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CONTINUES WITH BUSINESS BENCHMARKING

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Cover. Tim Logan, QLD grower turns a century and a half of tradition into a more confident, modern farm by embracing business benchmarking. *See page 42. Photo courtesy Jiriki Media.*

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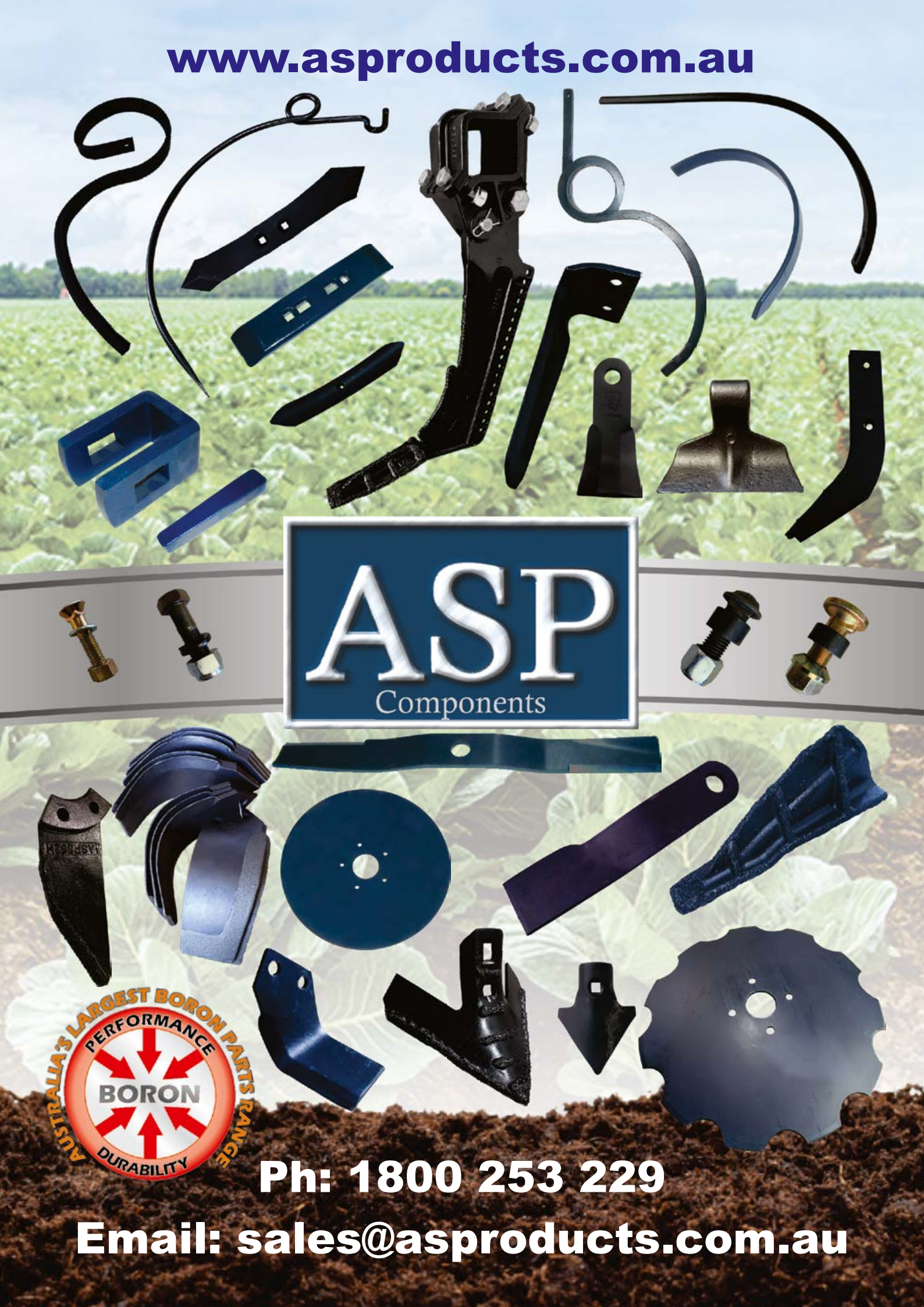

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MESSAGE FROM THE

AUSVEG Chair

The conflict in the Middle East has amplified the major challenges that have steadily degraded our viability as growers for years.

Shockwaves from the war have continued to majorly disrupt the fragile international supply chains that Australia has been too dependent on for too long, and the widespread uncertainty has growers rethinking their planting schedules and plans.

Nationwide, growers are still facing major cost surges and challenges accessing fuel, fertiliser and freight. This has flowed through to massive increases in the already unsustainable costs of every aspect of our businesses.

If we don't have certainty over cost and availability of the critical inputs we need to grow, harvest and send our crops to market, and don't have certainty we'll receive a viable return, then many can't take the risk.

Unless we have more certainty, and soon, more growers will be forced to take a conservative approach to future plantings, or farm viability, which will threaten Australia's food supply chain and food security.

Uncertainty in the industry has been building for years. After years of rising input costs and diminishing returns, four out of five growers were already considering leaving the sector. The latest pressures could be the tipping point that leads growers to cease vegetable production.

Most growers I've spoken to have been flat out dealing with their immediate challenges. But if you have a minute to reflect, you'd be justified feeling frustrated, defeated and angry. It is insulting when retailers and supply chain partners call for 'greater efficiencies' or governments rely on our 'resilience' to brush off the severe pressures we are facing.

The major impacts we're feeling right now are the result of issues AUSVEG and growers have been calling for action on for years, from political leaders of all persuasions.

Just a few years ago, the COVID-19 pandemic and start of the Russia-Ukraine war exposed the major vulnerabilities in Australia's supply chains and food production systems, and the risks of our reliance on imported inputs.

The lessons were clear but not learned fast enough. AUSVEG has consistently raised food security and supply chain issues with successive governments, calling to boost Australia's sovereign manufacturing capability, and for initiatives that make our vegetable growers and food supply chain more resilient, viable and productive.

When confronted with the urgent need to address vegetable growers' key challenges, politicians often point out that Australia produces more than enough food to feed ourselves. Vegetables, given their short shelf life and slim margins are typically produced in the country they are consumed, and Australia is no exception, with 98 percent of fresh vegetables consumed here, grown here.

The problem is we rely on imported inputs to grow that food. The current concerns over cost and supply, and fact growers have already reduced plantings, means years of inaction on food security from successive governments are now hitting home.

As more growers reassess, scale back or leave the industry, we risk becoming more reliant on cheap, imported frozen and processed vegetables that have already severely undermined Australian growers' viability.

We're seeing the risks of overreliance on imported critical inputs like fuel, fertiliser, plastics and packaging play out in real time. To allow that overreliance to extend to our food would be a national shame.

The Government response has so far been mostly broad moves, like the announcement of taskforces, underwriting fuel and fertiliser purchases, efforts to secure supply of fuel and fertiliser, and a snap food supply chain assessment.

