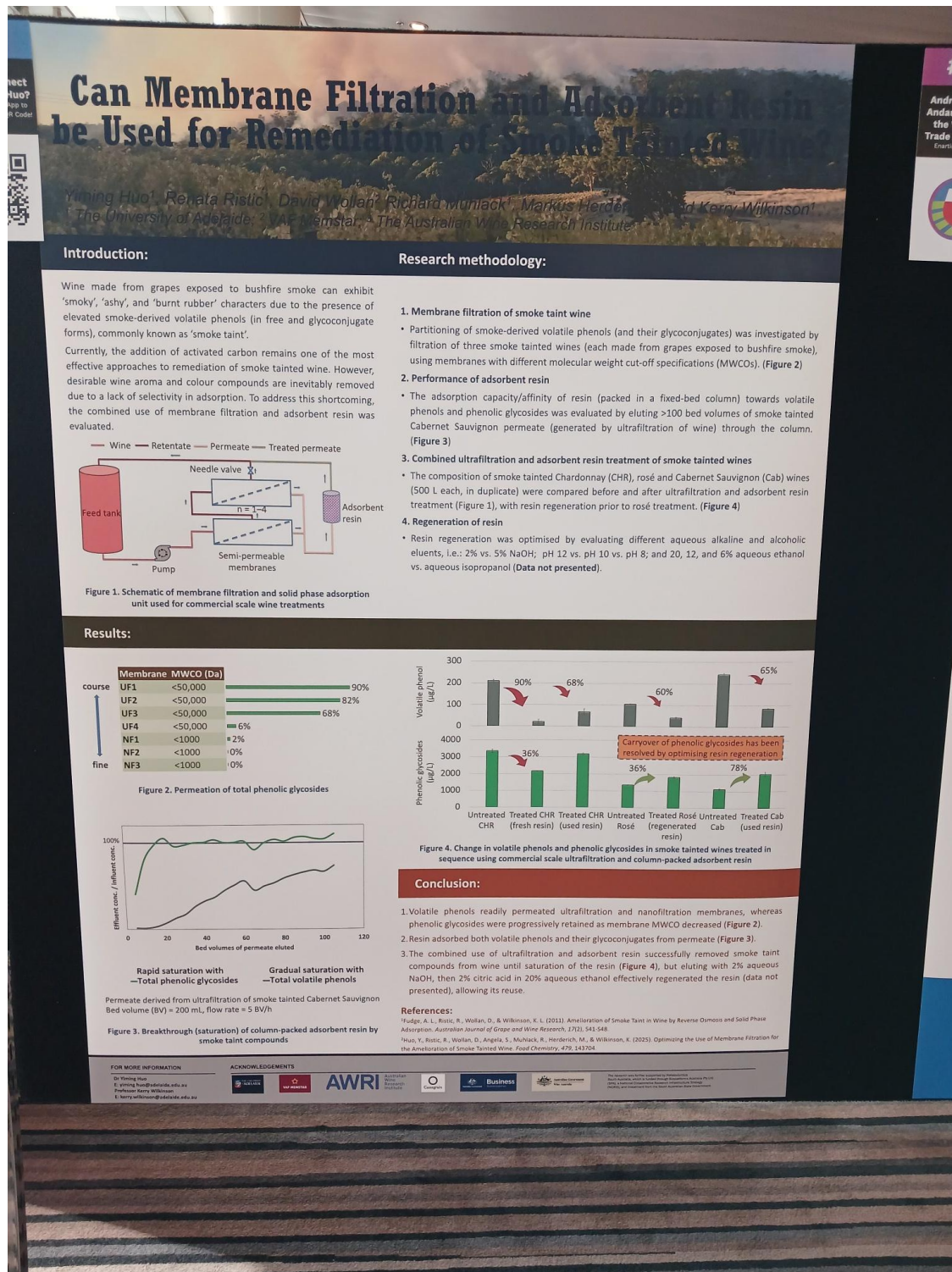
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AWRI

