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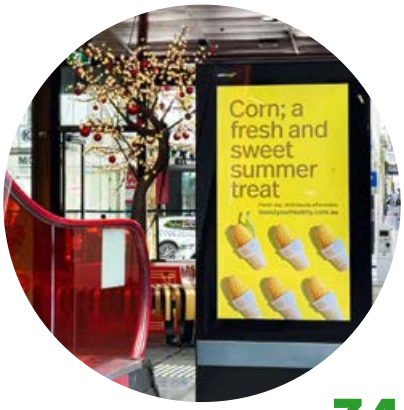

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TACKLING AUSTRALIA'S VEGETABLE CONSUMPTION CRISIS
IN COST-OF-LIVING CRUNCH

Editorial Contacts

Bill Bulmer
AUSVEG CHAIR

Michael Coote
AUSVEG CEO

Andrew MacDonald
NATIONAL COMMUNICATIONS MANAGER

Jessica Muller
EDITOR

CONTRIBUTORS
Kathleen Mullen
Rosalie Daniel
Andrea Lin
Campbell Cooney
David Daniels
Lilia Jenkins
Alex Gill
Perran Ross
Steff Carstairs
Ramesh Puri
Heidi Parkes
Alison Watson
Dr Melanie Ford
Dr Wayne O'Neill
Rehan Silva

EDITORIAL
AUSVEG
Phone: 03 9882 0277
communications@ausveg.com.au

PRINT
Metro Print

GRAPHIC DESIGN
Sam Behr

ADVERTISING
Jack Boyle
Event Sales & Partnership Executive
Phone: 03 9882 0277
jack.boyle@ausveg.com.au

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Cover. Yumeng Chen, Nuffield Scholar aims to improve farm planning.
See page 28.
Photo courtesy Campbell Cooney.

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GEARING UP FOR GREATER GAINS

MESSAGE FROM THE

AUSVEG Chair

The early stages of 2026 haven't brought a lot of room for optimism for us as vegetable growers.

The same tough operating and economic challenges we've been dealing with for most of the last five years are still there, squeezing margins, profitability and viability.

It's understandable there's still a lot of negative sentiment out there in vegetable growing regions across the country.

Hope for relief has also taken a hit as inflation has come back up along with interest rates. This means households, consumers and businesses, are still under a lot of pressure.

As price takers in the supply chain, we're in a difficult position as vegetable growers. We can't pass on the constant increases in our own costs and, particularly in the current cost-of-living crisis, we can't expect to suddenly be offered higher prices for our produce.

Australian vegetable growers are resilient, but AUSVEG's sentiment surveys keep showing relentless operating pressures are still pushing many to the brink of leaving the industry altogether.

The importance of our sector to Australia – particularly to our food security – means as a nation, we can't afford to give up on addressing vegetable growers' challenges.

As individual growers, it can be hard to reverse the tide, but by consistently pushing as a united industry for urgently needed policy fixes and investments in a more viable vegetable industry, we stand a better chance of spurring the Government into action.

With the upcoming federal budget, the Government has a chance to finally back-in Australian vegetable growers, and ensure Australia still has a vegetable industry capable of feeding the nation into the future.

AUSVEG's pre-budget submission is proposing reasonable, achievable reforms and investments that will make a material difference to growers' bottom lines, national health and productivity, and Australia's food security.

We can make up ground by improving vegetable farm productivity, demand for our produce, and, by extension, profitability. This is where we need the Government on board.

All growers know the cost and burden of compliance overload is a major barrier to more productive businesses, as duplication, endless audits and QA requirements keep eating up time, money and staff resources.

As AUSVEG's *Horticulture compliance and regulation report* showed, compliance is costing the industry at least $213 million a year. If we could align quality assurance alone under the one banner, we would achieve massive savings as an industry.

The report also made recommendations to lighten the compliance load. In our pre-budget submission, we're asking the Government to step up and help industry embrace these solutions, including through support for an AUSVEG-led industry taskforce to drive the reform.

As profitability challenges make it harder for growers to re-invest in their businesses, AUSVEG has also renewed calls for the Government to introduce innovation grants, and expanded instant asset write-off provisions, to let growers adopt the productivity and cost saving innovations and AgTech that can make a difference to their businesses.

While we may not be able to immediately improve returns by demanding higher prices, increasing demand is another way to give vegetable growers a boost.

After some promising progress with the launch of Plus One Serve last year, the Pledge for More Veg launch with Matt Moran at Parliament House, and the launch in February of the 2026, *Fresh veg, deliciously affordable* national outdoor advertising campaign in partnership with the Outdoor Media Association and Health and Wellbeing Queensland, the push to get more Australians eating more vegetables is gaining momentum.

To capitalise on that momentum, AUSVEG is continuing to call for a $25 million annual government investment for five years in a national consumer behaviour change campaign to lift vegetable consumption by one serve per person per day.

By achieving this goal Australia stands to unlock $4.7 billion in economic benefits, including $1.4 billion annual healthcare savings, a $3.3 billion uplift across the vegetable supply chain, and 13,000 new jobs.

The measures we need to see as growers are an investment in the Australian vegetable industry, and the nation. For the Government, acting now will pay clear dividends for generations to come, while the cost of doing nothing will be more growers leaving the industry, impacts on the future supply of Australian-grown fresh vegetables, and threats to our food security.

Bill Bulmer
AUSVEG CHAIR

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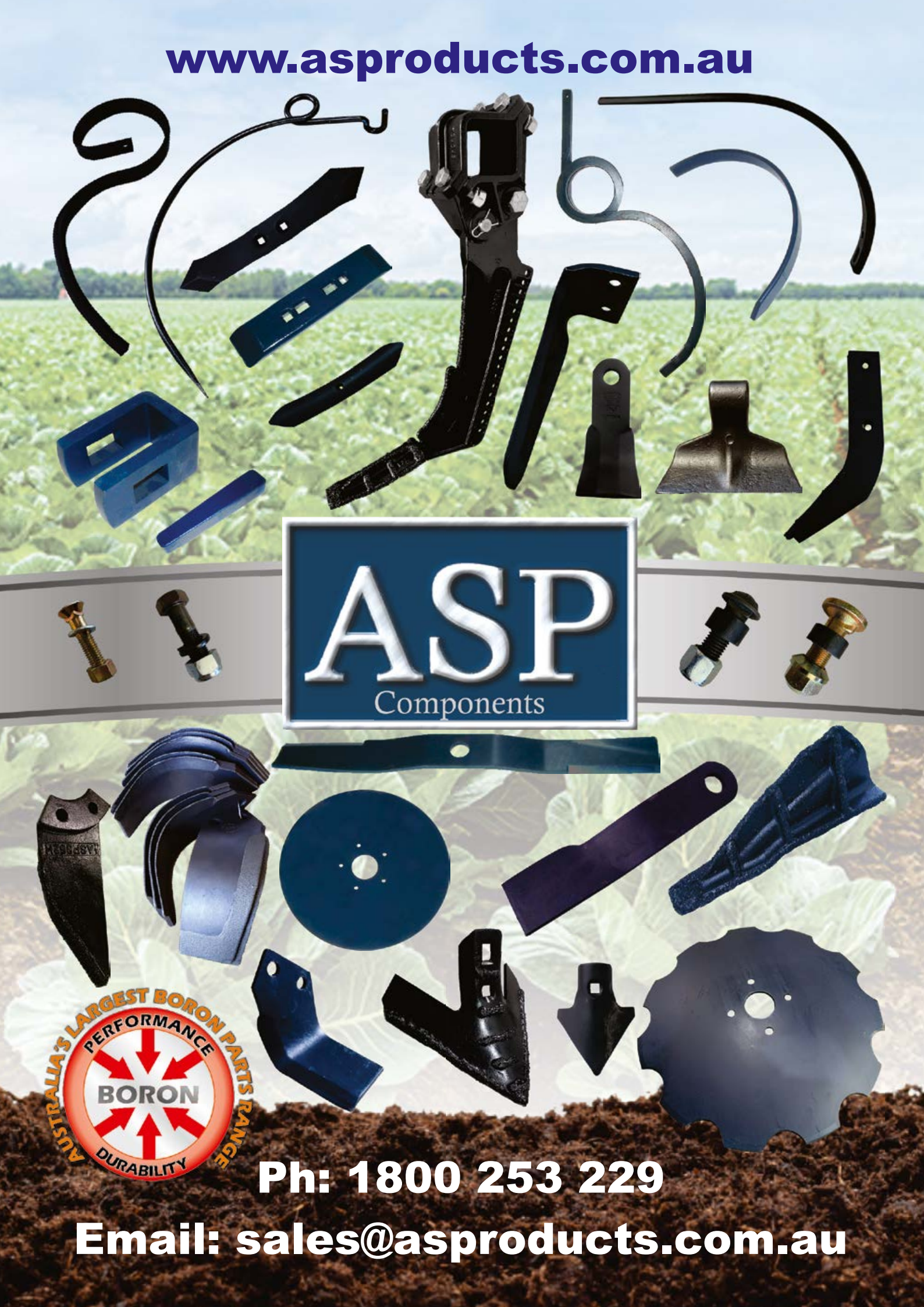

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THE STATE OF THE SECTOR WITH THE

AUSVEG CEO

The operational and economic dynamics that have made it increasingly challenging for Australian vegetable growers to continue with their vital work growing and supplying the fresh, healthy and affordable produce that Australia depends on are continuing to have a major impact early in 2026.

Domestic and international factors have led to increased volatility and uncertainty, and continuing pressure on Australian vegetable growers and households alike.

All indications are that this will remain the case, at least for the immediate future.

In Australia we have seen inflation climb back up, with the Reserve Bank moving in early February to increase interest rates.

The return of this higher inflation environment impacts Australian vegetable growers on several fronts.

Even putting aside that most vegetable growers have to pay retail for many production inputs while selling their produce at wholesale, the increasing pressure that higher inflation and interest rates are placing on consumers also brings more challenges.

Not only does the persisting cost-of-living crisis mean that growers won't see the downward pressure on the prices they receive ease, but it also increases the wider vegetable industry's vulnerability to undercutting from cheaper, often inferior, imported frozen or processed produce.

In recent years, these risks to domestic producers have become more pronounced and played out in the market as retailers, conscious of the price pressures on their own customers as well as their own bottom lines, have brought in more frozen and processed produce from overseas.

With production costs continuing to rise, and downward pressure on farmgate prices being maintained, this remains a major area of concern for the Australian vegetable industry.

International volatility

Cheaper frozen and processed imports aren't the only current threat to growers' bottom lines, posed by current global conditions.

As growers well know, Australia is heavily dependent on international supply chains and imports for many of the farm inputs that are key to growing and supplying vegetables at a commercial scale.

Already this year, we have seen major upheaval in Iran, a major global urea producer, and Venezuela, which holds the world's largest oil reserves.

While Australia's direct exposure to these nations is limited, these are still seismic global events, with potential for further impacts as global supply chains and markets adjust.

Ongoing conflict in Ukraine, heightened tensions in parts of Asia and a generally combustible global trading environment, also increase the likelihood geopolitical volatility will continue to have an impact on Australia. This is particularly the case when Australia's own sovereign capability to manufacture so many of the key farming inputs that vegetable growers depend on remains limited.

Looking for certainty

In a dynamic domestic and international operating climate, Australian vegetable growers need certainty and stability. It is reasonable to expect our Government to foster such an environment, supporting measures that make it easier to do business, and that improve the vegetable industry's productivity and competitiveness, both domestically and internationally.

It was therefore disappointing to see the Government announce just days out from Christmas plans to increase fees and charges payable by grower exporters for export regulatory services, of which Government is the monopoly provider.

Aside from the fact these pending increases were presented as a done deal, plans released as part of a follow up consultation have so far provided no detail on how the efficiency of export regulatory service will be improved, which should be a bare minimum if fees for services are going up.

The plan also massively misunderstands the dynamics of commercial vegetable production in Australia.

As growers know, vegetables are typically a lower value, high volume crop, and Australian grower exporters are required to operate in highly competitive, and price sensitive international markets. This means any increases in export fees and charges can't be passed on and instead come off growers' bottom lines, adding further challenges to the Australian vegetable industry's competitiveness in international markets.

AUSVEG is continuing to raise the significant concerns of Australian vegetable growers in our representations to Government, including through a formal submission to the consultation.

Lack of understanding

The plan to raise export regulatory fees and charges is also emblematic of a wider issue, which is a lack of awareness and understanding in parts of the Government of the major threats and risks posed by the wider challenges currently at play in the Australian vegetable industry.

While department bureaucrats may be fixated on finding dollar savings to meet budgetary objectives, the plan to increase export regulatory fees and charges isn't happening in a vacuum.

Instead, it is yet another of many steadily rising costs, all occurring at a time when the cost of production, and the cost of doing business is already unsustainably high, and one of the top reasons two in five vegetable growers are considering leaving the industry.

To ensure that Australia retains a viable vegetable industry into the future, it is critical that politicians, and departmental officials see this bigger picture.

That Australia has not yet experienced widespread, long-lasting vegetable shortages flowing from years of severe operating and economic challenges, should not lull political and policy decision makers into a false sense of security.

The reality for many growers is that years of mounting production costs, increasing compliance burden, greater drags on productivity and unviable returns have severely eroded profitability and viability, meaning the risk more will soon leave the industry is very real.

As these challenges facing growers have become more pronounced, AUSVEG has increasingly provided evidence, data and research, and continued to propose solutions to the Government on growers' key issues.

This has included through our regular Industry Sentiment Surveys, last year's *Horticulture compliance and regulation report*, election priorities documents and submissions to federal budgets and dozens of other government and regulator inquiries of recent years.

The evidence couldn't be clearer. To ensure we have a viable vegetable industry into the future and to protect our food security, government action and appreciation for the role that Australia's growers play in feeding the nation is needed now.

Mindful of how the economy and productivity works, AUSVEG is not calling for a sudden injection of potentially market distorting government support, or potentially inflationary increases in government spending.

Instead, growers need to see genuine action on our industry's productivity challenges, in particular government support for the implementation of the findings of our horticulture compliance and regulation report.

Growers need to see action on the industry's workforce challenges, including adjustment to existing visa schemes, and the introduction of new labour initiatives that give growers a chance of addressing the skilled, semi-skilled and lower skilled workforce shortages that 60 percent are continuing to experience.

We are also continuing to call for investment in the future of Australia's vegetable industry, and the future health of our nation, through a $25 million per year, five-year Commonwealth commitment to a consumer behaviour change campaign that gets each Australian eating one more serve of vegetables each day by 2030.

Increasing consumption

Increasing demand for the world-class vegetables that Australian growers produce will make a material difference to growers' bottom lines, our national health and economy.

As AUSVEG continues pursuing the necessary federal investment in a transformative national campaign that gets more Australians eating more vegetables, we are also continuing to prioritise additional initiatives in pursuit of that goal, through the Plus One Serve program.

Throughout February, AUSVEG once again partnered with the Outdoor Media Association (OMA) and Health and Wellbeing Queensland for the 2026 instalment of the high-profile, *Fresh veg, deliciously affordable* campaign, aimed at getting more Australians eating more Aussie-grown vegetables.

Coinciding with the busy back-to-school, back-to-work period, this national campaign saw messaging promoting the benefits of buying and consuming vegetables feature across thousands of outdoor advertising billboards and signs in metro and regional locations across the country.

A key aim of the *Fresh veg, deliciously affordable* campaign was to encourages more Australians to include more vegetables in everyday meals and snacks, emphasising versatility and the great value they represent during a period of sustained cost-of-living pressure.

AUSVEG would like to thank *Fresh veg, deliciously affordable* partner organisations, Health and Wellbeing Queensland, and the OMA – in particular the donation of $41 million in outdoor advertising value from OMA members over the past five years to help encourage Australians to eat more vegetables.

Hort Connections 2026

As we continue through what is certain to be another challenging year in the Australian vegetable industry, finding opportunities to come together as an industry is increasingly important.

One of those key opportunities will be Hort Connections 2026 – co-hosted by AUSVEG and the International Fresh Produce Association Australia-New Zealand. This year's instalment of the Southern Hemisphere's largest horticulture conference and trade show will be held in Adelaide, with an expanded four-day program from 1 – 4 June at the Adelaide Convention Centre.

With a stellar speaker lineup, world-class trade show and cutting-edge innovations on display, alongside a multitude of valuable networking opportunities, Hort Connections 2026 will once again have something for anyone with an interest in horticulture.

I encourage all growers and industry colleagues to register now to secure your spot alongside the thousands of delegates expected at this year's event, and look forward to another massive Hort Connections in Adelaide.

Michael Coote
CEO, AUSVEG

AUSVEG pre-budget submission pushes action on grower issues

As the Federal Government finalises its May budget, Australia's vegetable growers continue to make it clear to political leaders that without meaningful action on key issues including productivity, compliance burden, energy costs and lifting vegetable consumption, the viability of an industry which Australia depends on for its food security remains under a cloud.

That is the message in AUSVEG's 2026–27 pre-budget submission. The Australian vegetable industry is a $5.7 billion sector that produces 3.8 million tonnes of fresh produce annually and supplies more than 98 percent of the fresh vegetables consumed in this country. But years of ongoing operating and economic challenges, rising costs and poor returns, continue to pose threats to the long-term viability of Australia's vegetable growers.

Average industry margins (EBITDA) are at just nine percent; 62 percent of growers report being less profitable than a year ago, and 53 percent expect to be financially worse off in another year.

With grower investment in maintaining essential farm assets down from 66 percent in July 2024 to 39 percent in July 2025, finding the productivity advances needed to improve viability has become increasingly difficult. This has increased the risk of more growers exiting the industry, with 40 percent considering walking away.

In its pre-budget submission, AUSVEG has provided a suite of recommendations to the Federal Government, designed to address the key issues facing vegetable growers, and safeguard national food security by improving the long-term viability of Australia's critical vegetable industry.

The submission sets out a coordinated package of reforms and targeted investments across four key pillars.

PILLAR ONE

Stimulating Demand and Ensuring Food Security

- **National, evidence-based, multi-channel behavioural change campaign:** Funding of $25 million per year over five years to increase domestic vegetable consumption by one serve per person per day.
- **Sovereign Manufacturing Capability:** Strategic investment in domestic facilities for critical farm inputs such as fertiliser, agricultural chemicals and packaging to insulate the industry from geopolitical supply chain shocks.
- **Innovation Grant Program:** A dedicated fund to help growers replace ageing machinery; currently, only 39 percent of growers are able to maintain their assets, leading to a long-term decline in national productivity.

PILLAR TWO

Tax Reform and Structural Support

- **Enhanced Instant Asset Write-off:** Establish a minimum of $50,000 immediate deduction threshold for businesses with a turnover under $50 million.
- **Worker Accommodation Incentives:** To address regional housing shortages, introduce accelerated depreciation (increasing the write-off from three percent to 33 percent over three years) for on-farm worker accommodation.
- **Compliance IT Solutions:** Provide funding for software and IT resources to help SMEs manage complex horticultural payroll and human resource requirements.
  - ***Context:*** *Compliance costs now account for 42 percent of the average grower's EBITDA, representing a crushing drag on viability.*

PILLAR THREE

Workforce

- **Workforce Capacity Building:**
  - Grants to upskill industry organisations to help businesses navigate complex industrial relations and workforce regulations.
  - **Leadership and Efficiency Training:** Funding for practical training programs to upskill employees to take on leadership roles and to empower businesses to adopt lean management to improve efficiency.

PILLAR FOUR

Sustainability

- **Horticulture-Specific Sustainability Grants:** Direct funding for infrastructure enhancing farm sustainability, including renewable energy, biofuel plants, and water efficiency.

These measures have been deemed essential to restoring confidence at farm level, and reversing worrying declines in grower profitability, productivity, as well as vegetable consumption among Australians.

Key funding commitments identified

In addition to the multitude of policy recommendations to address the major issues facing growers, AUSVEG's submission identifies the following key Federal Government investments as necessary to stabilise the sector and incentivise productivity-enhancing investment:

- A national vegetable consumption campaign, designed to drive domestic demand and improve national health outcomes, funded at $25 million per year for five years, for a total Federal Government commitment of $125 million.
- An Innovation Grant Program to support modernisation of farm equipment, improve efficiency and competitiveness in markets, with $25 million in funding recommended, based on matched grants between $100,000 to $500,000.
- A $950,000 investment over five years to implement the recommendations of *AUSVEG's Horticulture Compliance and Regulation: Reducing the Burden by 2030* report, to reduce the $213 million annual cost of compliance in the Australian vegetable industry.
- A $72 million investment in a Sustainability Grant Program, to incentivise investment in renewable energy and water efficiency, with the funding recommendation based on average expenditure per vegetable growing business.
- A strategic investment in increasing sovereign capacity to bolster domestic production of key farm inputs like fertiliser, chemicals and packaging.
- A $2 million investment over two years for industry upskilling grants, to help growers increase their skills and capacity to understand, manage and navigate increasingly complex industrial relations and workforce regulations.
- A $750,000 investment over two years for Scope 3 Carbon Accounting Capacity Building Support, to assist growers understand and meet the upcoming Scope 3 carbon accounting and emissions reporting requirements.

Increasing vegetable consumption

With Australia and its vegetable industry continuing to face a deepening national challenge in the form of declining vegetable consumption, worsening diet-related disease, reduced productivity, and increasing pressure on vegetable growers, the need to get more Australian's eating more vegetables is increasingly urgent.

Australians on average are consuming just 1.8 serves of vegetables daily – merely one third of the recommended intake, with only 6.5 percent of adults and 4.6 percent of children meeting dietary guidelines, resulting in rising chronic disease risk and escalating healthcare expenditure.

> Given the major boost that increasing demand for vegetables would provide to Australian vegetable growers, AUSVEG, in its submission, is continuing to call for a $125 million federal investment in a national behaviour change campaign to get more Australians eating more vegetables.

This call has been bolstered and supplemented by a separate, detailed pre-budget submission from the AUSVEG-led Plus One Serve initiative – the first implementation-ready, evidence-based national program designed to increase vegetable consumption by one extra serve per day.

In providing a comprehensive overview of the program and its many benefits, the Plus One Serve submission emphasises that a $125 million Commonwealth investment over five years will deliver measurable, long-term impact – $4.7 billion in economic benefits, including $1.4 billion in annual healthcare savings, $3.3 billion in uplift across the vegetable supply chain, 13,000 new regional jobs, and a return of $12.30 for every dollar invested.

Productivity

The urgent need to lift vegetable grower productivity and long-term viability sits at the core of AUSVEG's pre-budget message. Australian vegetable growers are among the most innovative globally, but their capacity to invest in modern equipment, automation and AgTech has been eroded due to persistent economic and operating challenges. This has led to both declines in productivity, and challenges adopting the productivity-enhancing measures needed to reverse the cycle.

With around 40 percent of growers unable to maintain key farm assets, let alone replace them with newer technology, ageing equipment, deferred maintenance and reduced capital investment have created a downward spiral which threatens long-term output and competitiveness.

To address these issues, AUSVEG is continuing to call for the introduction of a targeted innovation and sustainability grant program and support for enhanced instant asset write-off. This will help growers modernise their equipment, which will mean increased productivity, reduced costs, and investment encouraged in more efficient energy and water-saving infrastructure.

With AUSVEG's 2025 *Industry Sentiment Report* also identifying 60 percent of growers are experiencing workforce shortages across full-time, part-time and casual positions, addressing these issues, and the subsequent dampeners on productivity they represent, remains another key focus.

AUSVEG has continued to call for the retention of key measures such as the 88-day regional work requirement for working holiday makers, and the review, expansion and introduction of new visa and migration measures – in tandem with development of domestic skills attraction strategies.

Additionally, AUSVEG's submission emphasises the need for a tailored grant program to boost industry organisations' capacity to upskill horticulture businesses in navigating complex industrial relations regulations, and the introduction of practical training programs to upskill employees to take on leadership roles within vegetable businesses, and to empower businesses to adopt lean management and improve efficiency.

AUSVEG has also reiterated its longstanding call for the introduction of a national labour hire licensing scheme.

Addressing compliance burden

The growing and overwhelming burden of compliance confronting growers is another major productivity-inhibiting factor for the Australian vegetable industry.

As AUSVEG's *Horticulture Compliance and Regulation: Reducing the Burden by 2030* report affirmed, growers are increasingly faced with a multitude of complex compliance standards and requirements – often replicated and identical at wholesale, retail, state and national levels.

The report also quantified that compliance now costs growers an estimated $213–$250 million annually, representing 4.3 percent of farm costs. For an industry with average EBITDA margins of just nine percent, this represents a crushing drag on profitability and productivity.

Within the report, AUSVEG identified 34 actionable recommendations, which will alleviate the compliance burden. As a key budget commitment, AUSVEG is calling for a $950,000 investment over five years to implement these recommendations, including through the urgent establishment of an industry taskforce to oversee this critical priority.

Energy costs compounding pressure

Since 2015, wholesale gas prices on the east coast have almost tripled, while electricity prices have risen by more than 70 percent. For vegetable growers these increases are eating into already slim margins and are another major cost limiting their capacity to invest in productivity-improving technology, or even renewable options, that may reduce their energy bills.

The industry relies on energy-intensive operations like irrigation, cooling, processing and storage, and having energy that is reliable, secure and competitively priced must be a national priority. Given the increasing prevalence of higher energy costs confronting vegetable growers, addressing these issues has become an increasingly pressing industry priority.

AUSVEG is calling for the Federal Government to prioritise regional energy reliability, improve transparency and oversight in gas and electricity markets, and ensure affordable domestic gas supply for Australian industry. The pre-budget submission also highlights growing concerns about the impact of energy transmission infrastructure on high-value horticultural land and the need for better planning to protect it.

A crucial budget for the vegetable industry

The 2026/27 federal budget comes at a critical juncture for the Australian vegetable industry, as 40 percent of growers consider walking away and a further 40 percent indicating they would do the same if they had a viable exit strategy.

The loss of just a small part of Australia's vegetable production will have serious consequences for food security, regional employment and the cost-of-living pressures.

The upcoming budget is a key opportunity for the Federal Government to decisively back an essential industry which is facing shrinking margins, working with ageing assets and dealing with escalating costs. The choices made in this budget will be critical to determining whether Australia's vegetable industry can continue to supply affordable, high-quality produce on which the nation depends.

SUMMARY OF AUSVEG BUDGET PRIORITIES

Secure Supply

Consumption and engagement

- Increase domestic vegetable consumption by one serve per person per day by committing to a long-term, national multi-channel behavioural change campaign ($25 million per year over 5 years = $125 million).

Food Security

- Increase and maintain vegetable processing and food manufacturing capability.
- Introduce an innovation grant program to modernise equipment and increase productivity, efficiency and competitiveness.
- Increase sovereign capability by investing in domestic production facilities for farm inputs such as fertiliser, agricultural chemicals, potash and packaging.

Competition

- Progress reform in competition policy to ensure greater equity in the grower-retailer relationship.

Skills and Workforce Stability

Workforce

- Introduce a National Labour Hire Licensing Scheme to tackle unethical labour hire providers, supported by a well-resourced Fair Work Ombudsman and Australian Border Force.
- Introduce a tailored grant program to boost industry organisations' capacity to upskill and educate horticulture businesses to navigate complex industrial relations and other workforce regulations and ensure compliance.
- Introduce practical training programs to upskill employees to take on leadership roles within vegetable businesses.
- Provide training and capacity building to empower businesses to adopt lean management and improve workforce efficiency.

Migration

- Commit to maintaining the current status of the Working Holiday Maker Visa, including the 88-day work requirement, without additional compliance and regulation.
- Reduce barriers and streamline adaptability of industry labour agreements such as the Horticulture Industry Labour Agreement (HILA) and Pacific Australia Labour Mobility (PALM) scheme, to assist industry in attracting international workers to Australia.
- Implement a short-term Harvest Visa or Agriculture Visa.
- Introduce a longer-term visa scheme to include countries outside of the Pacific region such as India, Indonesia and Vietnam.
- Increase programs and initiatives to assist growers to attract overseas skilled and semi-skilled workers.
- Develop career attraction strategies, particularly in agricultural sectors with significant workforce shortages.

Structural Supports for Businesses

Compliance & Regulation

- Reduce the compliance and regulation burden, based on the 34 recommendations from the AUSVEG *Reducing the burden by 2030* report.

Energy

- Improve regional energy infrastructure to boost reliability and reduce outages for growers.
- Increase transparency and oversight in gas and electricity markets to address escalating costs.
- Secure affordable domestic gas supply, including options such as an east-coast reservation scheme.
- Protect high-value farmland by ensuring transmission planning and other activities minimise impacts on horticultural production.

Business

- Introduce instant asset write-off – immediate deduction with a $50,000 threshold for businesses with a turnover of $50 million or less – for investment in productivity-increasing farm assets, such as machinery and processing equipment, as well as capital assets like accommodation.
- Provide additional resources, IT and software solutions to aid grower compliance with complex horticulture workforce schemes and payroll.
- Introduce additional policies around development of on-farm accommodation including reducing red tape and accelerated depreciation.

Read the full report via the website or by scanning the QR code below.

2025 Horticulture compliance and regulation: reducing the burden by 2030 report
ausveg.com.au

Trade and Market Access

- Implement a 12-month moratorium on Department of Agriculture, Fisheries and Forestry export cost recovery fees and charges increases to allow for review and industry consultation.
- Higher prioritisation of horticulture commodities in international trade negotiations, including Ministerial involvement in negotiations and delegations.
- Increased funding and resources for a reinvigorated whole-of-Government approach to negotiating horticulture market access and improving market access conditions.
- Increased resourcing for the Department of Agriculture, Fisheries and Forestry and Department of Foreign Affairs and Trade to focus on non-tariff trade barrier and red tape reduction for horticulture commodities.

Sustainable Future

Biosecurity

- Commit long-term sustainable biosecurity funding, including increasing plant biosecurity agencies' capacity and resources to combat incursions.

Sustainable Eco-Systems

- Introduce a horticulture sector specific grant program to encourage investment in infrastructure that enhances farm sustainability, including renewable energy and biofuel plants and water efficiency initiatives.
- Provide training and capacity building for growers to implement upcoming requirements for carbon accounting and emissions.

Protecting Traditional Knowledge while growing Australian Native Food markets

2022 Nuffield Scholar, Marlon Motlop, recently published a report highlighting the cultural importance and unique benefits of Australian Native Foods, as well as the various barriers faced by First Nations-led businesses entering the mainstream agriculture market.

Marlon Motlop is a proud Larrakia/Gulumeorrgin, Kungarrakany Erub/Darnley man who grew up in Darwin in the Northern Territory surrounded by Australian Native Foods.

"I had a very fortunate and lucky upbringing," Marlon said.

"My experience with Australian Native Foods was more from a cultural standpoint. It was around hunting, fishing and collecting, and gathering with family through traditions and cultural practice."

It wasn't until 2017 when he began working with his cousin that he was introduced to the commercialisation of Australian Native Foods. This exposure to the industry helped Marlon find his passion of sharing and celebrating the story of Aboriginal Australia with Native Foods.

Marlon spent five years working as the director of The Native Co, a company that grows native herbs in controlled environments with the vision of making Native Produce accessible to everyday Australians. From there, Marlon founded Native Kitchen Australia, which focuses on innovative ways to sell Native Produce, particularly warrigal greens and saltbush, into the Melbourne and Sydney markets.

"Through the Native Kitchen Australia space, I was able to really work on stakeholder and business relationships and really focus on the storytelling aspect of the Native Food sector and celebrate Aboriginal and Torres Strait Islander history and culture within those business deals and relationships," Marlon said.

This inspired Marlon to move into an advisory and consulting role within the Native Foods space, working closely with First Nations corporations on Healthy Country Plans and incorporating agriculture and food sustainability and security within those economic plans.

Research objectives

Marlon is the inaugural First Nations scholar to complete a Nuffield Scholarship since its beginnings in 1947. His research aimed to highlight the cultural importance and unique benefits of Australian Native Foods, as well as investigate the barriers facing First Nations businesses in the agriculture and farming sectors. He also accentuated the importance of safeguarding Indigenous Cultural Intellectual Property, which refers to the rights that Aboriginal and Torres Strait Islander peoples hold in relation to protecting and controlling their Traditional Knowledge and cultural expressions.

> "When I started it out, it was really about bringing awareness to the Australian Native Food sector, but more specifically around the Cultural Intellectual Property of Aboriginal communities within Native Foods," Marlon explained.

"I think there's been some progression in the conversations that we're now having in terms of safeguarding [First Nations Knowledge systems]. But I think there's still a long way to go to get Indigenous Cultural Intellectual Property legislated within the country... there really needs to be some progression from a legal perspective in this space."

Above L-R. Marlon Motlop, in Balgo, WA (Walmajarri Country). Marlon Motlop, NT, Arrernte Country holding Native nectar.

Learnings from overseas

As part of his scholarship, Marlon travelled internationally to learn about the significance of First Nations Foods from around the world and the similarities in their cultural importance. His travels extended to Canada, New Zealand, Brazil, the USA, England, Belgium and Singapore.

"I guess, particularly around North America and First Nations people within Canada, I feel they've probably progressed a little bit further than what we have as a country in their awareness and the frameworks they have in place for First Nations communities and people," Marlon said.

"What I've realised is that Australia is quite a young country in comparison. But there are somethings that we've adopted from international First Nations groups in terms of legislation and First Nations engagement that I think we'll continue to see evolve and mould in a way."

"It's a complex situation in Australia because we've got such a diverse range of Aboriginal and Torres Strait Islander cultures. We've got over 300 groups and within those there are different dialects and clan groups. So, it's a communal responsibility and the terms 'ownership' and 'property' aren't essentially concepts that Aboriginal and Torres Strait Islander peoples live by."

"It's a really complex topic to speak on, but if I was to compare anything in terms of what would work here, I think legislating Indigenous Cultural Intellectual Property and safeguarding knowledge is a priority, for example in Malawi, the first and only country to have ratified the WIPO Treaty, requiring patent applications to include Cultural origins of Traditional Knowledge."

Barriers for First Nations-led businesses

In his report, Marlon outlines the key barriers faced by First Nations-led businesses, including limited access to capital and finance, land use agreements and legal barriers, Market Access and supply chain challenges, infrastructure and capability gaps, and cultural misappropriation and cultural safety.

> "A lot of Aboriginal and Torres Strait Islander peoples will be first generation growers or farmers or business owners in the Native Foods space. Access to capital investment isn't something that we're born into or we come up with," he explained.

"Increased investment into capital for First Nations agribusiness is a must for setting up our businesses to grow, and basing business and strategic values from an agricultural space around the progression and self-determination of First Nation businesses in Australia is something that is a positive driver for the Australian economy from a broader perspective as well."

Looking ahead

As well as strengthening Intellectual Property and Knowledge protection, Marlon also recommended from his findings greater investment into research and development, increased capital investments in First Nations agriculture businesses, securing sustainable supply chains through capability and capacity building for First Nations agribusinesses, and implementation of culturally safe Aboriginal and Torres Strait Islander governance structures for First Nations businesses in the Native Foods sector.

Marlon emphasised the power that Australian Native Foods hold to be a bridge for conversations around reconciliation: "It's an opportunity to spark conversation between non-Aboriginal people within Australia and talk about the real history of Australia. The truth-telling aspect of this country's history is one that needs to progress, and we shouldn't look at that as something to be scared of. We should look at that as an opportunity to learn and grow as a society and as a nation."

"As humans, we connect through food and we're sustained by that very practice. I think that the way we look at Australian Native Foods now is like a niche market, but it's one of the oldest markets in the world."

> "Having our businesses and enterprise hold space within the mainstream market is something that I see within the next ten years for sure."

Above L-R. Marlon Motlop, NT, Gulumeorrgin Larrakia Country with Family. Native Co, Adelaide, SA Kaurna Country cultivating seedlings.
Inset. Kane Chenoweth, Dhaniya Yolngu (Gumatj) Country with Rock Oyster.

Marlon Motlop's 2022 Nuffield Scholarship was supported by Woolworths.

VEGETABLES
POTATOES
ONIONS

Building momentum on **national agrichemical priorities**

In the summer edition of *Australian Grower*, we outlined why AUSVEG and Hort Innovation had established a national agrichemical program and why a more coordinated, forward-looking approach to crop protection is essential for Australia's vegetable, onion and potato industries. At that time, the *National Agrichemical Management Program* (MT24023) was still in its establishment phase. Six months into delivery, the focus has now shifted from setting up the framework to delivering practical outcomes – quietly, methodically, and often working behind the scenes.

Turning coordination into action

The challenges facing vegetable growers are unlikely to change any time soon. Regulatory pressure on older chemistries continues to intensify, resistance risks are real, and the pathway for registering new products remains expensive and complex, particularly for minor crops. With more than 50 vegetable crops grown across highly diverse production systems, the sector relies heavily on minor-use permits, label extensions, and careful resistance management to maintain viable pest control options. Without active coordination, access gaps can emerge quickly, sometimes with little warning. Project MT24023 was designed to reduce that risk by providing national oversight, regulatory intelligence and communication, and a single focal point for industry engagement.

A single point of contact

As we reported previously, a dedicated National Agrichemical Manager role was established within AUSVEG to act as a central point of contact for growers, agronomists, regulators, researchers, agrichemical companies and other innovators. That role is now fully embedded and actively supporting industry. This central coordination has already improved the way information flows between stakeholders, ensuring that regulatory issues, permit timelines, and emerging risks are identified early and addressed in a more structured way.

Importantly, it is also providing agrichemical companies with clearer visibility of industry priorities, backed by evidence rather than anecdote, helping to focus discussions on where investment or regulatory effort is most needed.

Keeping chemistry on farm

One of the most tangible outcomes to date has been the collective effort to maintain continuity of existing crop-protection tools. This work has been undertaken in close collaboration with Hort Innovation's Regulatory Affairs Managers, whose experience and knowledge of the regulatory process have been critical to navigating complex permit pathways. The relationship has been highly complementary, with a shared focus on practical outcomes for growers.

Over the past six months, contributions have been made towards the renewal of 47 minor-use permits across the vegetable, onion and potato sectors. Of these, 32 permits have been successfully renewed, two uses transitioned to full label registration, and several others were progressed or rationalised where ongoing use was no longer viable.

In addition, an Emergency Use Permit for fluazinam was approved to support the suppression of Powdery scab in potatoes following the 2025 Potato mop-top virus incursion in Tasmania. This work was progressed in close collaboration with the Tasmanian state regulator, highlighting the importance of strong relationships at both state and national levels when rapid, risk-based responses are required.

> "Minor-use permits don't attract much attention until they're up for renewal. A big part of this role is making sure that the tools we have don't quietly fall off the system because no one was watching the timelines."

Early warning, not last-minute reaction

Another priority flagged in the summer edition was improving regulatory preparedness. Since then, an initial impact assessment has been completed on crops most likely to be affected by the potential loss of key neonicotinoid insecticides, including potatoes, brassicas, lettuces, cucurbits, fruiting vegetables and sweet corn. This information is now being communicated to industry to provide early warning and allow growers and advisers to plan ahead, rather than scrambling for alternatives once regulatory decisions are finalised.

It is also important to flag that dithiocarbamate fungicides have been formally tabled for review by the APVMA in the very near future. Overseas, several major markets, most notably the European Union, have withdrawn approval for dithiocarbamate fungicides such as mancozeb, while others have introduced tighter restrictions. Although the timing and outcomes of any Australian review cannot be predicted, growers and advisers should be aware of the trajectory that this is on and begin considering alternatives.

"Early identification of risk is a recurring theme of the program, whether it relates to chemistry reviews, resistance pressure or market access. The objective is not to predict outcomes, but to ensure the industry is informed, prepared and better positioned to adapt."

Market access and residue risk

The program has also commenced foundational work on residue compliance and market access – an area of growing importance for both domestic and export-focused growers. Australian Maximum Residue Limits (MRLs) for more than 50 vegetable crops have been manually compiled, resulting in a dataset of over 1300 individual entries.

In parallel, international regulatory developments are being actively monitored, with dozens international notifications reviewed each day to identify changes that could affect Australian exports. While this work is ongoing, it is already helping to flag potential compliance risks early and improve the consistency and accuracy of technical advice provided to industry.

The next phase of this work will focus on tabulating overseas MRLs for major export crops across key export markets, with the aim of making this information more accessible and usable for export businesses. In the meantime, exporters are encouraged to contact AUSVEG if they require information or clarification on MRL requirements in overseas markets.

Looking ahead

Project MT24023 remains in its early stages, but the progress since the summer edition reinforces the value of investing in coordination, evidence, and early engagement.

Much of this work happens out of the spotlight – renewing permits, monitoring regulatory changes, advising government, and building the relationships needed to support future innovation. However, these quiet wins are what keeps chemistry on farm and options open for growers.

As regulatory pressure continues to increase globally, a proactive, nationally coordinated approach is no longer optional. It is essential to safeguarding crop protection tools and supporting the long-term resilience of Australia's vegetable industry.