From a grower's perspective, what we really need are specifics. What we need are assurances we'll be prioritised for access to critical inputs as an essential sector, and details about how these inputs will be secured and distributed.

In widely covered media engagements during the crisis, AUSVEG has continued to emphasise that without these assurances, viable returns, and action on the longer term issues that have increasingly threatened our viability as growers, more will scale back, and the supply and availability of critical, safe, fresh Australian vegetables will decline.

It is also very important to acknowledge the human impact, and the mental health pressure on growers. If you are feeling overwhelmed, you are not alone, and support is available. Reaching out to a trusted friend, family member or your GP can be an important first step. There are also dedicated services and organisations across that understand the unique pressures faced by rural communities.

While there's not a lot to be positive about on the farm at the moment, I am looking forward to our industry coming together at Hort Connections in Adelaide in June. The conference will showcase the latest products, services and technologies driving the horticulture industry forward. But most importantly, it offers an opportunity growers to come together, compare notes and strengthen connections at a time that's needed more than ever.

Bill Bulmer
AUSVEG CHAIR

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THE STATE OF THE SECTOR WITH THE

AUSVEG CEO

In the years during and since the COVID-19 pandemic, AUSVEG's advocacy on behalf of Australia's vegetable, potato and onion growers has persistently and increasingly warned successive governments of severe threats to Australia's vegetable industry and national food security.

These threats have taken the form of an overreliance on imported critical farm inputs and a lack of adequate government action to address increasingly challenging economic and operating conditions for vegetable growers, which have steadily eroded their viability.

As a case study of the risks to Australia's food security, the pandemic brought cities and economies worldwide to a halt, threw international supply chains into disarray and exposed widespread vulnerabilities in Australia's capability to secure critical workforce. As a further reminder, the start of the Russia-Ukraine war provided more evidence of the risks posed by our over-dependence on imported critical inputs for our food production.

Closer to home

It is not only international factors that have heaped pressure on Australia's vegetable industry which grows and supplies 10,000 tonnes of fresh produce into the domestic market each day, and 98 percent of the fresh vegetables eaten by Australian families.

In the years since the pandemic, the persistent high inflation environment and tough economic and operating conditions have seen growers' challenges mount.

Surging productions costs, increasing compliance burden and persistent workforce shortages – curtailing growers' access to the skilled and semi-skilled workforces they need to feed Australians – have all taken a toll.

Making a hard situation worse, the cost-of-living crisis for Australian households, and downward pressure on farmgate prices mean increasingly unviable returns have severely challenged grower profitability, and eroded capacity to re-invest in productivity enhancements and innovations.

> The cost squeeze has also left an industry renowned for its world-leading, production and quality standards more and more vulnerable to the increasing flow of cheap, frozen and processed imported product, at the further expense of local growers and our domestic food manufacturing capability.

Six-monthly AUSVEG Industry Sentiment Surveys conducted since 2023 tell the story of a diminishing outlook across the sector. While an average of one in three growers in surveys conducted up to early 2025 indicated they were considering leaving the sector, that figure jumped to two in five over the past year – with a further two in five saying they too would do the same if they had a viable exit strategy.

A late 2024 media release outlining the findings of AUSVEG's then-most recent sentiment survey, offered this assessment of the urgent challenges facing vegetable growers:

"While the economic challenges and uncertainty which have hit the wider Australian community have played a role in the difficulties facing commercial vegetable growers, many of the issues contributing to this crisis in vegetable farm viability are the result of legislative, regulatory and policy settings that have been imposed upon the industry.

Our industry is in an extremely tenuous position, with growers leaving, considering leaving, or just one more set-back away from leaving."

Unheeded warnings mean that further set-back may have arrived for many growers.

War impacts

The start of the Middle East war in late February had an immediate, severe impact on Australia's vegetable, potato and onion growers.

Almost overnight export activity into the key Middle Eastern market ground to a halt and has remained severely disrupted. Meanwhile, mounting concerns over the availability of critical farm inputs which Australia overwhelmingly imports, led to steady price surges and supply issues.

The flow-on impacts have continued to affect almost every aspect of vegetable growers' businesses, not only in terms of cost surges and supply concerns over critical inputs like fuel, fertiliser, freight and packaging, but in new surcharges and cost increases on everything from irrigation equipment to crop protection products and callouts fees for services and trades.

A snap survey of more than 200 growers conducted in the initial weeks of the conflict – and used to inform AUSVEG's comprehensive media and political advocacy on behalf of growers – indicated the chilling effect the uncertainty is having on grower decision making. It showed 28 percent of growers had already reduced or stopped planting schedules, and a further 16 percent were actively considering their options. Growers who had opted to reduce planting had done so by an average of 35 percent.

Given there has been no let-up in the uncertainty, more will have revisited their plans since.

Meanwhile, of their significant production cost increases, growers had only been able to pass on around 10 percent to their customers.

As these new and urgent challenges have continued to severely hamper grower decision making, and ultimately threaten the availability of fresh, Australian-grown vegetables, AUSVEG's advocacy has emphasised the need for urgent measures.

In widely reported media engagements, and our regular and ongoing representations to government and supply chain stakeholders, AUSVEG has continued to highlight that without assurances over viable farmgate returns, and greater certainty over cost and access to key farming inputs, more growers will scale back, further reducing the supply of critical, Australian-grown vegetables.

Government response

The impacts of the crisis have generated a significant, reactive response from government, largely aimed at reassuring the public, and segments of industry.

To date, escalating government efforts have included the establishment of a fuel taskforce and fertiliser working group, the announcement of a snap food supply chain assessment, measures to allow government underwriting of fuel and fertiliser purchases internationally, and top-level diplomatic efforts to secure fuel and fertiliser supply from key trading partners. Following a push by AUSVEG and the wider agricultural export industry, the Government also announced a one-year deferment of the transition to full cost recovery for export regulatory services, until 1 July 2027.

While these are valid, arguably overdue measures, they are also overwhelmingly reactive, leaving growers still needing clear detail and assurance that their specific needs will be addressed.

As one example, while high-level official efforts to secure supplies of critical inputs like fertiliser are necessary, the widespread focus on bulk urea doesn't reflect the wide array of custom or bespoke fertiliser blends vegetable growers require to optimise productivity across a diverse vegetable industry.

To provide greater certainty, AUSVEG continues to emphasise the urgency of government recognising the vegetable industry as an essential sector, which will be prioritised for access to critical inputs like fuel, fertiliser and freight.

Grower returns

The current crisis has also cast grower-buyer relations back into sharp focus.

With our survey and ongoing discussions confirming growers are continuing to experience significant challenges passing their extreme production cost increases on to customers, all commercial buyers have an obligation to enact and honour evidence-based requests for viable returns from growers.

This is a key point AUSVEG has continued to emphasise pointedly in the media, and in our engagements with the major retailers and the Food and Grocery Code Supervisor.

