Wine Australia

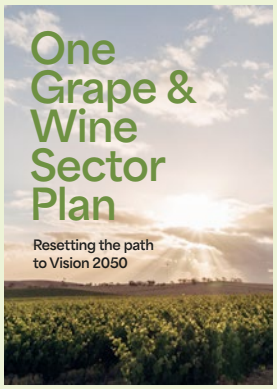


Pest, disease and biosecurity research

Now and into the future

Future proofing Australia's supply base

Wine Australia's investments in biosecurity, pest and disease research are guided by the priorities set out in the One Grape & Wine Sector Plan and reflected in its Strategic Plan 2025–30 and Annual Operational Plans.



One Grape & Wine Sector Plan

Future proof our supply base

Our climate will continue to change and present challenges in managing our vineyards. It's essential to build climate resilience through practices that protect our viticultural assets and work to enhance our environments. This responsibility falls on everyone.

Sustainable vineyard planning, exploring climate suitable varieties, clones and rootstocks, maintaining healthy vines, managing pests and diseases, and ensuring biosecurity are vital tasks that require careful attention. As a sector we will explore strategies to increase demand, improve flexibility in responding to climate change, and ensure the sustainability of our vineyards for the future.



Extract from Wine Australia's Research & Innovation investment priorities for 2026-27

Table 1: Research and Innovation investment priorities for 2026–27

	Outcomes sought from Wine Australia investment through to 2030
Future proof our supply base	• Grape growers have knowledge about short-term adaptation strategies to manage and maintain vineyards in low-demand periods. • The sector has access to new tools and technologies to better predict, manage and mitigate the increasing risk posed by bushfires and smoke taint. • Australia's grape growers and winemakers have access to a wide range of grapevine varieties, clones and rootstocks that are climate-resilient and suited to sustainable vineyard practices • The sector has access to a toolkit of strategies for seasonal management of climate extremes and long-term adaptation to climate change, and • The sector is well-prepared to manage endemic and exotic pests and diseases through the establishment of strong cross-sectoral and government relationships, and by securing co-investment in critical biosecurity research and innovation initiatives.

Pests, diseases and biosecurity threats can affect vineyard health and productivity, fruit quality and the time and cost involved in managing a vineyard, putting pressure on the long-term resilience of winegrowing businesses. Managing these risks effectively can also support more efficient use of chemical inputs, protect soil and biodiversity, and help growers demonstrate their commitment to sustainable winegrowing.

Wine Australia invests in research to give growers better knowledge, tools and management options to prevent, detect and respond to these threats. Endemic vineyard pests and diseases are estimated to cost around $250 million each year through lost production and additional management, while an exotic pest or disease incursion could have much wider and longer-lasting consequences on the broader community.

Between 2022 and 2028, Wine Australia will invest $7.13 million in biosecurity, pest and disease related research, combined with more than $15.25 million in partner funding and in-kind support, to create a portfolio valued at more than $22.4 million.

Together, these investments are building the knowledge and capability needed to protect vineyards, manage pests and diseases more effectively and support productive, sustainable winegrowing over the long term.

Wine Australia also participates in the Plant Biosecurity Research Initiative, which allows Australia's plant Research & Development Corporations and the Australian Government to coordinate and co-invest in research addressing shared biosecurity challenges.

Supporting the research into pest, disease and biosecurity management is Wine Australia's Regional Program, where the outcomes of these projects can be shared with growers and adapted to regional conditions.

Five Wine Australia investments will conclude in June 2027, covering grapevine trunk diseases, scale insects, fungicide resistance and phylloxera, as well as a smaller crown gall project. A sixth investment in best-practice virus sampling and detection will conclude in 2028.

Where should we invest next?

This timing provides an opportunity to look at what the research has delivered, identify any knowledge gaps that remain and consider where future investment could deliver the greatest value to the sector. This may include protecting vine health and production, improving the effectiveness of pest and disease management, reducing unnecessary inputs, caring for vineyard environments and supporting the long-term sustainability and profitability of winegrowing businesses.