FIND OUT MORE

For more information or to get involved, contact david.daniels@ausveg.com.au

The National Agrichemical Management Program is funded by Hort Innovation using the vegetable, onion and potato research and development levies and contributions from the Australian Government.

Project Number: MT24023

Hort Innovation VEGETABLE FUND
Hort Innovation ONION FUND
Hort Innovation POTATO – FRESH FUND
Hort Innovation POTATO – PROCESSING FUND

export/ trade + update

INTERNATIONAL TRADE

VEGETABLES
ONIONS

JANUARY TO NOVEMBER 2025

Australian vegetable export performance overview

While overall vegetable export values softened in 2025, key markets across Asia and the Middle East continue to present strong opportunities for Australian vegetable growers-exporters, albeit in difficult market conditions.

From January to November 2025, total export value eased by five percent, from $218 million to $208 million. Total export volume dropped by seven percent, with a decrease of about 12,000 tonnes, reflecting a more challenging global trading environment. Despite the drop in overall exports in this period, Australia's top fresh vegetable export markets continued to show encouraging demand for safe and reliable Australian produce.

Singapore, United Arab Emirates, Malaysia, South Korea and Saudi Arabia were the leading five markets for fresh vegetable exports over the period. Together, these markets underpin the long-term export success of the sector. In 2026, AUSVEG will be leading a series of targeted trade missions into these key markets to further strengthen the presence of Australian fresh vegetables in-market and support growers in developing new commercial relationships.

Change in vegetable exports by destinations

TABLE 1.

Source: Global Trade Atlas 2026

TRADE PARTNER	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total fresh vegetable exports	**$218,724,210**	**172,298**	**$208,166,173**	**159,684**	**-5%**	**-7%**
Singapore	$41,485,870	20,210	$40,630,489	18,295	-2%	-9%
United Arab Emirates	$27,875,183	29,466	$28,164,606	29,280	1%	-1%
Malaysia	$21,271,472	17,967	$19,420,165	16,660	-9%	-7%
Korea, South	$20,060,930	23,882	$17,095,325	20,195	-15%	-15%
Saudi Arabia	$10,484,983	12,345	$11,775,325	13,996	12%	13%
Japan	$9,468,891	4,666	$11,311,068	5,583	19%	20%
Hong Kong	$11,571,726	4,207	$10,742,206	3,778	-7%	-10%
New Zealand	$9,738,317	2,094	$9,322,320	1,969	-4%	-6%
Taiwan	$8,329,315	6,577	$9,061,500	6,579	9%	0%
Thailand	$12,614,539	12,481	$8,457,605	8,363	-33%	-33%

Singapore remained the largest Australian fresh vegetable export destination by value but saw a decrease in total export value by two percent, from AUD$41.4 million to AUD$40.6 million and a slight decrease in export volume to 18,925 tonnes. Total fresh vegetable exports to the United Arab Emirates remained at similar level compared to same period last year, with AUD$28 million in export value from the 29,280 tonnes shipped. Australian fresh vegetable exports to Saudi Arabia increased by 12 percent in value, from AUD$10.4 million to $11.7 million and export volume increased by 13 percent to 13,996 tonnes.

Japan has recorded substantial growth, with an increase of 19 percent in export value, from AUD$9.4 million to AUD$11.3 million, along with 20 percent in export volume from 4,666 tonnes to 5,583 tonnes (*refer to Table 1*).

INTERNATIONAL TRADE

JANUARY TO NOVEMBER 2025

Australian vegetable overview

Vegetable export by crop

Carrots, potatoes and onions continued to be the three largest export crops for the industry. Total carrot export value in this period has grown five percent from AUD$61.5 million to AUD$64.7 million and total export volume has increased by seven percent to 75,033 tonnes. Export value of potato has also increased by four percent from AUD$45.2 million to AUD$47 million, adding an additional 470 tonnes to the export volume. Celery exports have grown six percent in value from AUD$6.9 million to AUD$7.4 million, with export volume increased by four percent to 3,832 tonnes (*refer to Table 2*).

Change in vegetable exports by crop

TABLE 2.

Source: Global Trade Atlas 2026

CROPS	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Carrot	$61,509,592	70,249	$64,742,921	75,033	5%	7%
Potato	$45,233,776	44,474	$47,087,271	44,944	4%	1%
Onion	$40,078,389	40,501	$21,074,037	21,797	-47%	-46%
Cauliflower & Broccoli	$15,656,575	3,238	$15,714,571	3,054	0%	-6%
Asparagus	$10,185,162	1,345	$12,131,918	1,492	19%	11%
Celery	$6,968,432	3,699	$7,386,684	3,832	6%	4%
Beans	$6,267,420	1,102	$5,974,076	944	-5%	-14%
Lettuce	$4,745,174	601	$5,703,234	764	20%	27%
Pumpkin	$4,800,052	2,798	$4,927,903	3,425	3%	22%
Spinach	$3,004,899	337	$3,499,787	408	16%	21%

Hort Innovation VEGETABLE FUND
Hort Innovation ONION FUND
Hort Innovation MELON FUND

FIND OUT MORE

Please contact Andrea Lin, International Trade Specialist, AUSVEG
andrea.lin@ausveg.com.au | +61 3 9882 0277

The *Multi-industry export program (Vegetables, Onions and Melons)* project is funded by Hort Innovation using the vegetable, onion and melon research and development levies and contributions from the Australian Government. **Project Number:** MT21009

International trade events 2026

Through the *Multi-Industry Export Program (Vegetables, Onions, Melons)*, AUSVEG coordinates grower participation in and exhibition at several international trade missions aligned with major trade events in regions.

EVENT	2026	LOCATION
Gulfood	26-30 January	Dubai Expo City
Foodex	10–13 March	Tokyo Big Sight, Japan
South East Asia Trade Mission	April	Thailand, Malaysia & Singapore (TBC)
FHA-Food & Beverage	21–24 April	Singapore Expo
AUSVEG Fresh Produce Showcase	1 June	Adelaide, South Australia
Reverse Trade Mission (inbound)	May/June	South Australia
Asia Fruit Logistica	2–4 September	Asia World Expo, Hong Kong

INTERNATIONAL TRADE

JANUARY TO NOVEMBER 2025

Australian onions overview

EXPORT OVERVIEW

Australia's fresh onion exports experienced a considerable downturn in 2025, recording the weakest performance since 2018. Total export value fell sharply by 47 percent, from $40 million to $21 million, while export volumes dropped by 46 percent, effectively halving shipments to 21,979 tonnes.

This decline reflects challenging conditions across global markets, with almost all major destinations recording reduced demand for Australian onions.

The Australian onion industry has been particularly impacted by delays in finalising the Australia–EU Free Trade Agreement (AUEU-FTA), resulting in lost market share to competitor countries that are able to export onions tariff-free into these key markets.

Thailand, the United Arab Emirates, the Netherlands, Belgium and Japan were the top five markets for fresh onion exports over the period. However, each of these markets recorded notable contractions, highlighting the scale of the challenge facing the onion export sector.

Thailand remained Australia's largest onion export destination, but performance was at its weakest since 2018. Export value fell by 49 percent from $7.9 million to $4 million, while export volumes dropped by 45 percent from 9,543 tonnes to 5,229 tonnes. A similar trend was evident in the UAE, where export value declined by 46 percent from $4.5 million to $2.4 million, and volume fell by 38 percent to 2,540 tonnes.

The European market also softened significantly. Exports to the Netherlands dropped by 49 percent in value, from $4.3 million to $2.2 million, while volumes fell even more sharply, down by 57 percent to just 1,691 tonnes (*refer to Table 3*).

Change in onion exports by destination

TABLE 3. **Source:** Global Trade Atlas 2026

TRADE PARTNER	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total fresh onion exports	**$40,078,389**	**40,501**	**$21,074,037**	**21,797**	**-47%**	**-46%**
Thailand	$7,910,269	9,543	$4,012,178	5,229	-49%	-45%
United Arab Emirates	$4,576,607	4,072	$2,469,825	2,540	-46%	-38%
Netherlands	$4,342,129	3,946	$2,203,724	1,691	-49%	-57%
Belgium	$2,207,447	2,026	$1,901,996	1,995	-14%	-2%
Japan	$2,952,742	2,482	$1,842,251	1,580	-38%	-36%
Malaysia	$3,136,102	3,091	$1,510,208	2,177	-52%	-30%
Taiwan	$2,794,511	3,422	$1,373,407	1,774	-51%	-48%
Norway	$1,310,381	1,279	$1,050,737	974	-20%	-24%
Papua New Guinea	$659,791	480	$701,558	396	6%	-18%
France	$897,796	905	$662,841	654	-26%	-28%

IMPORT OVERVIEW

According to data from the *Global Trade Atlas*, onion imports into Australia recorded a modest increase in value and volume between January and November 2025. Import value rose to $7.2 million, while import volumes increased by 15 percent, from 6,961 tonnes to 8,024 tonnes.

China, the Netherlands and New Zealand were the top three origin markets for onion imports. The majority of imports from China consisted of semi-processed onion products. While the value of these semi-processed imports from China declined by 13 percent, from $5.2 million to $4.6 million, the volume increased slightly to 5,918 tonnes (*see Table 4*).

Change in semi-processed onion imports by destination

TABLE 4. **Source:** Global Trade Atlas 2025

TRADE PARTNER	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total semi-processed onion imports	**$7,135,959**	**6,961**	**$7,218,765**	**8,024**	**1%**	**15%**
China	$5,271,953	5,838	$4,607,177	5,918	-13%	1%
Netherlands	$1,427,673	599	$1,515,463	611	6%	2%
New Zealand	$194,873	374	$819,810	1,334	321%	257%
United States	$207,667	123	$178,116	121	-14%	-2%
Peru			$73,767	25	N/A	N/A
Vietnam	$19,633	25	$16,867	15	-14%	-40%
India	$14,161	3	$7,564	1	-47%	-67%

vegetable fund update

This project has been funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

Hort Innovation VEGETABLE FUND

Lessons from Europe

WHAT AUSTRALIA'S VEGETABLE INDUSTRY CAN TAKE HOME FROM THE EU STUDY TOUR

In September 2025, a group of Australian vegetable industry representatives travelled to the Netherlands and Spain as part of a European Vegetable Industry Study Tour, gaining first-hand exposure to some of the world's most advanced horticultural breeding, production, and processing systems.

The tour brought together growers, seed company representatives, and industry staff to explore how European innovators are responding to rising costs, labour constraints, regulatory pressure, and increasing sustainability expectations – challenges that closely mirror those facing Australian growers.

The study tour was delivered with support from Hort Innovation, funded by the vegetable research and development levy and matched with contributions from the Australian Government, ensuring Australian growers have access to global insights that strengthen long-term productivity, resilience, and market competitiveness.

Timed to coincide with the renowned Week 39 seed trials in the Netherlands, the itinerary included visits to leading seed companies, agritech manufacturers, biological input specialists, and the Fruit Attraction trade fair in Madrid. While severe weather prevented planned farm visits in Spain's Albacete region, the program still delivered an exceptional cross-section of innovation and practical learning.

Genetics doing the heavy lifting

One of the strongest take-home messages from the Netherlands leg of the tour was the central role that genetics now play in managing risk and reducing input dependency. Across visits to Bejo, Syngenta, Enza Zaden, Bayer (Seminis), BASF Nunhems and Rijk Zwaan, breeding programs were increasingly focused on resilience rather than yield alone.

Participants saw varieties bred for resistance to major diseases such as *Fusarium*, Downy mildew and Tomato spotted wilt virus, along with improved tolerance to heat, bolting, and environmental stress. These traits are helping European growers reduce reliance on chemical controls while maintaining productivity, quality, and consistency.

Above. Natasha Shields (Peninsula Organics) at Bejo Open Days (Warmenhuizen, the Netherlands).

Above. Natasha Shields (Peninsula Organics) and Monika Fiebig (Monika's Organics) at Enza Zaden Discovery Field Days (Voorst, the Netherlands).

Inset. Marco and Vincent Mason (Mason Brothers Vegetable Farms) at Syngenta Fields of Innovation (Grootebroek, the Netherlands).

For Australian growers, the relevance is clear. Across Europe, the progressive withdrawal of many conventional crop-protection products has accelerated the shift toward resistant genetics as a primary risk-management tool. As a result, resistant varieties are becoming a cornerstone of integrated pest and disease management, reducing reliance on chemical inputs, lowering spray frequency and costs, and strengthening biosecurity resilience against both endemic and emerging pest and disease threats.

Organic and low-input systems moving mainstream

At Enza Zaden's Discovery Field Days, the group saw organic production systems operating at scale. Through its Vitalis breeding program, Enza Zaden is incorporating wild genetics into commercial vegetable lines to deliver strong disease resistance and reliable performance under low-input conditions.

What stood out was the quality of the crops on display. Several participants remarked that the organic lines rivalled conventional varieties in appearance and vigour, reinforcing the idea that modern breeding, rather than chemistry alone, is driving the next phase of sustainable production.

This approach has clear relevance for Australia as growers look to manage regulatory pressure on certain active ingredients while maintaining yield and market access.

AS ONE PARTICIPANT OBSERVED

"These varieties aren't just about yield anymore – they're designed to cut inputs, improve shelf life, and still meet market expectations."

Automation addressing labour challenges

Beyond genetics, the tour highlighted how mechanisation and automation are reshaping European horticulture in response to labour scarcity and costs – a challenge that resonates strongly in Australia.

At Sormac B.V., participants saw advanced postharvest processing systems incorporating AI-driven optical grading, automated trimming and washing, and water recycling. These systems improve efficiency, reduce waste, and meet increasingly stringent food safety and sustainability requirements.

At Roopack BV, the group examined custom-built harvesting machinery designed to minimise soil compaction, reduce fuel use, and significantly improve harvesting efficiency. Roopack's twin-disc harvesting system was of particular interest, with demonstrated reductions in product loss and increased component lifespan compared with conventional blade systems.

For Australian growers, these technologies highlighted practical pathways to address labour shortages while improving product quality and operational flexibility.

Biologicals becoming part of the toolbox

In Spain, the group met with representatives from Servalesa, a company specialising in biostimulants and microbial inputs. Although adverse weather prevented farm visits, technical presentations provided insight into how biological products are being integrated into European IPM systems.

Rather than replacing conventional chemistry outright, biologicals are being used to enhance plant health, stress tolerance, and soil function — reducing chemical reliance while maintaining yield and quality. This integrated approach aligns closely with emerging trends in Australia's own biological input sector.

From innovation to application

The tour concluded at Fruit Attraction in Madrid, one of Europe's largest fresh produce trade events. Here, participants saw how genetics, automation, packaging, and logistics innovations are converging to support low-input, technology-enabled production systems that respond directly to consumer and market expectations.

Across the tour, several consistent themes emerged. Genetics are reducing chemical dependence, automation is reshaping labour efficiency, and sustainability is increasingly embedded in commercial decision-making rather than treated as a separate objective.

For Australian growers, the value of the tour lay not in replicating European systems, but in understanding where global horticulture is heading and how these innovations can be adapted to Australian crops, regions, and markets.

AS ONE PARTICIPANT SUMMED IT UP

"What we saw wasn't futuristic – it's already happening. The challenge now is deciding how we apply it at home."

The insights gained from the EU Study Tour will help inform future industry priorities, from variety selection and mechanisation investment to the role of biologicals and integrated pest management – supporting a more resilient, competitive, and sustainable Australian vegetable industry.

The *Vegetable and Onion Industry Study Tours* are funded by Hort Innovation using the vegetable and onion research and development levies and contributions from the Australian Government. **Project Number: VG23002**

Hort Innovation VEGETABLE FUND

Hort Innovation ONION FUND

L-R. Natasha Shields (Peninsula Organics) at Bejo Open Days (Warmenhuizen, the Netherlands). Study tour group at Rijk Zwaan Open Field Demo Days (Fijnaart, the Netherlands).

NEW HORT INNOVATION FUNDED

carrot project

Hort Innovation has contracted Western Australia's Department of Primary Industries and Regional Development (DPIRD) to lead a new Australia-wide carrot Research and Development (R&D) project. *The Maximising carrot packout project* (VG24007) will run for three years and includes collaborators from the South Australian Research and Development Institute (SARDI) and the Queensland DPI.

This project aims to maximise the packout of high-quality carrots by improving production and handling practices. Carrots that do not meet market specifications have a major impact on farm profitability. This project seeks to deliver practical solutions to help growers reduce losses, improve crop quality, and meet the demands of both domestic and export markets.

Anthony Kachenko, General Manager of Sustainability and Production R&D at Hort Innovation, said the project was an investment for the future of Australia's carrot industry: "This project is about giving growers the tools and knowledge they need to deliver top-quality carrots to market, improving profitability and strengthening the supply chain. By focusing on practical solutions and industry collaboration, we're helping growers overcome production challenges, reduce losses, and ultimately achieve better returns for their hard work."

The first phase of the project commenced in December 2025. Researchers are working with growers and other stakeholders to identify research gaps and prioritise key R&D needs for maximising carrot packout.

Grower interviews are already underway across the country and will provide information on the current management of carrot crops. Interviews will be complemented by on-farm monitoring of crops during the 2026 growing seasons to collect baseline data. This will include information on soil and plant nutrition, disease pressures and post-harvest management.

A literature review on factors affecting carrot packout will synthesise current knowledge of carrot defects. A grower workshop will be held for the industry in February 2026 to develop a 'Carrot R&D plan' which will be used to determine R&D for Stages 2 and 3.

In Stage 2, targeted research will be conducted to answer key production causes of carrot defects. Although organisations involved will work collaboratively across all areas, each will focus on a specific part of the research to then share and learn from. Research will likely focus on crop production issues, carrot diseases, and post-harvest aspects, and will be conducted at research stations and on commercial farms. Following this, the impact of new management approaches on both crop quality and farm profitability will be assessed, ensuring recommendations are practical and economically sound.

A strong focus on industry engagement and knowledge transfer will underpin the final Stage 3. Direct engagement with growers and industry bodies, publications, videos, webinars, presentations and grower demonstrations will be utilised to deliver the results of the project. The extension program will provide growers with the tools and information needed to adopt proven practices and drive continuous improvement across the sector, to achieve a higher percentage of carrots meeting market specifications.

Neil Lantzke at DPIRD said: "By working hand-in-hand with growers and focusing our research on the root causes of the packout issues being experienced by the industry, we're confident this project will deliver practical strategies that make a real difference on-farm. The collaborative approach means we can adapt and respond to the industry's evolving needs as the project progresses."

Vincent Tana, Managing Director at Sumich, a Western Australian and Tasmanian carrot grower, said: "Packout rates have a direct impact on profitability, so finding ways to reduce losses is a priority for all of us in the industry. This project is exciting because it focuses on practical, research-driven solutions that can be applied on-farm to improve quality and deliver better returns."

DPIRD staff working on the project include Neil Lantzke (Project manager), Falko Mathes (Research Scientist) and a Technical Officer (to be appointed). The SARDI team consists of Michael Rettke and Cathryn Todd, and the QDPI team consists of Roberto Marques and Leisa Bradburn.

This project will help Australian carrot growers improve quality, reduce losses, and boost returns across domestic and export markets by addressing current production and postharvest challenges.

FOR MORE INFORMATION

Please contact Neil Lantzke, DPIRD, 0429 990 439 | Neil.lantzke@dpird.wa.gov.au

Hort Innovation VEGETABLE FUND

The *Maximising carrot packout project* is funded through the Vegetable research and development levy and contributions from the Australian Government. **Project Number:** VG24007

CASE STUDY

Nuffield Scholar aims to improve farm planning

For Yumeng Chen, farming is a family tradition, which she has embraced since her childhood in China. Having been named the 2026 Nuffield Scholar for the vegetable industry, supported by Hort Innovation, Yumeng's project will explore how virtual modelling can optimise production systems and decision-making in vegetable growing.

"I grew up on family farmland in Southern China," Yumeng said.

"My grandparents practiced mixed farming. From what I remember, we had about 20 hectares of rice fields divided into small blocks scattered across different locations within the same village. We had around 20 chickens and three pigs. We also had vegetable paddocks where we grew Asian leafy vegetables and other [crops] such as eggplants, tomatoes, pumpkins, winter melons, bitter melons, corns and chilies.

"My grandpa dug two ponds where we raised fish. Next to the house, we had a mandarin orchard, along with a pomelo tree, a chestnut tree and some tea trees. My grandparents also farmed watermelons on half of a nearby hill. I have three aunties who are also farmers. During busy harvest seasons my cousins and I would help out, going from one household to another."

After completing an agribusiness degree in Adelaide, Yumeng worked in Forth in Tasmania and Adelaide before moving to Melbourne. She began working at Fragapane Farms near Werribee, which grows broccoli, cauliflower, celery and other green vegetable crops. After nearly two years, she moved to the United States to complete a Masters in Supply Chain Management before returning to Fragapane Farms, where she is currently the Senior Account Manager.

"My main responsibility is taking care of the sales accounts for domestic retailers and the export markets. But I also do projects like supply planning, demand forecasting and data analytics."

Yumeng explained that while it's generally possible to tell if a company is doing well or not, it's important to have benchmarks in place to measure by, to work out how exactly the company is performing. The challenge of doing this at the highest level is something Yumeng embraces.

"There's always something new going on. I know a lot of people say farming is challenging, and it is absolutely challenging. But I think that's the excitement, coming from how we deal with so many issues every day. I love that.

"The business owner Joseph and my manager Rob said to me when I first started, 'we probably don't want to be the biggest in the industry, but we want to be the best at what we are doing.' I think the best way you learn about something is actually dealing with the issues, and it helps me not only for personal growth, but also to build a relationship with the teams, because the best way to build a relationship is actually solving problems together."

That passion to learn and to improve the way vegetables are grown has led to Yumeng being awarded one of two Nuffield Scholarships supported by Hort Innovation, with the other going to Jackson Boardman who works in the avocado industry in Queensland.

When announcing the Hort Innovation supported scholars, Chief Executive Brett Fifield said: "The Nuffield Scholarship is a powerful way to build capability and encourage fresh thinking in horticulture. By supporting emerging leaders, we're investing in the future of our sector."

Yumeng's scholarship will explore how virtual modelling can optimise production systems and decision-making in vegetable growing.

"The project aims to produce a virtual replica of the farming operations," said Yumeng.

"It can be smaller scale focusing in one area or a much larger scale to cover the whole produce supply chain. For example, if we just look at one produce category, iceberg lettuce, we can forecast the amount of iceberg (around 550,000 units) that is required for next year, based on historical data from our sales and operations planning system. We can also build a virtual replica of the farms, monitor crop growth and forecast how much lettuce will be ready in certain time periods.

"It helps us reverse thinking from final demand, to work out how many seeds we need to put in the ground and monitor the crop readiness in-between."

The Australian scholars formally began their travels for their projects in March with a gathering in Canberra, before heading to Japan where 110 scholars from 16 countries across the globe had the opportunity to meet each other. In late January Yumeng also travelled to Dubai as part of the AUSVEG trade mission to Gulfood, where she met with other scholars.

Over the year ahead, the Nuffield program will take her to the Philippines, Ireland, Poland, Denmark, the USA, Argentina, China, and other countries to learn about agricultural applications globally.

"I feel that my topic is broad, but I believe it is beneficial to keep it like that at the start, as I'm confident that through the experience and lessons I'll learn during the scholarship period I can narrow it down and produce something tangible in the end."

The Nuffield Scholars have a deadline for their final report to be submitted by the end of July 2027.

"I'm trying to do a lot of reading and researching for background. But, as previous scholars keep telling me, 'just keep yourself open minded, because there are so many people you haven't met yet, so many businesses you haven't visited yet. You'll have better ideas once you've done all the visits."

WATCH
YouTube

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The Nuffield Scholarships project is funded by Hort Innovation, using the apple and pear, avocado, vegetable, onion, raspberry and blackberry, and turf research and development levies and contributions from the Australian Government.
Project Number: MT22003

Hort Innovation VEGETABLE FUND

CASE STUDY

New Zealand study tour recap

INSIGHTS FROM VEGETABLE GROWER PARTICIPANTS

In late August a group of Australian vegetable growers spent a week in New Zealand as part of the vegetable and onion study tour program, funded by Hort Innovation.

These industry study tours provide opportunities for Australian vegetable and onion growers and supply chain businesses to increase their awareness and knowledge of the research and innovations in the global horticulture industry. This is achieved through the delivery of tours to strategic vegetable and onion growing regions, conferences, facilities, and innovation centres around the globe.

Over five days the group visited farming operations across the country's North Island, the biosecurity operations at Wellington's international airport, as well as various retail operations. The group were also delegates at the annual New Zealand horticulture conference.

You can read a detailed wrap of the full study tour in the Summer 2025/26 edition of *Australian Grower* magazine.

The group at LandWISE Inc.

Following the study tour, we caught up with the grower participants to hear about some of the key insights they gained.

Warrick Purdon

Warrick is the General Manager of Farm Operations with Hussey and Co. in Victoria's Gippsland region, where they grow baby leaf vegetables.

Why did you want to go on the tour to New Zealand?

For me it's always just about learning new things – learning something new from a new place and new people. It's experience that you don't get from a textbook or your local farmer down the road or even in our next state.

What was the highlight?

One of the highlights for me was seeing and talking to the guys after the conference and actually meeting a lot of growers that do very similar things and to the same sort of scale as what we do. And getting to talk to them about what they're going through.

What did you see that was unexpected?

One of the interesting things we saw up towards Hawke's Bay area was planting sweet corn under plastic, and it was basically just to bring him in a couple of weeks earlier to market. It was very interesting and I'd look at bringing that back home to us on a different scale. Because we have this divide in season between when Victorian growers switch off and Queensland growers start and vice versa at the end of the season. And being a Victorian grower, being able to come on maybe a week or two earlier is definitely something that we'll be looking into and potentially implementing this season.

Would you recommend to others in the industry taking part in one of the study tours?

I think [it's worth it for] the contacts and relationships that you make. I made contacts at the conference that I could now go to New Zealand on a separate study tour of my own if I wanted to, and could go and have a look at them and see the operation and get some more insight and advice.

Calvin Parker

Calvin is Farm Operations Assistant Manager on his family's farm near Manjimup in Western Australia, where they primarily grow potatoes, but also some other vegetable crops.

Why did you want to go on the tour to New Zealand?

I think that New Zealand is a similar sort of environment, and their regulations are pretty similar to Australia. So I think it was learning new things over there that we can potentially adapt and use over here.

What was the highlight?

We did go to a potato farm over there and we talked a lot to the farmer, and he had a lot of interesting things to talk about. They don't use irrigation over there, whereas we spend a lot of money on irrigation and watering our crops. Also, the chemicals that are getting taken away over there could potentially be taken off the shelves here, and I think that it's good to see what they're doing to adapt.

What did you see that was unexpected?

We went to an asparagus farm, and they were growing under a small plastic dome, just 30 cm off the ground, and that was so they could get into that market earlier and therefore they were getting a much better price.

A couple of other things I [noticed] was it was a lot different in the aspect of land prices. In the Manjimup Pemberton area where Jimmy and I are, land prices generally are around $50,000 a hectare, and sometimes even less than that.

Over there, prices are up to $200,000 a hectare, and I just don't know how it's viable for them to be buying land at that sort of price and with all the input costs that they talked about. It just didn't really add up. The other thing was that the scale of some of the farms we went to were just massive.

Would you recommend to others in the industry taking part in one of the study tours?

The people on the tour that we met, like Warwick for example, we might live on the other side of the country, but if we're ever over there, we would definitely contact him and go and have a look at his operation, along with multiple other people that we met.

Another good thing is to get out and learn and see other countries and how they do stuff. More of it should happen. JIMMY FOX

Jimmy Fox

Jimmy is part of his family's farming operation near Pemberton in Western Australia, primarily growing potatoes, but also other crops.

Why did you want to go on the tour to New Zealand?

I just wanted to learn new things and meet new people as well that are in a different industry than us.

What was the highlight?

It was going to the apple farms there and realising how they've adapted after the floods. With the apple farms, [they're] pretty similar with the netting and how they've grown the apples and the pruning, but different in some ways as well. With the irrigation, normally we have sprinklers that shoot up around the trees, but they use old drip irrigation that shoots right onto the roots underneath where the tree is. That was quite a bit different.

What did you see that was unexpected?

We went to a few real big farms there and they have 300 people working for them. We only probably employ four or five people.

Would you recommend to others in the industry taking part in one of the study tours?

I would 100 percent recommend this tour, especially for younger farmers like me. I think more of us should get out and meet other people, which is a very big thing. We made some pretty good relationships with people over there.

LISTEN
Vegalogue
Podcast

The *Vegetable and Onion Industry Study Tours* are funded by Hort Innovation using vegetable and onion research and development levies and contributions from the Australian Government. **Project Number:** VG23002

Hort Innovation VEGETABLE FUND
Hort Innovation ONION FUND

Minor Use Permits

The below minor use permits were recently issued by the Australian Pesticides and Veterinary Medicines Authority (APVMA). This information is circulated as part of Hort Innovation's Growing Innovation e-newsletter, which members and interested horticulture participants receive monthly. **Sign up at** horticulture.com.au/growers/become-a-member.

Permit ID	Description	Start Date	End Date	Permit holder	Jurisdiction
PER13116 Version 5	Propiconazole / sweet corn / northern corn leaf blight	8 Feb 2020	31 Oct 2030	Hort Innovation	ACT, NSW, QLD, SA, NT and WA only.
PER80977 Version 4	Propiconazole / parsley / cercospora, rust, powdery mildew and septoria	8 Dec 2015	31 Oct 2030	Hort Innovation	All States and Territories, except VIC
PER89870 Version 3	Entrust Organic Qalcova active insecticide (Spinosad) / various crops / fall armyworm	21 July 2020	31 Oct 2030	Hort Innovation	All States and Territories, except VIC
PER14907 Version 5	Emamectin / brassica leafy vegetables / various pests	14 Jan 2019	30 Sept 2026	Hort Innovation	All States and Territories, except VIC
PER94854 Version 2	Isocycloseram / celery, baby leaf spinach, baby leaf lettuce, kale, open leaf lettuce, parsley, coriander, shallots and leeks / serpentine leafminer	9 Aug 2024	30 Sept 2028	Hort Innovation	All States and Territories, except VIC
PER95266 Version 2	Clothianidin / fruiting vegetables, cucurbits / cucumber fruit fly	21 Aug 2024	30 Sept 2027	Hort Innovation	All States and Territories, except VIC

All efforts have been made to provide the most current, complete and accurate information on these permits, however you should always confirm all details on the APVMA website at: **portal.apvma.gov.au/permits**. Details of the conditions of use associated with these permits can also be found on the APVMA site. You can also access the Non-Performance Reporting Form for Horticultural Pesticides at **horticulture.com.au**. This form should be completed when an adverse experience occurs as a result of using a permit. A 'non-performance' is an unintended or unexpected effect on plants, plant products, animals, human beings or the environment, including injury, sensitivity reactions or lack of efficacy associated with the use of an agricultural chemical product(s) when used according to label (or permit) directions.

Users are advised that while the pesticide can be applied legally under the APVMA minor use permit, there can be a significant delay until the MRL gazetted by the APVMA is adopted in the Australia New Zealand Food Standards Code. Until this occurs the MRL may not be recognised and a zero tolerance may be imposed for residues of the pesticide resulting from its use according to the APVMA permit.

Please be aware that in the absence of an MRL in the Food Standards Code, the use of the pesticide according to the permit may result in the suspension of the produce in the marketplace. Please check the FSANZ website or the **Australian Government ComLaw website: legislation.gov.au/Series/F2015L00468)** to confirm if there are MRL established by the Australia New Zealand Food Standards Code.

Tackling Australia's vegetable consumption crisis in cost-of-living crunch

Vegetable consumption in Australia remains well below recommended levels, with average intake sitting at around 1.8 serves per day. This decline has implications not only for public health but also for the commercial sustainability of the vegetable industry.

Driving consumer demand at a key time of year: national visibility to in-store action

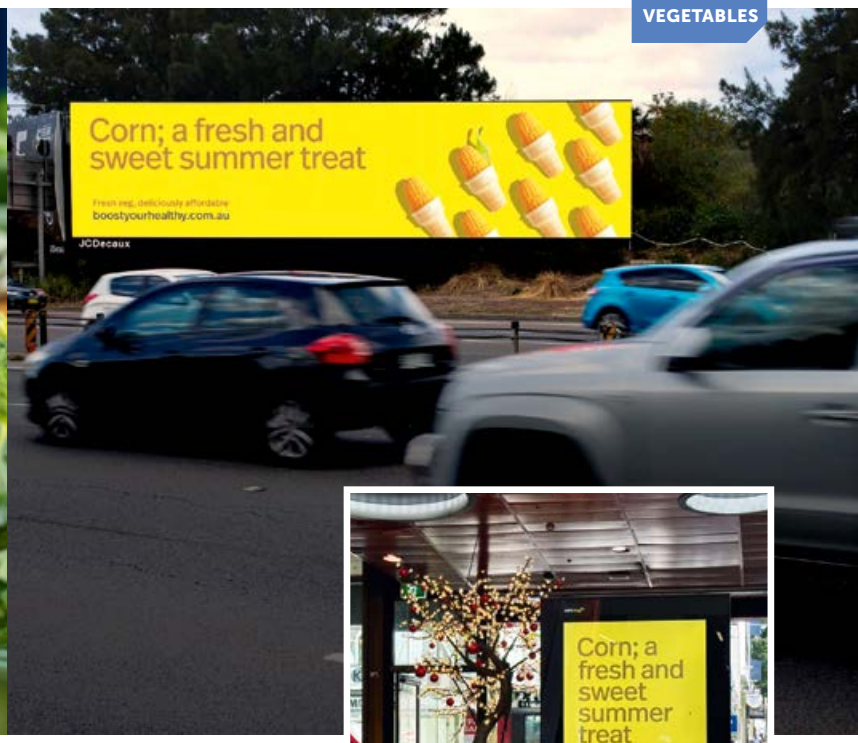
Australia's vegetable industry continues to deliver high-quality, nutritious food under increasingly challenging conditions. Rising input costs and ongoing volatility are further compounded by low consumer demand.

We know that Australians are still eating far fewer vegetables than recommended. While this is often framed as a public health issue, for growers it has direct commercial consequences, influencing demand stability, price confidence and long-term investment decisions across the supply chain.

In response, AUSVEG has sharpened its focus on tackling vegetable consumption through the Plus One Serve program – working across media, retail, educators and public health organisations to help encourage Australians to choose vegetables more often every day.

Two key initiatives have recently been implemented through innovative partnerships to champion and grow healthy eating right across Australia at a key time of year – back-to-school and back-to-work. These include a multi-million dollar national outdoor advertising campaign, and retail integration at the point of purchase to strengthen and drive consumer engagement.

Robert Hinrichsen, Founding Director, Kalfresh, Michael Coote, CEO, AUSVEG, Justine Coates, Managing Director, Plus One Serve - AUSVEG, Richard Gorman CEO and Grower, Kalfresh.



Building demand at scale: *Fresh veg, deliciously affordable*

Throughout February, Australians across metropolitan, regional and rural areas were met with a powerful and highly relevant message: *Fresh veg, deliciously affordable.*

Delivered in partnership with the Outdoor Media Association (OMA) and Health and Wellbeing Queensland, the national outdoor media campaign ran from 2nd February to 1st March 2026. Its aim was to support Australian growers by encouraging more Australians to include vegetables in everyday meals and snacks during a period of sustained cost-of-living pressure.

The campaign deliberately avoided guilt-based messaging or complex nutrition advice. Instead, it focused on small, achievable behaviour changes that fit everyday life. Creative executions such as "Broccoli: slice, dice and mix with rice" and "Corn: a fresh and sweet summer treat" positioned vegetables as familiar, affordable and easy to use.

The underlying message was straightforward: vegetables don't require extra time, extra money or major lifestyle changes. They can be added, swapped or enjoyed as snacks alongside meals people already choose.

This approach reflects growing evidence that people are more likely to act when changes feel low-effort and realistic. By meeting Australians where they are – on the commute, near shops and in local communities – the campaign helped reinforce vegetables as a normal, everyday choice.

For growers, the scale of the activity was significant. Through OMA's national network, *Fresh veg, deliciously affordable* appeared on thousands of Out of Home advertising assets across the country, with the outdoor media industry again donating substantial advertising value under its National Health and Wellbeing Policy.

From awareness to action: why retail matters

While national visibility helps shape attitudes, the real test comes when shoppers stand in front of the shelf.

Supermarkets are where food decisions are made quickly, often on autopilot. That makes retail one of the most powerful settings for behaviour change. For growers, what happens in store can determine whether good intentions translate into vegetables in the trolley.

This insight underpins AUSVEG's growing focus on retail engagement, including its Retail Setting Action Plan, developed as part of the AUSVEG-led Plus One Serve program, supported by Hort Innovation which identifies supermarkets as a critical pathway to increasing vegetable consumption at scale.

One of the strongest examples of this work to date is the Ritchies Veg Digital Challenge.

Above. L-R. Samples of the *Fresh veg, deliciously affordable* Out of Home advertising campaign.

Retail action delivering results: the Ritchies Veg Digital Challenge

Developed in partnership with Ritchies Supermarkets and leading researchers, the Veg Digital Challenge was designed to test whether small, low-cost changes in store could increase vegetable purchasing – without discounting or undermining product value.

A central feature of the trial was the introduction of per-serve pricing. Alongside the traditional price-per-kilogram, vegetables were displayed with a price per recommended serve (75 grams), helping shoppers quickly understand both value and dietary guidance at the point of purchase.

Importantly, this was not a promotion or price cut. It was about reframing value.

Research led by Monash University, in collaboration with Deakin University and Ritchies, analysed loyalty card data before and after the change. The results showed average daily vegetable purchases by semi-regular shoppers increased by 46.3 grams (a 25.7 percent lift), while purchases by less frequent vegetable shoppers increased by 60.6 grams per day (a 28.4 percent lift).

For growers, this distinction matters. The largest increases came from shoppers who were not already heavy vegetable buyers, meaning overall demand grew rather than simply shifting between customers.

Chris Jonker from Ritchies Supermarkets said the trial highlighted the value of testing behaviour-change ideas where decisions are made.

"Retail is where food decisions actually happen. Through the Veg Digital Challenge, we've seen how small, practical changes in-store can help shoppers better understand the value of vegetables and choose them more often. Partnering with AUSVEG and researchers allows us to test what works and generate insights that can be scaled."

What this means for growers

Taken together, these initiatives point to a clear direction for the industry.

First, increasing vegetable consumption doesn't require discounting or short-term price tactics that erode value. Clear messaging, smarter framing and better information can lift demand in a more sustainable way.

Second, growers don't have to carry the consumption challenge alone. Retailers, media owners, health agencies and researchers all have roles to play – particularly in the environments where choices are made.

Finally, evidence matters. Trials like the Ritchies Veg Digital Challenge provide credible data that can be used to engage other retailers and government, strengthening the case for scaling what works across the system.

Part of a broader national strategy

Both Fresh Veg, Deliciously Affordable and the Ritchies Veg Digital Challenge sit within AUSVEG's Plus One Serve by 2030 ambition to increase vegetable consumption by one extra serve per person per day.

Plus One Serve brings together growers, retailers, researchers and health partners to apply evidence-based behaviour-change strategies at national scale. Outdoor media builds awareness and normalises vegetables in everyday life, while retail trials help convert that awareness into purchasing.

For growers, the message is clear: coordinated action is underway across the system to strengthen demand for Australian-grown vegetables – today and into the future.

Above L-R. Elizabeth McIntyre, CEO, Outdoor Media Association, Dr Robyn Littlewood, CEO, Health and Wellbeing Queensland, Justine Coates, Managing Director, Plus One Serve - AUSVEG, Michael Coote, CEO, AUSVEG. Coolnyynpin State School's Pick of the Crop Program.

MORE INFORMATION

Connect with the program team, visit plusoneserve.com.au | info@plusoneserve.com.au

This project has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government.

Project Number: VG23016

Hort Innovation VEGETABLE FUND

FERRARI GROWTECH TWISTWEED AI

AUTOMATIC INTER-ROW AND INTER-PLANT HOE

The **Ferrari Growtech Twistweed AI Automatic Inter-Row and Inter-Plant Hoe** is perfect for vegetables such as lettuce, cabbage, broccoli, chicory and cauliflower, with a **leaf width between 3 and 21cm**.

The Twistweed AI only **requires one person** to operate and can weed, on average, **13,000 plants per hour.**

With both **single bed** and **multi bed** frame options, and **three point hitch** and **self propelled** models, you can choose the one that best suits your needs.

The **minimum inter-row spacing is 23cm** and the **minimum in-row spacing is 10cm**.

The **main equipment** for the Twistweed AI includes:

- vision system with Artificial Intelligence
- hydraulic side shifter
- hydraulic circuit automatic management
- fertilizer applicator
- machine control from tablet

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*pictures for illustrative purposes only

Postcard from California

WHAT CAN AUSTRALIA'S BABY LEAF INDUSTRY LEARN FROM THE BIG PLAYERS

The recent 11th International Spinach Conference in Monterey, California, offered a unique opportunity to not only learn the latest research, but also observe the US baby leaf industry first-hand with site visits to growers, processors, seed companies, and research institutions.