To keep growers growing, and to protect the availability of critical fresh vegetables for Australian consumers, it is fundamental that growers receive viable farmgate returns.

Consequences for consumers

Without assurances over viable farmgate returns, and greater certainty over surging costs and input supply challenges, growers will continue adjusting planting and harvesting schedules.

While impacts of grower decisions to reduce planting schedules during the initial weeks of the crisis will be felt in terms of reduced supply and limited availability of some vegetables in some locations, it is critical all politicians and key decision makers understand that more severe impacts on the future supply of Australian-grown fresh vegetables are still to come as the uncertainty continues.

As vegetable growers continue making daily, or weekly decisions about what, and how much, to plant or harvest, decisions made today will take weeks or months to flow through in the form of reduced supply for consumers.

If growers don't have certainty over viable returns, and certainty over availability of critical inputs, more will reduce production, more will leave the industry, supply of Aussie-grown vegetables will reduce, and prices for consumers will rise higher.

Once production volume or capacity is lost, it is much harder to recover, which means Australia will be even more dependent on imports – not just for critical farm inputs like fuel and fertiliser, but for our food.

A need for systemic reform

In the years leading up to this latest crisis, AUSVEG has consistently led a chorus of calls from growers for measures to strengthen Australia's sovereign capability to manufacture key farm inputs and food, to improve supply chain integrity, and to ensure government policy settings make it easier, not harder, for vegetable growers to carry out their essential work.

Sadly, unheeded warnings now have serious implications for Australia's future food security.

As these earlier warnings now come to fruition, it is critical the nation takes this opportunity to address the other long-standing, systemic challenges that have hampered vegetable growers' capacity to continue feeding Australians.

While the need to address the current extreme pressures on growers remains urgent, it is also critical for the Government to commit to meaningful reform.

It is crucial that the Government backs industry efforts to reduce the compliance burden that costs the industry conservatively $200 million a year. It is critical the Government supports industry efforts to lift productivity and address workforce shortages, and it is critical the Government gets on board by supporting a behaviour change campaign to get more Australians eating more vegetables – before most vegetables available to Australians are imported.

Hort Connections

In the face of so much uncertainty, it is key that our industry finds opportunities to come together, consolidate and regroup.

With Hort Connections 2026 from 1-4 June at the Adelaide Convention Centre fast approaching, the entire horticulture sector has an important chance for that connection.

As the largest horticultural event in the southern hemisphere, Hort Connections will provide opportunities to network, get together and reflect on how great the sector can be, with the latest innovations and insights on the industry's key topics on display.

In tough times, this year's event will also provide an opportunity to step away from the day-to-day, catch up and compare notes with colleagues and counterparts confronting many of the same challenges.

Michael Coote
CEO, AUSVEG

MIDDLE EAST WAR IMPACTS

A crisis years in the making

The fallout from the war in the Middle East has pushed the Australian and world economies into states of extreme uncertainty. For Australian vegetable growers, and Australia's short-, medium- and long-term food security, the pressure and implications are particularly profound.

While impacts of the conflict on Australian vegetable growers, who grow and supply 10,000 tonnes of fresh produce to market each day, have placed many under extreme, viability-threatening pressure, this is not solely the result of a war which commenced weeks ago.

Rather, the tipping point facing Australia's vegetable industry is the culmination of long-standing structural vulnerabilities, and years of severe operating challenges for growers that organisations like AUSVEG have regularly warned successive governments about.

Immediate impacts

In the days following the start of the war, a snap, week-long AUSVEG survey of more than 200 growers revealed immediate, severe pressures due to input cost shocks and supply concerns.

While these pressures have played out and been felt differently across the country's vegetable growing regions, more than three quarters of growers indicated they had just three weeks or less of diesel supply, and that their diesel costs on average had increased by 75 percent within just a few weeks of the conflict starting.

Almost half indicated they had just three weeks or less of fertiliser supply, and that average fertiliser costs had increased by 53 percent. Importantly many survey respondents were yet to attempt placing new orders, meaning the true extent of the cost and supply shock was still flowing through the system.

Growers also indicated the widespread imposition of fuel surcharges on freight, averaging 40 percent in the survey concluding late March, and continuing to climb in the weeks since.

While fuel, freight and fertiliser emerged as immediate cost and supply pressure points, growers also reported that price rises, or additional surcharges were affecting all areas of their businesses, from packaging and crop protection products to irrigation equipment and new fuel surcharges on service callouts, all leading to further financial pressures.

Of these significant production cost increases, growers indicated they had only been able to pass about 10 percent to their customers. In response, AUSVEG has repeatedly emphasised the importance of vegetable growers' customers enacting evidence-based requests from growers in good faith – publicly in the media, and in meetings with the major retailers and the Food and Grocery Code Supervisor.

Global shockwaves, local consequences

The Middle East conflict sent shockwaves through already fragile international supply chains, sharply affecting the availability and cost of essential farm inputs such as fuel, fertiliser and freight. For Australian vegetable growers who rely heavily on these imported inputs to plant, harvest, and transport produce – as well as for other essential items like packaging, irrigation equipment and crop protection products – the consequences have been immediate and severe.

As costs that were already unsustainable have surged further, and uncertainty about future availability of inputs and viable farmgate returns have grown, growers have adjusted their plans, unable to take on more risk.

The ongoing uncertainty is particularly damaging for a vegetable industry that operates 52 weeks of year, where decisions about what crops and how much to plant are made weekly, and where growers must commit to planting weeks or months before harvest, often without guarantees about future business conditions.

Initial production schedule reductions already reported by growers will flow through the supply chain and be felt by consumers in reduced availability of some produce on some shelves. However, as growers continue reconsidering and adjusting plans, the longer uncertainty reigns, the more extreme the impacts on future fresh vegetable supply will be – taking weeks or months to reach households.

Regardless of a short, medium or long-term resolution to the war, the worsening impacts on the supply of Australian-grown fresh vegetables will continue to be felt – and once production scale and capacity is lost, it is not so easily recovered.

Unheeded warnings

The crisis unfolding across the sector now is not just a temporary disruption. It is the cumulative consequences of years of insufficient government action on sovereign capability, supply chain resilience and addressing Australian vegetable grower's key issues. The risks to Australia's food security are now very real.

For years, AUSVEG has raised these concerns to governments of all political persuasions, consistently calling for measures to strengthen Australia's sovereign capability to manufacture key farm inputs, to improve supply chain resilience, and to support policy settings that foster viable vegetable production. These calls have been grounded in the lived realities of growers, who for years have confronted escalating costs, diminishing returns and compliance overload which even before the war in the Middle East had left four in five considering leaving the industry.

The early warning signs were also brought into sharp focus during recent global disruptions. The COVID-19 pandemic exposed vulnerabilities in labour availability, logistics, and international supply chains, while the commencement of the Russia-Ukraine war provided another illustration of the risks of over-dependence on imported fertilisers and energy.