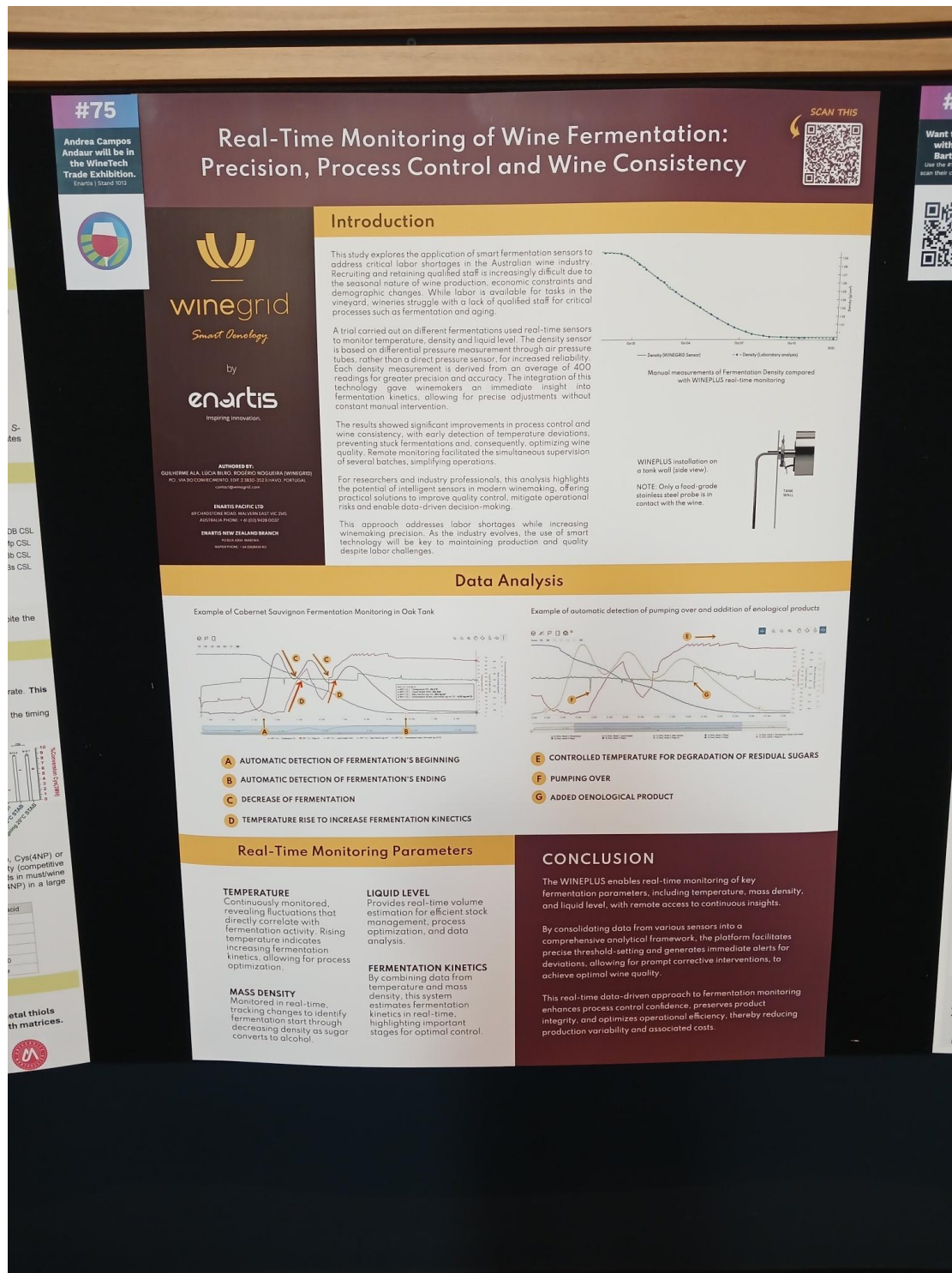
Wine Australia

TREASURY WINE ESTATES

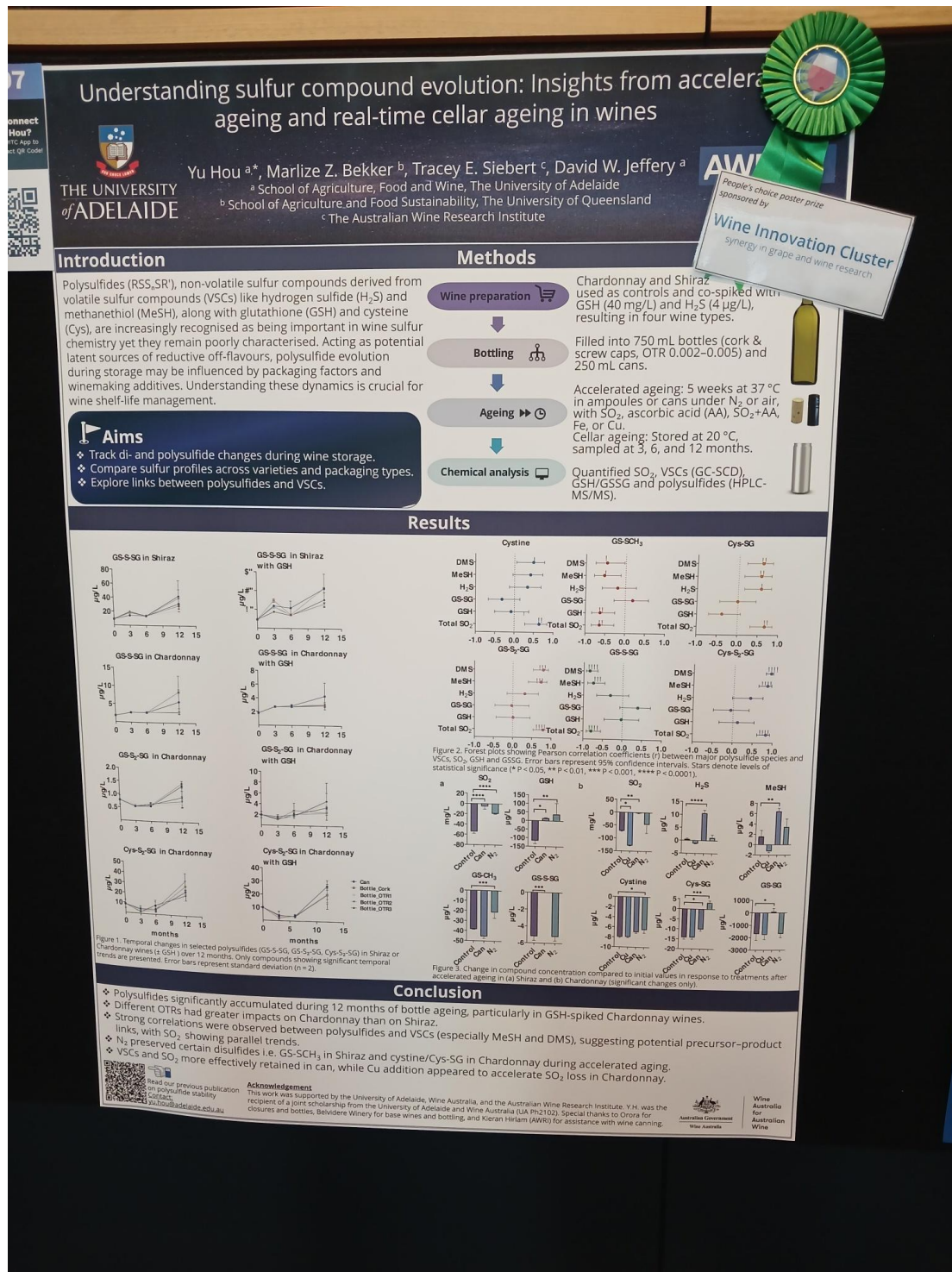
Can membrane filtration and adsorbent resin be used for remediation of smoke tainted wines? Poster



Real-time monitoring of wine fermentation: precision, process control and wine consistency - Poster



Understanding sulfur compound evolution: Insights from accelerated ageing and real-time ageing in wines. Poster



Long-term performance benchmarking of wine closures - Poster



Long-Term Performance Benchmarking of Wine Closures



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Introduction

- Affinity Labs, formerly The Australian Wine Research Institute Commercial Services, were engaged by Diam Bouchage (Oéret, France) to conduct a long-term closure performance benchmarking trial.
- A 10-year closure performance study was established in 2014 for a white (Semillon) and red (Cabernet Sauvignon) wine.
- The trial compared Diam 5 and Diam 30 technical corks against screwcap (Saran/sin) and natural cork (grade 1) closures.
- Evaluation included physical, chemical and sensory testing at multiple timepoints throughout the trial duration. Trial data up to an including eight (8) years in bottle is presented here.