A Biosecurity, Pests and Diseases Research & Innovation Strategy is being developed to guide these decisions. Priorities will be informed by:

- industry need
- risk
- potential impact and strategic value
- feasibility
- available funding
- opportunities for collaboration and co-investment.

A connected approach to pest, disease and biosecurity management

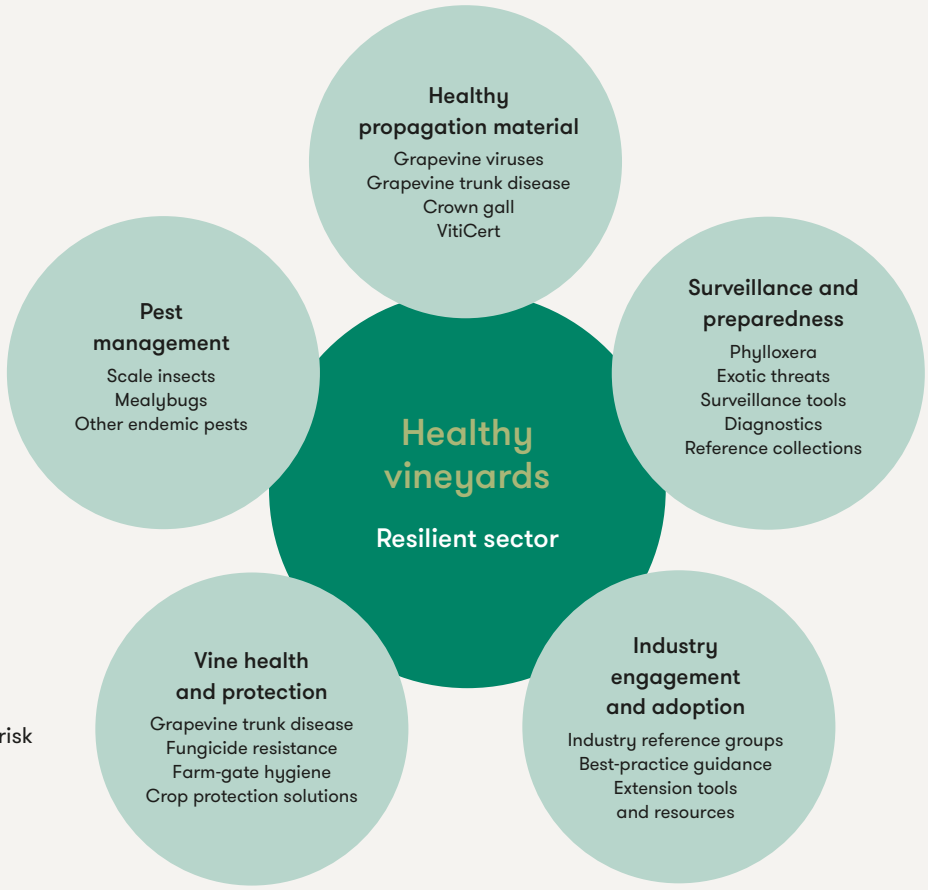
Wine Australia's pest, disease and biosecurity investments build the scientific knowledge, techniques and practical tools needed to address current industry priorities and prepare the sector for future challenges.

Enablers

- Research partners
- Industry input and collaboration
- Evidence, data and tools
- National coordination
- Co-investment and leverage