California is the epicentre of global baby leaf spinach and salad production, where scale is a defining feature and the industry operates with a distinctly North American 'go big or go home' mindset.

Fitting also that the home of Popeye, an enduring symbol of spinach's place in popular culture, leads the country, and possibly the world, in production intensity, research investment and regulation.

Observations from California offer useful context for our own industry, highlighting areas where current approaches appear effective, while also drawing attention to emerging issues that warrant ongoing monitoring and collaboration.

Stuart Grigg and Dr Len Tesoriero - part of Applied Horticultural Research's (AHR) team on the Hort Innovation project *Addressing challenges in baby leaf production* (VG23014) - attended the conference and associated site visits.

Above. *Figure 1.* Spinach stretching to the horizon at Taylor Farms.
Inset. Dr Len Tesoriero in the field.

Commercial practice
IN CALIFORNIA

Postharvest handling
Visits to commercial operations in the Salinas Valley highlighted the highly integrated nature of the Californian leafy greens industry.

Dole, Soledad

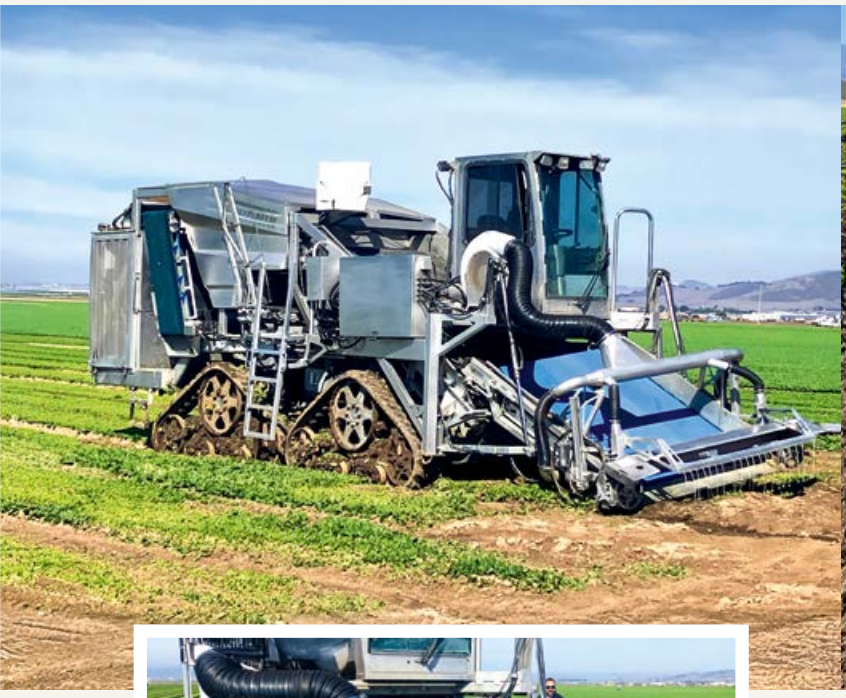
Dole only grow around 35 percent of their own produce, with the remainder sourced from local contracted growers. Spinach is harvested overnight – between dusk and early morning – and into bulk bins fitted with cooling tubes. Slits cut into the tubes increase airflow through the bin, increasing the efficiency of cooling.

Spinach lines generally run during the early morning, processing the product harvested overnight. Softer wash lines are used than for other leafy greens to reduce the risk of bruising. This means spinach can go from the field to bagged product in as little as 12 hours, a much faster turnaround than what typically occurs in Australia.

In contrast, lettuce is harvested from approximately 6am to early afternoon. Interestingly, Dole rinses the cut surfaces in saline water to reduce browning, as this process can remove some of the fluids and latex leaking from the cut surface. Adding salt alters the osmotic pressure in the wash water, which could explain why saline water is more effective.

Following washing, lettuce is vacuum cooled to as close to 0°C as possible. While this temperature risks freezing, minor damage to the outer leaves is considered okay if it helps to maintain the cold chain; frozen leaves are simply removed during processing. The lettuce is sealed in bags flushed with nitrogen, another method used to inhibit browning.

A key postharvest process is the use of variable flow drive vacuum coolers. It has only recently been recognised that rapid vacuum cooling can rupture the leaf cells within relatively fragile baby leaf crops. Slower vacuum cooling rates reduce the risk of damage.



Above L-R. *Figure 2.* Spudnik spinach harvester at Taylor Farms. *Figure 3.* Salanova lettuce is direct sown and machine harvested, ready mixed for processing.

Taylor Farms

The benefits of automation was a consistent theme during site visits, particularly at Taylor Farms. Taylor Farms is a massive operation (*Figure 1*), fully vertically integrated with turnover exceeding USD $7 billion.

Automated broccoli harvesters have been trialled, but, in the end, machines just couldn't keep up with experienced hands in high-density production systems. Skilled contract crews still outperform the robots.

Spinach, on the other hand, is an excellent candidate for mechanisation. Advanced harvesters and on-board sorting systems reduce the need for human hands without compromising quality.

Taylor Farms uses Spudnik spinach harvesters (*Figure 2*), incorporating:

- Air assistance at the front of the harvester to move spinach onto the belt, reducing both leaf damage and wear to the bearings
- First airbridge very early in the process, to remove contaminants
- Mesh belts that spread leaves to prevent bruising
- On-harvester vision sorting systems that eject damaged leaves and contaminants using a finger knock-out mechanism.

Rava Ranches

A visit to family owned and operated Rava Ranches further highlighted the scale and complexity of leafy vegetable production in the Salinas Valley. Crops include lettuce, brassicas, chard, mesclun, garlic and capsicums as well as spinach, with the majority planted directly from seed (*Figure 3*). Every week they sow roughly 150 acres of organic and 200 acres of conventional spinach. The annual seed bill alone can top USD $41 million.

Rava Ranches have a strong emphasis on soil health. Rather than using chemical fumigants, broccoli is grown for both its commercial value and strategic use as a cover crop. To reduce soil-borne diseases, the plants are mulched and incorporated into the soil within 24 hours. Annual applications of gypsum and lime, along with sulphur and calcium, also help maintain soil health and reduce tip burn.

While crop rotation and careful management reduce pests and disease, diamondback moth remains a challenge. Damping off is also an issue for spinach, especially in warmer weather. Aerial sprayers have been replaced by more precise ground rigs, and mustard cover crops are often grown before spinach to reduce damping off issues.

Irrigation is another tool used to manage disease and maximise spinach quality.

While three irrigations are used to germinate the crop, irrigation is then withheld for seven–10 days, driving the roots deep underground. Irrigation resumes once the true leaves start to emerge. While they try to avoid crops getting *steamy*, extra water may be needed during hot afternoons, simply to cool the crop.

Irrigation water is either pumped directly from bores or put into a storage dam. Like all of the local salad producers, there is a high level of consciousness about food safety and, therefore, the importance of clean irrigation water.

Figure 4. Plastic-lined and fenced dam, covered with floating balls (to prevent birds settling as well as reduce water loss). Water is chlorinated to drinking quality before application to salad crops.

Conference highlights: Research, regulation, and challenges

The 11th International Spinach Conference included a terrific field day, with a huge range of different varieties on show (*Figure 5*). There were cultivars to suit different climates, with flat to full savoy, round or pointed, various shades of green and a range of resistance packages.

To prevent contamination, the storage dams are covered with a layer of floating plastic balls (reducing evaporation as well as preventing birds landing) (*Figure 4*). In addition, the water is pH balanced and treated with chlorine before use, and at the end of the season each dam is emptied and the plastic liner cleaned to remove accumulated dirt.

As another food safety measure, products are tested for microbes before harvest. While expensive, the costs of previous food safety outbreaks make this extra level of testing a worthwhile investment.

The farm has no less than twelve baby leaf harvesters, but all cooling is done at local processors. They therefore rely on fast turnaround times to maintain quality.

Industry research priorities

Jennifer Clarke, Executive Director of the California Leafy Greens Research Board, gave a compelling overview of the challenges and research priorities shaping the spinach industry.

The Board spends more than USD $1.3 million annually on research, of which the bulk (62 percent) is spent on plant breeding and genetics, followed by disease management (23 percent). It was interesting to see that only two percent and three percent of the budget are spent on entomology and IPM respectively, despite the growers noting major challenges with diamondback moth.

Weed science – which must surely be one of the biggest challenges for Australian baby leaf growers – only receives one percent of funds. Presumably the dry conditions mean weeds are less problematic. Weed management in Californian systems is increasingly high-tech, with laser weeders and solarisation joining traditional cultural approaches.

Despite many challenges, the Californian industry certainly isn't standing still.

Jennifer highlighted broader trends that are reshaping production, including a growing appetite for organic produce, ongoing trade uncertainty with Canada and Mexico, and the increasing role of robotics and AI in the field and packing shed.

With roughly 64 percent of California's leafy greens now grown organically, she emphasised that understanding organic-specific pest and disease pressures is no longer optional, it's central to maintaining both yield and market access.

Left. Stuart Grigg part of the Applied Horticultural Research's (AHR) team in the field.

Disease management

In the past, downy mildew was absolutely front of mind when it came to disease of baby spinach. However, a number of presenters described how downy mildew pressure has eased in recent years thanks to resistant varieties.

According to Diedrick Smilde (from the International Working Group for *Peronospora effusa*), spinach varieties typically have commercial lifespans of eight–16 years. However, they may be replaced sooner if new races of downy mildew emerge or industry and consumer preferences shift.

While the resistance packages are currently holding up, Professor Jim Correll (University of Arkansas) described how he uses 'sentinel' spinach crops in key growing areas as bait for any new and emerging pathotypes. This proactive approach offers early warning and can inform management decisions.

Official recognition of new downy mildew races is a meticulous process, requiring validated virulence patterns and submission of type isolates to the International Working Group for Peronospora (IWGP).

Beyond downy mildew, other emerging risks were discussed. White rust (white blister) has become a growing biosecurity concern (*see page 43*).

Stemphylium leaf spot varies between regions in terms of species' dominance. There are also marked differences in sensitivity between cultivars. In the USA, *Stemphylium* is most likely during warmer seasons, with symptoms initially visible on the cotyledons.

According to Dr Lindsey DuToit, resistance to Group 11 (strobilurin) fungicides has emerged in some *Stemphylium* isolates. These were highly effective when initially tested in the early 2000s and while some studies indicate that pyraclostrobin is more effective than azoxystrobin, effectiveness is declining. The work therefore highlights the need for continual monitoring, rotation of key fungicides and adaptive disease management strategies.

However, the major pathology issue now facing growers is damping off, largely due to *Pythium uncinulatum*. A recent review estimated that losses from this disease are between USD $47–$77 million in the Salinas Valley alone.

Above. *Figure 5.* A major field day was held as part of the conference, showcasing a huge range of different spinach varieties.

Figure 6. Even the immaculately cultivated and groomed field day crops were developing a few leaf spots (cause possibly *Stemphylium* or a *Pseudomonas* bacteria).

JP Dundoer-Arias from California State University has been studying the interaction between pythium root rot in lettuce and the tospoviruses Impatiens necrotic spot virus (INSV) and Tomato spotted wilt virus (TSWV). He has found that INSV infection (due to thrips infestation) greatly increases the severity of root rots.

Dr Len Tesoriero has observed the same interaction between TSWV and root rot in hydroponic lettuce growing in the Sydney Basin. While the culprit here was *P. dissotochum, P. uncinulatum* is associated with root rot and wilt of lettuce in Victoria. It seems likely that plants are already weakened by *Pythium* infection before the virus arrives. As the virus reduces root development, the plant collapses and dies.

Food safety

Food safety was a central theme throughout the conference. Ramy Colfer from True Organic Products noted that spinach recently topped the infamous 'Dirty Dozen' list, a result of violations in legal pesticide residue limits and food safety microbial contamination. Felice Arboisiere, Director of Food Safety and Quality Assurance at Dole, Monterey also emphasised how the legacy of the 2006 *E. coli* outbreak still shapes industry practices today.

Growers have implemented rigorous measures to safeguard leafy greens, including agricultural water assessments, proactive wildlife and livestock risk mitigation, and field-by-field microbial sampling before any harvest is approved.

Of particular concern is *E. coli* O122, which is emerging as an even bigger risk than *E. coli* O157.

Presentations also noted the importance of using clean water, both for irrigation and postharvest washing, avoiding contamination with soil amendments and considering the potential for cross contamination at harvest, during packing, and even in cold storage.

Soil and nutrient constraints

Soil and nutrient management also featured prominently, with Richard Smith (University of California) presenting insights on cadmium uptake in spinach. Spinach, it turns out, is particularly adept at absorbing cadmium (Cd), as roots mistake it for zinc. In areas affected by recent floods, sediments deposited on fields have increased soil Cd levels. As Cd is a heavy metal, this potentially creates a food safety issue.

However, there are a number of strategies growers can use to reduce risk:

- Amend soil with zinc (competes with Cd for uptake) (*Figure 7*)
- Lime soil to increase pH to >7.0, reducing Cd solubility
- Add compost to immobilise Cd
- Choose varieties with low Cd uptake
- Use irrigation water with low chloride levels.

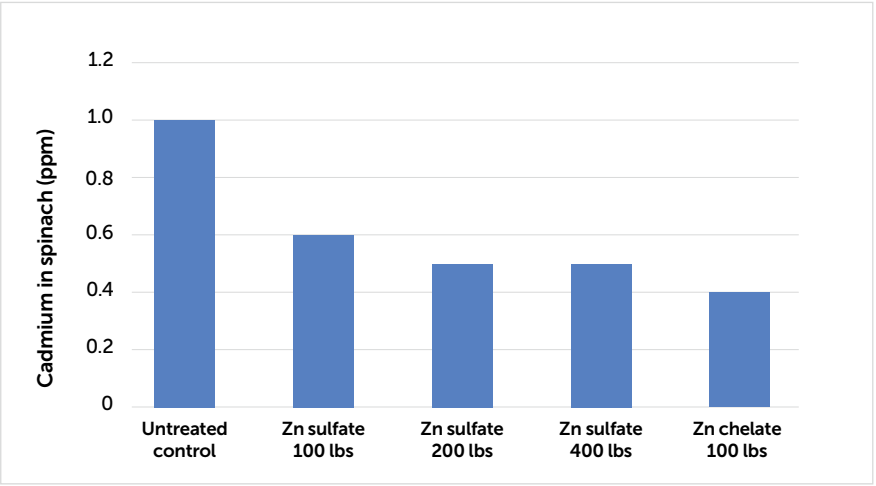


Figure 7. Effect of zinc fertilisation on cadmium uptake by spinach. Soil contained 2.4ppm cadmium. Data presented by Dr Richard Smith, University of California, Monterey.

Nitrogen management was another key focus. Breeding efforts are increasingly aiming to improve nitrogen-use efficiency, supporting productive crops while reducing environmental losses.

Developing varieties suited to low-N systems is emerging as an important priority, linking genetics, soil science, and crop nutrition to the wider goal of sustainable baby leaf production.

Growing in the cold

Susan Scheufele from the University of Massachusetts Extension gave an intriguing glimpse into the niche spinach industry in New England, where spinach is grown in polyhouses.

This product is largely sold in local supermarkets and farmers markets, appealing to consumers willing to pay a premium for fresh greens when snow blankets the region.

Interestingly, spinach actually becomes sweeter when exposed to cold temperatures - a quirk that New England growers and consumers have embraced.

Summer cover crops are strategically planted to set up winter production, maximising yield per dollar in the off-season and ensuring a steady supply of high-quality spinach throughout the colder months.

Take-outs for the Australian industry

Spinach farms in the USA really are next level mind-blowing. The scale of operation, investment involved, and volumes processed are hard to get your head around. Despite this, farmers in the USA have more commonalities with Australia than differences.

Increased labour costs (especially in California) are boosting automation, with increasingly sophisticated management of everything from soil health to harvest method.

Disease management is also a major concern. While downy mildew can mostly be managed through variety resistance and the use of crop protectants – both in the USA and here in Australia – damping off pathogens have taken its' place as the most challenging issue commercially. Emerging issues with white blister are also one for Australian growers to watch. Understanding how the USA industry manages this disease will prove vital if this potentially seed-borne pathogen arrives here.

The emphasis on food safety is also relevant here as there. With our own previous issues in this space, it is useful to see what strategies American growers use to further reduce risk of contamination within supply chains.

All in all, the conference was a useful and enlightening event, and one that that will definitely help guide activities within our project VG23014 *Addressing key challenges in Australian baby leaf production.*

The *Addressing key challenges in Australian baby leaf production* project is funded by Hort Innovation, using vegetable research and development levies and contributions from the Australian Government.
Project Number: VG23014

Hort Innovation VEGETABLE FUND

White Blister (White Rust) of spinach

A BIOSECURITY RISK FOR AUSTRALIAN BABYLEAF GROWERS

BY DR LEN TESORIERO

White Blister (WB) of spinach is caused by a fungal-like oomycete, *Albugo occidentalis (Ao)* and occurs widely in eastern USA as well as several countries across Europe and Asia. It is closely related to the organism which causes WB disease on brassica vegetables and canola. It is also related to the pathogens that cause downy mildews, and soil pathogens such as *Pythium* and *Phytophthora* species.

Unlike downy mildew, there are no commercial varieties of spinach with full resistance to WB. It causes yellow leaf lesions with glassy white pustules. These mostly form on the undersurfaces, frequently having a concentric ring pattern (*Figure 1*). White pustules sometimes also occur on the upper leaf surfaces and on petioles.

The WB causal agent (*Ao*) can also infect some *Chenopodium* species (e.g. fat hen). However, it does not attack related crop plants such as beet and chard.

While the disease cycle of WB is very similar to that of the downy mildews, it is still not completely understood. Sexual resting spores (oospores) form on diseased tissue. These can remain viable in the soil for years. It is also reasonably likely that oospores can spread in or with seed at a low frequency, although the disease is not known to be seed-borne.

Once infection has occurred, the formation of white pustules signals the development of masses of oval-shaped sporangia. These spread to other leaves by wind, rain and insects.

Sporangia germinate in high humidity (RH>95 percent) and at temperatures between 12-22°C. They produce small, fluid filled sacs, inside which zoospores form. When these burst, the released zoospores swim through the moisture films in soil or on plant material in search of new hosts.

On encountering a suitable host, the zoospore forms a thickened membrane and germinates, infecting the plant through its' stomata. As every pustule produces vast numbers of sporangia and zoospores, infection can spread extremely rapidly, especially under wet conditions.

As WB is closely related to downy mildews, the chemicals for control are similar. Some weather-based models have been successfully used in the US to reduce chemical applications while still maintaining disease control.

Figure 1. White blister pustules on the underside of a spinach leaf.

WB of spinach is not currently found in Australia. However, the lack of resistance and limited effective chemical controls mean it would be difficult to control. Moreover, as it is potentially seed-borne, it is essential to remain alert for this potentially damaging exotic pathogen.

Optimising nitrogen with cover crops

OAKDALE (NSW) DEMONSTRATION SITE UPDATE

A year of trials at the Soil Wealth and Integrated Crop Protection (ICP) Oakdale demonstration site is testing how legume and cereal cover crops, combined with reduced tillage, can better align nitrogen release with brassica crop demand - cutting inputs, improving efficiency, and delivering practical benefits for growers.

It was a busy year at the Soil Wealth and ICP project Oakdale demonstration site, which aims to explore how legumes can be effectively used to supply nitrogen to a brassica crop.

Steph Tabone (Applied Horticultural Research), who is leading trials at this site with grower Phil Bartolo, is putting theory into practice to test whether it is possible to align the nitrogen release from cover crops with the crop's nitrogen demands.

"This trial combines many things, including cover crop management, termination methods and soil preparational with the aim of optimising nitrogen cycling and reducing inputs," Steph said.

Above. Cover crop residues; Faba bean and oats (left), fallow (middle), oats (right) May 2025.

Overview and objectives

At the Oakdale site, the team has been testing three cover crop treatments - straight oats, a mix of oats and faba beans, and a bare fallow control.

Cover crops were terminated using a combination of herbicide at flowering stage and rolling/crimping down of the biomass.

To prepare the beds to the brassica cash crop, three approaches have been tested:

- Speed discing
- Strip rotary hoeing
- Full rotary hoeing,(the control).

These methods were selected to balance the goals of reduced tillage to support soil health, while providing practical benefits for the grower, including time savings, lower diesel use, reduced spraying for weeds and decreased tractor maintenance costs.

Seven treatments are being tested:

1. Fallow + speed disc (the control)
2. Faba and oat cover crop + speed disc
3. Faba and oat cover crop + strip rotary hoe
4. Faba and oat cover crop + full rotary hoe
5. Oat cover crop + speed disc
6. Oat cover crop + strip rotary hoe
7. Oat cover crop + full rotary hoe.

Trial activities to date

Activities at the Oakdale demonstration site began in May 2024, with soil nutrient and biology assessed prior to planting the cover crops in August 2024. Biomass assessments of the cover crops were conducted in November 2024, followed by termination of the cover crops in December 2024 using a combination of roller crimping and herbicide application.

Soil available nitrogen (ammonium and nitrate) was monitored throughout the year to track changes as cover crop residues decomposed. Above-ground cover crop residues were also measured for quantity and quality during the same periods to investigate residue breakdown over time.

In June 2025, soil was prepared using the three different bed preparation methods, with reduced-tillage approaches such as the speed disc and strip rotary hoe offering faster tractor operation and lower input costs compared to full rotary hoeing. Cabbage was transplanted into the prepared beds soon after.

Further soil assessments conducted mid-year measured soil hardness, water infiltration, and bulk density at 10 cm and 30 cm depths.

Cabbage tissue testing in September 2025 monitored nutrient status, with a focus on nitrogen, alongside measurements of soil water infiltration. Post-harvest soil tests and crop yield data were collected in mid-November 2025.

Fertiliser was applied following the grower's standard practice, with a base application at planting, and side dressing at five weeks after transplanting and again at the pre-heading stage.

EARLY RESULTS AND INSIGHTS

Cover crop performance

Before termination, the faba bean and oat mix contained 217 kg N/ha in above-ground biomass, while straight oats held 156 kg N/ha. Following termination, soil available nitrogen ranged from 17-24 kg N/ha across the treatments in December 2024 but decreased to 5-7.5 kg N/ha by May 2025, six months after residues were left on the surface.

> Cover crop residue biomass and nitrogen content declined significantly over this period.

The cabbage crop

The cabbage crop performed very well across all treatments, with only subtle visual differences.

Tissue testing at the pre-cupping growth stage indicated adequate nitrogen levels in all treatments, although slightly lower total nitrogen was observed in cabbages planted into strip rotary hoe beds.

> Yield data were relatively consistent, with the highest average head weights recorded in the faba-oat cover crop planted on speed-disc-prepared beds.

L-R. Bulk density assessments, March 2025. Cabbage under faba oat full rotary hoe treatment, July 2025.

Inspecting crop roots, September 2025.

Team planning and professional development

In January, the team held a two-day planning session to ensure the Soil Wealth ICP project continues to deliver value for vegetable growers in 2026. The team focused on the demonstration sites, events and training, resource development and communications activities, and explored four focus topics for the coming year.

They include:

- **Soil health:** Biology and microbiome
- **Crop health:** Integrated pest, disease and weed management
- **Input use:** Waste
- **Carbon and climate:** Resilient production systems.

The team also visited the Oakdale (NSW) demonstration site hosted by Phil Bartolo, which is focusing on optimising nitrogen supply for a brassica crop through strategic use of legume and cereal cover crops.

The field visit included a technical training session on nutrient management with agronomist Mike Titley – find his tips for cabbage plant tissue sampling on the Soil Wealth ICP website.

Cost and efficiency gains

While crop performance and yield were similar across treatments, the greatest benefits have come from reducing tillage through speed disc use. This method has saved time, reduced diesel consumption and decreased tractor wear compared to conventional rotary hoeing.

Using cover crops and terminating them with roller crimping (leaving residues on the surface) has also reduced the grower's herbicide use by 50 percent, as cover crops suppressed weeds and reduced tillage minimised soil disturbance, limiting weed seed germination.

Nitrogen dynamics and other lessons

Monitoring nitrogen levels after roller crimping showed a gradual decline in soil and residue nitrogen between December 2024 and cabbage planting in June 2025. In response, grower Phil has experimented with mulching and incorporating cover crop residues 4–8 weeks before planting, rather than leaving residues on the surface for 6–12 months, to better optimise nitrogen.

Early attempts highlighted challenges incorporating the high biomass using a speed disc, prompting adjustments. Residues are now mulched, left to decompose slightly, then incorporated.

The next steps will involve optimising the timing of mulching, incorporation and planting to further improve nitrogen use efficiency.

"Once this is better understood, we can perhaps reduce base fertiliser nitrogen to account for nitrogen supplied by legume cover crops," Steph said.

"A full analysis of soil hardness, bulk density, water infiltration, crop yield and economic outcomes is currently underway."

"We look forward to getting a clearer picture of what is working best for the grower, including an economic and soil health analysis."

An in-depth case study will be prepared and published on the Soil Wealth ICP website, providing further insights and recommendations for growers.

Acknowledgements

The team extends its thanks to grower Phil Bartolo for his engagement and ongoing efforts to host the demonstration site.

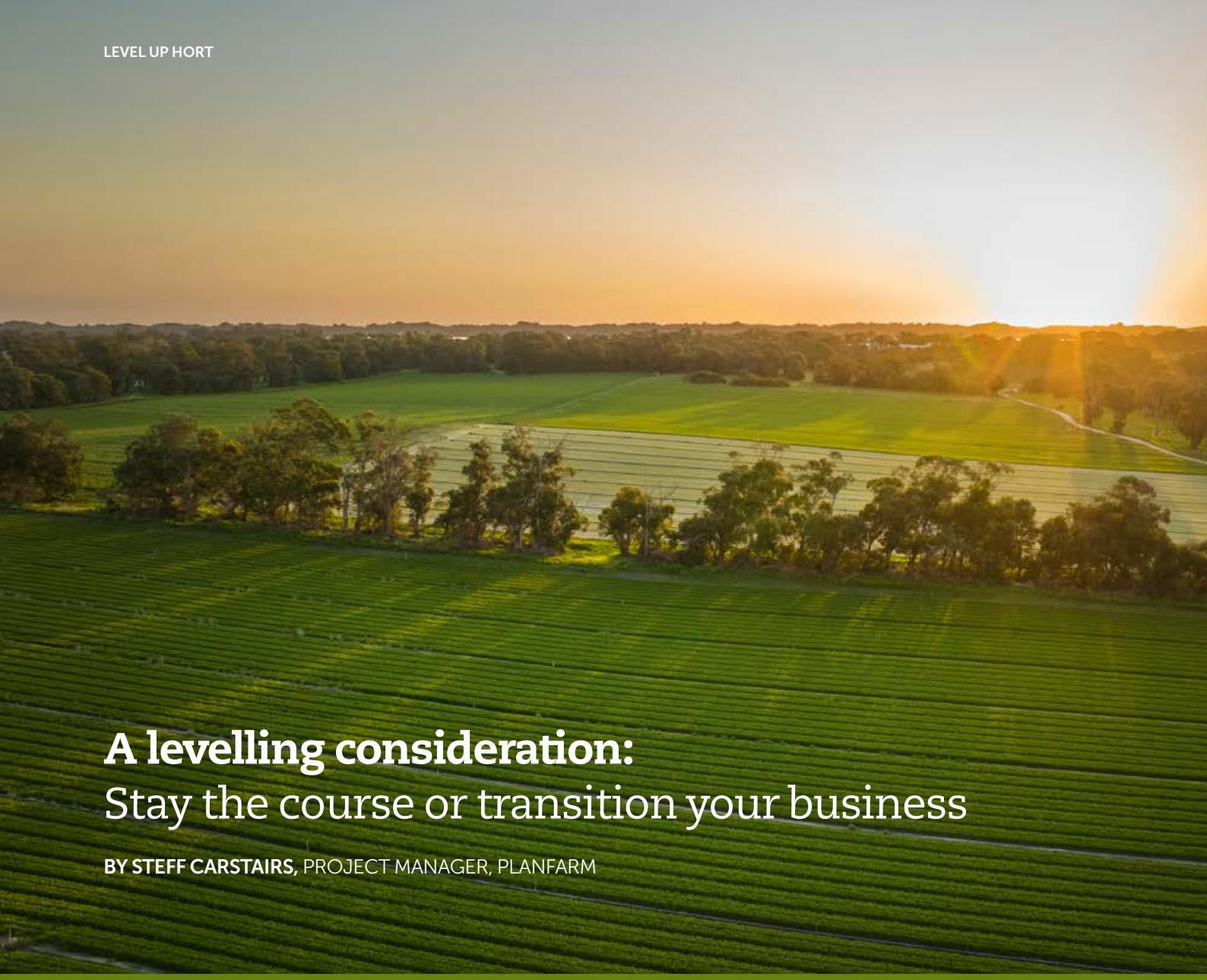
FIND OUT MORE

The *Soil Wealth and Integrated Crop Protection* (Soil Wealth ICP) project provides research and development (R&D) extension and communication services on improved soil management and plant health to the Australian vegetable and melon industries.

For further information, contact project leaders
Dr Gordon Rogers | gordon@ahr.com.au and Carl Larsen | carll@rmcg.com.au

This project has been funded by Hort Innovation using the vegetable and melon research and development levies and contributions from the Australian Government. **Project Number: MT22004**

Hort Innovation VEGETABLE FUND Hort Innovation MELON FUND



A levelling consideration:
Stay the course or transition your business

BY STEFF CARSTAIRS, PROJECT MANAGER, PLANFARM

With rising costs and declining margins, would you be confident deciding whether to hold on and navigate stormy waters, or change tack and enter your business into a transition phase?

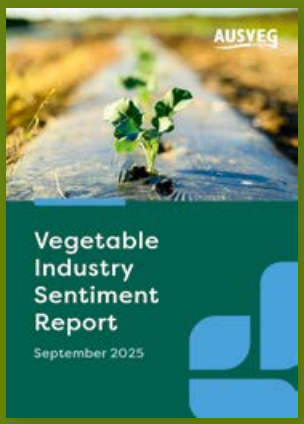
The 2025 AUSVEG Sentiment Survey indicated that 40 percent of vegetable growers across Australia planned on exiting vegetable production in the next twelve months. That is two in every five growers, an alarming number.

Decision-making isn't easy at the best of times, but when you and those around you are under incredible stress and work-load, at what point do you call it, and how do you remove the emotion to ensure that you are making the right decision for you, your family, and your business?

The Level Up Hort program is designed to provide vegetable producers with an advisory service to assist business owners and managers. Our role as advisors is to use your data to support complex decision-making through understanding what's really going on behind the numbers and to inform in an independent and unbiased way.

Our role is not to tell you what other growers are doing - that goes against everything we stand for - but there is a degree of high-level knowledge that the advisor brings to the table to guide the diagnostic process and establish a path forward to provide a stronger footing tailored to you and your business.

These elements are outlined on the following pages.



You may find that you have a profitable business that requires some adjustments to improve cashflow and efficiencies to get through these challenging periods, rather than an exit strategy.

Understand your true position

Knowing your true financial position is an important first step in moving you closer to confident decision-making. There are a number of key ratios that measure business performance and looking at these within a historical context allows you to assess whether this is a trend or a one-off occurrence.

These include:

- Operating profit, measured as Earnings Before Interest and Tax (EBIT) per hectare ($/ha)
- Profit Margin (EBIT Margin), expressed as a percentage, reflecting income relative to expenses
- Return on Assets Managed (ROAM), expressed as a percentage, reflecting return on investment
- Equity, expressed as a percentage, relevant to those who own the land that they farm, reflecting balance sheet strength.

Tracking these ratios and understanding them within the context of your own business is key to gaining a sound knowledge of your financial position and your business resilience – the ability to withstand shocks, adapt and continue to move your business forward.

Diagnostic techniques

Benchmarking your figures against other vegetable businesses enables you to gain further insight into your financial position – are your costs higher or lower than other businesses, is your income average or below that of other businesses, or are some cost lines blown out?

No one's figures line up exactly with the benchmarks, but the comparison highlights areas where your business varies considerably and where there may be opportunities to gain some ground on efficiency and productivity. Just as a soil test highlights which nutrients need addressing, benchmarking spots areas that need attention.

Looking at your figures with an external advisor can help identify what the real issues are within your business and help explain the 'stories behind the numbers' to draw out any issues that might be lurking below the surface. Without that they are just numbers on a page, and it is the knowledge and understanding of your business which helps advisors and other professionals supporting your business to tailor advice and tools specifically to meet your business needs, and to be able to advocate on your behalf. Ultimately, we are all there to gain a better outcome for you and your business.

Consider options

Once you have established your true financial position, and looked at what's driving the numbers, you can then consider whether to sail on, or chart a different course.

There are a number of factors to take into account:

- Are you willing and able to address the issues that have risen to the surface?
- Do you have, or can you tap into alternative income streams?
- Do you have the resources (finances and skills) or desire to transition into another enterprise or income stream?
- Is the risk versus reward adequate for what you are doing and, if not, what can you do to manage it?
- Is everyone on board and aligned with the direction of the business?

No matter which direction you decide to take, you don't have to face it on your own. Reaching out to a trusted advisor – whether that's your accountant, bank manager or farm consultant – can give you the clarity and confidence you need.

Take the first step and ask for support. The right guidance can make all the difference for you and your business.

Hort Innovation VEGETABLE FUND
Hort Innovation ONION FUND

FOR MORE INFORMATION

Please contact Level Up Hort Project Manager, Steff Carstairs
0428 712 852 | steff@planfarm.com.au | leveluphort.com.au

The *Level Up Hort* project is funded by Hort innovation using the vegetable and onion industry research and development levies and contributions from the Australian Government. **Project Number: MT22009**

CASE STUDY

Twin Lakes – *the decision to leave*

Twin Lakes grew their last crop of broccoli in 2025.
It wasn't an easy decision to transition out of vegetable growing.

Here's what Bradley had to say:

How did the numbers presented in Level Up Hort program help you better understand your financial position?

We had been considering a change in direction, but they solidified the gut feeling that I had for a while, and presented the numbers in an impartial way with objective analysis. We weren't the worst in the benchmarks, but we made the decision to exit because we had been considering a change in direction anyway.

What options did you consider?

We were specialist growers, we only grew one crop line and weren't in the market all year round. We looked at scaling up and growing multiple lines, but this would require growing in different regions, and we are a small family business, which meant spending time away from home or splitting the family up. I like working alongside my parents and kids, so we chose lifestyle over scale and were fortunate that we could transition to tree crops which suited.

What advice did you seek?

My bank manager, my bookkeeper, and another grower all pointed me to the Level Up Hort program and advised me to give it a go to gain a better knowledge of my business. Sometimes it's hard to know which way is the way forward, and you have to understand your own situation and how it relates to your business and your market, your buyers, and make decisions based on data, not gut feel.

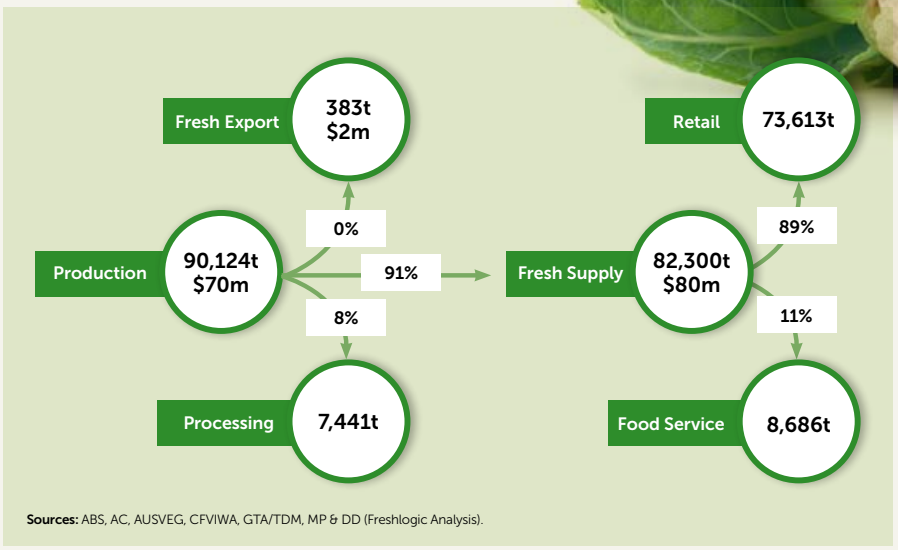
What advice would you give other producers?

Don't be afraid to change, take the time to stop and look up over the roo-bar so you can see where your business is headed, find the right people to talk it through and consider what sort of business are you handing on to the next generation. What sort of business do you want them to inherit?

VEGETABLES

COMMODITY PROFILE

Cauliflower



Sources: ABS, AC, AUSVEG, CFVIWA, GTA/TDM, MP & DD (Freshlogic Analysis).

This information is from *Hort Stats Handbook* released in February 2025, unpacking the cauliflower sector performance during the financial year of 2023/24.

44% of cauliflowers are grown in Victoria

54 percent of all Australian households purchased cauliflower at least once, reaching a three-year low.

- Cauliflower purchase volumes remained stable, with an average of households buying 400g each time.
- Supermarket sales declines stemmed from the loose format dropping -9.7 percent of the kg share, while prepackaged cauliflower rose 9.8 percent in kg share.

Source: NielsenIQ Homescan for the 52 weeks ending 02/11/2025 for the Australian market.

Average retail price per kilogram increased
+2.5 percent to $5.68/kg
slightly behind the market average at +3.9 percent.

The *Australian Horticulture Statistics Handbook 2021-22 to 2023-24* project has been funded by Hort Innovation using multi-industry research and development levies and funds from the Australian Government.
Project Number: MT21006

The *Consumer Behavioural Retail Data* project has been funded by Hort Innovation using multi-industry research and development levies and contributions from the Australian Government.
Project Number: MT21004

Hort Innovation

Timorese PALM scheme workers bring benefits to Aussie farms

At Three Ryans Farm in Manjimup, Western Australia, owner Jake Ryan is solving his labour shortage problem by hiring Timorese workers on the Pacific Australia Labour Mobility (PALM) scheme.

"We've got a 200 hectare property. We do horticulture and also have sheep, cows and do a little bit of agritourism," he said.

"We've found PALM scheme workers to be more effective than backpackers for the simple fact that they are here to make money and send out money home to family, community."

Most of Jake's workforce comes from just a short flight north of Australia - Timor-Leste - a nation rich in culture and its people even richer in resilience.

"We've now had the same crew this third season. It means that when they return each year, they don't need training."

Proximity makes Timor-Leste a natural partner for Australia's farming sector, with thousands of Timorese currently working through the PALM scheme, helping to keep farms productive.

The PALM scheme is a temporary work visa which connects workers from the Pacific and Timor-Leste with employers in regional Australia and in food production facing labour shortages.

Australian businesses can employ reliable, productive workers for seasonal roles of up to nine months and longerterm placements of up to four years.

For many businesses, PALM scheme workers have become indispensable - with some Timorese workers completing more than eight seasons.

Since joining the seasonal worker program in 2012, Timor-Leste has expanded its contribution to Australia's essential industries, from horticulture and hospitality to meat processing and aged care.

Back at Three Ryans, workers like Abrao, from Hera in Dili municipality, return season after season. Abrao is now a team leader on the farm.

And for Abrao, it is more than just a job, it's a way to support his siblings through school and university. He's also built a house and is funding small businesses for his family.

Proximity to Australia makes Timor-Leste a natural partner for Australia's farming sector.

"The PALM scheme has changed my life and I'm very grateful for this opportunity," he said.

Last year the Australian and Timor-Leste governments launched a scale-up project to support Timorese candidates interested in joining the scheme. The project focuses on training including English language, worker and family readiness, vocational skills and driving courses.

Timor-Leste is building a pool of about 30,000 work-ready individuals, with over 600 already trained under the scale up project.

With over 20,000 Timorese placements in Australia to date, the PALM scheme has become an opportunity for economic and social empowerment for Timorese as well as a sustainable labour solution for Australian employers.

To learn more visit www.palmscheme.gov.au or contact the Timor-Leste National Directorate of Overseas Employment at enquiries.lsu.tl@gmail.com

PALM
Pacific Australia Labour Mobility

Advertiorial

Current projects

HORT INNOVATION VEGETABLE FUND

Hort Innovation conducts a number of R&D projects funded by grower levies.

Here is a list of some of the projects currently underway.

V Maximising Carrot Packout

VG24007

DELIVERY PARTNER: **DEPARTMENT OF PRIMARY INDUSTRIES AND REGIONAL DEVELOPMENT**

This project is a new initiative designed to help Australian carrot growers reduce losses and deliver more high-quality carrots to market. The project will focus on practical, research-driven solutions that improve packout rates, strengthen profitability, and support the industry's ability to meet domestic and export demand. Funded by Hort Innovation through the vegetable R&D levy and delivered in collaboration with WA DPIRD, the three-year program will combine grower insights, supply chain monitoring, and targeted trials to tackle the biggest challenges affecting carrot quality.