Screw Cap (Tin/Saran)



Natural Cork (Grade 1)



Diam 5 (Technical Cork)

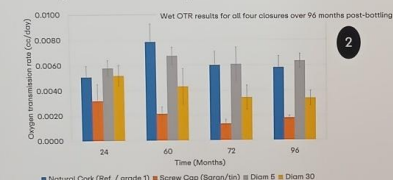
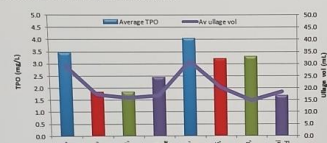


Diam 30 (Technical Cork)

Trial timeline and outcomes

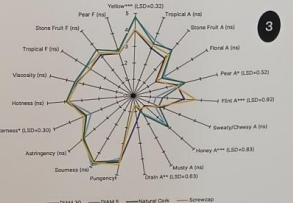
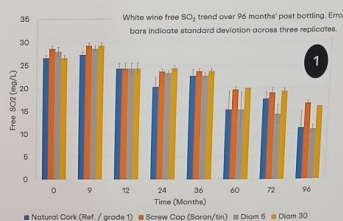
T(0)
Bottling
Data

- Consistency at bottling to establish the baseline for closure modulation is key.
- Due to the relatively small volumes being bottled, some of the resulting dissolved oxygen levels were higher than normally observed especially for the red wine. However, there was relative consistency in headspace oxygen values during bottling. Target fill heights on the day were ~32mm for screw-cap and ~63mm for the corks. Average wine temperature was 20.6 °C for the white wine and 21.4 °C for red.



Why run a closure trial?

- Ensures wine quality and longevity by evaluating how different closures preserve wine freshness, prevent oxidation, and maintain sensory attributes over time.
- Provides data-driven closure selection through comparison of oxygen transmission rates, consistency, and risk of faults like oxidation or reduction.
- Drives innovation and industry standards by identifying high-performing closures and influencing packaging practices across global wine markets.



Key Trial Takeaways

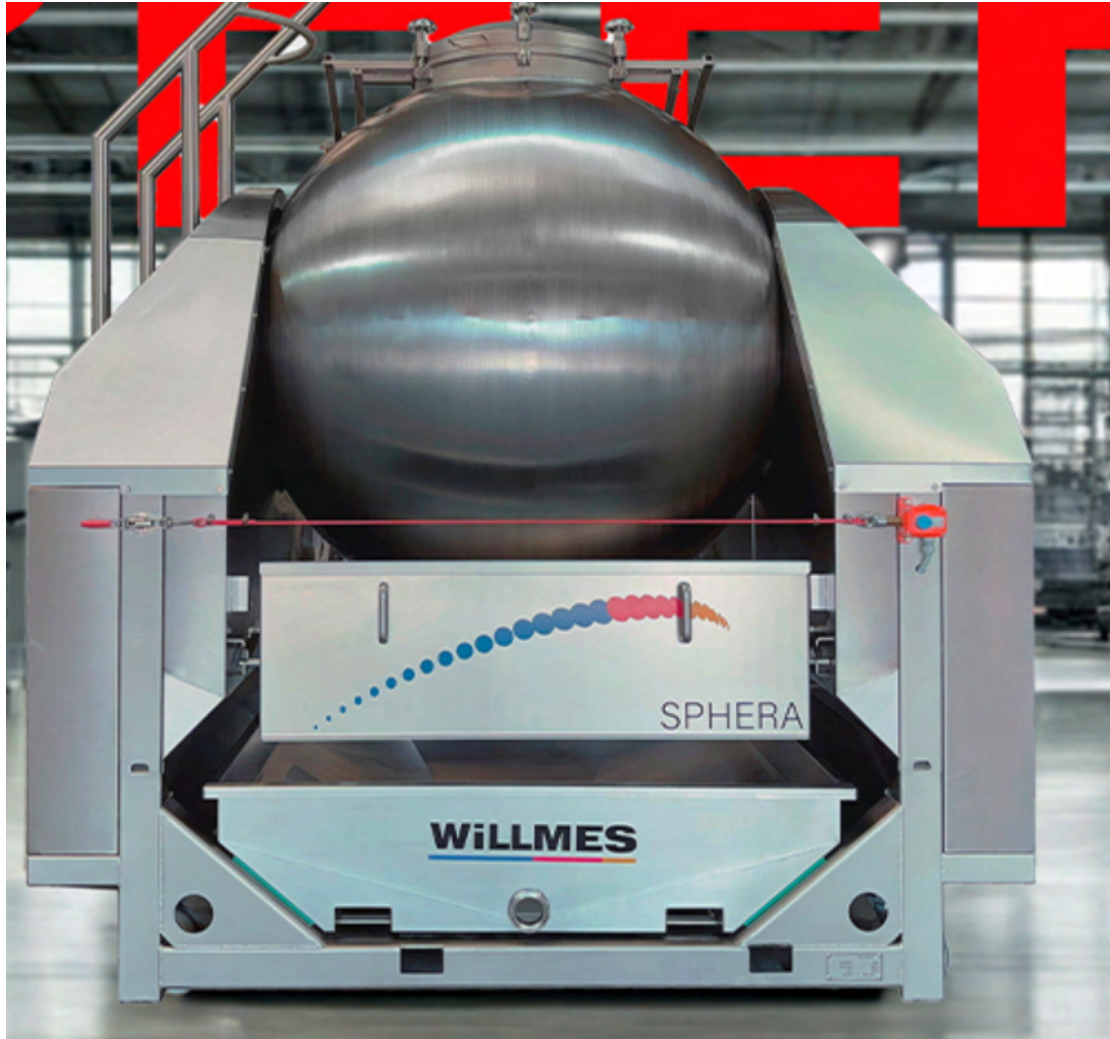
- After 8 years, Semillon wines under Diam 30 and screw cap retained significantly more free SO₂ than Diam 5 and natural cork, indicating superior protection against oxidation. Natural cork showed high bottle to bottle variability with respect to SO₂.
- Diam 5 and natural cork wines exhibited higher browning (OD 420nm) and higher oxygen transmission rates (OTRs), while screw caps had the lowest OTR (0.0018 cc O₂/day), followed closely by Diam 30.
- Semillon wines bottled under the different closures were differentiated by attributes related to oxidative (yellow colour, pear aroma and honey aroma) and reductive (flint aroma) aging conditions. In contrast, Cabernet Sauvignon showed minimal sensory differentiation, likely due to masking effects from extended bottle age.
- Overall, Diam 30 trial data aligned with screw cap (Tin/saran) data. Average Diam 5 trial data aligned with average Natural Cork (grade 1) data, however greater bottle to bottle variability was observed for natural cork sealed wines compared to technical cork sealed wines.