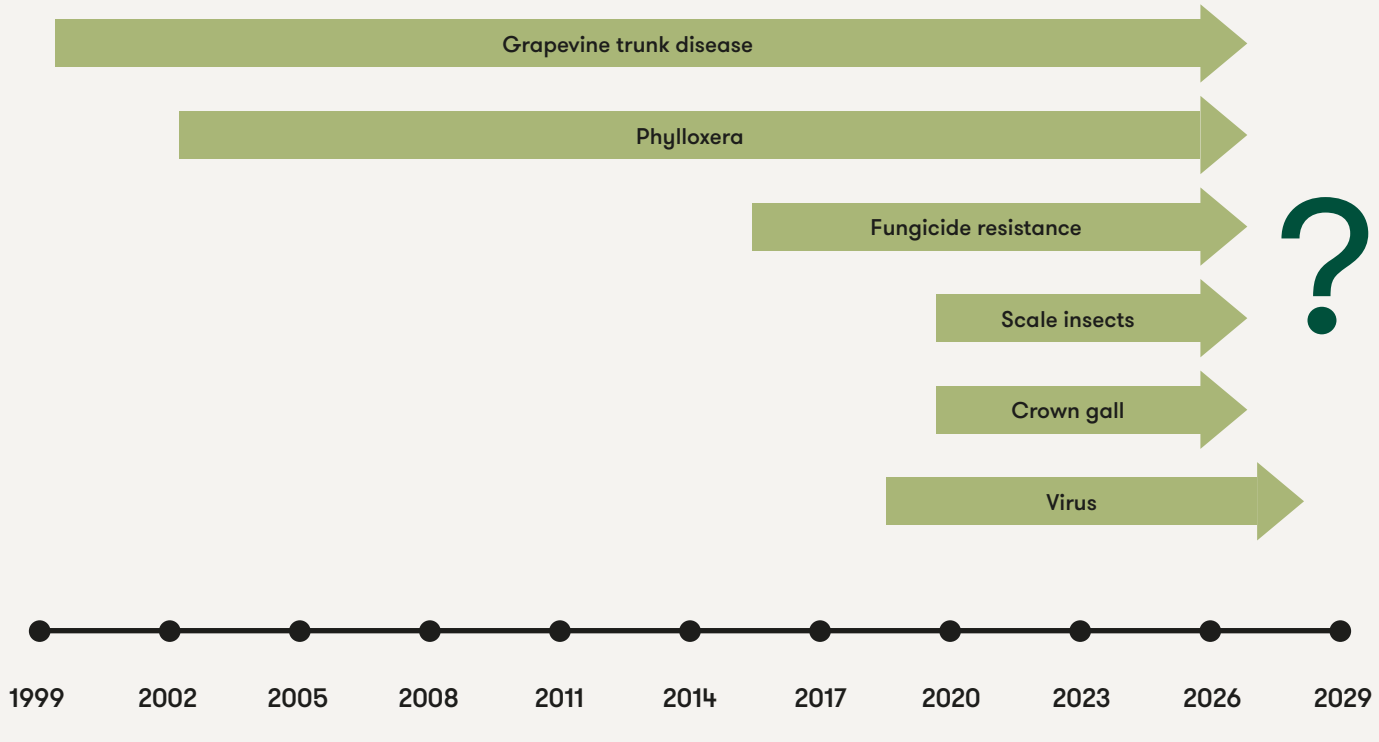
Outcomes

- Productive and profitable vineyards
- More sustainable winegrowing
- Reduced pest, disease and biosecurity risk
- Better-informed management decisions
- Continued market access
- A resilient Australian wine sector



Major investments are reaching a decision point

The question is not simply whether projects continue, but where future investment will deliver the greatest industry value.



The following sections summarise current and recent investments and some potential new areas for consideration, but the list is neither exhaustive nor predetermined.

Investments ending in 2027



Grapevine Trunk Diseases

Eutypa dieback and Botryosphaeria dieback are major grapevine trunk diseases that enter vines mainly through pruning wounds, causing dieback, yield loss and eventual vine death. They cost the Australian wine sector an estimated $6 million annually and can shorten vineyard life. Managing severely affected vineyards can be costly, with reworking around $10,000 per hectare and replanting $60,000–$100,000 per hectare, plus lost production in both cases. Improved prevention and management can help maintain production and reduce the financial and environmental costs of early vine removal and replanting.

Research has built a strong foundation of knowledge about the pathogens in propagation material and vineyards, including improved diagnostics, pruning wound protection options and disease-management options.