Key activities include identifying priority issues through grower engagement, developing and testing best-practice approaches for production and postharvest storage, and assessing the impact of these strategies on crop quality and farm returns. The project will also deliver a strong extension program - workshops, demonstrations, and digital resources - to ensure growers and industry stakeholders can confidently adopt proven practices. By improving packout and reducing waste, this initiative aims to boost profitability and build a more resilient carrot supply chain for the future.

V Evaluating mechanical harvest solutions in Australia

VG24006

DELIVERY PARTNER: **DEPARTMENT OF PRIMARY INDUSTRIES QLD**

This project aims to support the Australian vegetable industry in addressing rising labour shortages and costs by accelerating the adoption of mechanical harvesting technologies. It will connect international harvesting equipment manufacturers with Australian growers and agribusinesses to ensure machinery is tailored to local production needs. Through regional field tours, workshops, and direct engagement, the project will showcase the scale and diversity of Australia's vegetable industry, encouraging global investment and collaboration in harvesting innovation.

Key outcomes include the development of a harvesting technology roadmap outlining advancements in machinery, farming system adaptations, and economic scenarios. The project will also produce communication materials such as podcasts, videos, and articles to support informed decision-making and technology adoption. Collaboration with the Western Growers Association will provide Australian growers with a voice in global innovation discussions through participation in an International Automated Harvesting Advisory Committee, fostering long-term partnerships and future R&D opportunities.

Current projects

HORT INNOVATION VEGETABLE FUND

V Growing Leaders

VG23009

DELIVERY PARTNER: **AFFECTUS**

This project is developing the leadership capacity of a core group of diverse participants from across the Australian vegetable supply chain and building their capability to transform the Australian horticulture industry through vision, engagement, action, and leadership.

To address these challenges, the project will deliver an annual leadership program, providing participants with training, mentorship, and networking opportunities. It will also facilitate connections with industry stakeholders and promote leadership development beyond the vegetable sector.

The program will include face-to-face training, networking events, industry tours, and mentoring opportunities.

It will also involve alumni from Growing Leaders and other leadership programs, ensuring continuous improvement through regular monitoring and evaluation, and reporting progress and impact at six-month intervals.

The program targets participants from diverse backgrounds within the vegetable industry, with a two-thirds focus on levy-paying growers and one-third from the supply chain.

CODE

O Onion P Potato V Vegetable M Melon

V Guava root knot nematode identification and management

VG23007

DELIVERY PARTNER: **DEPARTMENT OF AGRICULTURE AND FISHERIES QUEENSLAND**

This project is developing rapid diagnostic tools, enhancing targeted surveillance, identifying effective management strategies, and engaging stakeholders for effective guava root-knot nematode (GRKN) management.

The GRKN is a highly pathogenic plant parasite that poses a significant threat to the Australian vegetable industry due to its broad host range and ability to overcome resistance genes in various crops.

In response to these challenges, the project is taking a comprehensive approach that includes the development of diagnostic tools that can quickly detect GRKN in large volumes of samples and conducting targeted surveillance to map the distribution of GRKN and other root-knot nematode species.

The project is also identifying management options, such as resistant cover crops, suitable weed hosts, and potential biological control agents.

A strong emphasis is placed on communication and extension of best practices, fostering collaboration among stakeholders, such as growers, agronomists, and policymakers, while leveraging international expertise to improve awareness of GRKN management strategies.

VEGETABLES
ONIONS

Current projects

FRONTIERS PROGRAM

Hort Innovation Frontiers

VP National Bee Pest Surveillance Program

PH23001

DELIVERY PARTNER: **PLANT HEALTH AUSTRALIA**

This project supports the continuation of the National Bee Pest Surveillance Program (NBPSP), a coordinated, risk-based initiative to detect exotic and regionally significant bee pests.

The five-year program will establish and maintain a coordinated, targeted, and risk-based surveillance program designed to enable the early detection of bee pests across Australia. It will target exotic or regionally significant pests and operate at a minimum of 8 highest risk ports using the most effective techniques for each pest or pest bee target.

The overarching objective is to protect pollination services and grower returns by maintaining Australia's biosecurity status and supporting the resilience of the honey bee sector.

VOPM RD&I Strategy for the Australian Organic Horticulture Sector

LP24001

DELIVERY PARTNER: **SOUTHERN CROSS UNIVERSITY (SCU)**

This project aims to develop a clear, evidence-based Research, Development, and Innovation (RD&I) Strategy for Australia's organic horticulture sector. Designed to guide current and future investors, the strategy will identify key constraints and prioritise opportunities based on potential returns. It will be built through extensive engagement with stakeholders across the organic supply chain, including producers, retailers, and industry bodies to ensure it reflects real-world needs and is both practical and widely supported.

The strategy will serve as a roadmap for future growth, outlining priority areas for investment, implementation plans, and expected outcomes. It will also assess gaps in current RD&I capabilities and propose solutions to strengthen the sector's long-term sustainability and profitability. Through ongoing consultation, industry events, and targeted communications, the project will ensure the strategy is not only well-informed but also actionable - positioning the organic horticulture sector for continued innovation and economic success.

CODE

O Onion P Potato V Vegetable M Melon

VOPM Fresh and Secure Trade Alliance (FASTA)

AM22000

DELIVERY PARTNER: **DEPARTMENT OF AGRICULTURE AND FISHERIES QUEENSLAND**

The Fresh and Secure Trade Alliance (FASTA) sees key Aussie export stakeholders and authorities joining forces to help protect and grow Australia's horticultural exports.

As part of the program, FASTA will also bring a host of biosecurity initiatives that will solidify Australia's strong pest-management reputation for years to come.

Insect pests are a major challenge for Australia's horticultural producers as they impact production and domestic and international trade. Before new trade can commence, trading partners require evidence that Australia's horticulture exports are insect pest free.

The program is focused on two areas:

- **Delivering robust and timely datasets to underpin market access negotiations:** State and Territory governments will work together to standardise their approach to collecting phytosanitary, or pest and disease management, data. This data demonstrates that Australia's produce is pest-free while also ensuring the impact of phytosanitary treatments on fruit quality will be minimised. These datasets will be used to open new export markets for Australian produce, and improve conditions to existing ones.
- **Increasing understanding about fruit fly and other key pests:** A multi-discipline, multi-organisational research team of over 70 scientists from across Australia will be assembled to test new technologies for tracking pests, trapping pests and reducing pest pressure. Through the eight-year program, this will increase Australia's research capabilities in pest management research and facilitate world-class research.

VOPM Reducing on-farm food waste and unlocking its value for grower profitability and sustainability

HN24001

DELIVERY PARTNER: **END FOOD WASTE AUSTRALIA**

Australian horticulture faces significant on-farm food waste, with up to 38 percent of crops lost annually depending on type. This waste sits across not just produce but also water, fertiliser, labour, and land use. Nationally, this equates to one million tonnes of lost produce, worth $2.5 billion, each year.

This project aims to transform this challenge into an opportunity by reducing on-farm food waste and increasing grower profitability. It supports Australia's National Food Waste Strategy and the United Nations Sustainability Development Goal 12.3 of halving food waste by 2030.

The initiative will deliver evidence-based strategies tailored to Australian growing conditions, including a Grower Knowledge Database. With strong grower participation, the project will deliver tools, training, and insights to help growers sell more, waste less, and tap into new revenue streams – ultimately improving sustainability and profitability across the horticulture sector.

onion fund update

This project has been funded by Hort Innovation using the onion research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

Hort Innovation ONION FUND

CASE STUDY

SA onion grower sees major weed control and chemical savings with AI spot sprayer

In October last year, James Smith from Bowhill Produce in South Australia began trialling an Ecorobotix ARA 620 UHP Sprayer equipped with Plant-by-Plant™ Artificial Intelligence on his onion crop, through the VegMech project. He shared his experience with the ultra-high precision sprayer at a field day organised by VegNET and the Queensland Department of Primary Industries, with local growers able to see the machine in action.

Above. James Smith (centre) from Bowhill Produce with the Ecorobotix ARA Sprayer.

Where are you based and what do you grow?

"We're at Bowhill on the Murray River, near Murray Bridge, so about an hour east of Adelaide.

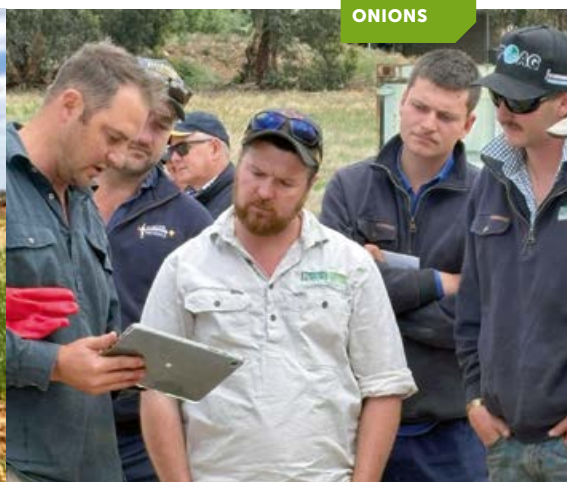
"My grandfather bought the farm in the mid-1960s, and we've grown onions since then, and in the last decade we've also grown carrots. We also do some broad-acre cropping. It's a family run operation. My father took over from grandpa back in the 90s. I've been back on the farm for 12 years or so now, and work with dad."

Can you tell us about the machine you are running trials with and how it works?

"It's an Ecorobotix ARA Sprayer."

"There're cameras which identify what is a crop and what is a weed. Then, depending on what you tell it to do, it will target that specific plant. So, if you're wanting to target grass in a crop, you set it with the algorithm to target specifically grass in an onion crop, or cabbage or whatever you're growing. If you want broadleafs targeted, you can do that.

"If you want to target just the crop with a fungus or nutrient, or something like that, it has the ability to do that too."



How easy is it to set that programming?

"That's the benefit of it. I think it's very user friendly. You don't need to be that tech savvy. Most farmers now have some technology skill because there's a lot more creeping into our industry, but it's very user friendly. So, all of the high-end technical stuff you don't really need to know."

How did you become part of the trial of this program?

"I got a text from AUSVEG, as did other growers in my area, calling for expressions of interest to trial it. I responded expressing interest as I've been looking at this sort of technology for a while."

What has your experience with it been like?

"So along with AUSVEG and the Queensland DPI as part of this I'm obligated to perform a trial as a comparison against conventional methods. So, I selected a one-hectare block for conventional spraying methods, next to a one-hectare block for the spot sprayer.

"The area I did with the conventional sprayer with conventional chemical rates and everything I would do normally before this technology, I didn't actually get weed control for a start. There were a lot of weeds that escaped, which means you're going to lose yield for a start, and lose quality. And the rates you're actually using in carpet spraying will probably reduce yield and quality as well. The crop's still growing so we're still to finally analyse that.

"Where I used the spot sprayer, it was clean as you're not spraying the crop itself, you're just targeting the weeds, and the chemical savings are huge. Initially you'll get savings in your first application or two, but if you're having to go in again, your savings are more. The results were chalk and cheese."

So, it works best when the crop is relatively new?

"It can identify weeds from 2mm I'm told, so you can go in earlier. Because if you're trying to go in with a conventional sprayer you have to wait for the crop to get to a certain stage so that it can survive the herbicide you put on, so it doesn't stunt it too much.

"But with this you can go in earlier and you can go with much higher rates because you're just targeting the weed. The downside is that when the crop's a bit older, if you've got anything that has escaped, you can't really use it for that.

But you're probably not going to have that weed burden late in a crop, because if you've used it properly, you're going to be on top of it all the time."

You hosted a field day last year for local growers. What was the response from them?

"All positive from what I've heard. The retailer who we got it through, the Queensland DPI and AUSVEG all came back to me with very positive feedback. The growers who were there asked a lot of questions and are all very interested from what I gathered. I just think it was an overall good day."

"The retailer was just excited that we could get a commercial size trial for growers to see it firsthand. People will see this machinery at other field days, but to see it on a farm working, where the growers were looking to buy it, were going to use it, it's just a really good opportunity for them."

This seems to be a growing area of technology. As a grower, can you see machines like this becoming more commonplace in the years ahead?

"Absolutely I think it will be. From what I hear from other growers who have been lucky enough to travel to Europe and America, this sort of technology seems to be already there. They might be a bit ahead of us, so I don't see why we wouldn't follow suit. The chemistry we're able to use is expensive, but also things are getting taken off as available to use. Anything that can create efficiencies and better results is definitely going to be palatable for growers going forward. I think definitely in the next five years to 10 years, things like this will be very common."

Above. Ecorobotix Sprayer demonstration at Bowhill Produce.

The demonstration day was organised by VegNET and the Queensland Department of Primary Industries as part of the *Advanced vegetable mechanisation program to maximise labour and cost efficiency* (VegMech) project.

VegMech is funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. **Project Number: VG23003**

VegNET 3.0 is funded by Hort Innovation using the vegetable and onion research and development levies and contributions from the Australian Government. **Project Number: VG21000**

Hort Innovation VEGETABLE FUND

Hort Innovation ONION FUND

Australian onions

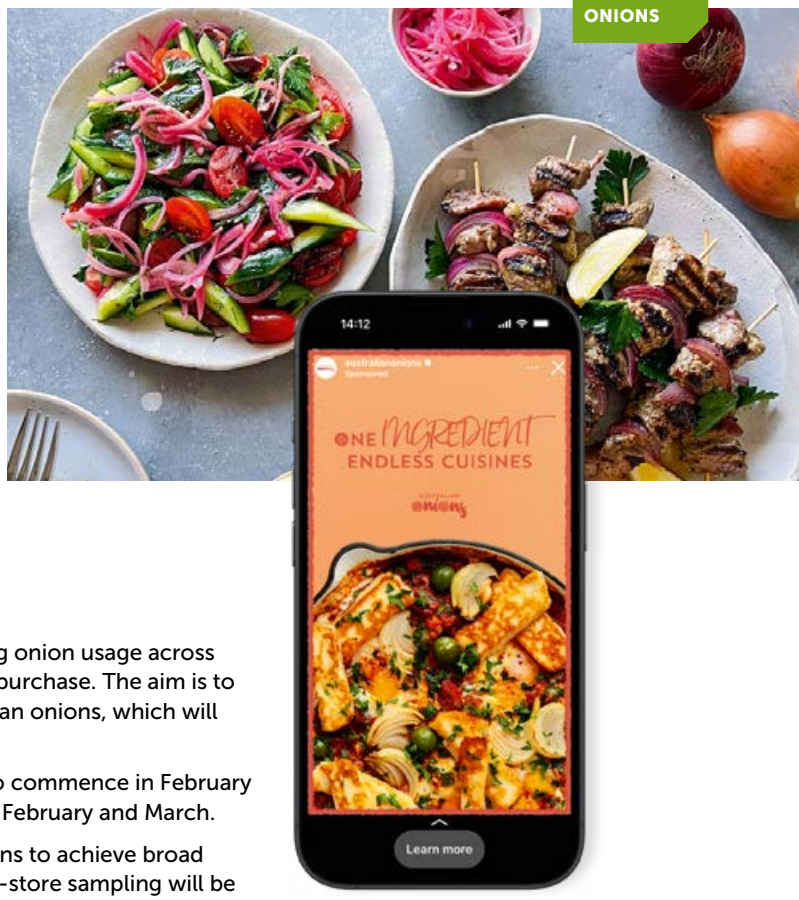
FROM PANTRY STAPLE TO FLAVOUR OBSESSION

BY HORT INNOVATION

Hort Innovation continues to implement a bold marketing strategy aimed at elevating the status of Australian onions from a humble pantry staple to a beloved flavour foundation in kitchens across the country.

Running from July 2025 to December 2026, the campaign is rooted in the strategic investment plan goal of demand creation – supporting the Australian onion industry by developing existing and future domestic markets.

The overarching objective is to drive consumer demand by inspiring Australians to consume more onions, more often. The campaign aims to significantly increase domestic consumption by continuing to position Australian onions as the first ingredient in every meal, building a flavourful foundation for every dish.



INSPIRE

In-Store Sampling Program

One of the pillars of the marketing strategy focuses on inspiring onion usage across everyday meal occasions by driving conversion at the point of purchase. The aim is to showcase the taste, versatility and emotional appeal of Australian onions, which will be achieved through a targeted in-store sampling program.

The first burst of the onions in-store sampling program is set to commence in February 2026, with a total of 130 sessions to be conducted throughout February and March.

The program covers both major retailers and independent chains to achieve broad representation across multiple states. The distribution of the in-store sampling will be as follows: 45 percent held at Woolworths, 45 percent held at Coles, and 10 percent held at independents/green grocers. The allocation of stores across states will be based on population density, store performance and permittance of in-store demos.

The recipes for the first burst will feature brown onions (caramelised brown onion) and red onions (grilled red onion, halloumi and zucchini skewers), encouraging year-round consumption.

The program is designed to physically remind and inspire consumers to choose onions by reinforcing their role in elevating everyday meals and keeping them front-of-mind for shoppers.

CONNECT

Earned Media Activity

As part of the 'Connect' pillar of the marketing plan, Australian Onions will activate an earned media PR spike. The objective is to motivate light buyers who cook 3–4 times per week to always start their meal with an onion.

The earned media activity is designed to drive mass reach by leveraging nostalgia in a timely and culturally relevant way, making it newsworthy to generate media coverage.

This strategy is based on the idea that people love to eat foods that remind them of their past. Nostalgic foods provide comfort and emotional regulation through familiar flavours, while also fostering social connection and strengthening feelings of belonging and community.

In February 2026, Australian Onions will celebrate Valentine's Day through a targeted earned media approach across breakfast TV and lifestyle media. This will drive top-of-mind awareness and make consumers fall in love with the flavour hit of onions.

The storytelling will be led by brand ambassador Mary Kalifatidis, positioning onions as the first ingredient in meals this Valentine's Day. The campaign will drive emotional connection by showing Australians how to cook meaningful, delicious date-night meals at home for your loved ones. This celebration of coming together will spark nostalgic moments only onions can own.

The recipes will also be shared across social media channels to drive further reach and engagement.

Social Media Activity

Paid social advertising is now live across Meta platforms with the intention of building high-reach, top-of-mind awareness.

Australian Onions has partnered with brand ambassador Mary Kalifatidis and various other content creators to create recipes that embed onion cooking into everyday meals. The recipes highlight different onion varietals and deliver key messages around taste benefits, versatility and ease, as well as health benefits. These partnerships will foster authentic conversations and bring both credibility and warmth to the message.

The delicious recipes shared so far include Mary Kalifatdis' (@maryykala) Onion Pie and Dezi Madafferi's (@dezi_cooks) Bolognese. These recipes have successfully generated buzz and reminded Australians that great meals start with an onion.

This project is funded by Hort Innovation, using the onion marketing levy. **Project Number: VN24601**

Hort Innovation ONION FUND

CASE STUDY

Onion study tour shows industry scale in the European Union

In September last year, Lynette and Glenroy Logan joined four other Australian onion growers for a two-week onions study tour through the United Kingdom and the Netherlands.

For Lockyer Valley onion growers Lynette and Glenroy Logan, the 2025 onion study tour to the United Kingdom and the Netherlands was an opportunity not to be missed. "We've always grown onions, and Glenroy is very good at producing a good quality product," Lynette said.

"So, the onions were a thing for us to be following. We've always wanted to go overseas to see farming more than going to cities, so it suited us to go and see what they had over there."

Study tour group

Funded by Hort Innovation (Project VG23002), the tour was one of a number of vegetable and onion industry study tours with the purpose of providing opportunities for growers and supply chain businesses to increase their awareness and knowledge of the research and innovations in the global horticulture industry. This is achieved through visits to strategic vegetable and onion growing regions, conferences, facilities and innovation centres around the globe.

This tour provided the opportunity to see a diverse range of onion-focused businesses, ranging from growers, packers, machinery manufacturers, seed companies and research organisations. The UK and the Netherlands are at the forefront of implanting new technology to increase automation, reduce labour costs, increase efficiency, improve disease management and incorporate digital technologies and AI.

Scale of operations

Both countries are powerhouses of onion production, and the scale of that production was something the Logan's noticed immediately.

"Just the size of the operations," Lynette said.

"We didn't see so much big farms, but we saw big grading facilities, and they had a lot of farmers growing for them and working to produce and send all around the world. I was amazed at the size of the sheds, the size of the packing lines, and they didn't just have one grading machine, some of them had four or five or six machines doing the job.

"Everything's mechanised. And the pack houses themselves are getting to the stage of having limited staff, with robots taking over all the packing roles."

What the Logans saw in Europe is strikingly different to their Lockyer Valley operation.

"We're long-term farmers in the area," Glenroy said.

"My great grandfather came out from Scotland in 1860. In 1869, he selected 300 acres (121.4 hectares) of land here, and we're still farming most of that today.

"I started farming in 1979 with my father, and [when] he passed away in 1999, we took over the farm and [have] been here ever since. 156 years of Logans have been on this property."

In that time the Logans have witnessed firsthand the changes in how farming is practiced.

"You'd be able to drive from here to Gatton, and there'd be twice as many farmers out there as what there is today. The bigger boys have bought up a lot of farms," Glenroy said.

As well as onions, the Logans grow potatoes, pumpkins, lucerne and beetroot, also trying out some other specialist crops too.

But onions remain a major part of the mix. Lynette pointed out, with some pride, that Glenroy is "very good at growing onions".

The Logans decided that seeing how the crop is grown on the other side of the world was too good an opportunity to miss.

"We saw five of the biggest producers and handlers of onions in the Netherlands and the UK," said Glenroy.

"It was just phenomenal that for one packing shed just 20 percent of their onions were sold in the Netherlands. The rest was all exported all around the world.

"They're in a pretty good place where they are, because container ships going backwards and forwards pass them the whole time. One company told us they've worked out it costs just five cents a kilo to send their onions around the world to most of their markets.

"They've got the finances and everything worked out really well."

Glenroy believes much of what they saw would work in Australia, but not at the scale it does in Europe.

"Honestly any of it would work here, but it's on such a grandiose scale over there. Like, we would just want one of those grading sheds to cover everything in Australia."

"You're looking at about half a million tonnes of onions being packed over there and sent around the world. We don't compare to anything like that, so most of it could be introduced here, but on a very small scale," Lynette added.

EU chemical limits

For the tour group there was special interest in how growers in the UK and the Netherlands are controlling weeds and insect pests. There are major restrictions on chemical uses in the European Union which has led to some creative solutions to find alternatives. For Australian growers there are concerns that those EU restrictions will be enforced here in the future, which will end access to the chemicals they rely on to farm effectively.

"There's companies and farms over there working on different aspects of how they treat their ground," Glenroy said.

"More, I guess, organic ways of farming." "We did see a couple of things," Lynette said.

"One was slow moving machines that were zapping a weed with lasers as it went. But that has probably got a massive price tag and at this stage, very few of us could afford one."

But Glenroy learnt about one other pest control solution which is unique to the Netherlands and its geography: "The Netherlands is protected by a huge dike and a lot of it is three, four or five metres below sea level, which is a little bit daunting to think about.

"One farmer we talked to said their biggest pest problem was nematodes. To control them they put galvanised iron walls up all around the paddock and just flood it, and they do that for six months. Just keep it topped up with water. They find that's a good way of getting a result of getting rid of the nematodes."

Study tour opportunity

The Logans have described the study tours as an opportunity which every grower should grab if they get the chance.

"I'm sure their eyes would really just about pop out of their head when they see the size of these operations over there, it was an excellent time," said Glenroy.

But Lynette wanted to make it clear, a study tour is a long way from a visit to a resort, and wants anyone interested in going on one to be prepared to be busy the whole time.

"For the two weeks that we were on the tour it was no holiday. By the time you got out of bed in the morning, had breakfast, you were on the go. We'd stop and have a quick lunch, and we were on the go again. We'd be getting back at five or six, have shower, dinner then to bed. There was no sit down and relax time. It was busy."

Expressions of interest in the next round of study tours are now open. Details can be found at ausveg.com.au

Hort Innovation VEGETABLE FUND
Hort Innovation ONION FUND

The Vegetable and Onion Industry Study Tours have been funded by Hort Innovation using the vegetable and onion research and development levies and contributions from the Australian Government. **Project Number: VG23002**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From review to action

SETTING THE NEXT CHAPTER FOR ONION CROP PROTECTION

BY DAVID DANIELS | NATIONAL AGRICHEMICAL MANAGER, AUSVEG

The Onion Strategic Agrichemical Review Process (SARP), published 12 months ago, provided a clear and credible snapshot of the crop-protection landscape facing Australia's onion industry. It documented where key chemistries have already been lost, where regulatory pressure is building, and where future risks are most likely to emerge. For growers and advisers, it served as a useful point of reference rather than a revelation.

The past few years have fundamentally reshaped crop protection in onions. The loss of chlorpyrifos and diazinon has left significant gaps in pest management, with no viable options currently available for controlling onion maggot or cutworms – both identified as high-priority pests in the SARP. The banning of chlorthal dimethyl (Dacthal), with no forward notice, has also created substantial gaps in weed management programs, with few (if any) alternative pre-emergent herbicides available.

Synthetic pyrethroids are another important class of chemistry coming under increasing scrutiny. These highly effective insecticides, including alpha-cypermethrin and lambda-cyhalothrin, have long played a role in managing rasping feeders in onion crops. Internationally, synthetic pyrethroids are attracting regulatory attention due to concerns about toxicity to non-target organisms, particularly aquatic species, and their broader environmental impacts. Australia is no exception. Alpha-cypermethrin is scheduled for regulatory review within the next five years, which provides some breathing room but also a clear signal. Planning for a future with reduced reliance on this chemistry needs to start now. In regulatory terms, five years can pass very quickly.

At the time of writing, the industry is awaiting final regulatory decisions from the Australian Pesticides and Veterinary Medicines Authority (APVMA) on diquat and paraquat, following the release of proposed decisions in July 2024. While outcomes cannot be predicted, the proposed decisions of 2024 offered little reassurance for onion growers, with almost all current use patterns for onions placed under a cloud of doubt.

Looking further ahead, dithiocarbamate fungicides, including mancozeb, are scheduled for regulatory review commencing in early 2027.

Internationally, progressively tighter restrictions are trending for dithiocarbamates, reinforcing the importance of early awareness and preparedness rather than last-minute reaction. For many crops, including onions, it is difficult to envisage effective disease-management programs without mancozeb remaining part of the rotation.

FIND OUT MORE

Please contact David Daniels,
AUSVEG's National Agrichemical Manager
david.daniels@ausveg.com.au | 0402 270 554

The National Agrichemical Management Program is funded by Hort Innovation using the vegetable, onion and potato research and development levies and contributions from the Australian Government.

Project Number: MT24023

Hort Innovation VEGETABLE FUND

Hort Innovation ONION FUND

Hort Innovation POTATO – FRESH FUND

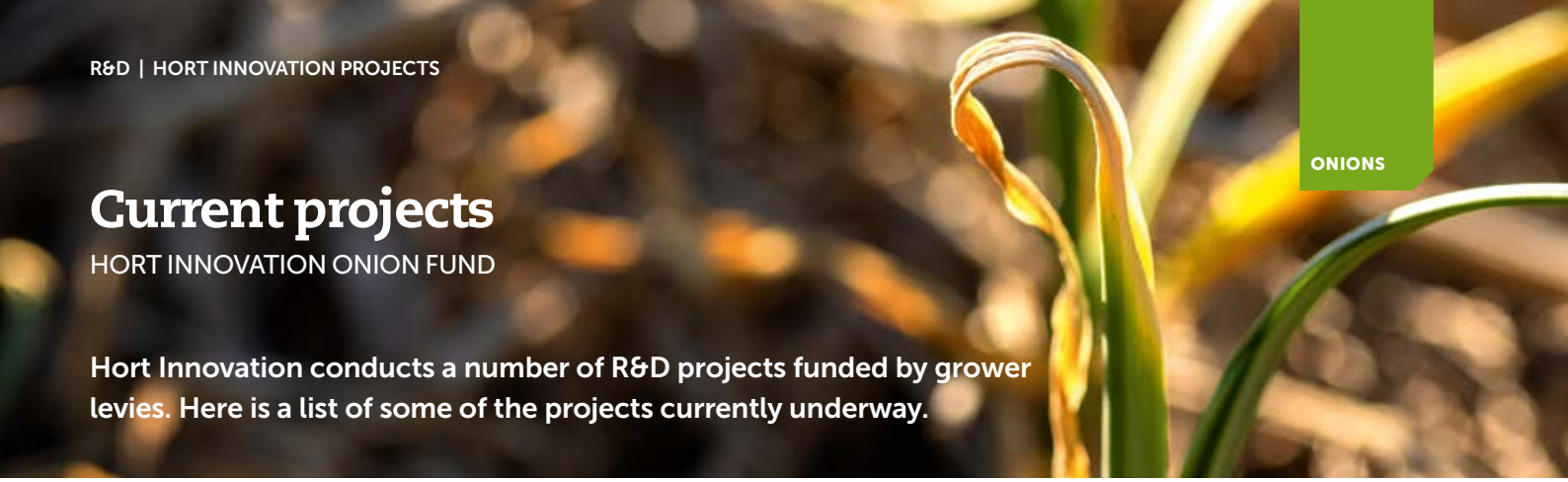
Hort Innovation POTATO – PROCESSING FUND

Identifying these pressures, however, is only the first step. The critical question now is where to focus effort. The onion SARP identifies close to 200 potential pest–product solutions that could, in theory, be pursued. However, not every option is commercially viable, supported by registrants or likely to achieve regulatory approval. The task ahead is therefore to prioritise – to identify where genuine opportunities exist, where registrant support is likely, and where there may be low-hanging fruit that can deliver meaningful gains for onion growers in the short to medium term.

The next phase, through Project MT24024, is about action – distilling the SARP into a small number of genuinely critical priorities with a strong likelihood of success, and then actively prosecuting those priorities. This will involve constructive engagement with growers and agronomists who want to contribute, ensuring on-farm experience and practical insight are captured in a clear and targeted way. That input will then be translated into concise, evidence-based cases and taken forward to agrichemical companies, Hort Innovation and other solution providers to help drive practical outcomes.

To date, there has been strong engagement from leaders across the onion industry, and this cooperation will be critical as the work progresses. AUSVEG welcomes constructive input from growers or advisers, and those wishing to contribute to the strategic priority setting for onions are encouraged to review the SARP and make contact.

The Onion SARP Report is available on the AUSVEG website: ausveg.com.au or scan the QR code.



ONIONS

Current projects

HORT INNOVATION ONION FUND

Hort Innovation conducts a number of R&D projects funded by grower levies. Here is a list of some of the projects currently underway.

O Rapid test and fungicide resistant screening for Stemphylium leaf blight in onion

VN24003

DELIVERY PARTNER: **METAGEN**

This project aims to improve disease control in Australian onion crops by developing rapid, species-specific molecular diagnostics for key canopy pathogens, *Stemphylium vesicarium* (SLB), *Alternaria porri* (Purple Blotch, PB), and *Peronospora destructor* (Downy Mildew, DM). Genome sequencing will be used to understand pathogen diversity and fungicide resistance, with in vitro and field trials assessing fungicide efficacy.

For growers, the project will deliver faster, more accurate diagnostics, enabling targeted disease management and improved crop protection. Outputs include improved disease control via optimised fungicide use, and extension materials to support integrated crop management. The findings will also benefit diagnostic labs and inform broader horticulture biosecurity strategies.

O Onion industry biosecurity strategy Phase I

VN25001

DELIVERY PARTNER: **AUSVEG**

This project aims to strengthen biosecurity preparedness across the Australian onion industry through the development of a new Biosecurity Plan. The plan will identify and address key biosecurity risks that threaten onion production and market access.

The plan will respond to evolving pest threats and industry needs by incorporating a high-priority pest list, establishing a robust review process, and delivering practical on-farm resources. It will also outline clear response protocols and incursion management strategies, guided by an industry biosecurity reference group.

Growers will benefit from improved tools and training to manage biosecurity risks at the farm level, helping safeguard productivity and ensure the industry remains competitive both domestically and internationally. The plan will also recommend targeted R&D priorities to enhance surveillance and diagnostics capacity, supporting long-term industry resilience.

VO Quantium scan tracking FY25/26: Veg & onion

MT25003

DELIVERY PARTNER: **THE QUANTIUM GROUP**

This project will transform how Australia's vegetable and onion industries make strategic business decisions by providing growers and trade partners with unprecedented access to Woolworths retail intelligence. Through a custom-built dashboard on Dashbox via the Quantium Portal, levy payers will gain continuous, self-service access to granular, up-to-date insights on category performance within one of Australia's largest fruit and vegetable retailers. The dashboard features weekly-updated data (with a 1-month lag), comprehensive filtering, monthly webinars, usage guides, and recorded training materials, empowering users to make faster, more informed decisions.

Key activities include dashboard development and maintenance, monthly webinars using different vegetable categories as case studies, user support, engagement sessions for levy payers, and comprehensive usage reporting and feedback collection. The project is designed for growers and trade partners supplying produce to retailers - especially Woolworths - who seek to optimise pricing, forecasting, growing, and product innovation decisions.

The intended impact for growers is enhanced pricing insights, improved sales forecasting, and informed growing and product innovation strategies, leading to increased profitability and market competitiveness. By leveraging access to Woolworths Group data, this scalable solution delivers immediate value and builds long-term analytical capabilities within Australia's horticultural industries, with the potential to expand to additional Hort Innovation fund categories for cross-industry intelligence.

VO Addressing herbicide resistance and control failures in ryegrass management for onions, carrots, and rotational crops

MT25001

DELIVERY PARTNER: **AUSVEG**

The aim of this project is to:

- **Assess the challenge and the opportunity:**
  Set up a baseline of the issue by surveying and identifying the geographic spread of Group 1 herbicide resistance in ryegrass
- **Manage whole of rotation demonstration sites and farmer directed peer learning:**
  Work with industry to select and manage demonstration sites in key onion and carrot growing regions. Support growers and researchers to experiment with management methods and learn together.
- **Evaluate alternative herbicides:**
  Review existing herbicide options registered for onions and carrots and identify gaps in herbicide availability.
- **Maintain linkages with other projects:**
  Create and sustain linkages with other related projects. Including relevant current and previous GRDC research. Secure opportunities to demonstrate a range of methods from other projects where appropriate such as mechanical and biological control options.
- **Demonstrate the success of the co-developed management strategies:**
  Work with demonstration site cooperators and their peer networks to evaluate the performance of management strategies and use this to demonstrate superiority of management strategies to the wider industry.

CODE

O Onion P Potato V Vegetable M Melon

potato update

This project has been funded by Hort Innovation using the potato - fresh and processing research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

Hort Innovation POTATO – FRESH FUND

Hort Innovation POTATO – PROCESSING FUND

JANUARY TO NOVEMBER 2025

Australian potato export performance overview

The potato market showed modest growth in export value driven by emerging Asian markets, while frozen imports eased slightly despite shifting competitive dynamics, and significant jumps in volume and value from India and China.

EXPORT OVERVIEW

From January to November 2025, total potato export value increased by four percent, from AUD$45.2 million to AUD$47 million. Total potato export volume increased slightly by one percent, to 44,944 tonnes. The overall increase in fresh potato exports show encouraging demand from international markets.

South Korea, Philippines, Taiwan, Indonesia and Singapore were the leading five markets for fresh potato exports over the period. South Korea had the largest market share for potato exports, accounting for one-third of total potato exports, but with a decrease of 18 percent in export value from AUD$18.2 million to $14.8 million. Total potato export volume to South Korea also decreased by 16 percent, from 23,628 tonnes to 19,850 tonnes. The Philippines has also recorded a decline in export value by eight percent, from AUD$7.4 million to $6.8 million and export volume has decreased by five percent, from 7,638 tonnes to 7,248 tonnes.

Change in potato exports by destination

TABLE 1.

Source: Global Trade Atlas 2026

TRADE PARTNER	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total fresh potato exports	**$45,233,776**	**44,474**	**$47,087,271**	**44,944**	**4%**	**1%**
South Korea	$18,175,337	23,628	$14,820,462	19,850	-18%	-16%
Philippines	$7,444,536	7,638	$6,826,463	7,248	-8%	-5%
Taiwan	$4,221,339	2,791	$5,960,335	4,345	41%	56%
Indonesia	$1,473,827	1,475	$4,624,203	5,256	214%	256%
Singapore	$3,534,021	2,111	$3,639,368	1,934	3%	-8%
United Arab Emirates	$2,886,428	2,037	$3,208,289	1,925	11%	-5%
Malaysia	$2,501,309	1,571	$2,964,575	1,591	19%	1%
Hong Kong	$2,361,656	1,039	$2,513,918	946	6%	-9%
Thailand	$1,095,020	1,115	$716,024	968	-35%	-13%
Fiji	$225,665	165	$597,022	283	165%	72%

On the other hand, Taiwan and Indonesia have recorded stronger growth in both export value and volume. Taiwan has recorded a growth of 41 percent in export value, from AUD$4.2 million to AUD$5.9 million and export volume has doubled by 56 percent, from 2,791 tonnes to 4,345 tonnes.

Indonesia has seen an increase of 214 percent in export value, from AUD$1.5 million to $4.6 million, and export volume has increased by 256 percent, from 1,475 tonnes to 5,256 tonnes (*refer to Table 1*).

FIND OUT MORE

Please contact Andrea Lin,
International Trade Specialist, AUSVEG
andrea.lin@ausveg.com.au | +61 3 9882 0277

This *Horticulture trade data* is funded by Hort Innovation using the potato research and development levy and contributions from the Australian Government.
Project Number: MT22005

Hort Innovation POTATO – FRESH FUND
Hort Innovation POTATO – PROCESSING FUND

IMPORT OVERVIEW

According to data from the *Global Trade Atlas*, frozen potato imports including French fries into Australia recorded a slight decrease in value and volume between January and November 2025, while significant jumps in both volume and value of frozen imports from India, China, South Africa and Germany were recorded. Import value dropped by four percent, from AUD$264 million to AUD$254 million and import volume has decreased by three percent, from 122,605 tonnes to 118,762 tonnes.

Belgium, Netherlands, New Zealand, Germany and United States were the top five origin markets for frozen potato imports. Belgium and Netherlands have both recorded a drop in import value and volume. Belgium's frozen potato import value decreased by 10 percent, from AUD$125 million to AUD$112 million, and a drop of 21 percent in import volume, from 53,390 tonnes to 46,618 tonnes. Netherland has experienced a decrease of 22 per cent in import value from AUD$72 million to AUD$56 million and import volume has dropped by 21 percent from 36,528 tonnes to 29,001 tonnes.

These falls were offset by rapid growth from Germany, India and China. India's import value increased by 284 percent, from $2.1 million to $8.2 million, while volume increased by 346 percent, from 828 tonnes to 3,696 tonnes. Similarly, China's import value increased 294 percent from $1.4 million to $5.4 million, while volume increased by 381 percent, from 544 tonnes to 2,615 tonnes. Germany also recorded a strong growth with the import value increasing by 58 percent, from AUD$12.5 million to AUD$19.8 million and import volume increased by 54 percent from 5,264 tonnes to 8,084 tonnes.

These increases reflect changing market dynamics, and signify intensifying competition for Australian growers.

Change in frozen potato imports by destination

TABLE 2. **Source:** Global Trade Atlas 2026

TRADE PARTNER	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total frozen potato imports	**$264,017,002**	**122,605**	**$254,079,708**	**118,762**	**-4%**	**-3%**
Belgium	$124,824,820	53,390	$112,494,508	46,618	-10%	-13%
Netherlands	$72,070,615	36,528	$56,490,946	29,001	-22%	-21%
New Zealand	$21,039,898	14,714	$26,062,435	17,138	24%	16%
Germany	$12,534,800	5,264	$19,839,564	8,084	58%	54%
United States	$19,604,214	7,767	$16,758,829	6,673	-15%	-14%
India	$2,127,051	828	$8,167,015	3,696	284%	346%
China	$1,364,596	544	$5,373,664	2,615	294%	381%
South Africa	$2,247,791	667	$2,933,996	2,905	31%	336%
Vietnam	$1,178,243	160	$1,303,081	355	11%	122%
Canada	$2,331,858	1,161	$1,241,483	670	-47%	-42%

Current projects

HORT INNOVATION POTATO FUND

Hort Innovation conducts a number of R&D projects funded by grower levies. Here is a list of some of the projects currently underway.

P Potato sustainability – undertaking a life cycle assessment

PT24001

DELIVERY PARTNER: **LIFE CYCLE STRATEGIES**

The objectives of this project are to:

- Inform potato growers nationally of the environmental performance of the sector, providing industry-based data that decision-makers can use in support of sustainability initiatives.
- Help Industry identify the area of greatest return/feasibility for practice change and the value of progressing alternative practices.
- Identify global best practice and how the Australian industry compares, aiming to identify opportunities to improve on individual grower carbon footprint.
- Provide growers with an understanding of the potential to improve the sustainability of their businesses based on national and global best practice.
- Inform future strategic industry investments and provide the fresh and process potato industry with clear messaging on the environmental sustainability of the industry.