We gratefully acknowledge Diam Bouchage for their generous support and funding of this closure trial in collaboration with Affinity Labs. Their ongoing commitment to research and innovation in wine closure technology has been instrumental in the successful delivery of this project.



Powered by **AWRI**

Willmes Sphera. Claims to give a high yield of high quality juice, faster with less pressure than a basket press.



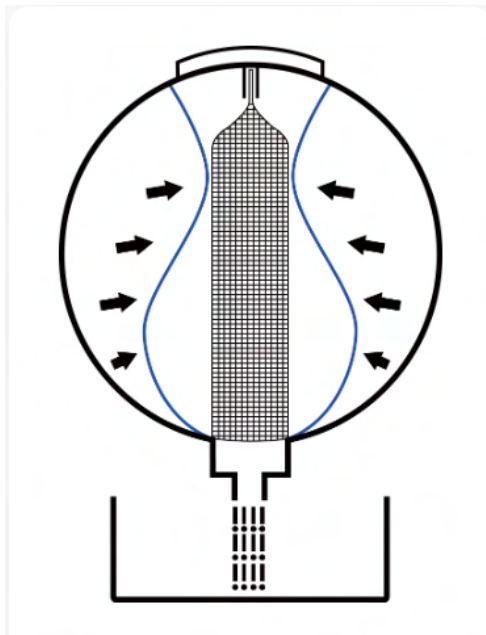
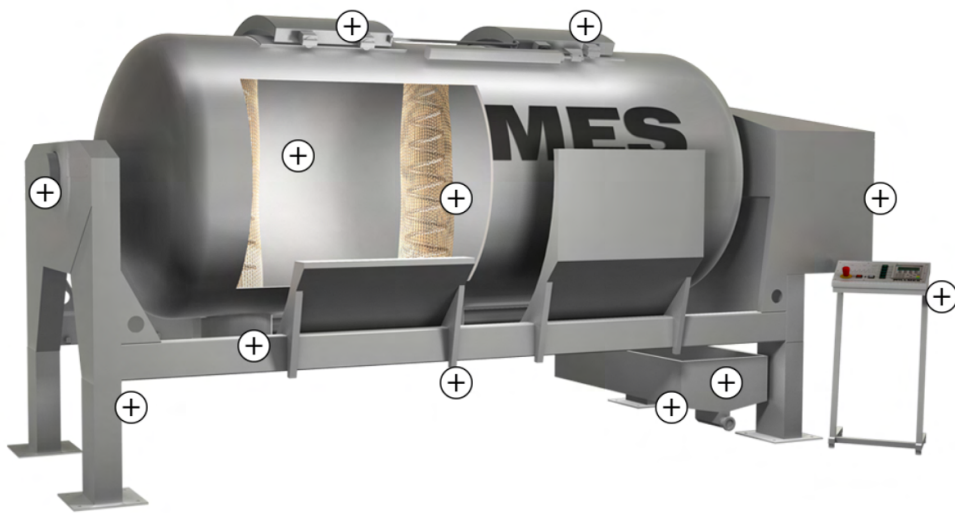
More information -

<https://www.willmes.de/en/produkte/sphera>

Willmes Sigma Press. Double membrane means less pressure needed, also shorter press time, less lees.

Photo below shows the flexible juice drains with a fine (pale brown) mesh over them and the double membranes.





More information -

<https://www.willmes.de/en/produkte/sigma>

Olavin square tanks



More information - <https://olavin.com/>

Sustainability

Sustainability workshop

Workshop - Who's asking for what, how are we answering and who's helping us along the way?

Insights into sustainability in the retail space (representative from Dan Murphy's)

- Consumers highly skeptical of generic sustainability claims, they have greater trust in products with 3rd party certifications.
- Consumers resonate with organic, biodynamic and regenerative agriculture.
- Perceived benefits in terms of environmental impact, ethical practices and enhanced wine quality.
- For most products, consumers won't pay more for sustainably produced. One study suggested Millennials and Gen Z might pay \$3-5 a bottle more for sustainable wine.
- There have been no shelf space changes in store around sustainability (unlike low/no alcohol products).
- There is an increase in sustainability awareness and education. Dan Murphy's newsletter once a year has a focus on sustainability.

How to make your sustainability credentials work for you when exporting wine

- There has been a shift in export markets with some having a greater focus on carbon neutrality.
- Sustainability has become an important part in procurement eg Tesco, Marks and Spencer and Waitrose (UK), Nordic markets (Systembolaget, Alko, Vinmonopolet), Whole Foods (USA), SAQ and LCBO (Canada), Ahold Delhaize (Netherlands).
- Sweden is the largest buyer of organic wines. With their aim for net zero carbon, there are more tenders for alternative packaging (cans, tetra paks) less for wine in bottles. Sweden is seen as the gold standard worldwide for their focus on sustainability.
- The consumer wants to be guided when it comes to buying sustainable products and it must be easy to do the right thing.
- Sustainability credentials can therefore help with some tenders and buyers.

- Systembolaget have on their [website](#) a page about sustainability certifications and list those that they think “Perform well in relevant environmental areas” (which includes SWNZ and Sustainable Winegrowing Australia).

Sustainable Winegrowing Australia

Established 2019, 2 tier programme - members when first starting and then move to certified members.

- Includes environmental, social and financial aspects
- 1,367 certified members
- ~60% of the national vineyard area is managed by certified vineyard members
- ~82% of the V25 vintage was processed by certified winery members.
- In a benchmarking study by Sustainable Wine Roundtable, weaknesses in the certification system were identified as labour, packaging and logistics.

Sustainability beyond a tick-box exercise. *Dr Peter Stanbury, Sustainable Wine Roundtable.*

What can sustainability do?

Access to market	• Customers increasingly require sustainability performance. • Ability to respond effectively to data demands.
Legal compliance	• Legal requirements are increasing and this is likely to continue. • Be ahead of new requirements, not chasing them.
Consumer expectations	• Respond to consumers’ need for ‘sustainable products.’ • Changing dynamics as younger consumers’ behaviours are felt.
Costs & business continuity	• Reduced costs of input chemicals, and in packaging. • Implications for finance and insurance costs.
Staff motivation	• Generally, people want to work for companies who value sustainability. • Better awareness of staff needs and views.
Excellence in viticulture	• How to optimise your assets in grape and wine production. • What does best practice look like and how to implement it.