Further research could build on this foundation by developing more sustainable management options, improving the health of propagation material and helping growers prevent disease and extend the productive life of vineyards.

Research partners

SOUTH AUSTRALIA · Government of South Australia, Primary Industries and Regions SA · SARDI South Australian Research and Development Institute · Charles Sturt University



Scale Insects

Grapevine scale insects have increased in prevalence in Australian vineyards in recent years, causing a significant challenge in some wine regions. High populations can reduce vine health and grape yield and produce honeydew that leads to sooty mould and fruit contamination, potentially resulting in fruit rejections. Scale insects can also transmit grapevine viruses, compounding their impact on vine health and productivity. Together with mealybugs, scale cost the industry approximately $5–$20 million/year in annual losses.

More effective monitoring and well-timed interventions could help growers maintain vine health and fruit quality while avoiding unnecessary treatments. This supports integrated pest management, responsible input use and continuous improvement in vineyard sustainability practices.

Research has improved understanding of scale biology and seasonal development, identified potential monitoring approaches and intervention windows, and evaluated promising control options. This provides a basis for developing more effective, whole-of-season approaches to scale management.

Research partner

SOUTH AUSTRALIA · Government of South Australia, Primary Industries and Regions SA · SARDI South Australian Research and Development Institute · Australian National University · AWRI Australian Wine Research Institute

Phylloxera

Phylloxera is one of the sector's most costly endemic pests. Replanting an infested vineyard can cost an estimated $60,000–$100,000 per hectare, with additional losses while vines return to full production. Infested areas also face ongoing farm-gate hygiene, disinfestation, compliance and administrative costs associated with containing the pest and managing movement of grapes, machinery, equipment and people. Preventing spread and improving early detection can protect established vineyards and reduce the need for premature removal and replanting. Stronger surveillance and containment also support responsible movement of vineyard material, machinery and people between properties and regions.

Research has informed a major update of the National Phylloxera Management Protocol, incorporating the latest knowledge and approaches to surveillance, diagnostics and containment. It has also supported an update of the Rootstock Selector tool, giving growers access to improved information to guide rootstock selection and manage phylloxera risk.



Research partner

AGRICULTURE VICTORIA



Crown Gall

Crown gall-like symptoms have emerged as an issue in young grapevines at some sites and in seasons when conditions favour disease, where they can affect vine health and establishment. Research has shown that the causes are more complex than first thought, as not all gall-like symptoms are true crown gall. Accurate diagnosis and healthy propagation material can help growers establish productive vineyards, avoid unnecessary vine replacement and have greater confidence in the planting material they use.

The current project is distinguishing true crown gall from other gall-like disorders, improving diagnostic methods and developing practical guidance to reduce disease risk through grapevine propagation material.

Research partners

Adelaide University

SOUTH AUSTRALIA

Government of South Australia
Primary Industries and Regions SA

SARDI
RESEARCH AND DEVELOPMENT



Fungicide Resistance

Fungicide resistance is making powdery mildew, downy mildew and botrytis bunch rot more difficult to manage. When an important fungicide loses effectiveness, growers face a greater risk of disease-control failure, production losses and additional spray applications. Better resistance monitoring can help growers select effective treatments, avoid unnecessary applications and protect the useful life of available fungicides.

The project has advanced rapid molecular testing for fungicide resistance and generated new insights into resistance in powdery mildew, downy mildew and botrytis bunch rot. Monitoring is improving understanding of the relationship between resistance, spray programs and disease control, providing evidence for more effective resistance management.