At the time these lessons appeared clear, with widespread recognition that Australia needed to bolster domestic capacity and build more resilient supply chains. Yet, despite a comprehensive 2023 House of Representatives inquiry report complete

Given the widespread uncertainty, AUSVEG's survey also showed 28 per-cent of growers had reduced or stopped planting schedules, and a further 16 percent were actively considering their options. Growers who had opted to reduce planting schedules had done so by an average of 35 percent.

with recommendations to bolster Australia's food security, and the 2025 commencement of the multi-year development of a National Food Security Strategy, meaningful progress on systemic reform has been slow.

A tipping point

Australian producers grow and supply 98 percent of the fresh vegetables consumed by Australians, which means our vege-table growers' issues are critical national food security concerns.

Any significant contraction in domestic vegetable production has direct implications for the availability of Australian grown fresh vegetables for consumers, and ultimately the prices paid at the checkout.

The fact that years of challenging economic and operating conditions mean growers have no capacity to absorb the latest round of severe production cost increases is also compounding the urgency.

With growers already considering leaving the industry in large numbers, even before the latest production cost shocks and input uncertainty, the risk of further, wider-scale drops in production remain very real.

While AUSVEG's latest survey results found some growers have already scaled back production, future decreases in supply will follow if more choose to leave the industry entirely, meaning reduced availability and higher prices for consumers.

As cost of living pressures continue weighing heavily on households, and amid the risk fresh Australian-grown vegetables will become more out of reach to everyday Australians, the gap will inevitably be filled by imports – particularly frozen and processed vege-tables, which have already been increasingly entering the country at the expense of Australian growers, and the erosion of domestic food manufacturing capacity over time.

As the pitfalls Australia's overreliance on imported critical farm inputs plays out in real time, extending that dependence to food, represents an even more serious national security threat.

As Australian growers scale back production or exit the industry, rebuilding that capacity is neither quick nor straightforward. As a country we are facing a tipping point, where decline in our food production capacity may become self-reinforcing.

Beyond the reactive

The escalating government response to the most recent crisis has in the main been reactive. Announcements of taskforces, working groups, government underwriting of fuel and fertiliser purchases, high-level diplomacy to secure supply, and a rapid assessment of our food supply chain have all been enacted in efforts to provide some reassurance to Australian industry, and the public.

These steps may provide short-term relief, but from growers' perspectives they are long overdue, and clear assurances have been missing – particularly the acknowledgment that the vege-table industry is an essential sector that will be prioritised for access to critical inputs.

While these assurances are essential to restoring a level of certainty to allow vegetable growers to continue growing food for Australians, it is also critical the Government takes this opport-unity to address other longstanding grower issues – particularly given the vegetable industry's valid, long-term warnings over Australia's lack of sovereign capability have eventuated.

AUSVEG for many years has proposed constructive, low-cost or cost-neutral government initiatives to alleviate viability-threatening pressures on the industry.

This includes the urgent need to address the sluggish product-ivity that has continued to be a major drag on vegetable growers by alleviating the industry's skills and workforce shortages, investing in a national behaviour change campaign to boost vegetable consumption, reinvigorating growers' capacity to invest in innovations and efficiencies for their businesses, and addressing overwhelming compliance burden.

With compliance burden remaining one of the major factors leading growers to consider leaving the industry, an AUSVEG report released late last year identified that there was upward of $50 million in savings to be achieved in the short term by implementing recommendations to make industry compliance more streamlined and efficient.

With growers under immense financial duress, a lasting reduct-ion in the burden of compliance and regulation is now needed more urgently than ever, as current pressures may prove too much for many Australian vegetable producers.

Action needed

The pressures on Australia's vegetable industry triggered by the Middle East conflict are not an anomaly, but confirmation of the vulnerability of Australia's food systems.

As a nation, we now face a choice. We can continue to rely on reactive measures, scrambling in increasingly tight and competitive international markets to secure critical inputs while failing to address longstanding and prohibitive business cond-itions domestically, or we can commit to the structural reforms necessary to secure a resilient and sustainable food system.

The stakes couldn't be higher. As growers reduce planting and consider leaving the industry, the availability of fresh, safe, Australian-grown vegetables is increasingly at risk. These consequences extend well beyond agriculture, affecting food prices, quality, accessibility for all Australians, and our national health and food security.

The current dire situation is both a warning and an opportunity. This crisis must lead to meaningful reform before the risks become irreversible realities.

Pricing squeeze on vegetable growers confirmed in latest official statistics

New official figures show the average per kilo farmgate value of Australian vegetables in 2025 stayed below 2022/23 levels, as Australian vegetable growing businesses remain under cost and pricing pressure.

The latest *Horticulture Statistics Handbook* released in February by Hort Innovation shows Australia's 2024/25 overall vegetable production declined slightly to 3.78 million tonnes, from 3.83 million tonnes the previous year, while overall production value increased from $5.7 billion to $6 billion.

Far from signalling a reversal of recent cost, pricing and operating challenges that have left many vegetable growers considering their future viability, significant pressure points remain.

With the majority of the overall production value increase attributable to climbs in the production value of major crops like potatoes, tomatoes and onions, linked to corresponding drops in supply, these changes reflect challenging growing conditions for many staple commodities over the period.

SCAN TO VIEW

Australian Horticulture Statistics Handbook 2024/25, released by Hort Innovation each year, offers the most comprehensive and up-to-date annual data available on Australian horticultural production.

Despite the overall increase in production value, the average per kilo value across all vegetables, at $1.59/kg, was 2.5 percent lower than 2022/23's average of $1.63 – representing only a partial recovery from 2023/24's significant drop to $1.49/kg. With CPI having climbed a cumulative 5.9 percent over the 2023/24 and 2024/25 financial years, average per kilo farmgate value is down more than 8 percent in real terms compared to two years ago.

The new official figures come as AUSVEG Industry Sentiment Surveys continue to show that unviable returns for produce are an increasingly pressing issue leading two in five vegetable growers to consider leaving the industry.

The breadth and diversity of crops grown across Australia's vegetable industry means trends were not universal across all commodities. The handbook shows broccoli, cabbage, leafy vegetables and chilli production volume and value remained relatively stable compared to the previous year. However, larger moves were recorded across other commodities, also reflective of the pressures facing growers.

While a 2024/25 decline in onion production volume saw production value climb from $290 million to $306 million, this was still short of the $332 million recorded in 2022/23. Onions' $1.21/kg average farmgate value in 2024/25 also fell short of the $1.30/kg average recorded in 2022/23.

Similarly, a $40 million increase in tomato production value, linked to a drop in supply, still saw the average value of $1.48/kg sit well below the recent high of $1.77/kg recorded in 2022/23, and just two cents above the average of $1.46/kg recorded in 2021/22.

Despite increases in both production value and volume, carrots, peas and cucumbers also all recorded average per kilo prices below 2022/23 levels.