The SWR Bottle Weight Accord.

Background

- Up to 50% of the total carbon footprint of wine is the bottle it comes in.
- Research project in 2023 to explore any challenges to weight reduction.
- Core commitment: participants to reduce the average weight of their bottles to below 420g by the end of 2026.

Progress in year 1

- 25 members who make/sell 2 billion bottles (7.5% of global total)
- Mitigated 144,000 tonnes of CO₂.

Next steps

- Sparkling bottle weight accord
- Packaging decision framework.

More information - [Sustainable Wine Roundtable website](#). This is an organisation that is focussed on “advancing sustainability in the wine industry through collaboration” and has members from around the world and throughout the wine supply chain.

Embedding ESG into Business Strategy

Dr Peter Stanbury, Sustainable Wine Roundtable.

Environmental, Social and Governance. Primarily used by investors and companies to assess financial and material risks and opportunities.

Key drivers below combined are increasing pressure for ESG compliance.

- Government/regulation
- Consumers
- Investors/insurers
- Downstream business partners/buyers
- NGO's/civil society/media

Currently only large companies may be required to comply, BUT large companies buy from small businesses and may require them to comply also.

ESG compliance makes commercial common sense for the following areas

- Legal
- Business continuity
- Get on top of problems early

Key priorities for the wine industry are

- Transparency on ESG/Sustainability
- Packaging - reporting on Scope 3 carbon is kicking in, transport costs and other drivers for this.
- Labour standards

Sustainability Lessons from Yealands

Andree Piddington - Sustainability Manager, Yealands

The winery is carbon positive certified by Toitu. Awards include International wineries for climate action gold, and Green World awards winner in 2023.

Carbon Emissions Measurement

- Measure scope 1-3 organisation emissions (ISO 14064).
- Started as CarbonZero (carbon offset), now carbon reduced (don't offset).
- This year will do a full value chain map for Scope 3 (not required from ISO14064).
- Carbon positive goals - 50% reduction in Scope 1 & 2 by 2030 (compared with 2020 base year).

Solar power

- 2013 and 2016 - 411kWh installation on roof of winery, producing 18% of the winery electricity at that time.
- 2024 - a 4MW solar array installed opposite the winery.
- Renewable energy certificate. Now all Scope 2 power use is from renewable energy.

Bale burners

- 10% of prunings are dried, burnt, to heat water and glycol, saving 160 tonnes of CO2/year (by reduced use of natural gas).

Diesel use

- Accounts for about 70% of Scope 1 emissions
- Goal - 5% reduction in emissions from diesel each year
- Conversion of diesel irrigation pumps to electric in 2023
- Vineyard management - 2 activities at a time where possible
- Lean principles - reducing moving vehicle movements across the vineyards
- Cover crops - reduce mowing need.
- Have reduced diesel use by 569 tonnes of CO2 since 2020, a 39% reduction and savings of ~\$300,000.

Scope 3 emissions reduction

- Lightweight glass. Average for financial year 2024 is 398g, currently trialling 300g Bordeaux bottle in the UK.
- Bottle in market EU and UK, gives a 25-30% in emissions.
- Packaging in bag-in-box and PE for Nordic markets.
- Going forward - continue to increase bottling overseas and transition away from natural gas use.

For more information about Yealands' sustainability - company [website](#)



Zero Carbon Glass Production

Chris Colby - The Barossa Study

Barossa Valley has the aim to be net carbon zero by 2050. By their calculations, wine bottles account for 56% of carbon emissions (Scope 1, 2 and semi-direct 3).

The aim of the study was to reduce the carbon footprint of natural gas/LPG by converting to using renewable gas for glass bottle manufacturing.

What is renewable gas?

- Hydrogen (bit more difficult to manage)
- Biomethane
- Synthetic methane

It will take ~20 years to be able to produce enough renewable gas. One option is to electrify bottle production (maybe 10-20% renewable gas, rest electricity). Further work to be done on this study.

Business

The challenging international wine industry

Simon Birmingham - Former Trade Minister for Australian government

There are four areas of disruption, which are mostly here to stay

1. Climate change - this affects transport, agriculture, emissions, taxes. If mitigation doesn't work, how do we adapt?
2. Technology changes - use of AI in particular is hard to legislate and need to be mindful of the ethical consideration.
 - a. Government policies associated with climate change and technology may be erratic, disruptive and difficult to predict.
3. Geostrategic competition
 - a. The US focus is on wanting to dominate China

-
- b. China is wanting to continue to grow and will keep increasing military and defense.
4. Rise in populism
- a. Increase in populist governments worldwide
 - b. Less stable, predictable governments
 - c. Both far left and far right
 - d. Potential for more extreme policies around immigration, taxes, health etc

The high tariffs in the US are likely to stay long after Trump is gone.

On a positive note - Asia continues to be strong and grow, and is close to Australia and New Zealand.

Wine market insights - Tim Mablesen, KPMG

- In March 2024 China abolished the tariffs on Australian wine and sales are now back to pre-tariff figures of \$1 billion.
- However, in 2023 there was a 500 million litre surplus of Australian red wine. It is suggested that a 30% reduction of red vineyards is needed to rebalance supply and demand.
- Warm inland regions are averaging contract grower sales of ~\$300-400 per tonne (some \$100-150). Mothballing vineyards has been suggested but it is expensive. Some further decreases in pricing is expected.
- Internationally - there is an imbalance between supply and demand.
- There may be some consolidation in wine business, where those that are able may take advantage of reduced prices - but this doesn't decrease volume.
- ~60% of the Australian wine industry is made up of family owned businesses.

Considerations for success based on case studies

Applicable to both case studies

- Family operated business – capital and finance constrained
- Long lead times between crush and production and sales – working capital challenges
- Focus on sales revenue rather than margin or profit, let alone cash flow
- Unreliable profitability/cashflow forecasts
- High debt levels due to the cost of infrastructure and working capital requirements of the industry
- Depressed bulk wine market in terms of pricing and transactions

Wine business specific challenges

Commercial wine business, Riverland SA

- Rapidly declining profitability and cash flow when tariffs were introduced – majority of business was exporting red wine to China
- Low margins due to a lack of established brands and poor access to the domestic market and direct to consumer channels
- Heavy reliance on high-volume, low-value bulk wine sales
- Rising costs and declining asset values
- Cost and availability of water

Wine business specific challenges

Premium wine business, McLaren Vale SA

- Unsuccessful geographic expansion to the US
- Winemakers needing to make wine to the standard of the price point - tendency to over deliver in terms of the cost of the wine
- Disagreement with/between financial stakeholders/owners
- Highly competitive fragmented industry – especially at the price point in domestic retail shelves
- Under developed e-commerce platform but strong loyal wine club
- ATO arrears, payment arrangements and Director Penalty Notices

Key issues wine businesses across the value chain should now be considering...