Research partners

SAAFE CRC

Curtin University

SOUTH AUSTRALIA

Government of South Australia
Primary Industries and Regions SA

SARDI
RESEARCH AND DEVELOPMENT

Investment ending in 2028



Grapevine Viruses

Grapevine viruses can reduce vine vigour, yield and fruit quality and are estimated to cost the industry approximately $19 million each year. They can spread through infected propagation material and via insect or mite vectors. Reliable testing and healthier propagation material can reduce the risk of introducing viruses into new plantings, support the establishment of productive vineyards and avoid the cost and disruption of replacing poorly performing vines. Access to tested planting material will also help growers demonstrate continuous improvement in their sustainability programs through responsible vineyard establishment practices that reduce virus risk and support healthy, productive and long-lived vineyards.

The current project is improving national sampling, diagnostics and laboratory capability to give greater confidence in virus detection and reduce the risk of viruses spreading through propagation material. Findings will inform VitiCert, the new national certification program for grapevine planting material, by strengthening the evidence used to determine which viruses should be excluded from certified planting material and how vines should be sampled and tested.

Research partner

AGRICULTURE VICTORIA



Other projects

Plant Biosecurity Research Initiative (PBRI)

The Plant Biosecurity Research Initiative brings together Wine Australia and the nation's other plant-industry research and development corporations with the Australian Government to coordinate and co-invest in research addressing shared biosecurity challenges. The initiative supports research in areas including early warning and risk, diagnostics and surveillance, resilient crop protection, and readiness and recovery.

Biosecurity Trakka

Biosecurity Trakka is a cross-industry project developing a secure national platform to share and analyse genomic information on plant pests and diseases, enabling faster and more accurate identification of plant biosecurity threats and better coordinated responses across jurisdictions. The project brings together plant industries and government to strengthen diagnostic capability, with Wine Australia's investment helping ensure wine-sector priorities are incorporated into its development and testing.

A collaboration between Australia's seven plant RDCs and the Department of Agriculture, Fisheries and Forestry

AgriFutures Australia | CRDC Cotton Research and Development Corporation | Australian Government Department of Agriculture, Fisheries and Forestry | Forest & Wood Products Australia | GRDC Grains Research & Development Corporation | Hort Innovation | sra Sugar Research Australia | Wine Australia



Research partner

AGRICULTURE VICTORIA

Xylella fastidiosa

Australia remains free from Xylella fastidiosa, a serious plant pathogen that can block the movement of water through infected plants, causing reduced growth, dieback and, in severe cases, plant death. In grapevines it causes Pierce's disease.

Xylella is Australia's highest-priority plant pest. A 2017 study estimated that an unmanaged outbreak could cost the Australian grape and wine sector between $2.8 billion and $7.9 billion over 50 years, compared with $0.15 billion to $2.0 billion if the outbreak could be contained to a single region.

Wine Australia has supported research to give growers and biosecurity authorities a stronger basis for early detection and coordinated action should an incursion occur. Work has improved understanding of potential native Australian insect vectors, strengthened diagnostic capability and informed surveillance and response planning.

Potential future research priorities

Industry consultation and the prioritisation process will determine future investment priorities. Issues being considered include those below, but the list is not exhaustive and inclusion does not indicate that future investment has been agreed. Industry can also identify additional biosecurity, pest and disease priorities through the consultation process.



Bacterial inflorescence rot

Bacterial inflorescence rot is a grapevine disease caused by *Pseudomonas syringae* pv. *syringae*. It can be mistaken for downy mildew and can cause significant yield losses. Further work could improve understanding of its prevalence and economic impact in Australian vineyards and provide clearer guidance on diagnosis and management.



Grapevine berry inner necrosis virus (GINV) and Grapevine Pinot Gris Virus (GPGV)

GINV and GPGV have been detected in several Australian regions in winegrapes, table grapes and rootstocks. However, little is known about symptom development, varietal susceptibility or their economic impact on Australian winegrape production. Overseas, GINV and GPGV have been associated with delayed budburst, leaf distortion, reduced shoot growth and lower yields, although infected vines may also show few or no symptoms. The viruses can spread through infected planting material, with bud and blister mites also able to transmit infection between vines.