AUSVEG CEO Michael Coote said: "The economic and operating pressures on Australian vegetable growers have been substantial in recent years, and unviable returns for produce are continually and increasingly identified as a top reason two in five growers are considering leaving the industry.

"With average farmgate value down in real terms, and costs of key farm inputs like energy and labour, in particular, having grown substantially in recent years, it is clear that Australian vegetable growers continue to face challenges.

"It is important to understand that an increase in the overall production value of vegetables does not automatically translate to higher returns for growers, particularly as production costs have continued to climb.

"It is critical to ensure Australian growers are receiving fair and viable returns for their produce, and just as important to ensure there are opportunities for vegetable growing businesses to access and adopt productivity and profitability enhancing innovations and initiatives.

"In light of the severe and continuing viability and profitability challenges facing Australian vegetable growers, the significant and ongoing program of research and development work funded through grower levies, and overseen by Hort Innovation, is particularly important to achieving those productivity enhancements."

The *Horticulture Statistics Handbook* is funded by Hort Innovation using multi-industry research and development levies and funds from the Australian Government. **Project Number: MT24019**

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Pioneering White Asparagus
IN TASMANIA

Tasmanian White Asparagus in Brighton, Tasmania is the first in the area to grow white asparagus – a vegetable widely celebrated in Europe, but relatively obscure in Australia.

A simple conversation with a friend about a local high-end chef's desire for white asparagus was the spark that led Tasmanian grower Richard Weston into one of the most unusual horticultural ventures in Australia. When he secured a Nuffield Scholarship a few weeks later, Richard selected white asparagus as the focus of his research, setting out to investigate whether the crop could be successfully grown in Australia.

In the years since, Richard has successfully established white asparagus at his farm in Tasmania with his wife, Belinda Weston, and partners Tom Barham and Jenna Howlett. The ambitious idea came with a bit of trial and error, but the team have found that the island's cooler climate more closely resembles traditional European growing regions than mainland Australia, making it better suited to the crop's requirements.

Even so, growing a European crop in Australian conditions has presented significant challenges. Unlike green asparagus, white asparagus is grown without exposure to sunlight. Farmers cover the rows with white plastic sheeting, preventing chlorophyll from forming in the developing spears. Without chlorophyll, the asparagus remains pale and develops a tender texture and delicate flavour that has made it a prized seasonal delicacy in countries such as Germany, Belgium and the Netherlands.

However, Tasmania sits in the path of the Roaring Forties – powerful westerly winds that regularly sweep across the island. These winds can lift or tear the plastic coverings, forcing the growers to constantly repair and reposition them throughout the season. Tasmania also experiences fluctuating temperatures and occasional extreme heat spikes, which means managing this crop through unpredictable conditions requires adaptability and a willingness to experiment.

Despite the difficulties, the crop offers a remarkable reward during harvest. White asparagus has an exceptionally fast growth rate, with spears capable of growing up to 10 cms per day under favourable conditions. This rapid growth means the harvest window is intense and highly time-sensitive – growers must monitor the beds closely to ensure the spears remain beneath the plastic to prevent exposure to sunlight.

The harvest period itself is short, typically lasting around eight weeks in early spring. This timing also positions the crop as a counter-seasonal offering compared to the northern hemisphere's spring harvest.

When Richard first began producing white asparagus, the primary market was Australia's fine dining restaurants. The vegetable's rarity and brief availability make it particularly appealing to chefs eager to showcase seasonal ingredients and experiment with new flavours and textures – an endeavour Richard admires and finds rewarding to assist with.

Over time, interest has expanded beyond the fine dining scene. Richard has increasingly sold white asparagus directly to customers, with strong demand emerging from Australia's European communities. For many people with ties to Europe, the vegetable carries deep cultural significance and nostalgia, making its local availability a welcome discovery.

"They know exactly what it is," Richard said. "We get a lot of people asking when it's available and how they can get it.".

What began as a simple idea has grown into a distinctive Tasmanian product, bringing a taste of European spring to Australian soil.

Above. Richard Weston and Tom Barham winning the *Delicious* Magazine Unearthed Producer award. **Left.** Richard harvesting white asparagus in Tasmania.

Protected cropping in action

While protected cropping has long had a place in Australian horticulture, it has previously been considered a niche sector compared to traditional growing methods.

This perception is partly due to the investment required to do it properly, including building glasshouses, installing irrigation and nutrient systems, and managing the conditions inside them to ensure optimal growing environments.

But this view is beginning to shift.

Butler Market Gardens operates 12 cropping sites across various locations, growing fresh herbs and vegetables that it supplies to major retailers. This includes its operation at Lyndhurst near Melbourne, where they predominantly grow herbs in 3000 square metres of protected cropping space.

"We've been here for about eight years, and historically, this facility was a flower farm," Chief Executive Officer Rick Butler said.

"Demand for herbs and flavour really grew from about 2010 onwards, aligned to popular TV shows like *Master Chef.* This also aligned to new formats of units sold like punnets and sleeved herbs. An opportunity came along to get access to this great facility with winter heating via an environmentally friendly biomass boiler."

Mr Butler said there is a very simple reason why protected cropping has a place in horticulture and is becoming increasingly popular.

"They aren't making any more land now, and in and around Melbourne a lot of the good soil now has houses on it. Protected cropping plays a role in growing products with a smaller amount of area.

"Not for every crop, there's certain things that you can't grow. You obviously can't grow carrots and onions and things like them in here because they need to be grown a certain way. But I think from an environmental and sustainable perspective, we're growing products and turning them around in four weeks. Our record here is 18 days from planting to harvest with the product within spec for our customers, so that's nice and quick.

"I think that moving forward more leafy green products are starting to be grown in projected cropping. Probably spinach, kale, cos lettuce. Some of those other soft, short shelf life, products. They're the ones that need to be close to the consumer because they have to have the shortest distance and timeframe from where it's grown to the consumer being able to buy it."

YieldX trial

Since November last year Butler Market Gardens' Lyndhurst greenhouse has hosted a commercial trial of a high-density growing system, designed to unlock unused space and boost production capacity.

The system was developed by YieldX using technology originally engineered by NASA for its deep space food program.

"It's a bit hard to explain, but basically the system grows with the plants," YieldX Chief Executive Officer and Chief Technology Officer Nadun Hennayaka said.

"As the plants grow, the 'white space' gets smaller to accommodate the plant size. Very simple concept, very simple model, but by doing that, we can increase the plant density."

"I do a lot of reverse engineering work as a hobby. So being a hobby tinkerer, I figured this would be a nice way to change things."

Mr Butler explained that he was drawn to the project as it addresses two key inefficiencies in his operation.

"One is maximising the actual yield that I can get from the space within the glasshouse. We're standing in a 1000 square metre glasshouse here that predominately grows basil and soft herbs. So, we want to maximise the space and to have as much product in here as possible, especially during the winter.