P Biosecurity preparedness and strategy for the potato industry

PT25002

DELIVERY PARTNER: **PLANT HEALTH AUSTRALIA**

This project will review and update the Biosecurity Plan for the Australian potato industry, ensuring it accurately reflects current and emerging exotic pest threats. Led by Plant Health Australia (PHA) in collaboration with AUSVEG and key industry stakeholders, the project will deliver a new Biosecurity Plan (version 4.0) and a practical Biosecurity Action Plan. These documents will provide a framework for identifying, prioritising, and managing biosecurity risks, guiding future investment in research, diagnostics, and industry communications.

The project's outputs will help the potato industry and government agencies plan and implement effective biosecurity activities, strengthen preparedness and resilience, and safeguard production and market access against exotic pest threats.

CODE

O Onion P Potato V Vegetable M Melon

P Australian potato industry communication and extension project

PT20000

DELIVERY PARTNER: **APPLIED HORTICULTURAL RESEARCH**

Beginning in 2021, this investment is tasked with supporting Australian potato growers in adopting improved practices on-farm and keeping up to date with the latest industry news, information, resources and technologies.

The project delivers a nationally coordinated but locally implemented program which employs regional delivery partners who provide specialist skills and knowledge to the industry. The role of the regional delivery partners is a broad one, with all activities geared towards improving the circulation and uptake of information within the industry.

As well as extension activities, the project produces key communication channels for the potato industry, including a hard copy quarterly R&D magazine, online webinars and podcasts, social media, and a dedicated website to host industry resources.

PV Vegetable Strategic Agrichemical Review Process (SARP) 2026 Update

MT25005

DELIVERY PARTNER: **THE TRUSTEE FOR THE VIVIENNE MCCOLLUM FAMILY TRUST**

This project will deliver updated Strategic Agrichemical Review Process (SARP) reports for 28 vegetable crops and produce a new SARP for dried vegetables. The SARP process involves assessing the importance of diseases, insects, and weeds for each crop, evaluating the availability and effectiveness of current pesticides, identifying gaps in pest control strategies, and recommending new or alternative solutions. The findings will guide the vegetable industry in pursuing new pesticide registrations or minor use permits, and inform priorities for the AgVet Grants program.

For growers and industry stakeholders, the updated SARP reports will provide clear, crop-specific guidance on pest management needs and available control options, supporting sustainable, profitable, and competitive vegetable production. A new Vegetable Pest Control Solutions Matrix will also be developed to help industry cross-reference pest priorities and control options across crops, enabling more strategic planning and investment in pest management solutions.

AVR SPIRIT 9200

2-ROW OFFSET BUNKER HARVESTER

The Spirit 9200 takes 2-row offset bunker harvesters to a whole new level. The well-known Spirit concept has been further developed for use in the top segment. More flexibility, more capacity, more comfort.

This is made possible by the hydraulic drive and optionally mountable cross roller set. Naturally, these innovations have all been developed in accordance with AVR's philosophy of potato-friendly harvesting.

A cross roller set can be mounted before the pintlebelts. This leads to a significant increase in the machine's cleaning capacity, without the need for additional direction changes to the potato flow. This is a unique concept! The cross rollers efficiently remove loose soil, small clods of earth and smaller stones from the product flow. Because of this, the pintlebelts can easily remove the remaining loose soil and haulm.

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ISSUE 19

POTATO LINK

supplement

BIOSECURITY BEYOND THE PADDOCK

SPOTLIGHT ON SUSTAINABILITY: MANAGING N_2O

FEATURE ARTICLE

POTATO EUROPE

ahr applied horticultural research
Hort Innovation POTATO – FRESH FUND
Hort Innovation POTATO – PROCESSING FUND
POTATO LINK AUSTRALIAN POTATO INDUSTRY EXTENSION PROJECT

POTATO LINK
AUSTRALIAN POTATO INDUSTRY EXTENSION PROJECT

TECHNICAL CONTENT
Dr Jenny Ekman
jenny.ekman@ahr.com.au

EDITOR
Paulette Baumgartl
paulette.baumgartl@ahr.com.au

ASSISTANT EDITORS
Andrea Mason & Ryan Hall
andrea.mason@ahr.com.au

PROJECT COORDINATOR
Peter O'Brien
peterob@potatolink.com.au

DESIGN
Jihee Park
hello@jiheeparkcreative.com

PUBLISHER
Applied Horticultural Research Pty Ltd
www.ahr.com.au

Cover: Potato Europe: J. Ekman

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POTATO LINK AUSTRALIAN POTATO INDUSTRY EXTENSION PROJECT

FROM PETER O'BRIEN ...

Welcome to this edition of PotatoLink, where we reflect on key achievements and explore emerging issues shaping the future of Australia's potato industry.

In this issue, we look back at major project milestones and what they've delivered for growers and the broader sector. We also bring an update from Tasmania, where new research into Potato Mop-Top Virus (PMTV) will support ongoing disease management efforts.

There's a special international feature spotlighting developments from the European potato sector, alongside a timely discussion on biosecurity beyond the paddock —highlighting the shared responsibility across supply chains to protect our industry.

Sustainability remains front of mind, with a focused look at managing nitrous oxide (N_2O) emissions and what this means for both productivity and environmental outcomes. We also delve into emerging research on the gut health of pests, offering fresh perspectives on integrated pest management approaches.

Rounding out the issue is a Spud GP focus on curl grubs.

As always, our aim is to keep you informed, connected, and supported with practical insights from research, the field, and beyond.

If you'd like to receive a printed copy of PotatoLink delivered to your door, subscriptions are just a click away.

Enjoy the read!

Peter O'Brien, PotatoLink Project Coordinator

Send your feedback to info@potatolink.com.auSend your feedback to info@potatolink.com.au

IN THIS SUPPLEMENT

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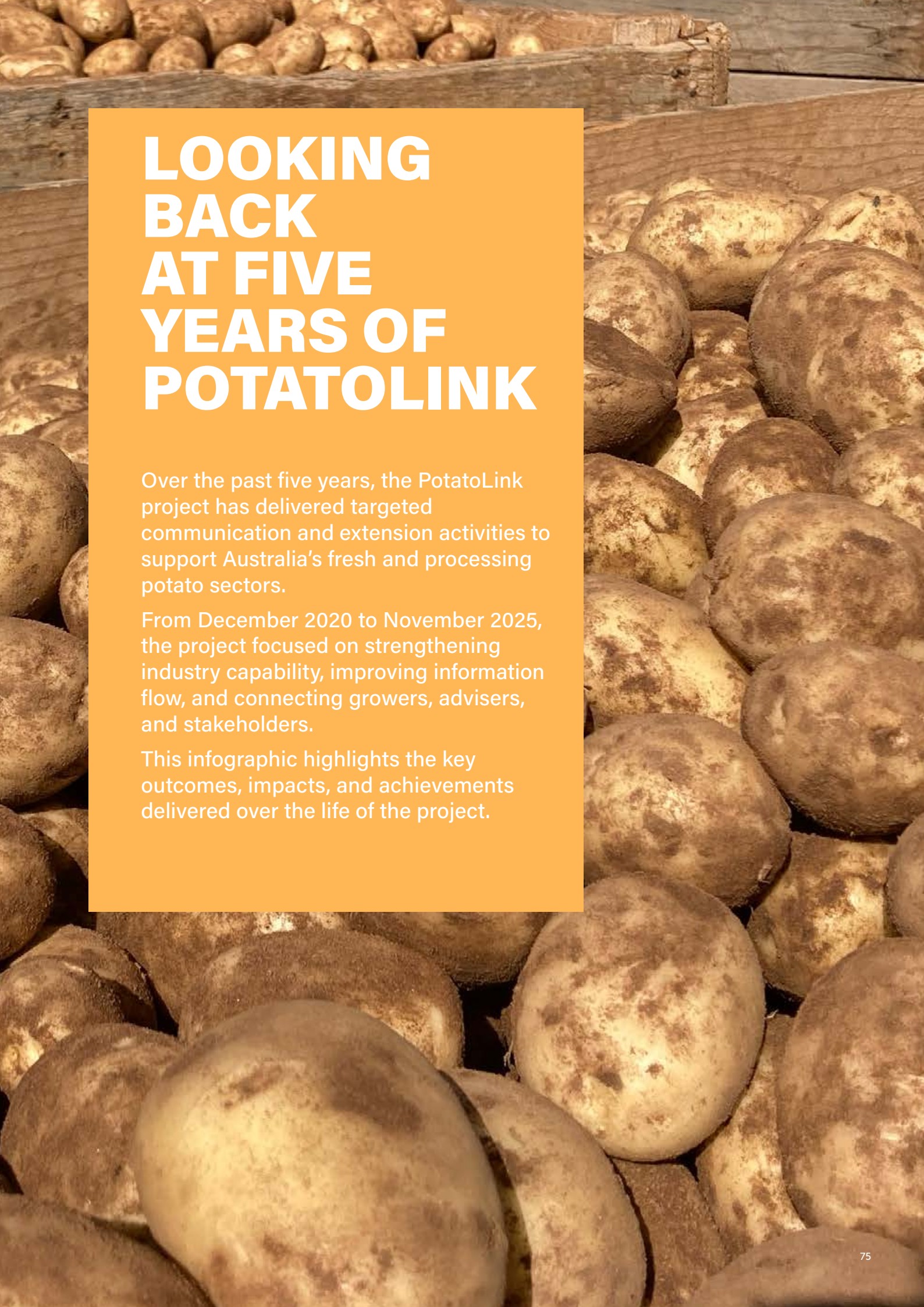


LOOKING BACK AT FIVE YEARS OF POTATOLINK

Over the past five years, the PotatoLink project has delivered targeted communication and extension activities to support Australia's fresh and processing potato sectors.

From December 2020 to November 2025, the project focused on strengthening industry capability, improving information flow, and connecting growers, advisers, and stakeholders.

This infographic highlights the key outcomes, impacts, and achievements delivered over the life of the project.

Engagement

Number of event attendees

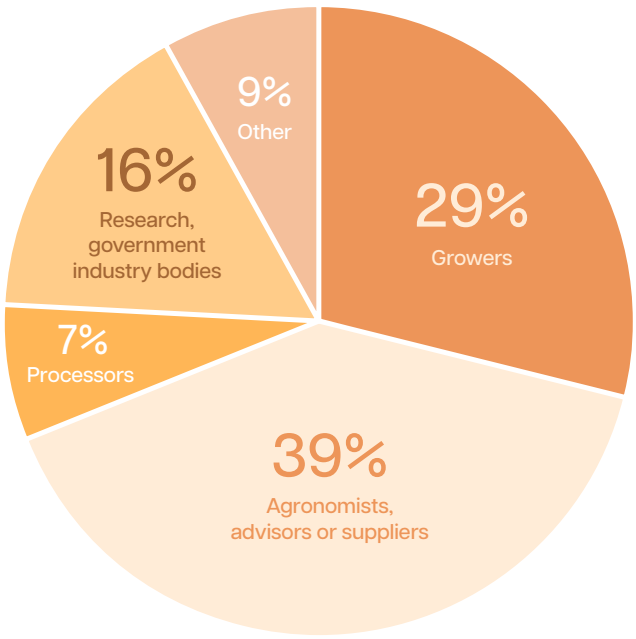
3369

Total people in person/online

45%

Of attendees were unique

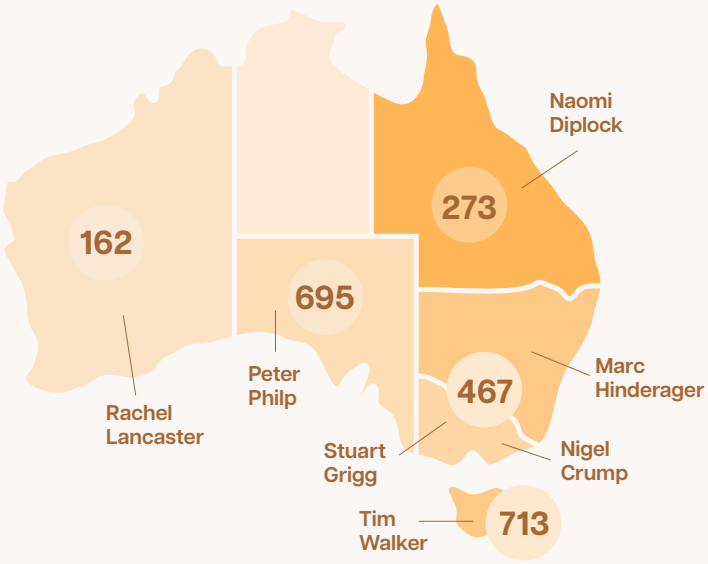
Event engagement by industry



"I think it (the magazine) is absolutely excellent, I couldn't give it any lower than a 10/10. Diversity of articles and their importance of them to me is great, hats off for picking the subjects right." **QLD grower**

Number of in-person event attendees in key potato growing regions

The regional representatives, named below, are integral to the success of PotatoLink events.



"PotatoLink has directly improved yields due to sharing information around soil health, I know of more growers getting better quality spuds." **WA grower**

"Its really good to finally have a national extension service across the states that is easily accessible and approachable." **TAS grower**

Outputs

December 2020 to November 2025

Website visits

50,000+

99,000
Total page visits

40,000
Unique website visits

Social media

1758 total followers

LinkedIn | Facebook | Instagram

200,000+
Social media impressions

Drives 5-10%
Of total PotatoLink website traffic

PotatoLink magazine

750 Physical recipients

450 Average online views each

71 Events

18 Magazines

16 Demonstration sites

27 Webinars

7 Online trainings

11 Global scans

18 Case studies

18 Fact sheets

9 Podcasts

17 Videos

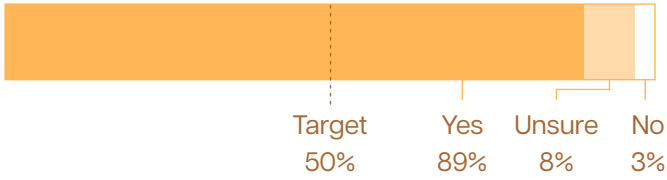
4 R&D forums

52 E-bulletins
1200 recipients

Outcomes

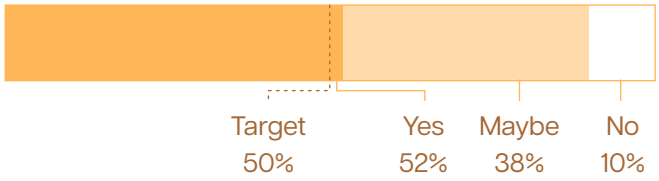
Knowledge outcome

Of event attendees who responded to post-event surveys, 89% indicated an increase in knowledge and skills because of the event, with a further 8% indicating they were unsure.



Change practice outcome

Of the event attendees who responded to the event surveys, 52% indicated they would change practice after the event, with a further 38% indicating they might change practice but needed more time to consider.



Collaborations

Project involvements

Potato Growers Manual

Hosting of the manual on PotatoLink website

Disease projects

Sharing research outcomes directly to industry for impact

Biosecurity

Reporting outcomes that strengthen national potato biosecurity

VegNET

Collaborating across national networks to maximise industry reach

Soil Wealth ICP

Partnering to spread tools, knowledge, and support

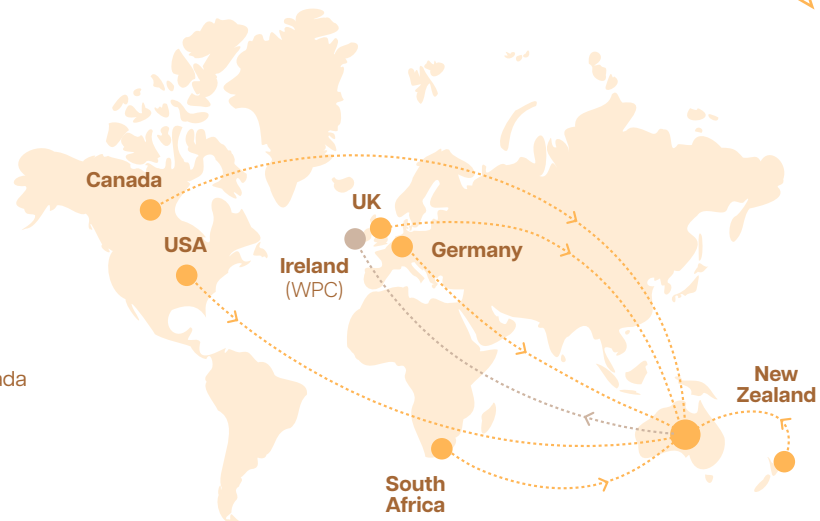
International speakers

In addition to local experts, the project also engaged with many international specialists to advance insights into a diverse range of topics.

- **Dr Andy Robinson** | North Dakota State University
- **Dr Phillip Wharton** | University of Idaho
- **Dr Nora Olsen** | University of Idaho
- **Dr Mike Thornton** | University of Idaho (emeritus)
- **Dr Kasia Duellman** | University of Idaho
- **Dr Amy Charkowski** | Colorado State University
- **Dr Julie Pache** | North Dakota State University
- **Monty Teeter** | Dragon Line USA
- **Dr Chad Hutchinson** | TriCal Group
- **Dr Brad Geary** | Brigham Young University
- **Dr Steve Johnson** | Formerly University of Maine
- **Roger Blyth** | Seed and Field NZ
- **John Jackson** | Potatoes New Zealand
- **Dr Mieke Daneel** | ARC South Africa
- **Dr Jacquie van der Waals** | University of Pretoria
- **Ryan Barrett** | Prince Edward Island Potato Board - Canada
- **Dr Ingo Hein** | James Hutton Institute
- **Dr Sanjeev Sharma** | James Hutton Institute
- **Dr Xinwei Chen** | James Hutton Institute
- **Vee Gururajan** | HarvestEye UK
- **Dr Jeff Miller** | Miller Research UK
- **Tika Schellevis** | McCains NZ
- **Albert Schirring** | Bayer, Germany

"Cover crops for soil health have become a major part of my rotation - PotatoLink has certainly influenced this, I'm not really getting information from anywhere else" **NSW grower**

"We are always looking to improve the way we do things, The information provided by PotatoLink has helped us and even inspired us to look at other areas where we may be able to make a change as well"
Supplier / Advisor



POTATO EUROPE

In September 2025, PotatoLink's Dr Jenny Ekman visited one of the world's largest potato industry gatherings – Potato Europe. Bringing together growers, researchers and industry leaders from across the globe, the event showcased the latest advances in potato production, technology and sustainability, offering valuable insights for the Australian potato sector. Please enjoy Jenny's on-the-ground dispatch from the event for all of us who couldn't attend.

By Dr Jenny Ekman, The Netherlands 2025

The Netherlands is not a large country. However, of the half million hectares available for farming, nearly 30% is dedicated to one crop – potatoes.

Many of the businesses that support this major horticultural sector are located in Flevoland, just west of Amsterdam, a highly productive potato growing region.

It therefore seems appropriate that the 2025 edition of Potato Europe was held at the Wageningen University and Research (WUR) field crops' site in Lelystad, Flevoland.

It is difficult to express just how big an event this is. More than 300 exhibitors spread over three exhibition halls plus a large outdoor display area; variety trials, with dug samples on display; paddocks full of potatoes being harvested, conveyed, transported and even graded - the entire potato supply chain represented, from breeding to growing, harvesting, sorting, processing, and marketing.

Held over two days (3-4 September), it's not surprising that the event attracted over 17,000 visitors from 107 countries.

If you needed to sit down for a while after all this excitement, there were also two conferences: a WUR scientific program on "Integrated Crop Management – the future of potato farming," plus a market oriented conference on "Europe's position in a changing potato world". With free hot chips and beer provided, this was the complete package.

THE 'PREQUEL'

Even before PotatoEurope started, there were events on offer, with (free!) field trips to visit local companies.

First stop for my bus was the farm of Pieter Koenraadt and family. Pieter grows both standard and sweet potatoes, together with rotations of sugar beet and cereals.

Despite an unusually dry summer, the crops are rarely irrigated; Flevoland is entirely reclaimed land, so the nearby freshwater lake is 5m higher than the farm. Water filters through the soil profile, keeping it moist in all but the dryest conditions.

The main focus of the visit was a washing unit installed by MCR machinery. The unit was specifically developed to prevent damage to the fragile skins of sweet potatoes but works equally well on standard spuds.

The unit's point of difference is that the nozzles project a mixture of air and water through an enclosed washing system. Despite high pressure used, the resulting jets feel soft – something I confirmed by putting my hand inside.

The MCR potato washer uses a mixture of air and water to save water and reduce damage.

Potatoes are pre-soaked for around 4-5 minutes, then passed through the chamber of jets on a mesh belt. The result is efficient removal of soil, despite only using around 50% as much water as a regular wash system.

The new washer has increased shelf life of Pieters' sweet potatoes from two weeks to three months. It also avoids skinning standard potatoes despite his soil containing around 20% heavy clay.

Next stop was Verbruggen Palletising Solutions. This factory was so new that much in the 14,000m^2 design and manufacturing plant was still wrapped in plastic.

One of the most interesting pieces of equipment was a new robot for palletising bags of potatoes (or onions). Each layer of bags is constructed on top of sliding panels, with bags positioned to create a flat, square layer. When complete, the panels withdraw, dropping the bags a short distance onto the pallet below. This creates a stable load with straight verticals and minimal need for strapping.

Our final destination was a 250ha family potato seed farm that has specialised in developing seed storage capacity. They now have 20 rooms with individual venting and temperature control, with seed stored in bulk as well as bins.

Harvested seed potatoes are usually dried/cured for five to seven days at 15°C. However, local seed may be grown in heavy soil and harvested wet, increasing curing time to over two weeks. They have therefore had to develop a more efficient curing and drying systems.

The facility had three different curing systems in place. The oldest was a bulk system with underfloor ventilation. Temperature and RH probes are buried as the bay is filled. Although air circulates through the stack, the system is relatively passive. This system reduces cost but increases the risk of uneven drying.

A 'letterbox' system provides faster, active curing. A plenum lines up with the gaps under bins of seed potatoes, blowing cool air over and through the aligned bins. Short-circuiting of airflow is prevented by stuffing foam fillers into the ends of each line of bins.

A final, new method was recently installed by Omnivent. Again, the bins are aligned against a plenum. However, this system pulls, rather than pushes, the air through the bins. This provides far more even airflow through the stored potatoes.

Often called 'forced air cooling' or 'pressure cooling' this method ensures that air always moves from cool to warm areas within the stack, preventing condensation. It is also energy efficient as temperature can be reduced more quickly and air moves consistently through the load.

THE MAIN EVENT

The next day came the event itself. A veritable wonderland of potato-related equipment, supplies and varieties.

BIOSTIMULANTS

The next day was the field day itself - a veritable wonderland of potato-related equipment, supplies and varieties.

It's no secret that the European Union has strict views on chemical use. The chemical options available to farmers are steadily diminishing, whether herbicide, pesticide, or postharvest treatment.

It is therefore not surprising that the range of biostimulants on the market has exploded, many of which were on display at the exhibition.

In brief, biostimulants include:

- Live microbes such as bacteria and fungi
- Extracts from microbes
- Substances that interact with the plant to stimulate certain natural processes, such as plant hormones

Biostimulants can be applied to the soil, seed, or directly to the plant itself. There are many products on the market, however most can be classified as shown in Table 1.

Information on the ingredients of biostimulant products is often vague or non-existent. To be sure, companies want to protect their intellectual property. However, this makes it more difficult to assess the likelihood of effectiveness, with grower testimonials often used as the only evidence of effectiveness.

Where data is presented, it is sometimes unclear whether the trial was conducted internally by the company or with an independent research services provider. While this doesn't mean that the products don't work, the lack of scientific data supporting efficacy is problematic.

BIOLOGICALS

As with biostimulants, this is an area which has exploded in the past few years, at least in Europe. However, products that are making a specific claim relating to pest or disease control need to be registered. That means much stronger evidence is needed from independent studies. The active ingredient also needs to be listed, so the mode of action is far clearer.

Table 1. Some categories of commercially available biostimulants seen at PotatoEurope

Purpose	Ingredients	Claimed Benefits
Soil amendment	Live fungi and/or bacteria	■ Increase conversion of organic matter into humus, increasing nutrient availability for plants ■ Increases microbial activity in the soil ■ Improves soil structure
Root optimiser	Rhizobacteria/ mycorrhizal bacteria, nitrogen fixing bacteria, fungi and seaweed extracts	■ Bacteria attach in or around the plant roots, increasing the effective root surface area and making it easier for the plant to take up nutrients ▪ *Endomycorrhizae* enter the root cells ▪ *Ectomycorrhizae* form a sheath around the roots ▪ *Rhizobacteria* live within the soil, but in close association with the roots ■ More efficient water uptake, improving drought tolerance ■ Fix atmospheric nitrogen ■ Produce plant hormones, stimulating growth and enhancing defence against pathogens ■ Protect from root disease
Plant nutrition	Organic nutrient sources, amino acids and fulvic acid / humic acid	■ Enhances nutrient uptake through chelating effects on minerals in soil ■ Stimulates plant growth, increasing yield ■ Improves soil health and fertility ■ Increased capacity of plant to respond to stress (e.g. drought, heat ■ Provides essential amino acids
Plant defence	Harpin	■ Activates the immune response, reducing susceptibility to pathogens ■ Increased calcium uptake

A companion planting of TerraLife SolanumPro with potatoes. Image: Humus Bewegung.

In Europe, sugar beet are widely used as a crop rotation with potatoes.

For example...

RootDei Biocontrol is registered in Germany and the Netherlands for control of *Rhizoctonia* in potatoes. The product is a formulation of the fungus *Trichoderma asperellum* strain T34.

Trichoderma parasitises other fungal species, secreting cell wall degrading enzymes that break down the host mycelium. It absorbs the nutrients released, ultimately dissolving and killing the pathogen.

T. asperellum was initially isolated in China, where it was found to have a broad range of biocontrol factors. The fungus not only parasitised other fungi, it also stimulated disease resistance in the plant and produced a number of anti-microbial metabolites[1]. This suggests that *Rhizoctonia* may not be the only pathogen inhibited by *T. asperellum*.

COVER CROPS

If the number of exhibitors is any guide, including cover crops in a rotation with potatoes (along with cereals and sugar beet) is another strong European trend. There is a wide palette to choose from, with cover crop mixes designed for early or late planting, to target nematodes, or specifically for nitrogen accumulation. Mixes of up to a dozen species are common, including ones specifically designed for rotation with potato crops.

For example, TerraLife SolaRigol and SolaRigol R include lupins, vetch, clovers, oats, niger and oil radish. They aim to shade the soil, increase biodiversity and create deep root channels, reducing erosion on formed ridges. Cover crops can also provide nitrogen and increase soil aggregates. Some products also claim reduced risk from certain viruses and soil-borne diseases for the following potato crop.

For example, Cérience produces a range of potato-specific cover crops designed to control nematodes. Depending on the species of nematode present, effective mixtures could include radish, white mustard, marigolds, and other species.

Another potential use of cover crops is to stabilise ridges, buffer temperature and suppress weeds while potato plants are small. The TerraLife product, SolanumPro, is grown as a companion crop, sown between the ridges at the same time or soon after the potatoes are planted. The mix contains approximately 25% legumes, balancing the nutrient requirements of the companion plant mix with the growing potatoes. Deep-rooted species are included to improve soil structure and reduce the risk of erosion.

PRE-SPROUTED SEED

One of the relatively novel ideas presented at PotatoEurope was pre-sprouting seed. This process, also known as 'chitting,' physiologically ages the seed. The result can be quicker emergence, earlier maturation, and a higher number of tubers.

Traditionally, chitting was done by removing the seed from cold storage and loading into shallow trays, minimising contact between tubers and allowing plenty of airflow. The trays were then exposed to light and warmer (over 10°C) temperatures for four to six weeks before planting. Light is important as it results in short, strong sprouts instead of the long, weak sprouts that form in darkness. Dormancy is broken, so seed grows rapidly after planting[2].

The Joppe system is designed to achieve the same effect using hanging mesh bags. Seed potatoes are loaded into the bags from a conveyor or directly from bulker bags. The bags are hung on a series of racks, with the racks stacked up to three units high.

Joppe suggest storing seed in the bags for 6-8 weeks, in an area with good ventilation and some light. The bags are emptied from the base by simply opening the Velcro seal, then the racks fold away for storage.

Transferring filled racks to cold rooms for 7-10 days can further increase the number of sprouts, if more small tubers are preferred. Plants emerge approximately two weeks after planting. Faster emergence = earlier harvest, particularly useful for late varieties.

Cut seed in the Joppe pre-sprouting system.

POTENTIAL ADVANTAGES OF A PRE-SPROUTING SYSTEM

- No condensation in pre-sprouting bags
- Reduced risk of disease
- More even and complete wound healing of cut seed
- Cutting seed removes apical dominance
- The total number of sprouts is increased
- Sprouts are short and hard, so grow rapidly after planting
- Mother tubers shrivel sooner

GIVING A MAGNETIC EDGE TO PESTICIDES

Perhaps one of the most interesting products was one which is already available in Australia – magnetic spray systems (e.g. MagrowTec).

Getting good spray coverage is essential to control the target pest or disease. However, this is not necessarily easy. There are estimates that 60 to 90% of product is wasted, either failing to stick to the leaves, simply falling onto the soil, or becoming spray drift.

Spray units vary hugely; our (AHR) trials with different sprayers have demonstrated major differences, with some achieving well under 20% coverage. Efficiency also varied between the tractor and the end of the boom, with coverage declining over distance.

Improving spray coverage can reduce the amount of product needed while also improving effectiveness. It has been recognised for more than 20 years that strong magnetic fields alter the properties of water, producing electric charges that cause the molecules to cluster together as well increasing oxygen content. For example, early research by Wachowiak and Kierzek (2002)[3] found that selected fungicides were more effective against late blight when they were subjected to a magnetic field before application.

Commercial magnetising systems can be fixed onto existing spray units to make them more efficient. Manufacturers claim coverage increases of 20% or more, as well as 70% reduction in drift, when the system is used.

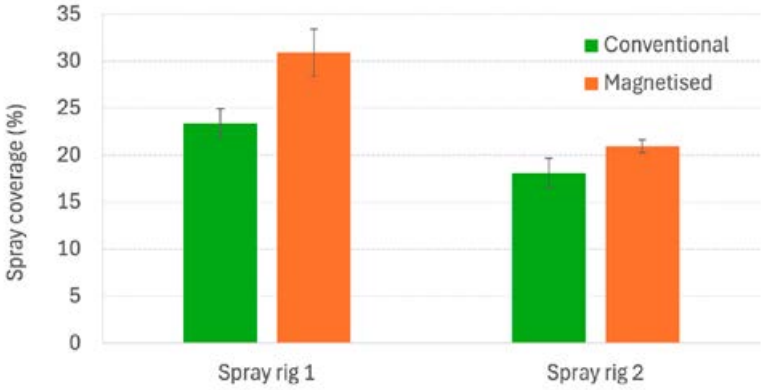
This is because a larger proportion of the droplets are the optimum size of 150 to 300 microns across. At this size range, droplets have enough momentum to reach the canopy rather than ending up as drift, but are also small enough to stick to the plant surface on impact.

ROBOTS IN THE FIELD

Who doesn't love a robot? With labour costs and availability as much a challenge in Europe as here, it was not surprising to see a number of robots, mainly designed around scouting for pests and disease. Some were still at the development stage, with just a prototype on display to gauge grower interest. Others were fully commercial, and large scale.

WIREWORM WARNING

One example of an emerging technology is a system under development by Wageningen University and Research. The unit is pulled behind the tractor, and can reliably detect and record wireworms at tillage.



Spray coverage, assessed using water sensitive paper to compare a conventional and magnetised spray system. MagrowTec internal report by J. Dolman, 2022

Wageningen researcher Hilfred Huiting is developing a system for detecting soil-borne pests such as this wireworm, then using this information to model risk.

However, detection is one thing, using this information is another.

According to Wageningen researcher Hilfred Huiting "We are still working on the ground truth of our findings. What do the numbers detected say about the actual population? Without that link we are more or less blind in our forecasting."

"Another part of our work is trying to model the risk of wireworm attack through modelling based on soil characteristics and cropping history. So far that looks promising."

In Australia, curl grubs are more likely to be an issue than wireworm (see Spud GP this issue, p34). I asked Hilfred if their system could also work for this pest.

"They can be very harmful to potatoes and also seem to be an emerging pest in the Netherlands. Given their size they should be easy to detect. In fact, it was the visibility of (curl) grubs directly after tillage that led us to develop automated recognition of wireworms". So, this technology could well come full circle.

MONITORING FROM THE GROUND UP

Another scout still in fairly early stages of development is the Cam-Bot. This small (shoebox sized), light (12kg) autonomous unit is designed to travel along between the ridges, examining the plants up and personal. It particularly targets the lowest leaves, as these are usually the first to suffer from stress, disease or infestation.

Equipped with multiple cameras, the Cam-bot can perform a range of monitoring tasks. The key application involves measuring light re-emitted from leaves in response to an intensely bright pulsed light, called 'chlorophyll fluorescence'.

Chlorophyll fluorescence measures the intensity with which chlorophyll in the plant responds to light. To get the best results, measurements are taken at night, avoiding interference from sunlight. Declines in chlorophyll fluorescence are an early indicator of plant stress, so may indicate disease, or nutrional imbalance.

Another Cam-bot application is scouting for aphids. The tiny size of the robot means it can travel under the plants, getting the best possible view of aphids hiding underneath the leaves. Plant health and aphid presence are uploaded into an app, along with GPS coordinates.

The app also monitors weather conditions, integrating this information with a risk assessment based on crop specifics (fertiliser, irrigation, growth stage, etc.) and satellite images.

The app can predict the areas at greatest risk of disease then despatch the Cam-bot scout to take a look.

Such early detection of pests and diseases facilitates targeted spraying. This significantly reduces the total volume of pesticide required plus prevents crop damage.

Cam-bot in action in the field, and with Sander Rijsewijk and José Montegro Mackliff at Potato Europe

GETTING THE JUMP ON VIRUSES

At the other end of the scale, Croptimal has developed a large, commercial potato disease detection robot. The largest unit can scan up to twelve rows at a time, although smaller units are also available. A trainable AI recognition model is used to detect infected, or otherwise abnormal, leaves.

Finding virus infected plants is a particular challenge, as symptoms are often subtle. However, the company claims approximately 80% accuracy at detecting PVY. Moreover, the system can potentially detect abnormalities due to virus infection even before they are readily visible to the human eye.

With the detection unit on the front and computing power plus driver in the centre, the only human contact is through a 'roguing' seat on the trailing arm. The seat can slide from side to side, allowing a worker to immediately remove infected plants.

While the upfront cost is likely to be considerable, Croptimal estimates a saving of 20 to 30%/ha compared to using human scouts. The unit can travel at up to 8 kph, potentially scanning 4 ha/h. Movements and detections are logged with GPS. As with the cam-bot, one of the key aims is to target pesticides efficiently, consistent with the European union aim to reduce pesticides by 50% (from 2015 levels) by 2030.

PREHARVEST GRADING

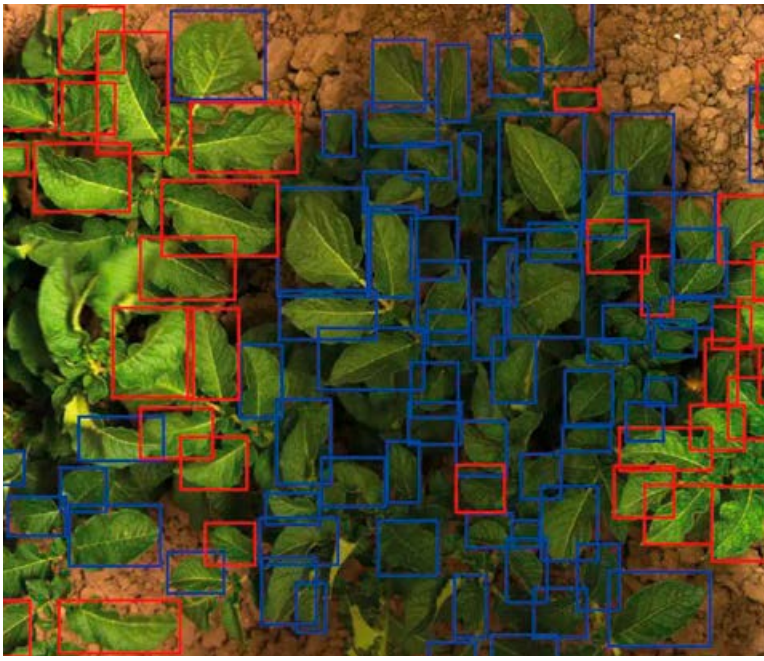
Understanding what is below ground before harvest can help growers decide both when to terminate the crop, and what to do with it after harvest. However, as the PotatoLink team know, digging and assessing potatoes manually is very time consuming. Using a machine to do the bulk of assessments would make this much easier, as well as potentially improving accuracy.

The Smart Grader Reader is not actually a grader. It simply reports the physical attributes of a sample of potatoes (or onions).

To use, a crate of potatoes (approx. 20kg) is emptied onto the short conveyor. The tubers are passed under cameras, allowing calculation of height, length and width of each. This is used to estimate individual weight and total yield. Data is initially output to a smartphone or laptop but can be imported into Excel for more detailed examination.

One application is for seed growers. Sampling the crop regularly leading up to harvest can help optimise haulm kill, with more of the seed falling within the target size range. The machine can also be used to assess yield and size range of a processing or fresh crop before harvest, or quickly compare bins of potatoes harvested from different sites.

The small size of the unit makes it mobile, so it can be used in the shed or taken out and used in-situ in the paddock. It might not have the sophistication of vision systems, which also record defects and disease, but is likely a major time saver compared to manual methods.



Croptiscan 9000 robot, and a sample of data output.

The Smart Grader Reader, which is used for rapid assessment of size range and yield for small samples.

TURNING STEMS INTO SUBSTANCE

To most growers, haulms are just something that gets in the way during harvest. However, to Jacob Smith they are a potentially valuable resource. The team at Fibe has developed a method to turn dried haulms into sustainable textiles. The process is proprietary, but involves both physical and biochemical processing.

Not only can this potentially provide an extra income stream for growers, but also produces a fibre with minimal environmental impact.

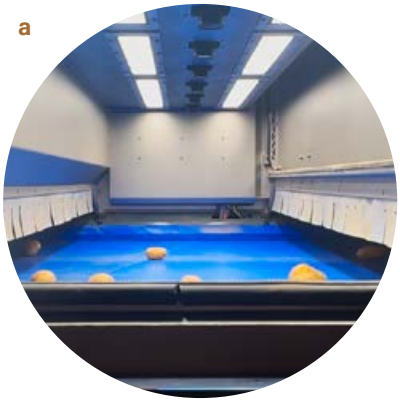
They are currently developing a specific harvester to speed up collection of the haulms. A prototype has been developed with GRIMME. The aim is to collect stems during desiccation, making tuber harvest easier.

"We are looking to expand our network as much as possible ... and one of the areas we are really interested in is Australia," Jacob said.

While their key focus is dried potato haulms, they are also interested in sampling other crops, including oilseeds and pulses – any of which may also provide a fibre from plant stems.

If interested in getting involved, maybe drop **jacob@fibe.uk** a line.

Jacob Smith from Fibe, showing their new thread and textiles made from potato haulms.



The Flikweert Divider unit removes rocks and clods from harvested potatoes. A flat conveyor passes under a row of cameras then clods or rocks are removed using flicking, piano key type 'fingers', efficiently dividing the load into potatoes and foreign objects.

POTATO GRADING

There is no such thing as blind potato grading. All of the examples of grading systems which are described here are optical, using cameras and software of varying levels of sophistication to assess each object as it passes below. Nevertheless, they can generally be divided into three broad categories:

- More work needed
- The middle ground
- All in one

More work needed

These machines are most often used to grade dirty potatoes, straight from the field. Their main purpose is to remove foreign materials, kicking out rocks and clods before potatoes go into storage, or to a processor.

These machines generally have only two output lines, representing 'pass' or 'fail.' The thresholds for accept or reject may be adjusted according to the type of foreign material encountered. Rejected material could include rubber, glass, sticks, stones, soil and plastic waste.

Flikweert Divider
The Divider unit is a high-capacity unit designed to sort foreign objects from dirty potatoes. It removes clods, rocks and other items using ejector fingers. It has an extremely high capacity, grading up to 120t/hour!

