Wine Australia

Agtech

Got a problem that needs fixing?
We might just have the solution.

Visit our agtech hub

With the support of Wine Australia, grapegrowers and winemakers have thrown open their vineyards and cellars to researchers and agtech designers to co-design, develop and test practical solutions for the everyday problems they have been grappling with.

Are you also trying to manage smoke taint, rising power and input costs, labour shortages, drought, quality consistency or environmental credentialing? Our team of dedicated developers and vineyard and winery owners have been contributing enthusiastically to Wine Australia's agtech program to adapt existing tech or create new concepts based on scientific research in an attempt to fix these common challenges.

In the following pages you'll find a range of tried and tested wine growing technology now available to help you make more profitable management decisions.

'Start with your biggest challenge—and don't underestimate the value of getting a few hours back each week.'

Josef Chromy Wines

For further details, to see it in action or test it, please call Andy Clarke on 0417 371 139


Wine Australia

Empowering the success of Australian wine

Spatial imaging

Reduce costly decision-making mistakes with the support of real time vine health mapping

We all know that a dead or underperforming vine isn't making you money, and that an ill-informed or late decision about what you should do about it just costs you more – in time, convenience, input costs, water, quality and yield.

Taking time to walk your vineyard regularly to identify persistent irrigation problems and diseased wood is a luxury few have time for. Gradual decline year-on-year is even harder to quantify, making it difficult to spot the tipping point at which vine replacement is the most economical action to take.

But what if you had a bird's eye view of every part of your vineyard, down to the nearest vine, all from the convenience of your desktop computer or hand-held device?
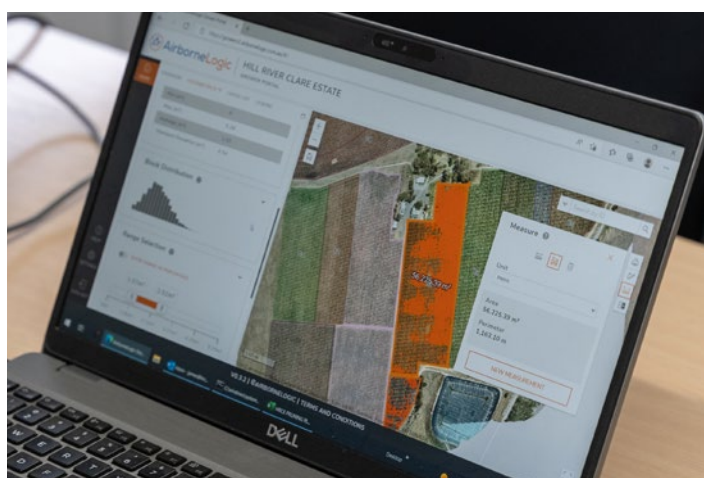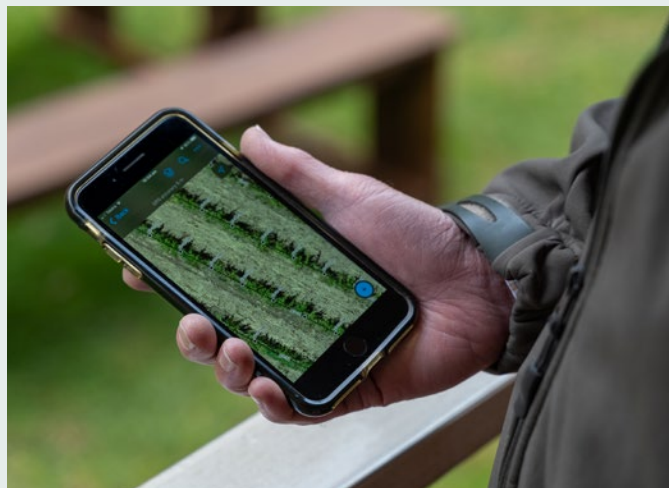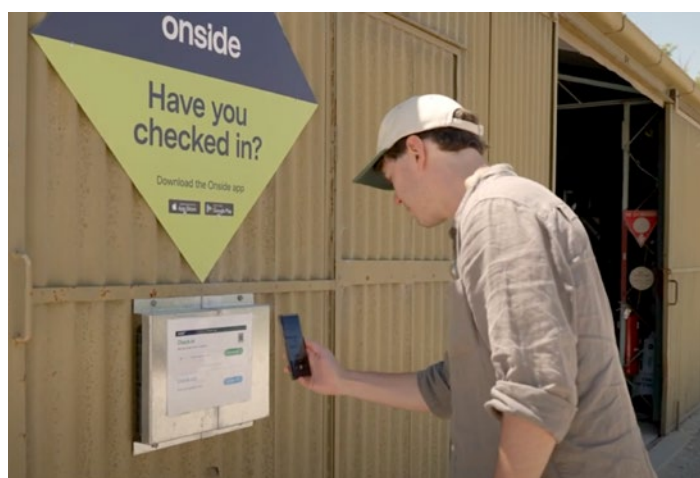

PROJECT
Vine health mapping

Airborne Logic maps your vines' health using drones that take aerial multispectral and thermal images and converts them into an easy-to-use, easy-to-act-on format.