"The second most important thing was labour efficiency. Walking all the way down the end of the row and walking all the way back is time consuming, and you've got the cost of labour going up year by year. And we're not necessarily getting too much more for a product.

"So, economies of scale must come into play here to remain viable long term – fundamentally, more volume at lower cost, [especially when] labour is making up nearly 50 percent of most farmers' costs."

Protected cropping is moving beyond its niche status as growers seek more efficient, sustainable ways to produce fresh food close to consumers, securing its growing role in Australian horticulture.

Above. YieldX, Butler Market Gardens and LaTrobe University teams at the official YieldX launch.

Unlocking maximum flavour & efficiency in **coffee and tea extraction**

Did you know over 70 percent of coffee and tea extraction efficiency depends on particle size? In a market where flavour and consistency define product success, manufacturers can't afford to get this step wrong.

Achieving a premium end product starts with precise size reduction of your raw ingredients, ensuring optimal surface area for flavour capture. When particle size is inconsistent, extraction efficiency suffers – leading to wasted product, undesirable bitterness, or weak flavour profiles.

For processors using integrated extraction systems, controlling the particle size of roasted coffee beans and tea leaves is critical. Too coarse, and valuable flavour compounds may not be fully extracted. Too fine, and excess bitterness or over-extraction can occur. Achieving the perfect balance in particle size requires advanced technology and this is where Comitrol® processors from Urschel make all the difference

Importance of particle size in extraction

In modern coffee and tea processing, the ground ingredients are mixed with water to create a slurry – a thick liquid mixture that allows for efficient extraction of flavour compounds. This process is essential in the production of coffee essences, instant coffee, and tea concentrates.

At this stage, the efficiency of flavour extraction is directly linked to how precisely the ingredients have been reduced in size. Inconsistent or oversized particles may result in uneven extraction, reducing yield and overall quality.

Urschel's Comitrol processors ensure a highly controlled, uniform particle size, allowing manufacturers to achieve:

- **Maximised flavour capture** – More surface area exposure leads to greater aroma retention.
- **Higher yield efficiency** – Improved extraction of soluble coffee or tea compounds.
- **Process consistency** – Ensures uniformity across production batches.
- **Comitrol M3600S** – Uniform particle size for optimal extraction.

Comitrol M3600S® is a leading solution for grinding roasted coffee beans and tea leaves before extraction. It's designed for precision size reduction, ensuring particles are uniform and optimal for slurry preparation.

By maintaining tight control over particle size, Comitrol M3600S prevents inconsistencies that lead to flavour degradation or loss. This translates to a better-quality final product – whether for coffee extracts used in ready-to-drink (RTD) applications or premium instant tea concentrates.

Urschel Comitrol M1700
Versatility for instant coffee and tea applications

For manufacturers requiring greater flexibility in size reduction, the Comitrol Processor M1700® provides multiple cutting options in a single machine. This model allows processors to fine-tune particle size based on their specific application, for example:

- Finely milled coffee or tea powders for instant extraction.
- Micro-cut tea leaves for enhanced flavour infusion.
- Pre-ground coffee for instant formulations with consistent texture.

Enhancing efficiency and quality in coffee and tea processing

Beyond flavour optimisation and helping you bring your best product to market, the Comitrol series from Urschel delivers additional operational benefits, including:

Comitrol M1700's precision cutting heads ensure that every batch meets the required specifications, reducing waste and improving process efficiency.

- **High throughput** – Handles large volumes with minimal operator intervention.
- **Sanitary, enclosed design** – Prevents dust, vapour, or liquid escape, ensuring cleanliness.
- **Low maintenance** – Durable stainless-steel construction for easy cleaning and longevity.

Comitrol M3600S and M1700 are tailored solutions to meet the demands of modern extraction systems, ensuring superior results in every batch.

For coffee and tea manufacturers aiming to maximise flavour retention, optimise extraction, and enhance product consistency, investing in precision size reduction technology is essential. Both the Comitrol M3600S and Comitrol M1700 models will ensure superior results in every batch.

By utilising advanced size reduction equipment, manufacturers can produce higher-quality extracts, increase efficiency and deliver premium coffee and tea products to a global market.

Above. Urschel Comitrol M1700.

Urschel Comitrol M3600S

FIND OUT MORE
For more information visit heatandcontrol.com
email info@heatandcontrol.com.au

export/ trade + update

VEGETABLES
ONIONS

Thailand's premium shelves
Building demand where it counts

AUSTRADE

Thailand is one of Australia's foundational vegetable markets, but it is under some pressure. In March, Austrade's Bangkok post teamed up with six peak bodies including AUSVEG, state and territory governments and Tops, Thailand's premium supermarket chain, to put Australian produce at the centre of Thai kitchens. Here's what that collaboration looked like on the shelf.

You would be forgiven for thinking, after watching *The Beach* or listening to your neighbour's stories about backpacking through Thailand 15 years ago, that the country was still all night markets and floating vendors.

But walk into a Tops food hall in central Bangkok and you step into something closer to a Parisian food market than a Khao San Road stall. Polished floors. Crates of produce arranged like jewellery. Australian asparagus stacked beside Australian carrots, lit with a halogen glow. This is modern Thai retail: premium, imported and fiercely competitive, built for a consumer with money to spend and a world of origin labels to choose between.

Thailand is an important market for Australian vegetable growers. It is Australia's largest fresh onion export destination, and a long-standing buyer of Australian carrots, potatoes, cabbages and leguminous vegetables. But 2025 was a difficult year. Total Australian fresh vegetable exports to Thailand fell by a third in the January-November period, and the decline was broad-based across most categories. Against that backdrop, the job of defending and rebuilding Australian share on Thai shelves has never been more important.

Discover Australia: Six States of Excellence, a two-week retail promotion at Tops, sought to highlight Australia's premium vegetables. Tops is the premium supermarket business of Central Retail and Thailand's largest food retailer. Running from 18 to 31 March across 98 stores and Tops Online, the campaign put more than 1,400 Australian products on the shelf under one curated banner, from beef and lamb to carrots, potatoes, onions, asparagus, broccoli and Australian wine.

The promotion was funded through the Accessing New Markets Initiative (ANMI), a $50 million program helping Australian exporters diversify and grow their exports, designed and jointly delivered by the Australian Trade Commission and industry.

Australian Trade and Investment Commission (Austrade) Trade Diversification Taskforce General Manager, Jay Meek said:

"More than ever, new strategies are required to remain competitive. Government and industry need to work together to build supply chain resilience, boost diversification and ensure Australian exporters can succeed despite global economic uncertainty. Engaging with peak industry bodies, like AUSVEG, is essential for building resilience in Australian businesses – and I am pleased to say we are getting on with it right now with ANMI and the Trade Diversification Network."