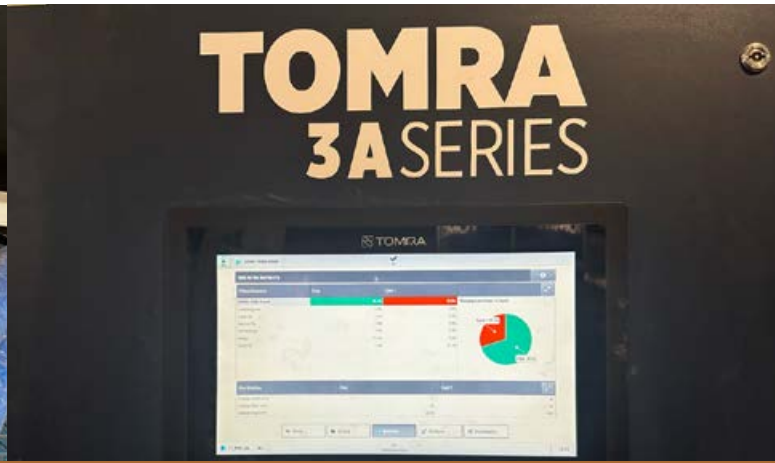
The potatoes are moved past the cameras on a flat conveyor belt, then allowed to continue or blocked using the fingers. Rejects fall onto the second belt which goes to waste, while good potatoes continue to a bin. The images shown in Figure 8 are a little blurry – reflecting the speed at which this machine is operating.

Tomra 3A
Like the Flikweert Divider (Figure 9), the Tomra 3A unit is primarily designed for unwashed potatoes, removing contaminants from the load. Although a somewhat smaller machine, it also provides high capacity, able to process up to 100t/hour.

The cameras include near infrared as well as colour, enabling it to 'see' through objects passing beneath. Unlike the Divider, where the cameras are mounted above a moving belt, the TOMRA unit cameras are sealed inside a separate box. Potatoes are inspected as they fall past the cameras, then flicked onto the rejection belt if categorised as foreign material.

The middle ground

While the *'more work needed'* machines are focused on getting rid of foreign materials and waste as fast as possible, the middle ground are the Swiss army knives of potato sorting. They can still detect foreign materials, but add the sophistication of defect detection – shrivel, disease, green patches, misshapen tubers, and other issues.



The Tomra 3A grader is primarily designed for removing foreign objects from unwashed potatoes

As their output is based on quality, they are often used for grading seed. However, they can potentially be used with brushed or even washed potatoes; adding a mechanical sizing unit can allow these machines to sort potatoes destined for the fresh market.

Flikweert Quality Grader

In contrast to the Divider, the Quality Grader has multiple cameras that capture potatoes from every angle as they roll past. Rollers mean that every spud is captured around ten times from multiple different angles, creating a complete 360° image. Images are analysed using AI algorithms developed from more than 400 machines worldwide.

The system can detect defects including wireworm damage, diseases such as scab, *Rhizoctonia,* and soft rots as well as physical damage including cracks, dumbbells, shrivelling or green patches. Thresholds are set for each defect, with the tuber either accepted or rejected using the now-familiar finger system.

At less that 3.5m long, the grader is more compact than some other units and can sort up to 20t/hour.

An optional RejectSeparator can be added to detect foreign objects such as clods and stones from defective potatoes, allowing the latter to be repurposed.

Tolsma-Grisnich Optica Q

The Optica Q can grade brushed or washed potatoes, including seed. A relatively compact unit, it can reliably grade seed potatoes at 15 to 18t/hour. However, this depends on tuber size; a brushed line in Holland is using it to grade large, fresh market potatoes at up to 30t/hour.

Unlike some similar units, it provides three-way grading; good quality, B-grade, and reject. The thresholds for each are set using sliders on a touchscreen, so can be easily adjusted to meet specifications.

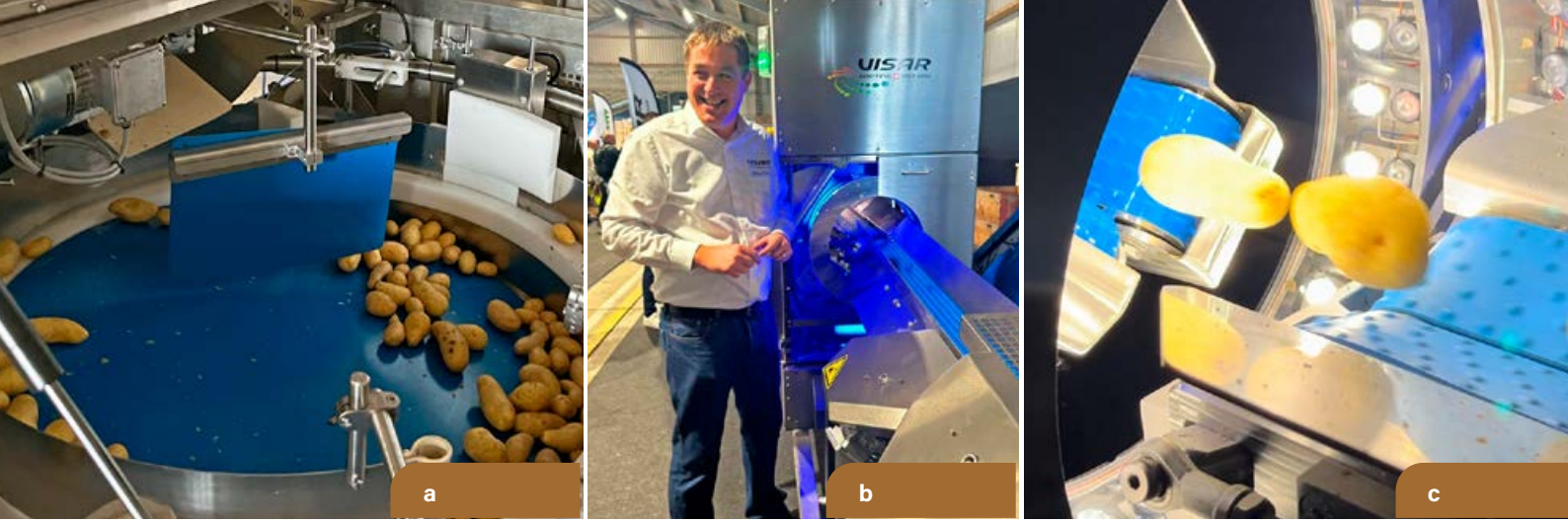
As with the Quality Grader, the potatoes are rolled under the cameras, allowing examination on all sides. The AI system that analyses each image includes data from diverse sources, adjusting for different varieties, soil types, environmental conditions and defects.

Checking out the Flikweert Quality Grader with account manager Robin de Winter

All in one

The Lamborghinis of the grading world, these are machines to boggle the mind. Whereas '*more work needed*'

Tolsma-Grisnich Optica Q on display, with Tolsma-Australia representatives Allan Greenhaigh (left) and Brad Hicks (right) and the author.



The Visar system singulates and aligns the potatoes using a unique, spinning disc (a). The potatoes are then shot through a ring of LED lights (b), surrounded by mirrors and with a top mounted camera (c).

graders generally look at each potato in a single dimension, these machines twist and spin every spud, photographing all possible angles as it whizzes past banks of cameras.

With each individual tuber intimately inspected, the grader can allocate it to an almost infinite combination of size, colour, and level of defect. Once the parameters are determined, the potatoes are simply popped off the line as they pass their designated departure point.

These machines are clearly focused on packing for the fresh market, and represent major investments.

Ellips GranTorino

The Ellips GranTorino is a massive machine. Able to handle up to eight lanes of potatoes singulated onto cup and roller trolleys, this machine can grade for both external defects (disease, compression bruising, misshapen, sprouting, etc. and internal attributes. These include dry matter, internal browning, hollow heart, glassiness and freeze injury. It achieves this using multispectral cameras that record images of multiple wavelengths. The company claims that this provides the most accurate sorting of any equipment currently on the market.

Visar sorting

The Swiss made Visar sorter looks more like an MRI machine than a traditional grader. The process starts with a unique singulator unit. Potatoes are dropped into a large, spinning disc, with centrifugal force aligning them into a single stream while avoiding contact with hard surfaces. Output is not in kg/minute, but 1.4m of potatoes/second (approximately 5 km/h).

The potatoes are then launched individually, at speed, through the optical module. This is a short tunnel with intense, all-round LED lighting. It's hard to watch; the potatoes are moving so fast they look more like a continual stream than individual spuds. Mirrors reflect light onto every surface as the potato spins through mid-air beneath a high-resolution camera. Three high resolution, shadow free images are recorded of each tuber. Analysis by the AI based software estimates size, levels of defects and other quality parameters.

The potatoes can be allocated to up to five quality levels plus waste. Transfer is achieved using a puff of air, with belts cushioned for a guaranteed soft landing.

These are just a few of the machines on offer. Others include U-Vision by Inovaa, the Smart Grader by GeJo Grading Services and the Newtec Celox-P-DUAL-UHD optical sorter.

The U-Vision system offers a sophisticated option for optical sorting and grading.

OPTICA Q: A CASE STUDY

South-Eastern New Zealand is known for fine wines, great cheese, and excellent potatoes. Andy Innes, a potato grower from Canterbury, devotes around 180 of his 700 ha to potatoes. Only 40 ha are grown for processing, with the remainder used to produce 20 different varieties of seed potatoes.

He recently installed an Optica Q optical sorting machine. This sorts potatoes into three grades – good, second grade and waste. According to Andy, one of the key reasons for investing in an optical sorter was availability of labour: "It became pretty obvious that we had to make some changes to what we were doing to be sustainable. I think optical sorting is the future."

Seed potatoes are harvested into bulk trailers, then transferred into bins in the yard. The potatoes are dried and cured for at least 3-4 weeks before grading. They are then split into different sizes and shipped to growers around New Zealand.

Previously, Andy was grading around 6 to 8t seed/hour with five staff plus a forklift operator. However, implementing an optical sorter has increased this to 10 to 12 t/h, with two staff who mainly just operate forklifts – loading and unloading. That is, he has doubled output using four to five few staff.

One of the other advantages is that you get a more reliable result. Andy explains, "With the Optica, you start at seven in the morning and it's still going the same at 5:30 at night. With no disrespect to staff, they start at eight o'clock in the morning and it's not long before someone has had enough. The consistency is better and it's amazing what the machine can pump through."

Growing 20 different varieties adds challenge, especially when soil type and dirt levels change. "Every paddock has a different soil profile. Some tubers are coming in damper, or with more dirt than others. All that has a bearing on how you set the machine up, or how you tweak things a little bit."

While Andy has been a relatively 'early adopter' of this technology, he will not be the first. "I've had a couple of other growers in to take a look and they've been completely blown away by how well it was doing." One of those neighbours had 20t of seed that didn't meet specifications. He graded 10t by hand, which took four staff four hours. The other 10t he ran through Andy's Optica Q in only an hour. Both batches passed inspection.

As shown at right, Tolsma (together with Grimme), recently ran a successful field day to demonstrate optical sorting technology. With labour such a key limitation, Andy is likely correct when he sees a future with increasing technology adoption.

Field day demonstrating optical sorting of seed potatoes, held in Canterbury New Zealand July 2025.

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SPOTLIGHT ON SUSTAINABILITY

MANAGING N_2O

Nitrous oxide (N_2O) is a potent greenhouse gas and ozone-depleting substance produced through microbial nitrogen transformations in agricultural soils. In potato systems, where high nitrogen inputs coincide with irrigation, soil conditions can favour nitrification and denitrification processes that drive N_2O emissions. This article outlines the mechanisms behind N_2O production and reviews management practices that can reduce emissions while maintaining crop performance.

N_2O AS A GREENHOUSE GAS

Carbon dioxide (CO_2) emissions tends to dominate the climate conversation, but nitrous oxide (N_2O), a 'hidden' gas released mainly from fertilised soils, is roughly 300 times more potent than CO_2 and also contributes to ozone depletion.

Produced largely by agricultural activities, particularly the use of synthetic fertilisers and manure, N_2O is the third most significant greenhouse gas and the leading ozone-depleting substance still emitted today[1]. N_2O emissions rise sharply when nitrogen is added close at the same time as irrigation, which is unfortunate as both are essential for high-yield potato production.

Understanding how nitrogen inputs, irrigation practices, and greenhouse gas emissions interact can help inform management choices.

THE NITROGEN CYCLE: HOW N_2O IS PRODUCED

Soil microbes help cycle nitrogen. After N fertiliser is added, some microbes turn ammonium into nitrate, and this process can release small amounts of nitrous oxide (N_2O) in soils where oxygen is low.

For example, when the soil is very wet other microbes use nitrate as a substitute for oxygen and break it down, again producing N_2O before eventually converting it to harmless nitrogen gas (N_2).

Both of these microbial pathways can generate N_2O, and which one dominates depends on how wet the soil is, how much oxygen can get in, how much organic matter is present, and the soil's pH[1].

As a rule of thumb, the assumption is that about 1% of the N fertiliser applied to fields is released as nitrous oxide (N_2O). But in reality, the amount can vary widely. In well-drained, well-managed soils, losses can be much lower than 1%.

Conversely, short-term spikes can occur, sometimes up to several percent of the fertiliser, especially when soils become very wet and low in oxygen, such as after heavy rain, irrigation, flooding, or in small patches where water collects.

New research also shows that past fertiliser use can leave behind 'legacy' nitrogen in the soil, which can continue to produce N_2O for years, effectively increasing long-term emissions beyond what is measured in a single season[2].

In potato systems, which generally have high N demand and often relatively low N-use efficiency, irrigation and fertiliser timing strongly control N_2O risk. Drip irrigation and careful split-application of N tend to reduce N_2O compared with flood/furrow or poorly timed heavy irrigation, but heavy irrigation or poor drainage can produce large short-term emissions[3].

EMISSIONS IN THE AUSTRALIAN CONTEXT

Recent Australian research suggests a more nuanced picture than older estimates of N_2O emissions. While agriculture remains the dominant source (accounting for over 74% of national N_2O emissions)[4], the relative contributions of fertiliser, livestock, and soil processes have been refined. A 2023 meta-analysis shows that direct emissions from fertiliser, crop residues, and animal excreta are roughly 26%, 36%, and 30% respectively[5].

That same analysis estimates the average emission factor for synthetic fertiliser across all agricultural systems is about 0.7%, although it varies. For example, under irrigation or higher rainfall the factor increases, and nitrification inhibitors can cut emissions by 55–84%[6].

These updates suggest that previous estimates from the early 2000s (e.g., '32% from inorganic N, 30% from livestock, 38% from soil disturbance') may overstate some sources and understate others, depending on how 'soil disturbance' was defined. There is also limited publicly available, up-to-date peer-reviewed LCA data for vegetable (especially potato) systems in Australia, however a new project is seeking to address this, see below.

EXPLORE FURTHER

Project: Understanding the environmental footprint of Australian Potatoes

Some international processors operating in Australia have goals to reduce greenhouse gas emissions, and they may seek information on fertiliser use from Australian growers.

MANAGING N_2O IN POTATO FARMING

Recent research shows that irrigation strategy plays a major role in both water efficiency and nitrous oxide (N_2O) emissions in potato systems. A meta-analysis[7] found that moderate irrigation levels were often associated with reduced N_2O emissions and improved water-use efficiency compared with fully irrigated systems, although effects varied with soil texture and nitrogen rate.

Field studies reinforce these patterns: A meta-analysis of research from 2022[8] showed that drip irrigation substantially reduced N_2O losses compared with furrow irrigation by avoiding waterlogging and limiting denitrification hotspots, while another study[9] found that sprinkler irrigation cut cumulative N_2O emissions by 40-60% relative to flood irrigation. More recent work[10] confirms that irrigation method interacts strongly with fertiliser management to shape microbial processes driving N_2O formation.

MITIGATION STRATEGIES FOR AUSTRALIAN POTATO FARMS

- **Match fertiliser to crop needs (the 4Rs):** Apply nitrogen at the right rate, time, and place using the best product. Soil testing and sap/tissue sampling can refine fertiliser rates so less excess is applied. Split N applications (e.g. base plus topdress) and banding near roots help use more N in-crop.
- **Use enhanced-efficiency fertilisers:** Products like nitrification inhibitors or urease inhibitors slow down N transformation. By holding N in the ammonium form longer, they cut the spurts of nitrate available for loss via N_2O emission or nutrient leaching, and keep nitrogen available for the plant. The PototoLink demonstration below, showed such an inhibitor kept more N in big tubers without changing total yield.

EXPLORE FURTHER

Demonstration: Nutrient use efficiencies in potatoes

- **Manage irrigation and soil moisture:** Over-watering or heavy rain on nitrate-rich soils can trigger spikes in N_2O emissions. Improving irrigation efficiency through drip systems, scheduling, or soil-moisture monitoring helps match water (and dissolved nitrogen) to crop demand and reduces the risk of saturated conditions that promote denitrification. N_2O emissions are typically highest when soils are both warm and wet, so it's important to avoid applying fertiliser to saturated or waterlogged ground. Allowing several days for soils to drain after substantial rainfall before applying nitrogen or resuming irrigation can significantly lower emission risk. Maintaining drainage and preventing soil compaction helps keep soils well-aerated, reducing N_2O emissions.

- **Cover crops and crop rotation:** Grow cover crops (preferably including grasses or legumes) after potatoes. These take up leftover N and add carbon, reducing the nitrate pool that would feed N_2O. For example, oats/faba bean covers at Oakdale markedly cut residual soil N. If legumes like sunn hemp or clovers are used, they fix new N into the system, partly replacing synthetic N. However, the timing of termination is key so that N is released when a cash crop can use it. In practice, cover crops can be killed off (rolled or herbicide) 4–8 weeks before planting as needed.

- **Organic amendments:** Adding compost or manure can boost soil fertility and carbon, but high N organics deserve care. Fresh, undigested manures or slurries can fuel N_2O as microbes consume the organic N and deplete oxygen. It's best to apply manures early (not just before rain) and incorporate them into aerobic soil. Mature composts and biochars release N more slowly and generally reduce N_2O risks. Overall, adding organic matter is beneficial but should be timed to avoid coinciding with wet, anaerobic conditions.

PUTTING MITIGATION INTO PRACTICE

The benefits of these strategies are both environmental and economic. Improved nitrogen use directly cuts fertiliser costs and often increases yield or quality.

Table 1 below summarises key mitigation options and their effects. By adopting these practices, Australian potato growers not only curb emissions but also stand to gain improved efficiency and profitability.

EXPLORE FURTHER

Fact sheet: Nitrous oxide emissions from vegetable soils. What's all the fuss about?

Trial results: Exploring nitrogen management with cover crops at Oakdale

Table 1. Summary of practices to reduce N_2O losses in potato systems

Mitigation strategy	How it cuts N_2O emissions	Other benefits
Right fertiliser practices (4Rs)	Match N supply to crop demand – avoids excess nitrate that fuels denitrification	Saves fertiliser cost; maintains yield; better crop nutrition
Enhanced-efficiency fertilisers	Slow the conversion of $NH_4^+ \rightarrow NO_3^-$ (via inhibitors or coatings) – less transient nitrate means less N_2O	More N stays plant-available; often higher yield or quality (see trial results)
Precision irrigation and drainage	Prevent waterlogging by scheduling irrigation/wet inputs carefully. Apply fertiliser only when soils are not saturated	Saves water; reduces energy use; improves root health
Cover crops and rotations	Cover crops take up leftover N and recycle it for next crop. Less "free" N reduces N_2O potential	Builds soil organic matter; smothers weeds; legumes add N naturally
Soil amendments/ organic matter	Use mature compost/slow-release manures (avoid raw high-N slurries) to minimise sudden N spikes	Improves soil structure and fertility over time (when managed properly)

THE SCIENCE OF N_2O PRODUCTION IN SOILS

Nitrous oxide (N_2O) emissions from agricultural soils are driven by complex, microbially mediated processes. The two primary pathways are nitrification and denitrification, each with distinct biochemical steps and environmental triggers.

- **Nitrification:** This aerobic process is carried out by autotrophic bacteria and archaea like Nitrosomonas and Nitrospira. It involves the oxidation of ammonium (NH_4+) to nitrite (NO_2-) and then to nitrate (NO_3-). During these steps, small amounts of N_2O can be released as a byproduct, especially when oxygen is limiting or ammonium is in excess. Recent studies have identified a third pathway, nitrifier denitrification, where these microbes reduce nitrite directly to N_2O under mildly anaerobic conditions.

- **Denitrification:** This anaerobic pathway is driven by heterotrophic bacteria (e.g., Pseudomonas and Paracoccus) that use nitrate as an alternative electron acceptor when oxygen is scarce. In this multi-step process (NO_3- → NO_2- → NO → N_2O → N_2), N_2O is an intermediate. Soil pH, carbon availability, and oxygen levels heavily influence this pathway, with high carbon and low oxygen promoting more N_2O relative to N_2.

- **Soil conditions:** Moisture, temperature, pH, and organic carbon – are critical in determining which pathway dominates and how much N_2O is produced. For instance, waterlogged soils encourage denitrification by reducing oxygen levels, while dry soils typically favour nitrification. Understanding these microbial dynamics can help fine-tune fertiliser management to reduce N_2O losses.

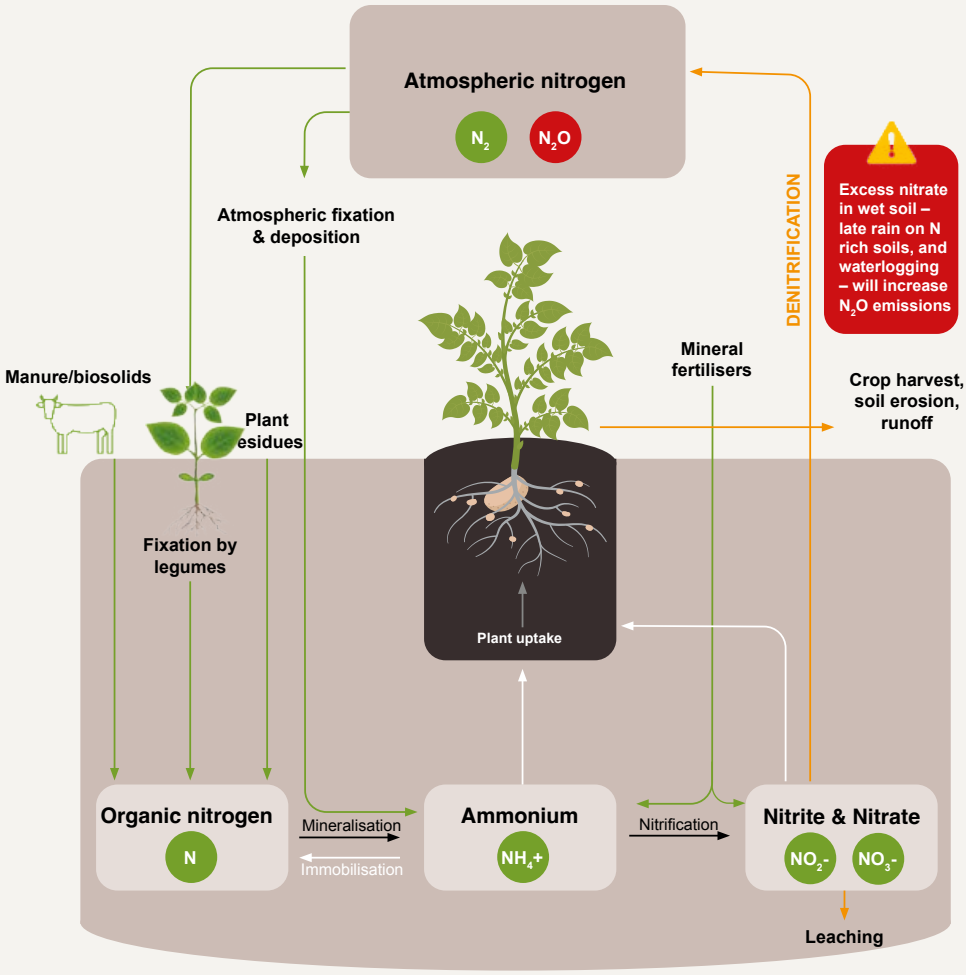

Figure 1. The nitrogen cycle

CALCULATE YOUR OWN N_2O EMISSIONS

International potato processors have invested in the Cool Farm Tool, which is used often used to calculate greenhouse emissions. While there are GHG calculators designed in Australia such as H-GAF, Cool Farm Tool is often recognised by international potato processors. Cool Farm Tool has a potato-specific module and is freely available to help you estimate your N_2O emissions from different types of fertiliser or other on-farm practices. Note that any greenhouse calculator is inaccurate compared to a professional life cycle analysis, such as potato LCA being carried out for the Australian industry.

CALCULATE YOUR OWN EMISSIONS

Cool Farm Tool

KEY POINTS

- N_2O emissions increase when nitrogen application coincides with irrigation or waterlogged soils.
- Soil microbes produce N_2O through nitrification and denitrification, driven by moisture and oxygen levels, compared with flood or furrow systems.
- Enhanced-efficiency fertilisers can substantially cut N_2O emissions.
- Short-term N_2O emission spikes can occur after heavy rain or irrigation.
- Residual nitrogen can continue to generate N_2O for years.
- Potato systems are high risk due to high nitrogen inputs and irrigation demand.
- Drip and sprinkler irrigation generally reduce N_2O

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GUT HEALTH FOR PESTS: HOW MICROBES COULD CHANGE PEST CONTROL

By Lilia Jenkins, Alex Gill and Perran Ross | Cesar Australia

If you've ever drunk a Yakult, spooned some Greek yogurt or taken a probiotic supplement, you already know that tiny microbes living in your gut can make a big difference to your health.

The 'beneficial' bacteria in your gut help break down food, produce vitamins, and keep your digestive system in balance. Without them, you wouldn't feel quite the same.

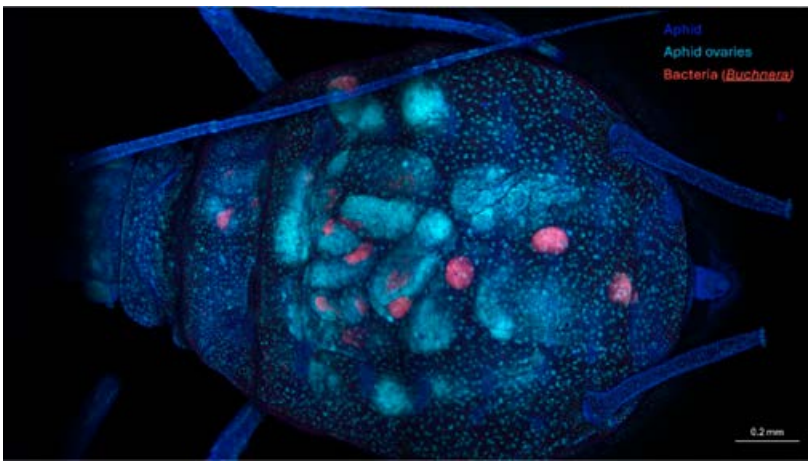
It turns out that insects also rely on tiny microbes within them to survive and thrive. These specific microbes are called endosymbionts, and they could open new doors to managing pests in sustainable, smarter and more targeted ways.

THE INVISIBLE PARTNERS EVERY INSECT DEPENDS ON

The invisible partners every insect depends on.

Many insects possess obligate endosymbionts, meaning the pest cannot live without them. For example, an endosymbiont called Buchnera helps provide aphids with vital nutrients missing from their diet.

Other endosymbionts are secondary. They aren't essential but can offer other benefits, like protection against predators (beneficial insects).



Using FISH (fluorescence in situ hybridisation), we can see the endosymbionts living inside this aphid. Image Courtesy of PEARG.

THE DOUBLE-EDGED ROLE OF ENDOSYMBIONTS

The relationship between an insect and its secondary endosymbionts isn't always simple. An endosymbiont that's 'good' in one situation might come with downsides in another.

For example, an endosymbiont might help the pest avoid predation by beneficial insects, but that might come at the cost of slower reproduction.

Understanding these trade-offs is important for pest management, as they can directly influence how significant a problem a pest becomes. An endosymbiont could influence how quickly a pest population grows, how readily it spreads disease, or how vulnerable it is to pesticides and beneficial insects.

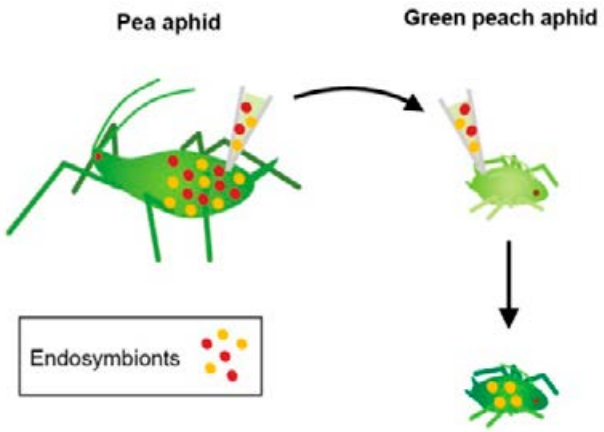
WHY DO EMDOSYMBIONTS MATTER FOR YOUR CROPS?

Think about what happens if your gut health is thrown out of balance, maybe after a heavy course of antibiotics. Digestion slows down, energy drops, and your whole system feels off.

Insects are the same. When their endosymbionts shift, their performance changes.

That's why researchers at the University of Melbourne's Pest and Environmental Adaption Research Group (PEARG) and Cesar Australia are exploring ways to tip these balances by working with the bacteria already naturally occurring in insects.

By exploring the effects some secondary endosymbionts have on their hosts, researchers are looking for new, sustainable and long-lasting ways to protect horticultural and broadacre crops. This research is happening as part of the Australian Grains and Horticulture Pest Innovation Program, an investment by the Grains Research Development Corporation (GRDC), Hort Innovation, the University of Melbourne and Cesar Australia.



Endosymbiont transfer from Pea aphid into green peach aphid using microinjection. Courtesy of Perran Ross, PEARG.

THE SCIENCE BEHIND ENDOSYMBIONT PEST MANAGEMENT

Endosymbionts offer a novel method for pest control with potential for unique management strategies. However, turning this vision into reality is a detailed, hands-on process.

Across Australia, many of the pests we deal with every season carry endosymbionts. But not every species has them, and even within the same species, some populations do and others don't.

This diversity means researchers need to collect insects from a wide range of regions and host plants to determine which insects carry which endosymbionts, and whether they could be used to control target pests.

Once an endosymbiont of interest has been identified in one species (the 'donor'), it can be transferred directly to another species (the recipient'). Out in the field, this can happen naturally through reproduction or feeding together on the same plant. In the research lab, this is achieved through a process called microinjection. Using a small needle under a microscope, researchers extract body fluids from the donor and carefully inject it into the recipient. If successful, the recipient can pass the new endosymbiont on to their offspring, creating a new line of insects carrying the introduced bacteria.

It doesn't end there. The same endosymbiont can behave very differently once inside a new host, as each insect species has its own biology. So, researchers must then determine whether the same effect has also been transferred. They look for signs of benefits or costs, such as how well the insects survive and reproduce, how the bacteria spread through a population or generations, whether virus transmission changes, and how the pest interacts with predators.

ENDOSYMBIONTS AT WORK

Some of the most advanced work so far has not occurred in agriculture, but in the public health sector.

Wolbachia is a secondary endosymbiont that, in mosquitoes, can reduce their ability to transmit viruses like dengue, chikungunya, and Zika. Mass releases of mosquitos carrying Wolbachia have successfully reduced these diseases in countries like Australia, Singapore, Indonesia, and Brazil.

Using the same process, Australian agricultural research is now catching up, and the early results are promising:

- Some endosymbionts can directly harm pests, acting like a natural bio-pesticide and reducing their numbers. The endosymbiont Rickettsiella, found in pea aphids, has been successfully transferred into green peach aphid. Research, including published lab studies and modelling work, shows that it reduces the green peach aphid's fitness, alters its heat tolerance and modifies its body colour. Rickettsiella can rapidly spread within green peach aphid populations, meaning it has the potential to be self-sustaining in a field environment, an important factor for persistent pest control strategies.

- Other endosymbionts don't reduce pest numbers, but do make them less damaging. Lab experiments show that the endosymbiont Regiella, when transferred from green peach aphid to oat aphids, can supress Barley Yellow Dwarf Virus transmission. Further work is planned to determine its effectiveness at reducing virus spread under field conditions.

The colour difference between an aphid carrying Rickettsiella (left) and an aphid without Rickettsiella (right) aphid. Photo courtesy of Lilia Jenkins (Cesar Australia).

- Some endosymbionts can affect how beneficial insects feed on pests. For example, certain aphids infected with Rickettsiella viridis or Regiella insecticola were eaten more quickly by ladybird beetles in laboratory experiments at 20°C than uninfected aphids.

FROM LAB TO PADDOCK

In Australia, at PEARG, researchers are:

- **Surveying insects:** mapping the endosymbionts in key crop pests (aphids, mites, caterpillars, spider mites), and beneficial insects (parasitoid wasps).
- **Exploring new solutions:** Transferring new endosymbionts into target insects, creating new ways to manage pests and support beneficial species.
- **Field testing:** Running small plot trials and larger field experiments to understand the dynamics of pests and their endosymbionts under real-world conditions.

But like any new pest control tool, there are questions to work through:

- **Target species:** Which pests and beneficials are most suitable for this approach?
- **Ecological impacts:** How will introducing a new endosymbiont affect other species and ecosystems?
- **Spread and stability:** Will the introduced endosymbiont stay in the population long enough to be effective?
- **Regulation and approval:** What safeguards and approvals are needed before releasing live microbes into the environment? Even if these endosymbionts already occur in Australia, field use of this technology requires formal approval.

THE FUTURE OF ENDOSYMBIONT-BASED PEST CONTROL

Endosymbiont-based pest control isn't on the shelf just yet, but progress is happening each season.

The thing is, unlike sprays or other visible controls, you can't see endosymbionts at work in your field. That doesn't mean they aren't making a difference, just like the probiotics working quietly in your gut. But understanding their effects and how to use them effectively takes time.

So for now, the best step is to stay connected. Stay informed through updates from **Cesar Australia** and publications produced by **PEARG** to ensure you're among the first to hear about trial results and future opportunities to see the work in action.

ACKNOWLEDGEMENTS

This research is being undertaken as part of the Australian Grains and Horticulture Pest Innovation Program (AGHPIP). AGHPIP is a collaboration between the Pest & Environmental Adaptation Research Group at the University of Melbourne and Cesar Australia. The program is a co-investment by the Grains Research and Development Corporation (GRDC), Hort Innovation, and the University of Melbourne, together with in-kind contributions from all program partners.

WANT TO CONTRIBUTE?

Find out how you can contribute to Cesar Australia's research

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R&D + biosecurity update

Guava root-knot nematode identification and management

RESEARCH UPDATE FROM THE NORTHERN TERRITORY

BY DR MELANIE FORD AND DR WAYNE O'NEILL

Guava root-knot nematode (GRKN), *Meloidogyne enterolobii,* was first detected in Australia in 2022. It was found in cucumber, zucchini, capsicum, sweetpotato and snake bean crops in the Top End of the Northern Territory. Further testing indicates that it is also present in isolated areas of Queensland.

Due to the challenges of managing this pest, Hort Innovation, alongside AUSVEG and several state and territory governments, have embarked on an Australia-wide project, *Guava root-knot nematode identification and management* (VG23007).

Led by the Queensland Department of Primary Industries, this strategic levy investment from the Hort Innovation Vegetable Fund seeks to understand where guava root-knot is found, better ways to detect it, and regionally appropriate management strategies.

Above. Cucumber roots with heavy galling caused by guava root-knot nematode. Photo credit: David Yuan, Australian National Insect Collection.

Where has it been detected in NT?

The Northern Territory Department of Agriculture and Fisheries (NTDAF) are conducting Territory-wide surveys to determine where root-knot nematodes are a problem, which species are present, and the crops affected.

Dr Melanie Ford of NTDAF is working with growers, community gardens, and households to collect hundreds of root samples. She is analysing roots in the laboratory and identifying root-knot nematodes via their DNA.

There are three main species of root-knot nematodes that are found across the NT. To date, the newly detected fourth species, GRKN, has not been found outside of the Top End region. The other three species are long established in the NT and other parts of Australia.

"From our survey results to date, guava root-knot nematodes appear to be concentrated around the residential suburbs of Darwin and less in the agricultural areas. When detected on commercial farms, infestations of guava root-knot nematodes are often associated guava trees, and vegetable crops planted near the infested guava. The limited distribution is good news for other productive regions and building effective management practices," explained Melanie.

Despite guava being a favoured host, GRKN has a very wide crop host range, and large losses have been experienced in multiple vegetable commodities overseas, so avoiding spread of the pest to other regions is extremely important.

"Farm hygiene, especially boot washing and wheel washing, are important for growers to prevent the spread of root-knot nematodes.

Another movement pathway for GRKN (and other plant pests and diseases, e.g. viruses) is the uncontrolled sharing of vegetative planting material. Therefore, it is crucial for farm staff and visitors travelling from infested to healthy areas to 'come clean-go clean'."

Research into management

Root-knot nematodes are notoriously difficult to manage, with most practices focussing on reducing populations and their impact to crops. Rotating crops with non-host cover crops are effective ways to reduce nematode populations by removing their food source. As guava root-knot nematode is a recent detection in Australia, it was unknown which local cover crops are suitable for management, so this project is testing a range of rotations for resistance.

"It is important for growers to know if rotational cover crops are root-knot nematode hosts, especially in mixed horticulture and fodder farming systems in the north."

Trials are underway in the NTDAF Berrimah Research Farm glasshouses to identify which common NT cover crops are resistant to guava root-knot nematodes and if any are hosts.

Above. Long melon crop affected by GRKN in the Top End, NT.

Preliminary results suggest that Jumbo sorghum, Pronto sorghum and Katambora Rhodes grass are resistant to guava root-knot nematode. The commonly used fodder crop, Cavalcade, may be susceptible. Further research is under way and results will be available in mid-2026.

On the ground

Some Top End growers impacted by GRKN have been proactive about farm hygiene, rotational cover crops and the use of compost amendments. Inputs of organic amendments have also been shown to suppress root-knot nematodes by supporting increased populations of natural enemies of the nematodes in the soil.

"Due to their diligence and hard work, we have seen two farms reduce the GRKN populations to negligible levels in annual cropping systems. This is a really positive outcome."

Systems with mixed perennial and annual production are more challenging to manage as the perennial crop roots can host root-knot nematodes across seasons and at depth in the soil. To address these challenges, the Australia-wide project is developing methods for rapid detection of GRKN from soil samples. This will be key to helping growers understand where it is on their properties and drive Integrated Pest Management strategies for long-term management.

Left. Celery crop roots heavily infested with established root-knot nematodes in Central Region, NT.

Below. Glasshouse trials, at Berrimah Research Farm, testing common NT cover crops for GRKN resistance.

AFFILIATIONS

Melanie Ford, PhD
Nematologist
Plant Pathology, Biosecurity and Animal Welfare
Department of Agriculture and Fisheries

Wayne O'Neill
Plant Pathologist
Agri-Science Queensland
Department of Primary Industries, Queensland

The *Guava root knot nematode identification and management project* is funded by Hort Innovation, using the vegetable research and development levy and contributions from the Australian Government.

Project Number: VG23007

Hort Innovation VEGETABLE FUND

Strengthening insecticide resistance management for fall armyworm

BY RAMESH PURI, HEIDI PARKES & ALISON WATSON
DEPARTMENT OF PRIMARY INDUSTRIES, QUEENSLAND
ASEAN FAW ACTION PLAN

Three experts from the USA and Asia shared their experience of managing fall armyworm insecticide resistance in a webinar in December to help Australian growers address this challenge.

Insecticide resistance in fall armyworm (FAW) is an increasing global concern, particularly in intensive cropping systems characterised by continuous host availability and frequent insecticide use. To support Australian industries in preparing for this challenge, a webinar in December 2025 brought together three experts from the USA and Indonesia to share their knowledge and experience of managing FAW insecticide resistance with Australian industries and researchers.

The webinar was delivered jointly by the *National fall armyworm innovation system for the Australian vegetable industry project* (VG22006) led by the Queensland Department of Primary Industries (DPI), and the ASEAN FAW IPM Action Plan.

This event was part of a broader effort to enhance insecticide resistance warning capability, support coordinated decision-making and promote sustainable FAW management across horticulture and mixed-cropping systems.

Above L-R. Dr John Stanley and Dr Ramesh Puri from the Queensland DPI monitoring a fall armyworm management trial in sweet corn at the Bowen Research Facility in August 2025; John and Ramesh are working on insecticide resistance management in fall armyworm as part of the vegetable-levy funded VG22006 project.

The global picture:
Rapid resistance under high pressure

Dr David Mota-Sanchez
Michigan State University

Dr David Mota-Sanchez opened the session by highlighting that fall armyworm (FAW) is already one of the top 20 most insecticide-resistant pest species worldwide. To date, 272 cases of resistance have been recorded across 47 active ingredients spanning eight Modes of Action. He emphasised that high spray frequency, lack of pest-free periods and continuous host availability create a perfect storm for resistance development, as exemplified by Puerto Rico. Dr David Mota-Sanchez advised that rotating insecticides and implementing area-wide management programs are crucial for resistance control, which requires integrating additional tools.