Images taken at the same time each year (flowering and veraison) have allowed **Hill River Clare Estate** Vineyard Manager James Meyer to identify emerging problems quickly. These provide his team with the information they need to easily target and fix costly operational problems such as irrigation leaks and growth inconsistencies during the growing season.

The images also identify diseased vines that need removing or reworking, which supports James' long-term and strategic decision-making, guiding critical investments around grape varieties and vineyard infrastructure design for the business' future.

"The drone flights saved us countless hours. Ground-truthing is now more targeted and less time-consuming. It's given us clarity on where to focus our resources."

PROJECT
Biosecurity, operations and OH&S management

Yalumba initially adopted the Onside app to enhance the protection of their vineyards against biosecurity risks. But, the wine company soon discovered the app had the added benefit of knowing exactly where its team members and contractors were in real time across eight sites.

In addition to making everyday team management easier for a busy site manager, this integrated operations, communications, compliance and biosecurity tool ticks off OH&S responsibilities, as well as genuinely enhancing the safety of vineyard teams.

"Knowing you'll get a phone call to check that you got home safely (if you forget to check out) after nightly frost monitoring, provides peace of mind."

Tech partners

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Irrigation scheduling

Greater vineyard profits and wine consistency can be secured through optimum irrigation scheduling

Wine Australia-funded research and in-vineyard trials with winegrowing partners across Australian wine regions have clearly demonstrated that optimising the timing and quantity of water available to your vines is a key player in securing desired and consistent grape quality and yield.

These findings have been confirmed by early adopters of a range of irrigation scheduling technologies in Coonawarra, Tasmania, Clare, Sunraysia and the Yarra Valley, where hands-on experience has provided further evidence that having additional tech in your toolbox to inform precision decision-making around irrigation has significant benefits.

When searching for the optimum yield and quality, securing the perfect balance between wasting water and over-stressing vines when it's dry and hot, is a constant battle for vineyard managers. The 'perfect' irrigation amount varies significantly across regions, between properties and within vineyards.

What is 'too much' or 'too little' will vary from site to site depending on multiple factors including (but not limited to) the weather (actual and predicted), soil type and variability, vine variety and age and phenological stage. The availability and cost of water and sustainability goals (or credentialling requirements) will also contribute, as will the intended use of the fruit after harvest.

Wine Australia continues to invest in the development and trialling of potential solutions to support growers in the profitable management of irrigation. This saves you time, gives you peace of mind and can even allow you full control off-site – no more rushing home from Christmas lunch to switch on the irrigation!

> *"Time banking was an unexpected benefit. With access to real-time data and visual tools, we could redirect our attention to other critical tasks instead of walking every row."*
>
> Kellie Graham, Viticulture and Operations Manager, Josef Chromy Wines

PROJECT
Get a handle on your soil moisture levels

One way to better understand how much water to apply (and when) is to measure the amount of water stored in the vineyard soil. There are a range of soil moisture sensors on the market, and the level of sophistication, accuracy and ease of use has accelerated dramatically. It is also now possible to integrate their use with other monitoring and scheduling solutions.

Wine Australia has supported growers to work with several tech companies to develop and test a new generation of soil water sensors.

Marty Gallasch installed soil moisture probes as part of Wine Australia's Ag Tech Program in his premium Shiraz and Grenache Vinhaven Vineyards at Ebenezer in South Australia. Marty says the main challenges for the area have always been climatic.

> *"We have lower rainfall and limited water supplies compared to many grapegrowing regions. We also contend with managing diverse and inconsistent soils."*
>
> Marty Gallasch, Vinhaven Vineyards

Improved vineyard performance due to having a better understanding of the water available to his vines has made Marty an enthusiastic advocate for irrigation scheduling technology at regional grower workshops.

PROJECT
Real time vine water use monitoring

How great would it be if your vines texted you when they needed a drink?