Both viruses are included in the current virus sampling and diagnostics project, which aims to improve their detection in propagation material and commercial vineyards. Further research is needed to understand varietal susceptibility, symptom expression and economic impact, and ultimately determine their significance to Australian winegrape production.

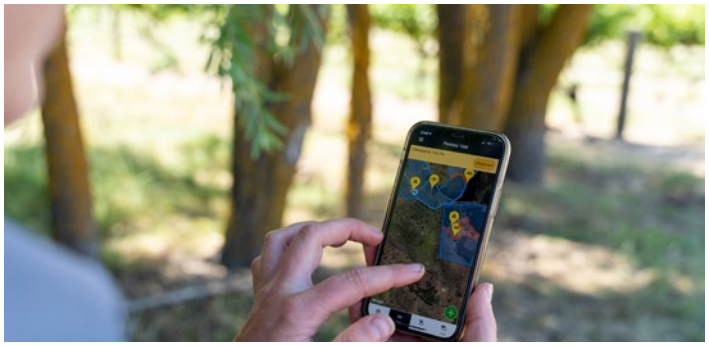


Herbicides and sustainable weed management

Weed management options for Australian vineyards are narrowing. Paraquat and diquat are being phased out of vineyard use by June 2028, while glyphosate resistance and changing customer and community expectations are placing greater pressure on chemical use.

These changes could increase weed-management costs, labour and machinery use, while greater reliance on non-chemical options, such as cultivation, may also increase soil disturbance.

Future research could help growers compare the effectiveness, cost and environmental effects of chemical, mechanical, biological and integrated approaches. This would support practical decisions that protect soil condition and biodiversity, reduce unnecessary inputs and help businesses demonstrate continuous improvement through sustainability programs.



Innovative Crop Protection Technologies

On behalf of the Plant Biosecurity Research Initiative (PBRI), Wine Australia recently led a global scan of innovative crop protection technologies that could complement or provide alternatives to traditional synthetic chemicals. These included biologicals, genetic tools, digital technologies, mechanical approaches and novel delivery systems.

The project identified a substantial pipeline of emerging crop-protection technologies and examined the regulatory, technical and commercial barriers that can limit their availability to Australian plant industries. The findings could inform future investment in promising technologies and the work needed to support their adoption in Australia.

Consultation

Wine Australia consults widely across the grape and wine sector to identify and rank biosecurity, pest and disease priorities and inform future research investment. Industry input helps assess the significance and urgency of current and emerging issues and opportunities and, alongside research findings and other evidence, informs where investment can deliver the greatest benefit to the Australian wine sector.

Who we engage with for feedback and input

Growers and regional networks

Grapegrowers, winemakers, regional discussion groups, technical committees, National Advisory Network and joint Wine Australia in-region appointments.

Industry bodies and committees

Australian Grape & Wine, Wine Biosecurity Committee, Research Advisory Committee, Vignerons Committee, Vinehealth Australia, Sustainable Winegrowing Australia, regional associations and relevant industry associations.

Project and technical experts

Industry Reference Groups, research partners, technical specialists and vine improvement groups.

Supply chain and service providers

Nurseries, advisers, agribusiness, technology providers and other businesses involved in vineyard biosecurity and pest and disease management.

Emerging voices and innovation networks

Future Leaders alumni, start-ups and others able to identify emerging risks, technologies and opportunities.

Have your say

Help shape Wine Australia's Biosecurity, Pests and Diseases Research & Innovation Strategy and determine future priorities. Wine Australia is seeking input on the following:

What matters most?

- Which pest, disease or biosecurity issues matter most to your vineyard, business or region?

Why does the issue matter to you?

- Yield or quality loss?
- Management cost or labour?
- Limited or ineffective management options?
- Biosecurity or market risk?

What does it cost you?

- What does the issue cost you?
- Approximate impact ($/ha)
- An estimate is fine.

What would help?

- Better detection or monitoring?
- Better management options?
- Practical guidance or demonstrations?
- Better biosecurity or preparedness?

Email your thoughts: research@wineaustralia.com