Scan the QR code or visit youtube.com/watch?v=DabWkZqf4N0 to view the webinar presentation.

Grower decisions matter

Dr Dominic Reisig
North Carolina State University

Dr Dominic Reisig's presentation was centred on the idea that managing BT (*Bacillus thuringiensis*) resistance depends on people as much as biology. Effective resistance management isn't just technical; it requires incentives, governance and coordinated stewardship. Outlining the USA's experience of *Helicoverpa*, Dr Dominic Reisig explained that the use of moderate-dose traits and fragmented stewardship allowed resistance to develop gradually and spread quietly, only becoming obvious during high-pressure seasons. Resistance management is most effective when biological principles are aligned with human behaviour.

Scan the QR code or visit youtube.com/watch?v=MeE58xcz2Gw to view the webinar presentation.

Emerging resistance risks in Indonesia

Prof. Andi Trisyono
Universitas Gadjah Mada

Prof. Andi Trisyono provided an overview of the current status of FAW resistance management in Indonesia. Although major resistance issues have not yet been reported, early warning signs are emerging. Key priorities include improving farmer awareness so growers can recognise early signs of resistance and know how to report control failures, as well as strengthening laboratory infrastructure. Early detection of resistance will depend on stronger local monitoring systems, along with accessible training and education for growers on resistance management and reporting.

Scan the QR code or visit youtube.com/watch?v=JeMlTR14HoQ to view the webinar presentation.

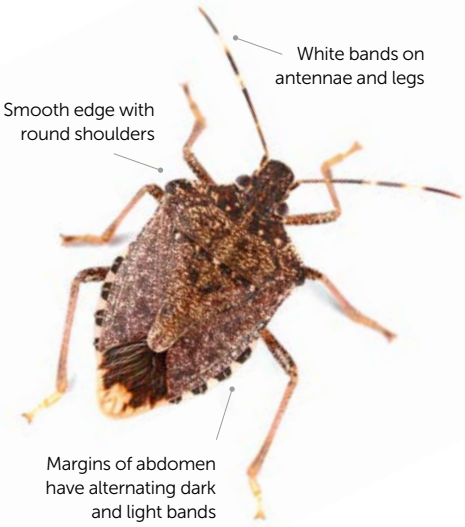
The National fall armyworm innovation system for the Australian vegetable industry project has been funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government, with co-funding from the Queensland Department of Primary Industries, New South Wales Department of Primary Industries and Regional Development, and the Victorian Department of Energy, Environment and Climate Action.

Project Number: VG22006

Hort Innovation VEGETABLE FUND

Understanding pest notifications: **From detection to decision**

PUTTING PEST DETECTIONS INTO CONTEXT FOR VEGETABLE GROWERS AND ADVISORS



Not all pest notifications are equal

As a vegetable grower or crop advisor, you probably receive notifications about insect or pathogen (pest) detections in your area. Most of the time they are likely to be insects or disease symptoms you have seen before. The more alarming notifications may be those received when a new, exotic pest is reported. Understandably, these alerts can create uncertainty. Exotic pest detections may result in a biosecurity response and changes to market access status or protocols, never mind potential impacts on crop yield and management options. These more visible biosecurity responses are only a small part of the insect and pathogens that are reported on by state and territory biosecurity agencies.

Pest notification systems exist to keep growers, agronomists, scientists and regulatory agencies informed about changes in the pest and disease landscape. When a pest or pathogen is detected for the first time on a new host plant or in a location where it hasn't been found before, biosecurity agencies issue notifications as part of biosecurity surveillance.

These alerts serve multiple purposes: they enable early detection of potentially serious threats, help track pest movements, and create awareness that supports informed decision-making.

Evaluating pest risks

When new pest detections are evaluated, several factors are considered before recommending actions. One example is potential economic impact: Will this pest reduce yields or quality enough to justify response costs? Regulatory agencies assess whether the species meets criteria for quarantine status, which triggers mandatory responses. Establishment potential is also considered based on climate suitability, host availability, and reproductive biology. The availability of effective monitoring tools and management options is also considered.

Scan QR code to learn more

For growers, this means that high-priority exotic pest alerts and responses are actually relatively rare. These are the responses that typically involve quarantine pests with proven capacity to cause severe crop damage, rapid population growth, and potential for widespread establishment. Recent examples for the vegetable industry include Tomato brown rugose virus (ToBRFV) detected in South Australia in 2024 and Potato mop-top virus (PMTV) detected in Tasmania in 2025.

Here we share examples of pests (*Table 1*) that were detected and reported by bio-security agencies in 2025 as extension of host range, extension of geographic range and not considered technically feasible to eradicate.

Pest monitoring systems and notifications are tools for awareness. They reflect our increasingly sophisticated surveillance systems and our commitment to staying ahead of and being prepared for potential threats. However, the vast majority of new pest detections do not result in economic damage to vegetable crops.

By understanding the difference between detection and threat, and by maintaining communication with extension services, fellow growers and biosecurity agencies, you can make informed decisions about when to act and when to simply stay alert.

Where to find out more:

- The Australian Interstate Quarantine website: **interstatequarantine.org.au**
- If you suspect that you have seen an exotic plant pest, you need to report this to the national **Exotic Plant Pest Hotline on 1800 084 881.**
- Information on current eradications is available at: **outbreak.gov.au**
- Sign up to receive biosecurity updates from AUSVEG via *Frontline*.

TABLE 1. This table provides examples of pests that were reported by biosecurity agencies in 2025 for which no further biosecurity response was triggered.

PEST AND HOST	LOCATION	ALERT TYPE	WORTH KNOWING
Brown marmorated stink bug (exotic; not established in Australia)	Various states	New detections	BMSB is an exotic, hitchhiker pest, often travelling with imported goods from northern hemisphere countries. The risk season for BMSB is between 1 September and 30 April inclusive, which is when additional measures are put in place for specific imported goods arriving from certain countries where BMSB is present.
Root and crown rot (*Pythopythium helicoides*) on papaya	Northern Territory	Extension of geographical and host range	The Oomycete water mould was detected on papaya. No further response action was undertaken as this pathogen is already present in Australia. It can also affect vegetables such as lettuce and capsicum.
Blackleg or soft rot on potato (*Pectobacterium polare*)	Western Australia	Extension of geographical range	Soft rot pathogen or blackleg was detected in potato in Western Australia. It is considered widespread with records in Victoria, NSW, Qld and SA. There is no reported evidence of significant economic impacts. Known hosts of *Pectobacterium polare* are potato and field mustard (*Brassica rapa*).
Papaya mealybug (established in parts of Australia)	Queensland	Extension of geographic range	Papaya mealybug is a sap-sucking insect that has previously been reported in the NT. It was initially considered to be not technically feasible or cost beneficial to eradicate because it has a wide host range and spreads easily between host plants. This was a report of a new detection in Qld. Papaya is the preferred host. Vegetable hosts may include eggplant, beans.
Tropical root knot nematode (*Meloidogyne luci*) on faba bean and tomato. New pest to Australia; not feasible to eradicate and no response was initiated.	Victoria	New pest record	Tropical root-knot nematode was detected in vegetable crops at multiple locations in Vic. It is a new pest to Australia. Eradication was not deemed to be technically feasible because of challenges in sterilising soil where the nematode is established. Tropical root-knot nematode can spread with propagation material, soil and machinery. Cleaning of equipment before moving between properties is recommended to reduce the risk of spread.

RESPONSES TO EXOTIC PESTS

Brown marmorated stink bug (*Halyomorpha halys*; BMSB) is an exotic pest that causes major damage to agricultural crops, nursery stock and ornamental plants. It's also a nuisance pest because it seeks shelter in large numbers, in buildings and equipment during the winter months. When crushed or disturbed, it has a foul-smelling odour.

BMSB can hitchhike in goods and items from northern hemisphere countries during their winters and can survive for long periods by remaining dormant.

When there is a post-border detection of BMSB in Australia, the Australian Government works closely with state and territory governments to manage the risk of the pest establishing a viable population in the environment.

EXOTIC PLANT PEST HOTLINE
1800 084 881

A trapping and surveillance program is undertaken around each post-border detection site to confirm that no further BMSB are present. Response agencies may also undertake additional activities including trapping, visual surveillance, sweeping of vegetation and treatment of higher-risk sites.

AUSVEG state update

NEW SOUTH WALES

It's been a busy few months for growers in NSW, with no shortage of challenges and opportunities shaping the industry as we know it.

Biosecurity has remained a core focus of NSW Farmers' Horticulture Committee throughout its recent work to represent growers within the state, with responses to Tomato brown rugose fruit virus (ToBRV) and Potato mop-top virus (PMTV) a top priority to protect the future of the state's industry.

In late 2025, NSW Farmers welcomed the state government's decision to tighten controls to prevent PMTV from entering NSW, as a win for biosecurity in the state.

A highly contagious plant disease, PMTV is currently present in Tasmania, and a new control order is now in place to prevent potatoes, soil, materials and equipment linked to potato production in infected areas from entering NSW. This is a strong step forward to containing the disease.

Meanwhile, NSW Farmers' Horticulture Committee also continues to engage with our growers, AUSVEG and the NSW Government for ToBRV updates, information and next steps.

Red tape also remains a core challenge for growers nationwide, with NSW Farmers continuing to make positive progress in its efforts to reduce the cost and burden of compliance for the sector.

In December last year, farm leaders secured a federal government commitment to introduce a legislated right to repair agricultural machinery, in a major step forward in cutting costs for farm businesses under increasing pressure.

Work also continues to develop a first farm buyers' scheme to help young farmers get into horticulture and other commodities within the agricultural industry.

Armed with policy proposals for both the state and federal governments, the NSW Young Farmers' Council continues to advocate for a solution to help young farmers succeed in the sector.

With recent AUSVEG statistics indicating one third of Australian vegetable growers are considering leaving the industry, it's vital we ensure the next generation can access farmland and continue to feed the world. We look forward to sharing further updates on this important work soon.

NSW Farmers advocates for a profitable and sustainable New South Wales farming sector. You can find out more, including how to become a member, via our website nswfarmers.org.au.

Stephen Mudd
NSW Farmers
mudds@nswfarmers.org.au
M. 0429 011 690

NORTHERN TERRITORY

Weathering the wet: Cyclones and horticulture in the Northern Territory

The Northern Territory (NT) is known for its extreme weather conditions, and the majority of the territory experiences a tropical climate that is broken up into two distinct seasons – the Dry Season and the Wet Season, also known as hot and hotter! Although most of the local and tourist activities happen in the Dry Season – including the majority of the vegetable production, the Wet Season is a magical time. It brings majestic monsoonal rains that seems to encourage the pace of life to slow, including vegetable production. Every few years however, that monsoonal weather can bring serious cyclones that can pose threat to people, infrastructure and farms.

Recently the Top End experienced Cyclone Fina, a Category 3 severe cyclone, bringing with it heavy rains and winds up to 205 km/h. Tiwi islands, Cape Don and the Darwin regions were most effected. Thousands of residents lost power, businesses and homes experienced outages, and infrastructure was damaged. The community jumped into action with emergency services and military assistance coordinating to help remote communities, restore services and aid in the clean up process. Luckly there were no casualties as a result of the cyclone, with some residents having already lived through the 1974 Cyclone Tracy that took 66 lives.

The horticultural industry was impacted with significant damage to the local banana industry. The NT's largest banana farm at Lambells Lagoon publicly reported losing approximately 40 percent of its fruit, a major setback for local supply. Recovery is expected to take several months while plants re-establish. For the vegetable industry many growers experienced trellis crop losses, water logging and power loss. Some vegetable growers growing in shade houses also experienced infrastructure damage due to the extreme winds.

Although this cyclone was significant, extreme weather conditions are not new to growers in the NT. They are familiar with transport to markets being impacted and weather events that can damage and destroy a crop. This familiarity allows them to plan their businesses to accommodate for this as much as possible.

As the Wet Season is a known time for these weather events, it is often the time of year where most growers will take a break. For those willing to accept the challenge of the weather, they will grow through the season to gain the higher prices, but they also run the higher risk and challenges that come with this intense time of year.

Mariah Maughan
NT Farmers Association
ido@ntfarmers.org.au
M. 0417 618 468

Cyclone Fina, outer Darwin farming region.

vegnet update

National Vegetable Extension Network
VegNET

AUSVEG

Hort Innovation VEGETABLE FUND

Hort Innovation ONION FUND

VegNET overview

NATIONAL

Contacts

LOCAL REGIONAL DEVELOPMENT OFFICER

NEW SOUTH WALES – Penrith
Sylvia Jelinek
Local Land Services NSW
M. 0427 086 724
sylvia.jelinek@lls.nsw.gov.au

NORTHERN TERRITORY – Darwin
Mariah Maughan
NT Farmers
M. 0417 618 468
ido@ntfarmers.org.au

QUEENSLAND – N & FN – Bowen
Richelle Kelly
Bowen Gumlu Growers Association
M. 0419 429 808
rdo@bowengumlugrowers.com.au

QUEENSLAND
Wide Bay Burnett – Bundaberg
Jessy Logan
Bundaberg Fruit & Vegetables Growers
M. 0407 366 797
VegNET@bfvg.com.au

QUEENSLAND – SE – Gatton
Monique Rooker
Lockyer Valley Growers Inc
M. 0456 956 340
ido@lockyervalleygrowers.com.au

SOUTH AUSTRALIA – Adelaide
Peta Coughlin
AUSVEG SA
M. 0409 029 745
peta.coughlin@ausveg.com.au

TASMANIA – Launceston
Tayla Field
RM Consulting Group
M. 0429 391 538
taylaf@rmcg.com.au

VICTORIA – Gippsland – Sale
Amanda Gould
Food & Fibre Gippsland
M. 0474 500 380
amanda.gould@
foodandfibregippsland.com.au

VICTORIA – N, S and W – Melbourne
Daniel Bosveld
AUSVEG VIC
M. 0459 519 433
rdo@ausvegvic.com.au

WESTERN AUSTRALIA – Perth
Angela Tarbottom
vegetablesWA
M. 0427 373 037
angela.tarbottom@
vegetableswa.com.au

NATIONAL
Cherry Emerick
AUSVEG
M. 0418 389 680
cherry.emerick@ausveg.com.au

VegNET is the vegetable and onion industry extension program that is run by growers, for growers and delivered by AUSVEG.

The program aims to keep Australian vegetable and onion growers informed about current R&D activities, results and resources – supporting the adoption of industry best practice and bolstering vegetable and onion productivity and profitability in key growing areas across the country.

Coordinated nationally by AUSVEG, VegNET is delivered 'on-the ground' by regional development officers (RDOs) in key growing regions who are responsible for developing and executing regional extension plans.

A critical step in ensuring growers receive assistance is the identification of each region's key priority issues, resources and connections requirements.

The most common challenges identified in consultation with industry are:

- Water (availability, quality and cost)
- Labour (availability, awards, HR and skills)
- Input costs
- Biosecurity
- Pest management
- Market development (including export)
- Post-harvest and marketing
- Urban encroachment
- Social license (environmental impact and chemical (mis)usage)
- Business management

Now in **Phase Three,** the VegNET program is running with RDOs based in organisations with strong grower networks in vegetable and onion production regions.

The program is overseen by a National Coordinator, who works with each regional group to ensure growers have consistent access to an industry-focused extension program that will put their needs first in their efforts to be productive, profitable and more competitive in an ever-increasingly global marketplace.

In 2016 Hort Innovation invested in 10 regional capacity building projects to effectively transfer R&D information to vegetable growers through regionally-based extension projects and associated coordination and training projects. These projects were contracted to delivery partners based in the ten major vegetable growing regions and were unified under a national brand – VegNET.

Phase One The first phase of VegNET finished in early 2020, with the regional development officers (RDOs) delivering R&D awareness and extension activities in their geographical regions.

Phase Two The second phase of VegNET finished in September 2021, and resulted in each region developing regional priority areas for extension. These regional priorities were collated into national priority areas to inform a national extension program that is nationally-consistent and regionally-specific.

VegNET is funded by Hort Innovation, using the vegetable and onion research and development levies and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

Here are some of the innovative projects currently underway in 2026 supported by the Innovation Fund.

VEGNET
National
UPDATE

INNOVATION IN ACTION

Spotlight on VegNET's 2026 projects

Across Australia's vegetable growing regions, Regional Development Officers (RDOs) are often the first point of contact when growers are facing change, pressure, or new opportunities. Whether it's responding to seasonal challenges, exploring new practices, or navigating emerging issues, RDOs play a critical role in supporting growers with practical, timely advice.

The VegNET Innovation Fund is a key enabler of this work. It gives RDOs the flexibility and resources to turn ideas into action, supporting projects that address regional priorities with an innovative approach focusing on delivering real, on-farm solutions. Crucially, the fund allows RDOs to act when it matters most, helping growers respond to challenges and opportunities as they arise, rather than after the fact.

Having access to the Innovation Fund strengthens the impact of VegNET's regional network by encouraging collaboration across vegetable growing regions. When local areas are facing shared issues, RDOs can work together to combine knowledge and deliver solutions. This collaborative approach helps amplify successful on-farm outcomes, strengthen relationships to support a more resilient and productive vegetable industry.

Above. Daniel Bosveld Victoria North, West and Southeast Regional Development Officer (Speaking at Somerville AgriChem Masterclass and Bio Ferts Discussion Event).

We encourage you to reach out if a project sparks your interest.

FIND OUT MORE

Please contact Cherry Emerick AUSVEG on 0418 389 680 | cherry.emerick@ausveg.com.au or Emily Corbett AUSVEG on 0425 375 207 | emily.corbett@ausveg.com.au

VegNET 3.0 is funded by Hort Innovation using the vegetable and onion research and development levies and contributions from the Australian Government. **Project Number: VG21000**

Hort Innovation VEGETABLE FUND Hort Innovation ONION FUND

Compliance navigation guides for Victorian vegetable growers

Helping growers spend more time on the farm and less on paperwork.

This brand-new project is tackling one of the biggest hurdles for Victorian growers: compliance. With multiple standards, costly audits, and increasing administrative demands often taking time away from day-to-day farm operations. This project is focused on making compliance clearer, simpler, and more manageable for Victorian growers.

Led by VegNET Victoria North, West and Southeast, the project is developing practical compliance navigation guides covering Freshcare, HARPS, Fair Farms, Sedex, and organic and biodynamic standards. Designed with growers in mind, the guides include easy-to-use checklists, templates, real farm examples, and practical tips to support audits and ongoing compliance.

To ensure the resources are accessible and useful, the project is being supported by workshops, webinars, and one-on-one assistance. While the work is currently focused on Victoria, the learnings and tools developed through this project have strong potential to benefit growers nationally, helping reduce compliance costs and support informed decisions around certification and market access.

VICTORIA CONTACT

Daniel Bosveld
Regional Development Officer
0459 519 733

Above L-R. Tayla Field, Tasmania Regional Development Officer and Prue Rothwell, Tasmania Regional Support Officer. Kirsty Kittle, VegNET Support Officer, Maria Colangelo (Rainbow Fresh) and Peta Coughlin, VegNET Regional Development Officer.

Flying precision:
Using drone imagery to inform on-farm decisions

Helping growers turn drone data into practical actions.

Drone technology and multispectral imagery have the potential to support smarter crop management, but many growers remain unsure where to start or how the technology could fit into their day-to-day operations. This project is helping Tasmanian growers explore how drone imagery can be used as a practical, decision-making tool.

Delivered by VegNET Tasmania in partnership with the Tas Farm Innovation Hub, the project combines hands-on workshops, field demonstrations, and a real farm case study to show how data can be translated into practical decisions that reduce inputs and saves time.

This project aims to be the linkage between growers, agronomists and drone operators, aiming to reduce barriers to adoption and giving growers the tools to use precision technology with confidence.

Growing regeneratively:
Supporting young Tasmanian growers

Supporting the next generation to build resilient, future-focused farms.

This project supports young Tasmanian growers who are keen to better understand how regenerative principles can be applied in practical, commercially viable vegetable production systems.

VegNET Tasmania is delivering a 12-month Young Growers Program for participants under 45, with a strong focus on soil health, whole-system thinking and biological inputs. The program combines theory with hands-on learning, including composting demonstrations and on-farm trials.

Through monthly sessions, workshops, and industry events, participants are building knowledge, confidence, and valuable peer networks.

The project supports young growers to take practical steps toward strengthening the sustainability of their farming methods.

Smarter soil solutions:
Managing cyst nematodes in South Australian brassicas

Turning soil test results into real on-farm solutions.

Cyst nematodes remain a significant challenge for brassica growers on the Northern Adelaide Plains. Building on previous work that developed a DNA-based soil test, this project is now focused on helping growers translate test results into practical, integrated management strategies.

Grower-supported trials are underway, testing integrated approaches that include biological, chemical, organic and cultural controls. The trials are measuring impacts on nematode populations, crop health, yield, and overall soil health to identify strategies that are both effective and practical.

The VegNET South Australia team is working closely with growers, agronomists, and researchers, delivering results to help mitigate risk and improve productivity. Successful outcomes will be shared via a fact sheet and distributed to growers.

TASMANIA CONTACTS

Tayla Field
Regional Development Officer
0429 391 538

Prue Rothwell
Regional Support Officer
0477 182 408

SOUTH AUSTRALIA CONTACT

Peta Coughlin
Regional Development Officer
0409 029 745

VEGNET
Tasmania
REGIONAL UPDATE

Direct reward at Elphin Grove Farm

Regional Support Officer for VegNET Tasmania, Prue Rothwell, recently had a chat with Matt Young, Owner and Manager of Elphin Grove Farm, to learn more about how their diversified business model came to fruition, and what their key drivers are to continue this model into the future.

Elphin Grove Farm is a 220-hectare mixed farming enterprise situated in East Sassafras in Northwest Tasmania. It has been run by the Young family since 1980.

Like many vegetable farming businesses in Tasmania, the Young's introduced diversification into their business to reduce risks and assist with managing crop rotations. They grow peas and potatoes for processing, poppies for alkaloid extraction, grass and oat seed, as well as sweet corn, celeriac and baby corn for the fresh market. They produce sheep and cattle that are sold to local butchers, which allows soil resting during crop breaks.

Most Tasmanian vegetable producers rely on contracts from several processors and packers. What sets Elphin Grove Farm's operation apart is its direct-to-customer marketing to wholesalers and retailers. The Young's supply celeriac, sweet corn and baby corn to local greengrocers, farmers' markets and supermarkets in Tasmania, and a speciality hospitality fruit and vegetable wholesaler in Melbourne.

Being open to opportunities is something that Matt and his family are clearly comfortable with, and it has been key to them getting into the direct market business for the fresh vegetables.

VEGNET: ***How did you find the gap in the market to grow and sell a particular line of produce directly to fresh markets?***

MATT YOUNG: A friend of mine was the manager at Tasfresh Wholesalers. One year at their AgFest stall, he tossed me an ugly-looking bulb and said, "You should grow that." I said, "That's fine, but what is it?" It turned out to be celeriac (a very common vegetable in Italy and Germany).

As a business, we looked into it and decided to give it a go and have now been growing it for almost 20 years. In the first year, we grew 1,500 bulbs, and slowly increased this, eventually peaking at around 60,000 bulbs supplied into the Melbourne market. But relying on this market alone, pricing became an issue, and the arrangement [with the wholesaler] eventually broke down, so we no longer supply into the [open wholesale] markets. We've since consolidated and now only sell directly to [selected] wholesalers and retailers.

VEGNET: ***What business decisions did Elphin Grove Farm make in expanding to direct market sweet corn?***

MATT YOUNG: My dad, Ian, was delivering celeriac to a greengrocer in Spreyton. The owner said, "you should grow sweet corn, no one is growing it locally."

Years earlier, we had grown sweet corn for McCain before they took the contracts to New Zealand, so between Dad and I, we already had a fair amount of knowledge of how to grow corn. We started producing sweet corn and initially sold some directly to local greengrocers, with the bulk going through a pack house.

One day, while delivering celeriac to Young's Vegie Shed in Launceston, I noticed the sweet corn on display and, as strange as it sounds, recognised it. When I asked the manager where it came from, it turned out the bin they had was the one I'd picked the day before. It had come to the retailer from a packer we supplied. I asked if they wanted to buy directly from us, and they agreed. That allowed us to sell the corn for 20 cents more per cob than the pack-house price, with no real change to our system other than adding a bin of sweet corn to our regular celeriac deliveries.

VEGNET: ***You had a grower profile in the Australian Grower magazine back in 2019 with a focus on your popcorn. What's changed over the past six years?***

MATT YOUNG: A lot has changed, particularly how we manage sweet corn and controlling the Heliothis grub. This usually relies on a consistent spray program, but we've moved away from

Above L-R. Sweet corn and celeriac from Elphin Grove Farm. *Images ©Flick + Dave Photography*. ©Matt Young.

mainstream chemicals, partly due to withholding periods, and instead are now using a biological virus product, ViVUS Max, that kills the grub. We're hoping this will be very effective this year. The first couple of years came with some teething issues, including UV damage when it was sprayed at the wrong time of day.

We now have a strong support network that helps us with Integrated Pest Management (IPM) and the latest research and techniques, in the same way agronomists support chemical programs. Rebecca (Bec) Addison and the team at IPM Technologies are great. Bec does crop walks, inspecting plants and often picking up things in the paddock that I don't see myself.

We're always open to new crop opportunities. We still grow popcorn, but outside of the sweet corn season we don't often have the time to actively promote it with customers. We've also changed our sweet corn variety to 'super sweet', as the previous variety was superseded and no longer available. We're currently trialling a new popcorn variety for baby corn, which is increasingly becoming our focus for the fresh market rather than popcorn itself.

VEGNET: ***Based on your journey, what would you say to vegetable growers who are thinking about diversifying their business to include direct marketing?***

MATT YOUNG: Look at your business – if you can make it work within your business then it is certainly profitable. Talk to the people you want to supply and see what they need and how much.

There is nothing worse than supplying a customer and then running out – planning and logistics can be the biggest headache to manage and get right.

VEGNET: ***How does selling direct financially compare with the larger commodity markets?***

MATT YOUNG: Selling direct means we set our price right through the supply chain. Some people will tell you you're too expensive, while others will say you're too cheap. But if you know your costs and the margin you need, it can be financially worth it.

But it's worth noting that it's [our fresh market crops that are] the most labour-intensive part of our business, as everything is hand-harvested. That said, we only sell what we harvest, so it's about improving growing efficiencies and product quality, because that's where income really changes.

Getting the quality right in the paddock makes everything else flow better. With celeriac, we've been concentrating on improving sizing, as last year we lost three weeks of growing time due to a weather event in November. With sweet corn, we've increased the crop area, but harvested volumes haven't risen due to ongoing grub issues. Hopefully though we've got this sorted with IPM this year.

VEGNET: ***What has kept Elphin Grove Farm continuing with direct marketing as a part of your business diversification?***

MATT YOUNG: It works financially for us to direct market. The past couple of years have been a bit tight, largely due to Heliothis in the sweet corn crop affecting quality and therefore volume. But that's vegetable growing, it happens.

Direct marketing has been good for recognition. All the farmers I know do the best they can, yet the only feedback from the processing companies is a piece of paper at the end of the season saying what was taken, what was rejected and what you're being paid. Whereas, with direct marketing, I know within a couple of days whether a crop is good or if something needs addressing.

When top chefs call to say it's some of the best corn they've ever had, it makes you feel good. That kind of feedback keeps you going during the peak harvest period from February to April, which is also alongside the poppy harvest and straight after grass seed harvest. During these busy times there are moments in the week when you question why you do it, but then you get the positive feedback, and it gets you up and going again.

Above L-R. Elphin Grove Farm and Matt Young. *Images* ©Matt Young. ©*VegNET Tasmania*.
Inset. ©*VegNET Tasmania*.

FIND OUT MORE

Please contact Tayla Field, Regional Development Officer, RMCG, 0429 391 538 | taylaf@rmcg.com.au
Prudence Rothwell, Regional Support Officer, RMCG, 0477 182 408 | prudencer@rmcg.com.au

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Hort Innovation VEGETABLE FUND
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Growers table at the Regional Roundup Murray Bridge.

VEGNET
South Australia
REGIONAL UPDATE

Boosting farm resilience through industry collaboration

BY KIRSTY KITTEL, VEGNET SA REGIONAL SUPPORT OFFICER

In November VegNET SA hosted two Regional Roundup events for growers from three major growing regions: the Northern Adelaide Plains, the Adelaide Hills and Murray Mallee.

We brought a myriad of speakers along to discuss topics ranging from recent agri-political issues to current Hort Innovation projects and a debrief of grower learnings from AUSVEG study tours. Most notably, we collaborated with two key organisations in horticulture reinforcing the value of collaboration in building resilient farm businesses:

- Planfarm, the consultancy firm which gives expert guidance in Farm Business and Agronomy and provides financial benchmarking through its *Level Up Hort* Program.
- South Australian Research and Development Institute (SARDI), which delivers applied science that grows South Australia's primary industries through the work of highly skilled scientists backed by dedicated technical, field, and support staff.

Planfarm's *Level Up Hort* Program

Stephanie Carstairs, Planfarm's Horticulture Project Manager in Western Australia, presented at the Northern Adelaide Plains Regional Roundup. Her presentation gave growers a clear and practical understanding of how *Level Up Hort* is helping vegetable and onion businesses strengthen their financial position and make more informed decisions.

The program is in its third year of a five-year national initiative funded by Hort Innovation through the vegetable and onion levies and delivered by Planfarm and RMCG. Stephanie explained that *Level Up Hort* was developed in response to increasing pressure on vegetable businesses, with many growers facing higher costs, labour challenges, shifting markets and general uncertainty since the COVID-19 pandemic.

With these added pressures, Stephanie said, "Sometimes we become frozen with decision-making, but if we know our true financial position, we can use this to form basis of decisions and to move our business forward."

Benchmarking is as necessary a tool in growing as soil and leaf testing, where results only make sense when measured against accepted standards. "If you are not measuring your key financial metrics within your operation, then your decision-making will be compromised and based on gut feel only," Stephanie added. Financial benchmarks reveal whether a business is performing above or below industry norms.

Stephanie also informed the growers of the reality that the average vegetable business is working on margins too tight to support long-term sustainability. This message, delivered clearly and backed by data, will hopefully inspire the growers in the room to make practical decisions around labour, seed, fertiliser, packing and freight in their growing businesses.

FIND OUT MORE

Please contact Peta Coughlin, AUSVEG SA on 0409 029 745 | peta.coughlin@ausveg.com.au

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Hort Innovation VEGETABLE FUND
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Growers who attended the Murray Bridge Regional Roundup heard from Thea Walker, Horticultural Business Consultant at Planfarm. Thea was nominated for the Premier's Horticulture Awards Researcher/Advisor of the Year in 2025 and has worked one-on-one with growers to help them understand their financial data, identify opportunities for growth and implement long-term business improvements. In her presentation, she demonstrated how *Level Up Hort* can help growers to assess profitability, manage labour costs effectively, and make informed decisions that ensure the sustainability of their businesses.

The key messaging to growers from both Stephanie and Thea was to focus on the controllables and start with one simple measure – operating efficiency, which growers can calculate in minutes using their own financial records. Improvement begins with measurement, and many growers left the session motivated to take that first step.

SARDI's pest and disease update

Research scientist Dr Michael Rettke shared the latest findings from SARDI, highlighting cutting-edge advances in vegetable research. SARDI's work is strongly focused on soilborne diseases, exploring a diverse range of control strategies supported by robust diagnostics and monitoring. Much of this research is delivered through trials conducted directly on grower sites, combining innovative in-crop disease management approaches with a strong local focus, while contributing to and drawing from national research collaborations.

The National Potato Project, led by the University of Tasmania (UTAS), is placing strong emphasis on integrated disease management for soilborne diseases, with particular attention to pre-plant inoculum management, innovative in-crop disease control strategies, and a deeper understanding of the environmental drivers that influence disease epidemics. Building on the PREDICTA® Pt platform delivered by SARDI, the project is also developing new diagnostic tools for bacterial pathogens such as blackleg and Dickeya, as well as *Verticillium albo-atrum*, a seedborne wilt disease.

Research for the onion fund has been on *Fusarium* basal rot, where the key strategy to reduce your risk is through crop management including, crop rotation, using different varieties, optimising irrigation, balancing nitrogen and nutrition, managing other pathogens and pests, and implementing controls to reduce disease. Other onion research has been on bacterial rots, pink root and root lesion nematodes. Research trials are comparing the incidence of rotted bulbs, root health and productivity using biologicals, chemicals and bio stimulants.

SARDI has done research on soilborne diseases in South Australian and Victorian carrots, which is now part of a larger national project led by the Department of Primary Industries and Research Development (DPIRD) WA. Additionally, SARDI has developed tests for the two species of cyst nematodes that impact brassicas in the Adelaide Plains.

Finally, SARDI has been working with a national guava root knot nematode project led by DPI Qld, aiming to provide quantitative DNA based test capability to assist in monitoring its spread and in evaluating control strategies.

It was invaluable to have Michael at our event, to help growers identify what they can be doing to mitigate the risk of soilborne disease and see what research is being done to advance our industry and protect yields.

Creating networks between growers, scientists and advisors

VegNET SA prioritises industry collaboration and connecting growers with the right people to help increase their productivity, profitability, preparedness and competitiveness. Enabling growers to connect directly with organisations like Planfarm and SARDI, brings insights into the business tools, research and support available to growers. These interactions help translate data and research into practical considerations, while also strengthening the professional networks growers can draw on when navigating financial, production and soil health challenges.

Maintaining connections across industry, research and advisory sectors will continue to play an important role in supporting the long-term sustainability and longevity of South Australian vegetable businesses.

L-R. Growers catching up before the Regional Roundup event. Dr Michael Rettke (centre) and Stephanie Carstairs (right) presenting at the Regional Roundup Plains.

VICTORIA
NORTH, WEST AND SOUTH-EAST

VEGNET NORTH, WEST & SOUTH-EAST
Victoria
REGIONAL UPDATE

VegNET supports Victorian leafy vegetable growers facing biosecurity restrictions

In October, Tomato potato psyllid (TPP) was found in a backyard located in northern Melbourne. The presence of this invasive pest resulted in the removal of Victoria's Area Freedom Certificate on 8 December 2025.

Each state and territory has its own approach to regulating hosts and carrier plants of TPP. Vegetable farmers received the first update from Agriculture Victoria (AgVic) about the removal of the Victoria's Area Freedom Certificate on 21 November 2025 – just 17 days before the deadline. It cannot be understated how disruptive this was to growers approaching their most productive and profitable period before Christmas.

The first Interstate Certification Assurance (ICA) released on 24 November required all vegetables with green material being sold to Qld to undergo extreme washing protocols – a process that would shred any leafy vegetables going to our biggest market. Tasmania initially would only allow vegetables into the state that had been fumigated or irradiated. Solanaceae and Convolvulaceae produce faced more significant trade restrictions into all other states and territories except WA. AUSVEG Victoria immediately reached out to AgVic to highlight the flaws in the existing protocol and request necessary changes.

VegNET Victoria and VegNET Gippsland took on the responsibility of communicating the constantly evolving situation to members and conveying growers' needs back to AgVic. For VegNET Victoria, this involved bulk emails to our mailing list and hundreds of phone calls and individual emails per week to growers. These communications fostered substantial discussions of what the trade restrictions meant for their lines of produce and how to navigate the accreditation processes. VegNET also produced guidance extension material for growers and provided help to market agents, nursery growers and processing companies.

Critically, the different state governments were not immovable in their trade restrictions. VegNET was able to convey the concerns and needs of growers to AgVic, which was responsible for continuously negotiating trade protocols and ICAs. VegNET was also able to secure meetings with the Qld and Tasmanian market access teams to put forward the grower's case. With the backlog of growers seeking accreditation, both Qld and Tas granted Victorian growers a two-week grace period leading up to Christmas. In the extreme turmoil facing the industry, this offered some critical relief.

The key learning highlighted from these experiences is the need to include growers in the biosecurity response discussions at the highest level. The difference between the initial proposed trade protocols and those now implemented are night and day.

If growers had been consulted before the protocols were released, many of these changes would not have been necessary.

While green leafy vegetables now have a clear pathway to continue trading interstate, more work must be done to ensure *Solanaceae* and *Convolvulaceae* produce can be traded efficiently.

VegNET is continuing to engage with governments including AgVic to support growers.

How to get PS-60 accreditation for your business

Visit our website or scan the QR code to find out how to become PS-60 accredited.

Above L-R. Tomato potato psyllid examples.

FIND OUT MORE

Please contact Daniel Bosveld, at AUSVEG VIC on 0459 519 433 | rdo@ausvegvic.com.au
For ongoing updates and resources visit ausvegvic.com.au

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QUEENSLAND
WIDE BAY
BURNETT

VEGNET
Wide Bay Burnett
REGIONAL UPDATE

Agronomist Networking Breakfast strengthens regional connections and industry knowledge

The recent Agronomist Networking Breakfast brought together 32 participants from across the region for a morning of shared learning, collaboration and industry updates. The event created a valuable platform for agronomists, growers and service providers to connect and discuss the key issues shaping vegetable production today.

Attendees heard from AUSVEG representatives David Daniels and Rose Daniel, who delivered an engaging overview of several important national initiatives and upcoming changes.

Their presentation covered:

- agrichemical regulatory updates and what these changes mean for growers and advisors,
- permit use and compliance and the importance of staying aligned with evolving requirements,
- insights from the Strategic Agrichemical Review Process (SARP)
- updates on the national VegWatch project, supporting early detection and monitoring of priority pests and diseases,
- the new AUSVEG Farm Biosecurity Manual, created to help growers strengthen on farm preparedness and resilience.

In-region grower engagement

While in the region, AUSVEG and VegNET also visited five vegetable growers, providing hands on engagement and opportunities for meaningful, one-on-one conversations. These growers represented a diverse range of production systems and crops, including eggplant, zucchini, capsicums, sweet corn, pumpkins and more.

Growers openly discussed the challenges they face across different production environments, particularly the contrast between protected cropping and in-field production. One of the dominant themes was the complexity of managing pests and diseases when chemical registrations and available permit options differ between systems.

Key concerns around upcoming chemical reviews

Many growers expressed concerns about the upcoming chemical reviews being conducted by the Australian Pesticides and Veterinary Medicines Authority (APVMA), which are expected to place increased pressure on the range of chemistry available to the vegetable industry. While there is strong interest in new chemistries entering the market, growers highlighted that Australia is on track to lose more older, established chemistries through regulatory review than it is gaining through new registrations.

This imbalance could limit growers' ability to rotate actives effectively, an essential strategy for resistance management, and may further constrain options for smaller or niche crops that already rely heavily on minor use permits. The discussion reinforced the importance of strong industry advocacy, reliable data through SARP and continued communication between growers, advisors and regulatory bodies.

Supporting growers through biosecurity planning

Following the visit, the VegNET team has already supported the completion of four on-farm biosecurity plans, helping growers align with best practice frameworks and strengthen their preparedness.

Additional biosecurity planning opportunities will be rolled out in the new year, with the aim of supporting even more growers across the region.

FURTHER READING & RESOURCES

For access to the latest SARP reports (identifying gaps in chemical control, pest management needs, and recommendation priorities), see the Vegetable Industry SARP report at: ausveg.com.au/article/minor-use-permits-veg-industry-sarp-reports

To review the most recent guidance on farm biosecurity practices, including risk pathways, checklists and biosecurity plan templates, view the *AUSVEG Farm Biosecurity Manual* (2025 edition): ausveg.com.au/knowledge-hub/interactive-farm-biosecurity-manual

For information about the VegWatch project, see the program summary: planthealthaustralia.com.au/helping-the-vegetable-industry-stay-ahead-of-biosecurity-risks

For the regulatory process and decisions around chemical reviews in Australia, check the chemical review overview from APVMA: apvma.gov.au/regulation/chemical-review.

Above L-R. David Daniels, Rose Daniel and Jessy Logan checking out eggplants with grower Jason Smith from Carter & Spencer. Visiting Marcon Family Farms during AUSVEG's in-region visit L-R RDO Jessy Logan, Grower Clinton Marcon, AUSVEG David Daniels and Rose Daniel.

FIND OUT MORE

Please contact Jessy Logan Regional Development Officer on 0407 366 797 | vegnet@bfvg.com.au

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VEGNET
Northern Territory
REGIONAL UPDATE

VegNET in the NT 2026
Tours, farm trials and grower meetings

The upcoming year is looking to be a cracker for VegNET in the Northern Territory (NT) with plenty of ways growers can get involved, seek assistance and gain benefit from the project. VegNET NT will continue with focus areas from previous years, including pest management, water efficiency and licensing support, plant nutrition and future production and market opportunities. To support these focus areas, there will be new trials, industry tours and events taking place to assist growers.

Thailand vegetable industry tour

In late February, 11 NT vegetable growers and agronomists will be heading to central Thailand to experience a week-long industry tour visiting vegetable farms and businesses that grow similar commodities to those grown in the NT. As Thailand has a long standing tropical fruit and Asian vegetable industry, the industry tour is expected to be a highly valuable week for those attending.