Hans Loder found that the unique qualities of Coonawarra's Penley Estate soils caused his existing soil moisture probes to sometimes be out of sync with the vines' visually-evident ability to find water. Consequently, finding a sensor that monitored the vines (as opposed to the soil) was a priority.

Transp-IR uses a canopy sensor to measure humidity, canopy temperature and ambient temperature. This data is used to inform Hans how well the vine is making use of the water available to it, and if (and when) a 'top up' is needed.

> *"The Transp-IR solution is simple and easy to use. As a grower, on those occasions when I am unable to make a visual assessment, I just need to know whether the vines need a drink. Transp-IR gives me that information quickly and in an easy-to-interpret graph."*
>
> Krysteen McElroy, President-Padthaway Growers Association, Grapegrower and horticulture grower

Tech partners

cropx

AG LOGIC
Agricultural Intelligence

Sentek

METOS®
BY PESSL INSTRUMENTS

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Athena IR-Tech

PROJECT
Achieving vine consistency through data integration

Tasmania's Josef Chromy Wines has the challenge of managing a mixed vineyard in an increasingly variable climate. Their advice – look for tools that save time, reduce uncertainty and fit your day-to-day workflow. With the help of an integrated irrigation system, water post-flowering is limited to allow the soil to dry out just enough to divert sap from excessive canopy that shades the fruit, to fruit development. The technology supports effective water budget development and enabled Josef Chromy Wines to make the most of any effective rainfall, by only topping up with costly irrigation when the crop demanded it.

For Michael Paxton, at Clare Valley's **Queltaller Vineyards**, SWAN Systems and the 'extra eyes' in the vineyard provided by remote sensor technologies were 'a game changer', particularly with previously guaranteed rainfall patterns changing and pumping costs on the rise.

> *"It's helped us be more responsive to unpredictable weather and get smarter about using the water we have."*
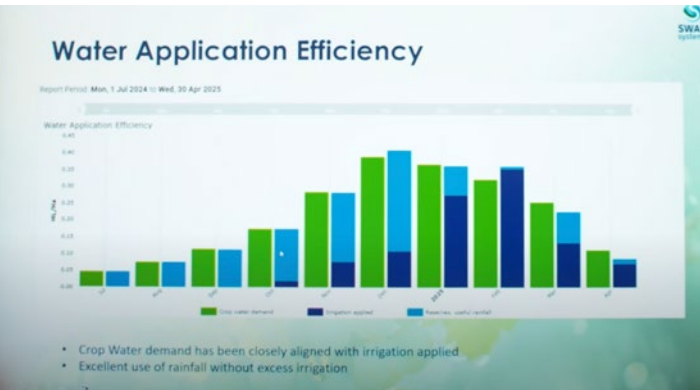
PROJECT
Weather stations and forecasting

Wine Australia's agtech program has worked with multiple growers and a range of weather station providers to test their usefulness and potential contribution to precision irrigation management.

Dan Sergeant, at **Joval Family Wines,** is just one of several growers who has road-tested Jane's Weather.

> *"The more I use Jane's Weather', the more I like it. The variability in rainfall across the Yarra Valley is significant, and Jane's weather does provide a more accurate estimate of rainfall compared to the BOM."*

More than a simple BOM weather forecast this app collects data from any local weather station, then utilises AI to analyse historical weather data and property-specific conditions, creating a tailored forecast just for you.

Jane's Weather can also provide insights on when conditions are likely to be rated good for spraying chemicals. Its calculations take into account the wind, delta-t and inversion potential.

> *"Delta T calculator will be extremely beneficial during the spray season, and the temperature forecasting will also be beneficial in the early part of the growing season when frost is a potential threat."*
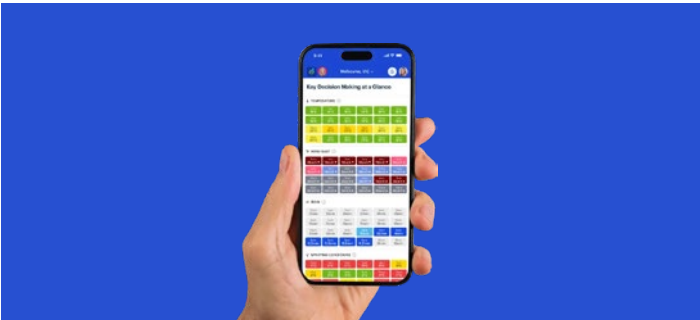
Tech partners

Tech partner

Wine quality management and energy savings

Real-time smoke risk assessment

Want to stop dropping useable fruit 'just in case' after a smoke event?