A campaign built around the Aussie table

Rather than a discount event, Discover Australia was built as a premium festival. Tops merchandised the assortment around six Australian states and a set of 'Aussie Table' meal occasions – including lamb, brunch, clean eating and the weekend picnic – translating the range into everyday Thai kitchens. Across two weekends, a dedicated sampling team ran in-store tastings that included Australian vegetables, giving shoppers a chance to taste the product.

The launch at Tops Food Hall Central Park in Bangkok was hosted by Tops Managing Director Thanawat Jirajariyavej and Australian Ambassador H.E. Dr Angela Macdonald PSM, alongside senior leadership from Central Group and Central Food Retail. A second launch followed in Phuket on 21 March, attended by Australian Consul-General Kirsten Fletcher, with an activation program designed for the island's HORECA buyers – the hotel, restaurant and catering network that drives Phuket's high-value food economy.

The centrepiece of the Phuket program was a chef's table curated by Dr Natsasi Noo-in, 'Chef Nat', better known in Thailand as the Lady Butcher and an Aussie Beef Ambassador.

Her menu threaded Australian vegetables through every course: lobster canapés with Australian asparagus, a carrot and macadamia soup, red wine braised lamb rack with Australian root vegetables, char-grilled sirloin with truffle potato purée, and pavlova with Australian berries and grapes. It was a deliberate showcase for Phuket's leading chefs and hoteliers.

The campaign brought together all six Australian states and the country's major horticulture and agrifood bodies, including AUSVEG, the Almond Board of Australia, Australian Table Grape Association, Summerfruit Australia, Avocados Australia, Meat & Livestock Australia and the Australian Food and Grocery Council.

Early signals from the premium channel

The sales data from Tops won't be available until later this year, and *Australian Grower* readers will see those numbers in due course. But there are early signals worth sharing.

Earlier this year, Austrade ran a retail promotion with another premium Bangkok grocer, Gourmet Market. Across 50 vegetable SKUs, vegetable sales during the promotion period grew 3.8 percent year-on-year, with carrot sales up 31 percent, onion sales more than doubling off a smaller base and asparagus emerging as a new line with shelf traction.

Though these are modest numbers in isolation, in a market where most Australian vegetable categories went backwards in 2025, a growing vegetable shelf in premium retail is a good sign.

What industry-government collaboration looks like in-market

"Defending Australia's fresh produce share in Thailand is a priority for Austrade, and that means strategic partnerships with the movers and shakers in Thai retail, the people who actually position our products in front of Thai consumers," said Cameron Allan, Australia's Trade and Investment Commissioner in Bangkok.

"Deepening our partnership with industry is how we make sure that work is aligned with what AUSVEG members actually need and want to say in-market. Close partnership also means we can solve problems together quickly."

For Australian vegetable growers, *Discover Australia* is a reminder that export markets are not won once and held forever. They need to be defended, season by season, shelf by shelf. Retail campaigns are not the whole answer to a softening export market, but they are one of the most direct levers available to government industry. More becomes possible when Austrade's in-market presence, AUSVEG's industry voice, state governments and Australia's premium food brands all pull in the same direction.

INTERNATIONAL TRADE

JANUARY TO DECEMBER 2025

Australian vegetable performance overview

From January to December 2025, total export value dropped by five percent, from AUD$234 million to AUD$223 million. Total export volume dropped by eight percent, with a decrease of about 14,411 tonnes, reflecting the ongoing challenges in the international trading landscape.

In 2025, Singapore, United Arab Emirates, Malaysia, South Korea and Saudi Arabia were the top five export destinations for fresh vegetables. Singapore was the largest Australian fresh vegetable export destination by value, with export value decreasing by two percent from AUD$45 million to AUD$44 million, and export volume dropping by nine percent from 22,208 tonnes to 20,122 tonnes.

Total fresh vegetable exports to the United Arab Emirates were maintained at a similar level compared to the same time last year, with a two percent increase in export value from AUD$30.4 million to AUD$30.9 million, at a similar export volume of 32,121. Australian fresh vegetable exports to Saudi Arabia grew by 13 percent in export value, from AUD$11.5 million to AUD$13 million, while export volume increased by 15 percent to 15,560 tonnes (*refer to Table 1*).

Change in fresh vegetable exports by destinations

TABLE 1. JANUARY TO DECEMBER 2025

Source: Global Trade Atlas 2026

TRADE PARTNER	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total fresh vegetable exports	**$234,769,446**	**184,377**	**$223,413,687**	**169,966**	**-5%**	**-8%**
Singapore	$45,468,838	22,208	$44,696,575	20,122	-2%	-9%
United Arab Emirates	$30,446,960	32,269	$30,941,831	32,121	2%	0%
Malaysia	$23,305,837	19,576	$20,909,185	17,774	-10%	-9%
South Korea	$20,645,124	24,600	$17,540,866	20,235	-15%	-18%
Saudi Arabia	$11,501,526	13,563	$13,016,409	15,560	13%	15%
Hong Kong	$12,671,758	4,504	$11,859,913	4,094	-6%	-9%
Japan	$10,000,932	4,801	$11,680,115	5,771	17%	20%
Taiwan	$9,282,377	7,161	$10,305,415	7,064	11%	-1%
New Zealand	$9,785,067	2,105	$9,233,768	1,935	-6%	-8%
Thailand	$13,102,043	12,797	$8,913,074	8,580	-32%	-33%

INTERNATIONAL TRADE

JANUARY TO DECEMBER 2025

Australian vegetable and onions performance overview

In 2025, carrots, potatoes and onions were the three largest export crops for the vegetable industry. Total carrot export value rose by four percent from AUD$68.4 million to AUD$71 million and total export volume increased by six percent to 82,782 tonnes.

Total export value for potatoes increased by two percent to AUD$49.5 million, while the export volume dropped slightly by two percent. Onion exports dropped by nearly half at 47 percent, from AUD$40 million to AUD$21 million, while export volume decreased at a similar rate of 46 percent, from 40,598 tonnes to 21,834 tonnes *(refer to Table 2).*

Change in vegetable exports by crop

TABLE 2. JANUARY TO DECEMBER 2025

Source: Global Trade Atlas 2026

CROP	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Carrot	$68,466,697	78,405	$71,080,787	82,782	4%	6%
Potato	$48,456,809	46,991	$49,512,013	45,975	2%	-2%
Onion	$40,266,523	40,598	$21,177,742	21,834	-47%	-46%
Cauliflower & Broccoli	$16,780,161	3,441	$16,915,157	3,289	1%	-4%
Asparagus	$11,068,781	1,433	$13,678,113	1,655	24%	15%
Celery	$7,780,298	4,126	$8,137,071	4,253	5%	3%
Lettuce	$5,292,742	676	$6,322,432	878	19%	30%
Beans	$6,292,266	1,106	$5,920,904	932	-6%	-16%
Pumpkin	$5,166,163	2,988	$5,269,921	3,661	2%	23%
Spinach	$3,444,252	401	$3,857,018	446	12%	11%

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

FIND OUT MORE

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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)* project, AUSVEG coordinates grower participation in and exhibition at several international trade missions aligned with major trade events in various export markets.