In previous years NT Farmers has teamed up with the Department of Agricultural Extension in Bangkok to run industry tours in both the NT for Thailand growers and in Thailand for NT growers as part of a successful knowledge exchange and professional development opportunity. In 2026 VegNET NT will be taking over the running of the tour, with the focus being predominately on vegetable production. Whilst in Thailand, the participants can expect to visit vegetable farms such as okra, snake bean and melon/pumpkin farms, all of which are major commodities grown in the NT. They will also visit tomato, mango, coconut and citrus farms, all varying in their farming methods including organic and protected cropping systems.

Whilst the content of the tour is the main take away, another key success is the relationships built between the NT growers attending. These growers often produce the same commodities and face similar on-farm and market challenges. Building a relationship with each other often has tangible positive impacts once returning to the NT.

FIND OUT MORE

Please contact Mariah Maughan
0417 618 468 | email ido@ntfarmers.org.au

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Electric fencing trial

Wallaby damage to vegetable crops is a significant issue for growers in the outer Darwin and Katherine regions with some farmers even reporting 100 percent crop damage/loss in a variety of vegetable crops. While it is common in the Katherine region to have permanent wallaby exclusion fencing around the property, this can be costly to install and maintain. For this reason, VegNET is trialling a portable electric fencing system on a farm in the area, which would offer a low-cost alternative that is able to be taken down and moved depending on where the grower is planting and when.

Using electric fencing to protect crops from wallabies has proven successful in other parts of the country, however there are unknowns regarding the effectiveness and robustness of a portable system. The concept does suit vegetable production systems in these regions, so VegNET is keen to see if the fencing system will be a success against the wallabies for the Katherine vegetable grower's crop this season.

Fusarium wilt management trial

Fusarium wilt is caused by a fungus and commonly causes yellowing, wilting, stunting, and eventually plant death in a variety of vegetables grown in the Top End region. Snake bean is a dominant crop grown in the Top End region and is one of the most common crops impacted.

VegNET NT is teaming up with a snake bean grower to see if they can reduce the impact of *Fusarium* wilt on his snake bean crop within a one-year period. Like many soil-borne diseases, significant improvements often take several years. However, VegNET NT did not shy away from the task of seeing what positive impact, if any, they could have in this short period.

To do this, VegNET NT engaged an agronomy consultant and developed a plan. The snake bean crop was taken out in August 2025 and a crop that is not considered a host of the types of *Fusarium* found in the NT (okra) was planted. When the okra crop is finished in January, a cover crop will be planted with another species that is not known for *Fusarium*. Ideally, the area would be left free of hosts for several years. However, with a one-year time frame to work with, a snake bean crop will be planted in May 2026, with close attention from an agronomist and the implementation of a nutrition and management plan to give the crop the best chance of success against *Fusarium* wilt. This will include using fertilisers that are not ammonium-based and implementing certain bio-stimulants and fungicides.

Grafted snake bean is also a possible solution to growing snake bean in *Fusarium* infected soils.

VegNET NT has also teamed up with the Department of Agriculture, Fisheries and Food to plant a row of snake bean that have been grafted onto a *Fusarium* resistant root stock (cowpea) in a known *Fusarium* impacted area to test the success of the grafted plants.

And there's more...

Alongside farm trials and industry tours, VegNET NT will also be running workshops and other sub-projects to assist growers. VegNET NT aims to hold a grower meeting in the Marrakai region early in the year to assist growers who have recently received a water licence to understand their licence and reporting requirements.

VegNET NT is also looking at commencing a sub-project that will allow growers to work closely with agronomists to fine tune their nutritional plans for their crops. This will include free SAP and tissue sampling for growers to get an indication of the benefits these services can have to their farm's efficiency and productivity.

VEGNET FAR NORTH
Queensland
REGIONAL UPDATE

WaterWise Together
Building healthier soils to manage run-off in the dry tropics

In the North Queensland region, growers operate in a highly variable climate where long dry periods are often followed by intense rainfall events. These conditions place pressure on soils, increasing the risk of compaction, poor infiltration and run-off when heavy rain arrives. Managing soil health is therefore critical, not only for crop productivity, but for keeping water, nutrients and soil where they belong: in the paddock.

The WaterWise Together Initiative was an 18-month peer-to-peer project delivered through a collaboration between the Bowen Gumlu Growers Association (BGGA) and the Queensland Department of Primary Industries (DPI). The project supported growers in the dry tropics to improve soil condition and reduce run-off of sediment, nutrients and chemicals during high rainfall events, while making more efficient use of inputs such as irrigation, fertiliser and crop protection products.

Soil health as a risk-management tool

In the dry tropics, soil health is being more and more closely linked to risk management. Bare, hard-set or compacted soils shed water quickly during storms, carrying soil and nutrients with them. By contrast, well-structured soils with good biological activity absorb rainfall more effectively, reduce erosion and store moisture for later use.

WaterWise Together focused on practical ways growers could improve soil structure, organic matter and infiltration – helping soils cope better with both dry conditions and sudden rainfall.

Practical, locally relevant learning

A key strength of the initiative was its peer-to-peer design. Growers connected with each other during field walks and workshops that were specifically designed to encourage question and answer sessions and open, candid conversation between growers across the Bowen-Burdekin district. These conversations allowed participants to compare approaches across different soil types, crops and irrigation systems, and to see firsthand how soil-focused practices performed under local conditions.

Growers worked directly with technical officers, including Billie White, Farmacist, and Sarah Limpus, DPI, to collect their own soil and irrigation water samples for analysis and interpretation. This process was crucial for growers to understand how their soil structure and chemical composition, and irrigation water impacts the performance of plants, nutrient and chemical inputs, leading to more efficient irrigation management. Approaching research and technical officers in the industry provides expert evidence-based results and recommendations while allowing grower-led discussions regarding realistic implementation of recommendations within commercial production systems.

Workshops held in March and November last year provided important insights into understanding soils, their characteristics, and how they act when wet so growers can better understand their soil types. Cover-cropping has been a highly discussed topic and the November workshop with Dr Kelvin Montagu from Applied Horticulture Research (AHR)/Soil Wealth took a deep dive into the theory, practice and crop varieties that help to keep soil integrity over the summer and set the paddock up for the next crop cycle. This workshop facilitated discussion between growers, agronomists and industry as to the availability of cover crop seeds and equipment, and highlighted regional factors that would need to be considered for planning to implement a cover crop. This discussion and the following peer-to-peer session suggested that growers are interested in incorporating this practice change where and when possible.

Given the dry environment of the region, growers were interested in understanding how they could better manage their moisture and irrigation. Healthier soils hold moisture better, but a big topic in a region without an abundance of water is irrigation scheduling. Soil moisture probes were integrated into their irrigation management to address the needs of the plants in different soil zones. This has saved water in the heavier soils, and the increased irrigation in the lighter soils has seen much healthier and productive plants.

Productivity benefits first

For participating growers, the primary motivation was maintaining productive, resilient soils in a challenging climate. By keeping nutrients and moisture in the root zone, soil-health improvements help reduce input losses and support stronger crop performance.

Reduced run-off was a natural outcome of these changes – delivering environmental benefits while remaining firmly grounded in on-farm productivity and profitability.

Long-term resilience for the Dry Tropics

The WaterWise Together Initiative demonstrated that focusing on soil health is one of the most effective strategies available to dry tropics growers to manage rainfall variability and run-off risk. Grower-led collaboration, supported by sound technical advice, allowed practical solutions to be tested and adopted at a paddock scale.

By investing in healthier soils today, North Queensland growers are building more resilient farming systems – systems that better withstand extreme weather, make smarter use of inputs, and reduce the movement of soil and nutrients off-farm.

On-farm changes that matter

Self-assessments compared the participant's before and after scores and showed that 100 percent of participants changed their practices through WaterWise. Some growers focused on improved irrigation management, while others incorporated a cover crop or utilised leaf and soil sampling techniques for targeted plant nutrition.

Across the project, growers had access to trials and research on a range of soil and water management practices aimed at improving infiltration and reducing run-off risk, including:

- Maintaining groundcover and grassy inter-rows to protect soil during wet season rainfall
- Adjusting traffic and cultivation practices to reduce compaction
- Improving irrigation scheduling to match soil and plant requirements
- Better aligning nutrient applications with crop demand and soil condition
- Using soil amendments to improve aggregation, infiltration and biological function.

Importantly, healthier soils also supported more consistent crop growth and improved efficiency of water and nutrient use.

FIND OUT MORE

Please contact Richelle Kelly
0419 429 808 | rdo@bowengumlugrowers.com.au

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VEGNET VICTORIA
Gippsland
REGIONAL UPDATE

From closure to opportunity

Maffra jobs expo responds to Dicky Bill's shutdown

The recent closure of Dicky Bill Australia in Maffra sent shockwaves through the local community, marking the end of a long-standing employer and leaving many skilled workers facing an uncertain future. For a town where manufacturing and agri-related industries have long underpinned economic stability, the loss was felt not only by employees and their families, but across local businesses, suppliers and services that rely on a strong and stable workforce.

For many workers, Dicky Bill was more than just a job – it was a workplace built on years of experience, routine and connection. The sudden closure created understandable concern about income security, career direction and what opportunities might exist locally. In regional communities like Maffra, the loss of a single major employer can have a ripple effect that extends well beyond the factory gates.

Yet, in the face of disappointment and disruption, the Maffra community has demonstrated resilience and leadership – turning a challenging moment into an opportunity for connection, support and transition.

A rapid community response

Recognising the immediate need to support displaced workers, Workforce Australia, through the Local Jobs Program, moved swiftly to coordinate a dedicated jobs expo in Maffra. The objective was clear: to bring employers, training organisations and support services together in one accessible location, creating immediate and practical pathways back into employment.

Timing was critical. By responding quickly, the expo aimed to reduce the risk of long-term unemployment and provide reassurance to workers that support was available close to home. Importantly, the event acknowledged the emotional impact of job loss while offering face-to-face conversations about what comes next.

For many former Dicky Bill employees, the expo represented a positive first step – an opportunity to reconnect with the local labour market, ask questions, explore options and regain confidence during a period of uncertainty.

Connecting skills with opportunity

A key strength of the Maffra Jobs Expo was its strong local and regional focus. Employers from a broad range of sectors – including manufacturing, agriculture, transport, construction, health and community services – were invited to participate, reflecting the diversity of employment opportunities across Gippsland.

The skills developed by workers at Dicky Bill – reliability, technical expertise, problem-solving, teamwork and a strong work ethic – are highly transferable across industries. The expo provided a platform for employers to recognise this value, while allowing jobseekers to better understand how their existing skills could be applied in new environments.

Training providers and employment services were also present, offering guidance on upskilling, reskilling and accredited training pathways. This ensured attendees could access not only immediate job opportunities, but also longer-term career planning support tailored to their individual circumstances and goals.

Leadership that makes a difference

Leadership from Workforce Australia, through the Local Jobs Program, was instrumental in turning concern into coordinated action. By working collaboratively with employers, service providers and the local community, the expo was organised quickly and with purpose – sending a clear message that Maffra's workforce is valued and supported.

The initiative highlighted the importance of proactive, place-based responses to economic change, particularly in regional communities where workforce disruptions can have far-reaching impacts.

By focusing on local solutions and strong partnerships, the expo demonstrated how collaboration can help communities adapt and respond to change.

Looking ahead

While the closure of Dicky Bill marks the end of an era, the response from the Maffra community reflects a forward-looking approach grounded in support, opportunity and resilience. The expo not only addressed immediate employment needs but also reinforced confidence in the region's ability to retain skills, attract employers and support workforce transitions.

As former employees take their next steps, initiatives like the Maffra Jobs Expo serve as a reminder that people, skills and experience are a region's greatest assets. Through early intervention, collaboration and practical support, workforce challenges can be met with confidence and care.

For more information about employment support, workforce initiatives or future events, contact Workforce Australia through the Local Jobs Program.

FIND OUT MORE

Please contact Amanda Gould
Food & Fibre Gippsland | 0474 500 380
amanda.gould@foodandfibregippsland.com.au

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WESTERN AUSTRALIA

VEGNET
Western Australia
REGIONAL UPDATE

Supporting innovation across the **Western Australian vegetable industry**

Ongoing partnerships and collaboration enable VegNET WA to continue to support grower-focused outcomes.

VegNET WA Team Update

The past few months have been incredibly busy for the VegNET Western Australian team. We're thrilled to welcome Chi Nguyen to the team as of last September. Chi has been a Regional Development Officer with Vegetables WA for a number of years and brings a wealth of knowledge and experienced to VegNET WA.

In December, Katrina Hill concluded her role with the VegNET WA team. During her time with the program, Katrina provided strong support to growers and contributed valuable knowledge and insight to VegNET activities. Her dedication and commitment to the vegetable industry are appreciated, and she has undoubtedly made a positive contribution. We thank Katrina for her efforts and wish her all the best in her future endeavours.

While our primary focus has been on working closely with growers to understand on the ground challenges and supporting practical, grower-led solutions, we have also had valuable opportunities to expand our extension activities. Participation in various initiatives have helped the team support innovation across the Westbern Australian vegetable industry.

"I personally found the networking with the other group participants the most beneficial part of the trip. The majority of the group were growers, whether it was their own farm or they were an employee."

PARTICIPANT

Gatton AgTech Showcase and Lockyer Valley Tour

We were excited to be part of the Gatton AgTech Showcase and Lockyer Valley Tour in October 2025, alongside the Tasmanian and South Australian Regional Support Officers (RSOs). The tour was an amazing experience for the WA grower participants. Meeting growers and industry professionals from other states, observing new technologies, and learning about different processes offered incredible insight. The interactions sparked discussion, inspiration, and ideas that can be applied back home in WA.

An extension webinar presented by the VegNET RSOs following the tour offered another opportunity to share key learnings and insights with growers who were unable to attend in person. The webinar highlighted the standout technologies, observations from the farm visits and practical takeaways, ensuring the benefits of the tour reached a broader audience.

Overall, the Gatton AgTech Showcase and Lockyer Valley Study Tour reinforced the value of cross-regional collaboration and knowledge sharing, helping VegNET WA continue to support growers in exploring innovative solutions and strengthening industry connections.

WESTERN AUSTRALIA

WA Horticulture Update 2025

We attended the Western Australian Horticulture Update 2025, a biennial event held on 22 October 2025 at Mandoon Estate in the Swan Valley, bringing together growers, researchers, policymakers and industry leaders under the theme *"Growing WA: Fresh Food, Sustainable Futures"*.

The program featured expert presentations, panel discussions, research updates, and case studies focused on sustainability, innovation, and resilience, alongside strong networking opportunities through the trade show and sundowner.

A highlight was the keynote address, *'WA 2040: Feeding the Future'*, which examined how population growth, changing consumer expectations, and challenges such as water availability, labour shortages, and land constraints will shape future food production in WA.

Another standout session was delivered by Clare McClelland from the Australian Fresh Produce Alliance, who introduced a free carbon accounting tool developed with Sustenance Asia, supporting measurement of Scope 1 and 2 emissions and highlighting the growing importance of emissions management.

The event concluded with an evening sundowner, offering a relaxed setting for continued discussion and connection. Overall, the event provided valuable insights, practical learning and meaningful networking opportunities for attendees.

Bilingual chemical training

The VegNET Innovation Fund Bilingual Chemical Training project concluded this year with the delivery of the final bilingual training session by VEG Education in Perth. The project aimed to build the knowledge, skills and confidence of WA vegetable growers in the safe handling, storage and application of agricultural chemicals, while supporting compliance with industry regulations and best practice. By offering accessible bilingual training, the project helped remove language barriers and ensured all participants could fully engage with the material.

The final session was attended by 16 growers, all of whom achieved a 100 percent pass rate, highlighting both the effectiveness of the training and the commitment of participants to industry safety. Graduates are now well equipped to apply their knowledge on farm and to maintain safety for colleagues, the environment, and the broader community.

In addition to technical learning, the project encouraged knowledge sharing and collaboration, allowing growers to discuss real world challenges and learn from both trainers and peers.

"This was a great opportunity and extremely useful for growers. I learned so much more about chemical use and how to measure, mix, and spray properly. I strongly recommend this training to anyone working on a farm, especially those who handle chemicals." PARTICIPANT

Looking ahead, 2026 is shaping up to be a busy year for VegNET WA, with a strong focus on collaboration, innovation and practical extension. Planned activities include a drone demonstration, sharing insights from the Gatton AgTech Showcase, and an OWL demonstration day in February 2026 featuring Dr Guy Coleman and an opportunity to see the technology operating in the field. Regional roadshows and additional chemical training are also planned, providing further opportunities for growers to build skills, explore new technologies and connect with industry experts.

Through ongoing partnerships with the national VegNET teams and industry stakeholders in other states, VegNET WA is also creating pathways for WA growers to participate in cross-regional research projects. These collaborations support knowledge exchange and ensure outcomes are relevant and applicable to local production systems, reinforcing VegNET WA's continued commitment to delivering practical, grower-focused outcomes across Western Australia.

FIND OUT MORE

Please contact Angela Tarbottom, vegetablesWA on 0427 373 037
angela.tarbottom@vegetableswa.com.au

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VEGNET
New South Wales
REGIONAL UPDATE

National Agriculture Day
Celebrating horticulture in NSW

What better way to celebrate National Agriculture Day (Friday 21 November) than at the Greater Sydney Local Land Services (GS LLS) Demonstration Farm with an event supported by VegNET NSW and the National Heritage Trust (NHT).

Organised by NSW VegNET Regional Development Officer, Sylvia Jelinek, the program's topics included an update on fall armyworm (FAW) research, how to attract pollenating insects using a variety of flowering plants, a discussion on irrigation assessment and updates on the Level Up Hort project and the Soil Wealth Integrated Crop Protection (ICP) GS LLS demonstration site.

Bringing people together

An unseasonal cool and showery day didn't keep the attendees away as 60 people experienced the day at GS LLS Demonstration Farm including vegetable growers, agricultural students, teachers, the 'Young Horties', local industry representatives and researchers.

Local committee members from Young Horties, Earl Yandall, Sales Manager NSW from AgNova, and Amberley Brady, founder of Realfoodprice and co-founder of Harmonia, attended the celebratory networking lunchtime barbecue. Young Horties is Australia's first national network created specifically for all young people working across the horticultural supply chain.

Members of this group share a passion for plants, produce and people, offering a community for people under 40 working in the industry.

Above. Hugh Littlefield talking about pollinator plants

Azzopardi kids enjoying the sweet corn crop on National Ag Day. **Top L-R.** Matthew Plunkett discussing Irrigation in the field. Umberto Calvo talking through soil improvement results.

Research in the future of FAW management

A highlight of the event was a presentation from researchers Dr Vivian Mendez and Dr Rehan Silva from Macquarie University, with an update on their Hort Innovation funded project, *Effective fall armyworm pheromone blends for improved monitoring and population estimation in Australia* (AS21000). Dr Vivian described how FAW adults' attraction to specific pheromone lure was dependent on the region around Australia, with a clear east and west coast variant. Dr Rehan Silva's project involves assessing the potential of spotted ladybird against FAW larvae, and identifying sweetcorn compounds that attract predators and repel FAW adults. The research is evaluating spotted ladybird, white collared ladybird and lacewing larvae as suitable FAW larvae predators and the compounds these predators may be attracted to, shining a light on positive outcomes in battling this pest.

In field walk and talks

Umberto Calvo from Applied Horticultural Research discussed the findings of the Soil Wealth ICP demonstration site, showing the differences between low till and conventional cultivation. Ryecorn cover crops were planted prior to the field day, with one of the experimental areas mowed while the other was sprayed with a knockdown herbicide and crimped. Results showed that the low till area had good porosity, root penetration, soil fauna present and a crumbly structure compared to the conventionally treated area, which had no soil structure, no stability and showed signs of compaction. A video showcasing the results 18 months into the commencement of this site can be viewed on the Soil Wealth ICP website.

Matthew Plunkett from GS LLS presented an infield talk about irrigation in sweetcorn and explained what the NHT WaterWise project is all about and how growers can get involved.

This was followed by GS LLS' Hugh Littlefield taking attendees through the farm's pollinator-attracting plants display, where he discussed how to improve fruit pollination now that European honeybee numbers are declining due to the spread of Varroa mite.

FIND OUT MORE

Please contact Sylvia Jelinek on 0427 086 724 | sylvia.jelinek@lls.nsw.gov.au.

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Project Project: VG21000

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VEGNET SOUTH EAST QUEENSLAND
Lockyer Valley
REGIONAL UPDATE

Introducing the new Regional Development Officer for South East Queensland growers

I am delighted to step into the role of Regional Development Officer (RDO) for South East Queensland with the Lockyer Valley Growers, and to share an update on my first few weeks in the position. Since commencing just prior to Christmas, I have been busy getting established, meeting growers, and gaining a deeper understanding of the region, its people, and the industry I am proud to now support.

Monique Rooker.

I am pleased to introduce myself as the new Regional Development Officer (RDO) for South East Queensland with the Lockyer Valley Growers Association. It has been a welcoming and rewarding start, and I am looking forward to supporting the industry moving forward.

One of my first priorities upon commencing was assisting with the establishment of the new Lockyer Valley Growers office, now conveniently located in the Gatton town centre. Setting up the office ahead of the end-of-year period was a busy but exciting task, and it was important to ensure the space was ready to serve as a central and accessible point for growers, committee members, and stakeholders. The Gatton location has already proven to be a valuable base, and I look forward to seeing it continue to develop as a hub for connection and collaboration.

Shortly after the office was set up, we held the Annual Growers Meeting and Christmas get-together at the new premises. This event was a highlight as it provided a fantastic opportunity to meet the committee and several growers in a relaxed and informal setting. The atmosphere was positive and welcoming, and it was encouraging to see strong engagement and a sense of community among attendees. As someone new to the organisation, this event helped me put faces to names and gain a better understanding of the growers and stakeholders in the region.

Since then, I have been fortunate to spend time out in the field visiting growers across the region, including trips to Stanthorpe and surrounding areas. These visits have been invaluable in helping me understand the diversity of operations, growing conditions and priorities across the region. I have found it particularly interesting to hear directly from growers about their individual farming goals, production techniques, and the challenges they face. Each conversation has reinforced the complexity of the horticulture sector and the importance of tailored, practical support.

Although my professional background is in business and marketing, this role represents an exciting opportunity to expand my knowledge into a new field. While horticulture is a new area for me, I am thoroughly enjoying learning about the industry. I believe my experience can add value by supporting growers in areas such as communication, stakeholder engagement and long-term planning, while I continue to build my technical understanding of horticulture.

A consistent theme I have encountered since starting is the willingness of growers and committee members to share their knowledge and help me find my feet. I have been grateful for how open, friendly, and generous everyone has been with their time, whether that be showing me around their farms, explaining production systems, or helping me understand the local industry landscape. This support has made the transition into the role much smoother and has reinforced the strong sense of community within the Lockyer Valley and broader region.

While this time of year can be a slower period for many growers, with production easing and some well-earned downtime, there is still plenty happening behind the scenes. We currently have several events and initiatives in the planning stages, and I am very excited about what is coming up. These activities are being designed to provide value to growers, encourage knowledge sharing, and strengthen connections within the industry.

As I continue to settle into the role, my focus will remain on listening to growers, building strong relationships, and identifying opportunities where growers in our region can be best supported. I am keen to learn as much as possible and to work collaboratively with growers, the committee, and industry partners to contribute positively to the region.

Thank you to everyone who has taken the time to welcome me, show me around, and share their experiences so far. I look forward to meeting more people in the coming months and to working together to support vegetable growers in our region.

FIND OUT MORE

Please contact Monique Rooker,
Lockyer Valley Growers Inc on 0456 956 340
ido@lockyervalleygrowers.com.au

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NEW SOUTH WALES
CASE STUDY

National Vegetable Extension Network
VegNET
NEW SOUTH WALES

CASE STUDY

Brassica herbicide trial puts weed control to the test

Introduction

In October 2024, the Australian Pesticides and Veterinary Medicines Authority (APVMA) cancelled the registration of products containing chlorthal dimethyl, due to serious health risks.

This affected the use of the pre-emergent herbicide Dacthal® which was widely used to control annual grasses and broadleaf weeds in agricultural settings, including crops like broccoli, Brussels sprouts, turf, flowers, fruit and cotton. It worked by inhibiting weed growth before seeds could germinate, making it effective in managing unwanted plants without harming sensitive crops.

The loss of this pre-emergent herbicide (with no current replacements in sight) identified the need to demonstrate herbicide combinations for weed control in brassica crops. This was trialled at the NSW Local Land Services (LLS) Demonstration Farm at Richmond Lowlands, to avoid the risk of growers trying combinations on their properties and potentially experiencing crop loss.

VegNET NSW held a Bugs, Weeds and Brassicas Field Day on 18 June 2025 to showcase the results to growers and industry.

Key messages

- The recent ban on crop protection products containing chlorthal dimethyl – an active ingredient commonly used in herbicides for weed control in vegetable crops – prompted VegNET New South Wales to trial the effectiveness of other pre- and post-emergent herbicides to control weeds in cabbage and cauliflower crops.
- Three trials were conducted in March and June 2025, which examined the performance of the post-emergent herbicide Fusilade Forte® with four pre-emergent herbicides, as well as Fusilade Forte against another post-emergent herbicide, Status.
- The trials provided a first step in helping vegetable growers adapt to other crop protection products that can effectively control weeds without impacting the quality of brassica crops. The results also highlighted the need for adaptive weed management strategies that consider seasonal conditions, herbicide interactions and site variability.

Testing the effectiveness of pre- and post-emergent herbicides

Two trials were conducted at the demonstration farm where the post-emergent herbicide Fusilade Forte® was applied with and without the pre-emergent herbicides Baron®, Dual Gold®, Stomp® and Ramrod®. A sub-trial was also conducted in June 2025 to compare the effectiveness of the two main post-emergent herbicides: Fusilade Forte and Status®.

In the first trial, cabbages and cauliflowers were planted on 24 February 2025 and assessed in late March. During this period, weed pressure was high due to a tropical summer climate characterised by frequent storms and elevated humidity.

In this trial, the most effective treatments were the combination of Fusilade Forte with Stomp and Ramrod. In contrast, Fusilade Forte paired with Dual Gold showed poor performance. In addition, all treatment combinations lacking Fusilade Forte as a post-emergent herbicide were ineffective.

Brassica herbicide trial puts weed control to the test

NEW SOUTH WALES
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The predominant weeds observed included amaranth, radish weed, various *Solanaceae* species, nut grass, Johnson grass, and volunteer plants such as corn, wheat and other cover crops.

In the second trial, cabbages were planted on 6 May and again Fusilade Forte was applied with and without Baron, Dual Gold, Stomp and Ramrod. The impact on weeds were observed in June and July.

Approximately two weeks after planting, the weather turned cold and a severe weather event occurred between 18 and 23 May, bringing around 245 mm of rainfall. Notably, around 182 mm fell on 23 May alone, contributing to bed slumping and collapse in some areas.

In the visual assessments conducted on 13 June, the most effective treatment combination was Fusilade Forte paired with Ramrod. This was followed in performance by Fusilade Forte combined with either Baron or Stomp. Notably, Fusilade Forte with Dual Gold performed better in this trial compared to the initial trial in March.

The least effective treatment in this trial was Fusilade Forte with Stomp, despite its better performance in the March trial. Fusilade Forte with Baron resulted in a moderate emergence of grass weeds.

At the time of assessment, the dominant weed observed was radish weed.

In the visual assessments conducted on 4 July, the most effective treatment was the combination of Fusilade Forte with Ramrod, which resulted in very low weed presence – ranging from none to just a few but stunting was visible in the cabbage plants. This was followed by Fusilade Forte with Baron, which showed low weed numbers but did allow some grass weeds to emerge and some stunting in cabbage plants. In contrast, grass weeds were effectively controlled by all other herbicide combinations.

The least effective treatment in this trial was Fusilade Forte with Stomp, which had a significantly high number of weeds present.

Some stunting in cabbage plants was observed in a few herbicide combinations including Fusilade Forte with a combination of Stomp and Ramrod, as well as Fusilade Forte with only Stomp and only Ramrod.

It is important to note that the unknown level of weed seed bank or weed pressure within individual bays or planting beds may have influenced the outcomes for this trial.

High number of weeds with Fusilade Forte and Dual Gold (March 2025).

Low number of weeds with Fusilade Forte and Ramrod (March 2025).

Left: Fusilade Forte with Ramrod (low weeds, plants stunted). Right: Fusilade with Baron and Ramrod (low to medium weeds) (July 2025).

Medium number of weeds with Fusilade Forte and Dual Gold (July 2025).

NEW SOUTH WALES
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Brassica herbicide trial puts weed control to the test

Comparing post-emergent herbicides

During the second trial, a sub-trial was conducted to compare the effectiveness of Fusilade Forte and Status. In the visual assessment conducted on 13 June, the most successful combinations involved Status paired with Dual Gold and Stomp, as well as Status with Dual Gold and Baron – both showing very low weed presence. The least effective treatment during this assessment was Fusilade Forte combined with Stomp and Ramrod, which resulted in high weed numbers.

In the visual assessment conducted on 4 July 2025, Status paired with Dual Gold and Stomp continued to perform well, matching the results of Fusilade Forte with Dual Gold and Stomp – both showing low weed levels.

Other effective combinations included Status with Dual Gold and Baron, and Status with Stomp and Ramrod, all of which maintained low weed pressure — although Status with Dual Gold and Baron showed signs of stunting in the cabbage plants. The poorest-performing treatment in this round was Fusilade Forte with Stomp and Ramrod, which showed medium to high weed presence.

Improving grower productivity, profitability, preparedness and competitiveness

This series of trials provided valuable insights into the effectiveness of various herbicide combinations under differing seasonal and climatic conditions. A consistent finding across all assessments was the superior performance of Fusilade Forte paired with Ramrod, which delivered near-complete weed suppression. This combination proved reliable even under challenging weather conditions, such as heavy rainfall and bed slumping.

However, Fusilade Forte with Stomp, despite initial success in earlier trials, underperformed in later assessments and resulted in a very high number of weeds, suggesting variability in its effectiveness depending on environmental factors or weed seed bank pressure.

The sub-trial comparing Fusilade Forte and Status highlighted that Status, when paired with Dual Gold and Stomp or Baron, consistently matched or outperformed Fusilade Forte in weed control. This suggests that Status may offer a more robust alternative in certain combinations, particularly where grass weeds are a concern.

Manually weeding the control plot (March 2025).

The trials demonstrated the importance of understanding site-specific weed pressure, which remains a variable that could influence trial outcomes. Future trials may benefit from quantifying the weed seed bank in each bay or bed to better interpret herbicide performance.

Overall, these trials provide a strong first step in helping vegetable growers adapt to new crop protection that can effectively control weeds without impacting crop quality. The trials highlight the need for adaptive weed management strategies that consider seasonal conditions, herbicide interactions and site variability. Continued monitoring and refinement of treatment combinations will be essential to optimise crop health and minimise weed competition in commercial production systems, beyond the initial research farm trial.

Further information

Contact VegNET NSW Regional Development Officer Sylvia Jelinek at sylvia.jelinek@lls.nsw.gov.au or 0427 086 724.

Brassica herbicide trial puts weed control to the test

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Appendix

Table 1 : Products used in the trial

Trade Name	Active	Group	Treatment	Target
Baron®	OXYFLUORFEN	14	Pre	Grasses and broadleaf
Dual Gold®	S-METOLACHLOR	15	Pre	Grasses and broadleaf
Stomp®	PENDIMETHALIN	3	Pre	Grasses and broadleaf
Ramrod®	PROPACHLOR	15	Pre	Grasses and broadleaf
Fusilade Forte®	FLUAZIFOP-P	1	Post	Grasses
Status®	CLETHODIM	1	Post	Grasses

Legend – Zero (no weeds) to Very High (weeds)

Zero to Very Low	Low	Medium	High	Very High

Table 2: Brassica herbicide (initial) trial combinations with Fusilade Forte – March 2025.

With Fusilade Forte	Baron	Dual Gold	Stomp	Ramrod
Baron	L - M			
Dual Gold		H		
Stomp			L	L
Ramrod			L	L - M

Table 3: Brassica herbicide (initial) trial combinations without Fusilade Forte – March 2025.

Without Fusilade Forte	Baron	Dual Gold	Stomp	Ramrod
Baron	VH			
Dual Gold		VH		
Stomp			VH	VH
Ramrod			VH	VH

Table 4: Brassica herbicide trial combinations with Fusilade Forte – June 2025 observations.

With Fusilade Forte	Baron	Dual Gold	Stomp	Ramrod
Baron	M (M Gr)	H	L	M
Dual Gold	H	L	H	
Stomp	L	H	VH	H
Ramrod	M		H	VL

Table 5: Brassica herbicide trial combinations with Fusilade Forte – July 2025 observations.

With Fusilade Forte	Baron	Dual Gold	Stomp	Ramrod
Baron	L (L Gr)	L - M	L - M	L - M
Dual Gold	L - M	L - M	L - M	
Stomp	L - M	L - M	VH	M - H
Ramrod	L - M		M - H	VL

Table 6: Sub-trial comparing post-emergent herbicides – June 2025 observations.

Fusilade Forte versus Status	Fusilade Forte	Status
Dual Gold and Stomp	L	VL
Stomp and Ramrod	H	L
Dual Gold and Baron	VL to L	VL

Table 7: Sub-trial comparing post-emergent herbicides – July 2025 observations.

Fusilade Forte versus Status	Fusilade Forte	Status
Dual Gold and Stomp	L	L
Stomp and Ramrod	M - H	L
Dual Gold and Baron	L - M	L

NEW SOUTH WALES
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Brassica herbicide trial puts weed control to the test

Brassica herbicide trial map – June 2025

	Bed 1	Baron		Dual Gold & Stomp		Dual Gold & Baron		Dual Gold
	Bed 2	Baron		Dual Gold & Stomp		Dual Gold & Baron		Dual Gold
Bay 6	Bed 3				**Brassicas** (walkway)			
	Bed 4	Baron		Dual Gold & Stomp		Dual Gold & Baron		Dual Gold
	Bed 5	Baron		Dual Gold & Stomp		Dual Gold & Baron		Dual Gold
	Bed 1	Stomp		Stomp & Ramrod		Baron & Stomp		Baron & Ramrod
	Bed 2	Stomp		Stomp & Ramrod		Baron & Stomp		Baron & Ramrod
Bay 7	Bed 3				**Brassicas** (walkway)			
	Bed 4	Stomp		Stomp & Ramrod		Baron & Stomp		Baron & Ramrod
	Bed 5	Stomp		Stomp & Ramrod		Baron & Stomp		Baron & Ramrod
	Bed 1	Dual Gold & Stomp		Stomp & Ramrod		Dual Gold & Baron		Ramrod
	Bed 2	Dual Gold & Stomp		Stomp & Ramrod		Dual Gold & Baron		Ramrod
Bay 8	Bed 3				**Brassicas** (walkway)			
	Bed 4	Dual Gold & Stomp		Stomp & Ramrod		Dual Gold & Baron		Ramrod
	Bed 5	Dual Gold & Stomp		Stomp & Ramrod		Dual Gold & Baron		Ramrod

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This project has been funded by Hort Innovation using the vegetable and onion research and development levies and contributions from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

QUEENSLAND SOUTH EAST CASE STUDY

National Vegetable Extension Network
VegNET
SOUTHEAST QUEENSLAND

CASE STUDY

Exploring export opportunities for Australian vegetables in Asia

Introduction

Brady Windolf, a third-generation vegetable grower from southern Queensland, is not only continuing his family's legacy at Windolf Farms but also looking to the future by exploring international markets.

Recently, Brady participated in a grower study tour to Singapore, Thailand and Malaysia, facilitated by AUSVEG as part of the *Multi-Industry Export Program* (MT21009). This experience provided valuable insights into the potential for Australian vegetable exports in Asia and highlighted the challenges and opportunities for growers looking to expand beyond domestic markets.

A gateway to Asian markets

In April 2025, Brady joined six Australian growers on a week-long study tour funded by Hort Innovation using the vegetable, onion and melon research and development levies. The program aimed to help growers understand export opportunities and build connections in key Asian markets. The itinerary was packed with activities designed to provide a comprehensive understanding of the region's market dynamics.

A key event was attending Food and Hotel Asia in Singapore, a major trade show that attracted 80,000 visitors from 115 countries and featured 2,500 exhibitors. This event showcased the scale and diversity of the global food industry and provided a platform for Australian growers to observe trends, network with industry leaders and explore potential partnerships.

The group also met with Austrade representatives and the Australian High Commissioner in Malaysia, gaining insights into the support available for Australian exporters. Visits to supermarkets, food service outlets and markets in Singapore, Thailand and Malaysia offered a first-hand look at how fresh produce is marketed and consumed in these countries. Cooking demonstrations further highlighted the versatility and appeal of Australian vegetables in local cuisines.

Key messages

- Export-focused study tours are a valuable opportunity for Australian vegetable growers to learn about promising international markets and their unique consumer trends, as well as build key relationships and networks.
- Lockyer Valley vegetable grower Brady Windolf attended a study tour to Singapore, Thailand and Malaysia in April 2025, which included a visit to the Food and Hotel Asia trade show and local retailers.
- Brady returned from the study tour with a clearer understanding of Asian export markets for Australian vegetables, market challenges and opportunities, and strong networks with both international buyers and other local growers who attended the study tour.
- In the lead-up to the study tour, VegNET Southeast Queensland distributed information on the event to growers in the region and investigated its suitability for younger growers to attend. Follow-up discussions with participants also provided valuable insights into Asian export markets for Australian vegetable producers.

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Key learnings: Opportunities and challenges

Brady returned from the trip with a deeper understanding of the opportunities and challenges of exporting Australian vegetables to Asia. He noted that Singapore, Thailand and Malaysia are attractive markets due to their growing affluent populations, proximity to Australia and strong market access. These countries import significant quantities of fresh vegetables from around the world, creating a competitive environment for exporters.

However, Brady observed that the competition in these markets is fierce, with high-quality produce from various countries vying for consumer attention. Unlike Australia, where most fresh vegetables are home-grown and imports are minimal, these Asian markets are accustomed to a wide variety of imported produce. This means Australian growers must work harder to differentiate their products.

One of Brady's key takeaways was the importance of innovation and quality in securing a premium position in these markets. While Australia's 'clean and green' image remains a selling point, Brady emphasised that it may no longer command the premium it once did. To succeed, Australian growers need to focus on delivering exceptional quality, leveraging technology and finding unique ways to stand out in a crowded marketplace.

Building relationships and networks

Beyond market insights, the trip provided Brady with an invaluable opportunity to build relationships with fellow Australian growers and international stakeholders. Meeting growers from across the country allowed him to share experiences, exchange ideas and form connections that could prove beneficial in the future. Brady highlighted the camaraderie among the group as one of the most rewarding aspects of the trip, noting that these networks were further strengthened when they reunited at Hort Connections 2025 in Brisbane.

The trip also facilitated connections with international buyers and retailers. A standout moment for Brady was touring a Tops supermarket in Thailand, the country's largest supermarket chain, led by a senior buyer. This experience provided a unique perspective on how Australian produce is perceived and marketed in Thailand. The relationship forged during this visit was further strengthened when Tops staff visited Windolf Farms in June 2025 as part of the export program's Reverse Trade Mission. This visit not only showcased the quality of Australian farming operations but also reinforced the potential for long-term partnerships.

Encouraging others to explore export markets

Brady strongly encourages other growers to participate in similar programs, emphasising the value of gaining first-hand insights into international markets. He praised the structure of the study tour, which allowed participants to visit three countries within a week – flying out on Sunday and returning on Friday. The compact schedule ensured a productive and immersive experience without taking growers away from their farms for an extended period.

For Brady, the trip was not just about exploring export opportunities but also about broadening his perspective and understanding the global food industry. He believes that Australian growers have much to gain by engaging with international markets, particularly in Asia, where demand for fresh, high quality produce is on the rise.

Brady on farm with a precision seed planter. **Photo credit:** Windolf Farms.

QUEENSLAND
SOUTH EAST
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Exploring export opportunities for Australian vegetables in Asia

Improving grower productivity, profitability, preparedness and competitiveness

Brady's experience highlights the importance of innovation, quality and relationship-building in succeeding in export markets. As he continues to embrace these principles at Windolf Farms, he is paving the way for a new generation of Australian growers to thrive on the global stage. Combining traditional farming values with modern practices and a global outlook, Brady is ensuring that his family's legacy remains strong while contributing to the growth of Australia's agricultural export industry.

The study trip has not only equipped Brady with the knowledge and connections needed to explore export opportunities but has also reinforced his commitment to innovation and excellence. As he looks to the future, Brady is optimistic about the potential for Australian vegetables in Asia and is determined to play a role in driving the industry forward.

Further information

Contact VegNET Southeast Queensland at ido@lockyervalleygrowers.com.au

Brady in an established carrot crop back at the farm in the Lockyer Valley. **Photo credit:** Windolf Farms.

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