A smoke sensor system that has been trialled in vineyards in north-east Victoria and the Limestone Coast over the last couple of seasons is now available for growers to purchase following the recent signing of a commercial partner to progress the Wine Australia-funded technology to market.

Wine Industry Smoke Detectors (WISDs) – colloquially known as 'wizards' – are field data loggers that provide a real-time assessment of smoke dose in a vineyard. Conversion of this reading to a smoke taint risk rating, gives vineyard managers an immediate heads-up about whether smoke in their area is a threat to their vineyards. This information can be used to make informed decisions about grape testing, vineyard management, and winemaking strategies to minimise the risk of smoke taint in wine.

Operating like the networks that continuously monitor air quality for human health, the data from the loggers is used to calculate risk ratings for smoke taint drawn from 10 years of smoke, grape and wine data collected by La Trobe University. This knowledge links smoke dose through to smoke composition, phenol levels in grapes and wine and their sensory outcomes in wines. It also incorporates the critical risk factors for smoke taint, including burn conditions, distance from the burn, grapevine variety and the timing of exposure during the season.
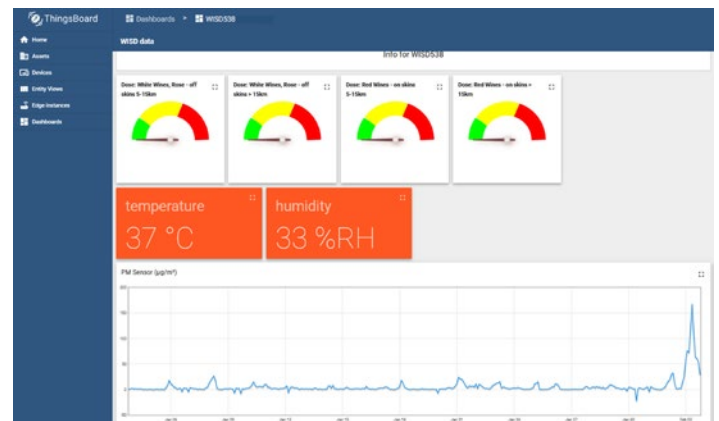
Example of a WISD output from South Australia showing a recent spike in smoke from Victorian bushfires. Note that although smoke is visible in vineyards and can be detected by WISDs, there is little cause for concern for smoke taint at this stage, with the traffic light risk rating needles clearly in the green zone.

The overall risk rating for smoke taint is delivered as a traffic light indicator, communicated to vineyard managers in real time via a mobile phone app. The risk rating and other data from the WISDs (currently temperature and humidity) can also be accessed via a dedicated website.

> *"I've got a WISD in my vineyard. They are a huge benefit in dispelling some of the myths out there about what amount of smoke will cause an issue"*
>
> Grapegrower, King Valley

Tech partner

PROJECT

## Increase harvest quality, consistency and efficiency by harvesting MOG-free fruit

Eliminate the green bitter characters from your wine and reduce time-wasting and costly breakdowns during fruit intake and processing by eliminating Material Other than Grapes from your grape deliveries.

Why waste time and fuel by transporting waste materials with your grapes when this in-field sorter can be retrofitted to any existing harvesting equipment and dumps unprofitable waste onto the vineyard floor. This technology, which has been tested as part of Wine Australia's agtech program, has demonstrated 10% weight losses, and reduced fuel usage for growers and is an affordable retrofit alternative to on-board selective harvesters. Enhancing quality and consistency of fruit for the winemaker, two models have been co-designed with growers, allowing the choice of either handling smaller quantities of premium fruit whilst retaining berry integrity, or a high-volume unit that allows growers to process large crops without reducing speed at harvest.