Saturated bulk wine market – pressure on red bulk wine inventory valuations

Vintages 23-25 have softened red wine oversupply but inadequate incomes for many

ESG investment and strategy now critical – Wine Australia sector plan now top of agenda

Vineyard values to rebound as funding constraints to maintain/invest lift – consider modelling

Strategic planning to respond to geopolitical risk and opportunity outlook re market access

Grape contracts and supply (distress exists for grape growers in inland regions)

Cost review and reduction strategies the only value lever for many

Industry consolidation and uplift in MGA activity (brand vs vineyard focused)

Succession planning should be driving MGA and exits

Short term

Medium term

Long term

In conclusion.....

1.

The Australian wine industry is a resilient industry which has faced many business challenges in the past.

2.

The global wine industry, like Australia, is being challenged to ensure future supplies match demand.

3.

If some producers decide to exit the industry and close their operations (as distinct from selling out to other producers), that will reduce supply capacity.

4.

If the surplus red wine stock and the vineyard area do not shrink enough through market forces, then major actions are needed to boost demand for Australian wines, raise their quality, and/or lower their production and distribution costs.

5.

If there were easy solutions that made all participants better off, they would have been found earlier, but that does not mean there is nothing that can be done – and a crisis is the best time to make hard decisions.

Rewards of an Inclusive Sector

Antoinette Lattouf - Australian broadcaster, journalist

Anoinette - written a book "How to lose friends and influence white people."

There are many benefits of a diverse workplace

- Diversity of employees within the workplace means a broader range of skills
- Happier employees
- Increased innovation and creativity
- More agile business
- Better at identifying risks
- More productivity

Do

- Commit to inclusion
- Have a DEI (diversity, equity and inclusion) plan
- Include metrics to enforce change
- Reap the business benefits

Don't

- Pretend to care if you don't, tokenism backfires
- Do the diversity without the equity and inclusion parts, diverse staff smell a fraud.



Mental Wellness in Business

Belinda Alworthy - Gotcha4life

Aim - for businesses to champion mental fitness

Australians wait on average >10 years to get help for mental health issues.

How can we build mental fitness? There are skills and tools we can use. Key points for both children and adults are -

- It's OK to feel big feelings
- Connection is protective
- Seeking help is a strength

What business managers can do in their workplace

- Lead with an open heart, it's ok to show vulnerability
- Embed connection rituals that happen every week, ask questions.
- Make prevention a priority. Recommend the [Gotcha4life](#) mental fitness gym, a free app with information and practical tools to build mental fitness.



How do we position our organisations for success? Session presentation

This discussion panel was about what has been learned from the recent major Australian wine business challenges (Covid and the China tariffs), and how these learnings can be used to make wine businesses stronger and better able to cope with the current and future challenges.

When challenges hit, businesses need to focus on the most important aspects

- Eg Covid - keeping wineries open, staffing, collaboration with other wineries and the government.

Looking back at the China tariffs crisis, we can see that some people panicked. "There is no crisis that can't be made worse by panicking." Some wineries destroyed relationships with distributors, sacked the wrong people and caused irreversible brand damage.

A better strategy would have been to focus on maintaining relationships and key staff to make it easier to rebuild. While a comment on sustainability may be "it's hard to be green when you're in the red" maintaining sustainability certification is crucial as it's increasingly important for customers and needed for market access.

After a crisis, businesses may feel panic from the unknown and the fear of not knowing what to do. Having a succession plan and a business continuity plan (disaster survival plan) can help businesses feel better prepared. When a crisis hits, having these plans means that you are not thinking about this issue for the first time.

Succession planning

- If I was to lose a key person today, who do we have in the organisation to fill the gap right now?
- Over time, can we train people to move through the organization in the future?
- Valid for large and small organisations, talk around the table - what are people's plans for the future, what skills do they have?
- People resources are key - there may be people you hadn't thought about who wish to do more. Alternatively the next generation may not want to step up.

Business Continuity Plan (disaster survival plan)

- What if...?
- The more of that you do, the better you are at problem solving
- Have emergency contact lists - key staff, insurer, accountant, lawyer, PR, banker.
- In challenging times, sometimes you need to navigate without your computer (information, data), how do we make decisions when we don't have great information.
- Are we doing enough work/planning about climate change/heating?
- Make lots of connections within and outside of the industry.

What wins/positives are there at the moment?

- Glass weight reduction requirement for UK - gets businesses ready for Australian upcoming packaging regulations, reduces COGS.
- If in an area with rainfall >500mm, off vine income from tree planting
- Research available grants and subsidies - use to swap out outdated gas equipment for example.
- Demand for Chardonnay - we're great at that in Hawke's Bay.
- Sustainability - there's really good benchmarking information. Are you scoring at the top end for each of the sustainable pillars when comparing to similar sized wineries/vineyards? If not, why? There are opportunities to improve and potentially save money also.
- Cost of production for the average grape grower (Australian figures) has doubled since Covid. How can you do things for a lower cost? Relationships with bankers are key. Have you identified the underperforming areas of the business? Using Agtech may help to reduce labour requirements for irrigation management. Can staff resources be shared with neighbours? While trying to cut costs, don't cut crucial corners (eg poor maintenance) which can result in larger bills and safety risks.

How do we hit that narrow window of opportunity?

Example - The UK duty change for higher alcohol beverages has meant better returns for lower alcohol wines. NZ Treasury - have developed a naturally lower alcohol (11%)

Sauvignon Blanc, which means no additional costs for reducing the alcohol. It's harvested earlier which helps with spreading vintage.

If there was a magic wand to grant wishes, what would you ask for?

- Commercially viable secondary use for wine grapes
- More time to be proactive rather than reactive
- Less vineyards, but no one to sell to, too early to retire.
- More confidence and belief in brands. Without a strong brand you are a price taker. Quality has never been better - need to shout about it more.
- Unified plan for climate change management.