> *"We're really rapt and the winery loves it"*
>
> Chris Nye, Duxton's chief viticulturalist
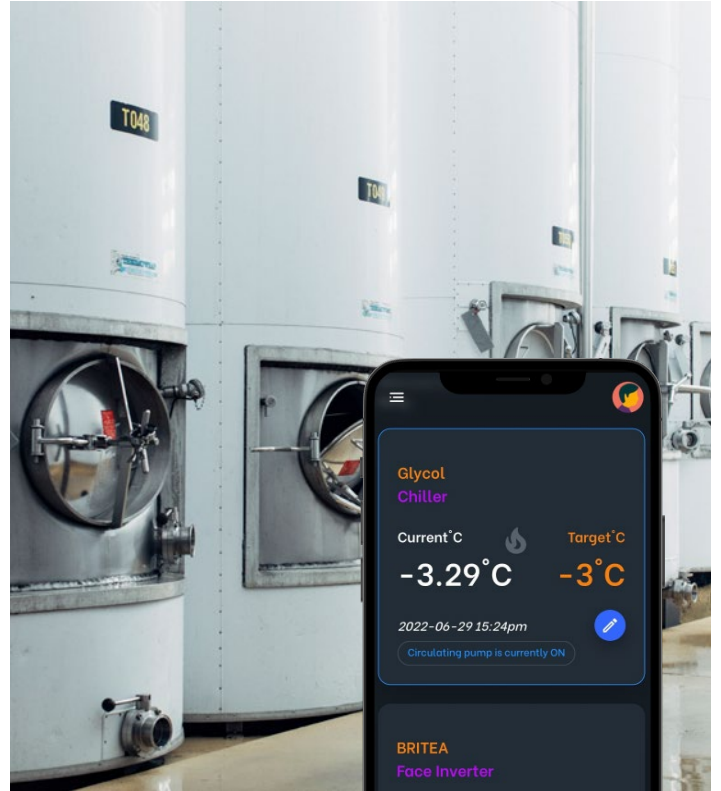
PROJECT

Halve your energy bills with smart cooling

Whilst reducing energy consumption by 52% across the winery site and lowering costly peak energy usage by 66% has a dramatic effect on the bottom line, the demonstrated benefits of Frigid.Cloud are not limited to reducing emissions and power bills.

In Wine Australia-supported trials at **Kaesler Wines,** first-hand experience clearly demonstrated why this cloud-based vat cooling tech is gaining popularity with wineries and breweries worldwide. Proactive cooling by batch (rather than by tank) and a pulse, lock and hold strategy avoids over cooling and protects wine quality.

> *"Having remote access to every tank and knowing the system is responding before we even notice a problem is a game changer during vintage."*
>
> Tim Dolan, Chief Winemaker, Kaesler Wine

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Next generation agtech solutions under testing

PROJECT

Looking for cost-effective, reliable help in the palm of your hand?

If you're struggling to recruit vineyard operators when you need them and are keen to try a 'helping hand' of a novel kind, please contact Wine Australia. We are currently working with tech developer Burro and interested vineyards to test and further refine a range of autonomous, electric vehicles (EV) which could be just what you're looking for.

Once programmed and trained to know your vineyard, you can set the Burro to work with minimal supervision. Coming with a range of towable attachments, it can slash or spray your mid-rows, while you get on with checking your dripper lines or something else requiring specialist human input.

Other horticultural sectors are finding the Burros super handy when hand-harvesting (e.g. strawberries and orchard fruit), programming the EVs to take crates of fruit loaded by the pickers in the rows, to the trucks for loading.

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PROJECT

Save spray and labour costs on powdery mildew control

A revolutionary new tech currently being tested at Best's Great Western is arguably performing almost as impressively as it looks! Already frequently utilised in other horticultural sectors to combat fungicide resistance, rising spray costs, labour challenges and environmental credentialling, UV-C light can be applied to crops to inactivate microorganisms such as the fungi responsible for powdery mildew.

UV-C is most effective when applied at night and in its first season, weekly applications via the UVEX largely supressed the development of powdery mildew on the test sites, with no chemical sprays applied. Pulling the UVEX machine with a Burro autonomous EV had the added benefit of eliminating diesel costs and the wages of an out-of-hours tractor driver.

Tech partner

Showcased agtech suppliers and contact details

Ag Logic	www.aglogic.com.au	0419 000 267
Airborne Logic	www.airbornelogic.com.au	08 7221 1625
Athena – IR Tech	www.athenairtech.com	0409 136 427
Aussie Wine Group (Stand 1139)	www.aussiewinegroup.com.au	0419 959 330
Burro	agriautomation.com.au	1800 919 328
CropX Australia	www.cropx.com	Ph (03) 9070 4848
Frigid.Cloud	www.frigid.cloud	0402 486 062
Goanna Ag (stand INV103)	www.goannaag.com.au	(07) 4671 3790
Jane's Weather	www.janesweather.com	0418 222 344
Metos ANZ	www.metos.com.au	1300 852 224
Onside	www.getonside.com	0456 635 978
Sentek Technologies	www.sentektechnologies.com	(08) 8366 1900
SWAN Systems (stand 1343)	www.swansystems.com	0467 000 229
UVEX	agriautomation.com.au	1800 919 328
WildEye	www.mywildeye.com	1300 WILDEYE