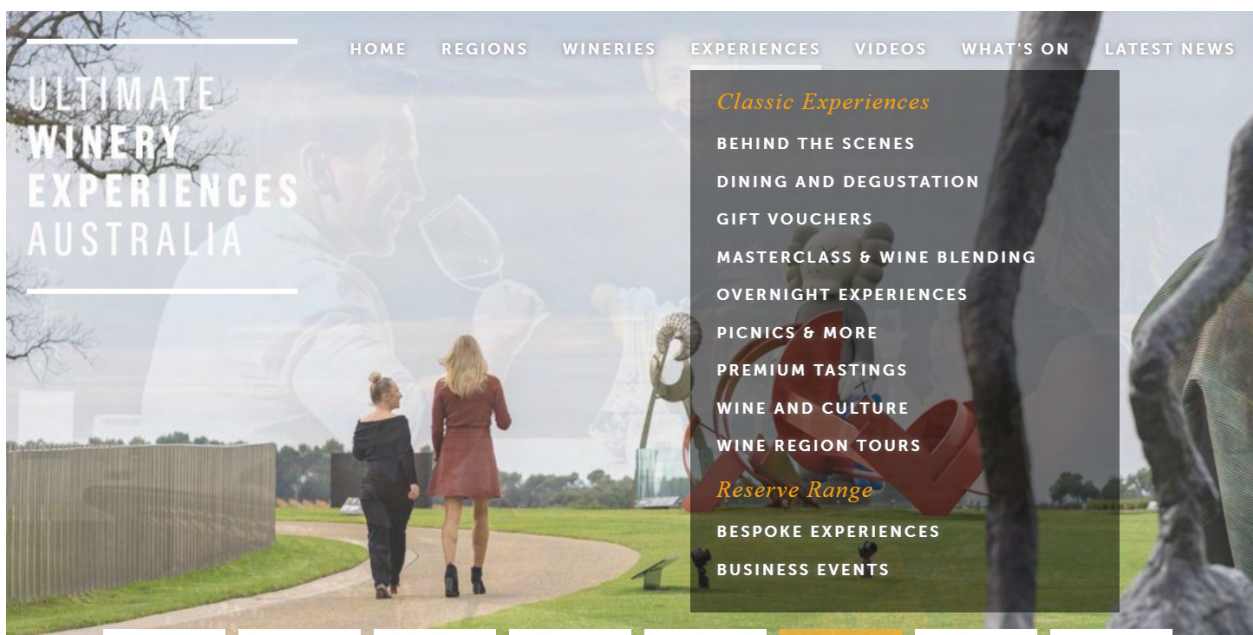
Sales and Marketing

Wine Tourism

Phillipa Harrison - MD Tourism Australia

Why is wine tourism important to the mix of tourism promotion?

- Food and wine is a key driver of destination choice.
- It promotes regional dispersal (people travelling into the regions, rather than just the main cities)
- Tourism contributes to GDP and helps to create 1 in 15 jobs in the regions.
- Challenge - only 1 in 5 high yielding travellers associate Australia with wine and food.
 - Have a number of celebrities who promote (unpaid) Australia, with 40% of them focussed on food and wine.
 - Weaving wine and food into "Come and say g'day"
 - Range of media and broadcast, PR activities, events.
 - "[Ultimate winery experiences](#)" - launched in 2013, collection of 30 Australian wineries, 100+ unique experiences (tours, behind the scenes, degustation, wine blending etc).



Learning from the competition

Food and drink insights - Alex Beckett, Mintel, London

- 66% of UK 16-44 year olds are finding more comfort from food and drink than otherwise would (due to the state of the world).
- Many businesses are prioritising survival over innovation (in 2010 49% of products, 2025 25% of food and drink products are new, rather than line extensions or other variants).
- Food and drink consumers value added wellness boosts (eg protein bars)
 - Conveys value for money
 - Deliver quick-fix nutrition
 - Example Two-Spoons Rocky Road icecream - GLP-1 and keto friendly
- 59% of UK think that nutrition is more important than calories.
- Adult soft drinks - functional drinks with relaxing effects provide a good alternative to alcohol. Example - Impossibrew = 0% alcohol, brewed with 'Social Blend' to give relaxed feeling, low calorie.



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- Consumers are concerned about ultra-processing, including no/low alcohol wines.
 - Trends
 - White Lotus effect - Thai takeaways increased 25%, global escapism.
 - Coke and Oreos
 - Gen Z loathes elitism so companies provide a casual option - Jamesan orange, Little's coffee.
 - Increased snacking, more occasions for drinking, eg Easton wine promotion of pairing with Dubai chocolate.
 - Increase in wine cocktails - sweet, refreshing, escapism, pleasure.
 - Regenerative agriculture gathering steam eg Wildfarmed brand in UK.
 - Sustainability has reduced as a driver for buying, it needs to be incentivised, packaging is their main touchpoint and microplastics will be the next big concern.
 - UK drinkers say a canned product would be good, need to emphasise the benefits eg easy to cool.
 - Whiny Baby (US) flavoured wine.



Wine Marketing Science

Professor Jenny Romaniuk, Institute for Marketing Science, Adelaide University

Common mistakes in wine marketing and what to do instead

1. Mistake - Trying to grow by building loyalty first.
 - a. Double jeopardy - small brands have fewer users, less loyal. More popular brands are bought by more people and somewhat more often. Businesses aim to increase the number of times buyers buy again rather than penetration.
 - b. Instead, expand your customer base and loyalty will follow. The work you do on getting new buyers will also work on people who have already bought from you.
2. Mistake - Trying to be more 'efficient' by narrow targeting
 - a. Instead, target the market. Give as many category buyers as possible the opportunity to buy your brand.
3. Mistake - Sacrificing reach for engagement
 - a. Instead, aim for cumulative reach. Reach across both targets and time, expose different category buyers to the campaign, reach those who didn't see it in other spots.
4. Mistake - Not understanding the 'mindsets' of your customers.
 - a. Example - a cellar door where most visitors are travellers but the only thing for sale are bottles of wine or expensive wine glasses.
 - b. Instead - winery experiences could be a good option - tutored tastings, behind the scenes tours, food and wine matching etc.

Think of the 'W's'

- Why
- When - timing (eg short, long, Saturday night)
- While - activities
- What with - (eg snacks, dinner)
- Who with

- Where
- How feeling (before, during, after)
- Instead - know your category entry points.

Category Entry Points for Champagne

Why	Celebrating a big event eg wedding, new house. To recognise a success or achievement
When	To drink before dinner To have at breakfast time
While	To kick off the evening Making a toast
With What	Have with canapes Have with a cigar
with/for Whom	When sharing a moment with my partner Catching up with a friend
Where	At a bar, restaurant or nightclub At a wedding
hoW feeling	To give me a lift if feeling down When I want to do something special for someone.

5. Mistake - Sacrificing packaging

- Create shopping and brand assets. Brand assets = what the brand has (logos, bottle shapes, label designs, and the overall brand aesthetic), shopping assets = what's in the shopping (online and in store) environment (product descriptions, high-resolution images, pricing information, and availability details used for online or in-store sales).

How to be found in a crowded market.

- Products under the same brand should look related.
- The big battle is against other brands, not against other variants of your own brands.

Public Health Narratives and Perceptions

Felicity Carter - Wine Journalist

2013 - Dry January introduced by Alcohol Change UK, now have Sober Spring, Dry July.

2015 - Rise in smart watch use gives wearers the ability to link poor sleep with alcohol consumption.

2018 - Sober Curious: The Blissful Sleep, Greater Focus, Limitless Presence, and Deep Connection Awaiting Us All on the Other Side of Alcohol. Popular book by Ruby Warrington, linked to wellness culture.

Covid - more paternalistic government. People could order wine to their home. Shut down of many alcoholic support facilities.

In the media

- More articles on alcohol and its negative effects
- Red wine has previously had a health halo. Now, if you want to demonise all alcohol then target red wine (glass of red wine images with articles about the negative effects of alcohol).
- Movendi International is the largest independent global movement for development through alcohol prevention. Their history goes back to the 1800's and temperance movement. They are involved with 178 organizations in 63 countries and in 2023 had a reach of 73 million people.
 - These groups want cancer warnings on alcohol, then people will more readily accept increased taxes and prices (like tobacco).
- WHO - alcohol has a moderate risk factor of disease, urging countries to decrease availability and increase taxes, stricter rules around marketing of alcohol.

What can the wine industry do to respond?

- Nutrition labels - should start using them as part of increasing transparency

- Be careful about marketing to women, eg how full a wine glass is with a woman holding it in images (alcohol link to breast cancer).
- Latest (April 2025) scientific, peer reviewed information - [Review of Evidence on Alcohol and Health](#)
- Drinkwise Australia “Stay tasteful when tasting” scratch cards available in cellar doors, so customers can keep track of how many ‘tastes’ therefore standard drinks they’ve had.



Risk and Reward: Consumer engagement with zero and mid-alcohol wines

Dr Hannah Ford - University of Adelaide

There are now more no/low alcohol wines in the market and retail areas to find them

- ‘Zero zone’ in an independent bottle shop, Australia
- ‘Lighter in alcohol’ section of VIntage Cellars, Australia
- Dedicated ‘Mid-zone’ in Sainsbury’s, UK
- Club Soda - Alcohol free bottle shop and tasting room in London.

Taste, price and quality concerns are the key barriers to broader consumer adoption of no/low alcohol wines. Consumers need to weigh up the risk vs reward of buying these products.

Research question 1 - *How do perceived risks and perceived values shape consumer engagement behaviour (CEB) across 3 wine categories (no alcohol 0-0.5%, mid-strength 5-10%, full strength >10%)?*

Research question 2 - *To what extent do brand equity and brand heritage mediate the relationship between perceived risk/value and consumer engagement across cultural contexts (investigate Australia vs UK)?*

Perceived values

- Functional value - does it deliver on taste and quality?
- Social value - will it help me connect with others?
- Situational value - is it the right choice for this moment/occasion?
- Epistemic value - does it satisfy my curiosity or desire to try something new?
- Emotional value - will it enhance my mood or experience?

Perceived risks

- Social risk - will others approve of my drink choice?
- Functional risk - will it taste good?
- Financial - is it worth the money (no alcohol often more expensive than equivalent full alcohol)?
- Time risk - will it be easy to find?
- Psychological risk - will it give me a hangover?

The research method was an online survey that included a range of ages, demographics, participants who drank no, mid and full strength wine - 872 in Australia and 852 people in the UK.

Explanation - brand equity vs brand heritage

	Brand Equity	Brand Heritage
Definition	The intangible value a brand has in the market, reflecting consumer perceptions of its quality, desirability, and loyalty.	The accumulated history of a brand, including its origins, traditions, values, reputation, and journey over time.
What it includes	Brand awareness, perceived quality, brand loyalty, and other brand associations.	Provenance, core values, longevity, historical milestones, and symbols.
How it's used	To influence consumer choice, command premium prices, and build a strong, loyal customer base.	To provide an authentic story, create a sense of trust, and evoke nostalgia and emotional connections with consumers.
Relationship	Brand heritage is a dimension or a contributing factor to a brand's overall equity. It is one of the sources that can shape consumer perceptions and build equity.	It provides a narrative and justification for a brand's value, making it a powerful tool for building brand equity, but heritage alone is not the complete picture of a brand's total equity.

Results

Australia

- Both perceived risks and perceived values play an equally significant role in driving consumer engagement behaviour for zero alcohol.
- Brand equity has a significantly positive impact for mid-strength wines
- Brand heritage is more influential for shaping consumer response to zero alcohol wines.

UK

- Only perceived values had a significant positive role in driving consumer engagement behaviour for 0% alcohol wines. This may be due to the fact that UK consumers have more familiarity with 0% products so the risk is not seen to be as important.
- However, perceived risk is more important for mid-strength wines, which UK drinkers are less familiar with.

Industry Application - how to apply the above research

- Focus on perceived values over the risks
- Highlight the functional and epistemic values (of the 5 perceived values, these are considered the most important), ie the taste, quality and trying something new/being curious.
- While the focus is on the perceived values, don't ignore the key risk perceptions. Education on the price of 0 alcohol due to the cost to take out the alcohol and on the quality/taste of the wine.
- Boost brand equity through value messaging
- Leverage brand heritage
- Consider country specific marketing strategies, as the research showed difference in consumer behaviour in the UK vs Australia.

The below study and figure was found after the conference to give further ideas on consumer behaviour for low/no alcohol wines.

Figure 1. Psychological factors and suggested interventions to encourage consumers to shift towards NoLo and mid-strength wine.



Note. Figure from Ford, H., Dolan, R., Goodman, S., Bastian, S., Pearson, W., & Corsi, A. M. (2025). Exploring consumers' drinking behaviour regarding no-, low- and mid-alcohol wines: a systematic scoping review and guiding framework. *Journal of Marketing Management*, 41(7-8), 703-733.

<https://doi.org/10.1080/0267257X.2025.2499101>

[Link](#) to full article