EVENT	2026	LOCATION
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)	27 May–1 June	South Australia
Asia Fruit Logistica	2–4 September	Asia World Expo, Hong Kong

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

VEGETABLES
POTATOES
ONIONS

Staying ahead of chemical losses

A look back at the past 12 months of progress from the National Agrichemical Management Program

At the time of this edition of *Australian Grower*, the *National Agrichemical Management Program* (MT24023) reaches its first 12 months of delivery. The project is funded by Hort Innovation, using the vegetable, onion and potato research and development levies and contributions from the Australian Government. It was established with a clear objective — to help ensure Australian growers retain access to effective, practical crop protection tools in an increasingly complex regulatory environment.

While we've spent much of the past 12 months catching up, the longer-term goal is to get ahead — identifying and addressing issues before they become problems. That starts with input from growers and agronomists to help pinpoint challenges and explore practical solutions. While our messaging over the past year may have seemed repetitive, it highlights the need for industry leaders to clearly understand what is at threat so we can prepare for the future. Now is the time to share your challenges and ideas. There's no time like the present.

The challenges

Growers and agronomists across Australia don't need to be reminded that the agri-chemical toolbox is shrinking at a rapid pace. Active ingredients are being withdrawn faster than new products are being approved. Over the past 12 months, only one new active has received regulatory approval and been brought to market for vegetable producers. Most new registrations are merely post-patent companies registering generic versions of existing products, offering little in the way of innovation or meaningful advancement for the industry.

VEGETABLES
POTATOES
ONIONS

Update on APVMA finalised chemical reviews

The Australian Pesticides and Veterinary Medicines Authority (APVMA) continues to progress its program of chemical reviews — perhaps at a rate of knots that makes many in the industry more than just a little uncomfortable.

Several important reviews have recently been finalised, and many more are currently underway or scheduled to commence in the coming years. While it's difficult to forecast the outcome of any review, especially those still several years from completion, one thing is clear — a large portion of the older, widely used chemistry in horticulture is now under serious scrutiny. It's important to recognise that no review has ever resulted in expanded access to crop protectants.

This regulatory uncertainty presents a timely opportunity for growers, agronomists, and crop protection providers to start thinking more strategically about the future of pest and disease management.

Whether it's through exploring alternative chemistries, reassessing IPM programs, or trialling new technologies, planning ahead will be key to maintaining productivity and resilience.

We've taken a look across the agrichemical toolbox for the crops we represent and matched this up with the list of chemical reviews from the Australian Pesticides and Veterinary Medicines Authority.

Below is a snapshot of the reviews most relevant to the vegetable, onion and potato sectors, covering recent decisions, reviews currently underway, and actives flagged for future consideration.

Where it helps, we've included some product names, not as endorsements, but simply so growers can quickly recognise what's being referred to.

- **Chlorpyrifos** (Lorsban®)
  Australia joined a long list of countries in effectively banning chlorpyrifos on 30 September 2025.
- **Diazinon** (Accensi®)
  All approved uses on vegetables were cancelled on 10 September 2025.
- **Chlorthal-Dimethyl** (Dacthal®)
  All approved uses on vegetables were cancelled on 10 October 2024, with no phase-out period.

The loss of these actives is creating clear gaps in pest management programs, with few practical or effective alternatives currently available. In many cases, growers are being forced to rely more heavily on a smaller number of remaining options, increasing the risk of resistance and placing additional pressure on already stretched production systems.

Reviews currently underway

The APVMA is currently reviewing 21 active constituents. Of these, the following are particularly relevant to the vegetable, onion and potato sectors:

Neonicotinoids

Clothianidin (Samurai®) Imidacloprid (Confidor®), Thiamethoxam (Actara®), Acetamiprid

Decisions on each of these chemistries will be published separately, with proposed regulatory decisions now expected to be released progressively before October 2026.

Diquat, Paraquat (Sprayseed®)

The APVMA commenced its review of diquat and paraquat (known to many growers as SpraySeed®) in 1995 and released proposed regulatory decisions in July 2024. The findings indicated that many current use patterns in orchards, vineyards and broadacre systems are not considered environmentally acceptable. While some uses in vegetable production remain supported, certain applications in row crops and market garden systems are also under scrutiny. Following a substantial volume of public submissions, the APVMA has extended the timeline for its final decision to mid-2026. While the outcome remains uncertain, there is limited confidence within the plant science community that these actives will retain their current use patterns. Based on regulatory trends internationally, it is likely that Australia will move toward significant restrictions, if not a full phase-out, of both diquat and paraquat.

Fipronil (Regent®)

A review of fipronil has been underway since 2002 and remains in the assessment phase. The proposed regulatory decision is now overdue and, at the time of writing (April 2026), is expected imminently. While the outcome is difficult to predict, there are significant concerns around the potential loss of this active, particularly for the control of soil and surface pests such as weevils, crickets and wireworms in certain crops.

Future reviews

A number of actives are either scheduled for future review or have been flagged due to various reasons. This includes a range of insecticides, fungicides and herbicides that are widely used across vegetable production systems.

For many of these, it is important that we begin considering alternative options now, rather than waiting for regulatory outcomes.

INSECTICIDES	FUNGICIDES	HERBICIDES
Acephate (Lancer®)	Azoxystrobin (Amistar®)	Amitrole
Abamectin (Sorcerer®) (Vertimec®)	Chlorothalonil (Bravo®)	Atrazine
Alpha-Cypermethrin (Dominex Duo®)	Difenoconazole (Score®)	Cyanazine
Bifenthrin (Talstar®)	Mancozeb (Dithane Rainshield®)	Dicamba
Dimethoate (Saboteur®)	Metiram (Polyram®)	Fluazifop-P (Fusilade®)
Emamectin (Proclaim Opti®)	Thiram	Fluroxypyr (Starane®)
Fenitrothion (Sumithion®)	Zineb	Glufosinate-Ammonium (Basta®)
Methomyl (Lannate®)	Ziram	Glyphosate (Roundup®)
Methiocarb (Mesurol®)	Propineb (Antracol®)	Simazine (Accensi®)
Permethrin (Ambush®)	Propiconazole (Tilt®)	Bromoxynil (Maya®)
Phorate (Thimet®)	Triadimenol	
Propargite (Omite®)	Triadimefon	
Pymetrozine (Chess®)		
Pyriproxyfen (Admiral®)		
Thiodicarb (Larvin®)		
Trichlorfon (Lepidex®)		

What are we doing?

Given the pace of change, the program is taking a short-, medium- and long-term approach to maintaining access to crop protection tools. Where unforeseen and urgent issues arise, provisions exist to allow the emergency use of chemicals not currently permitted by label. These are, however, generally reserved for genuine emergencies, such as the incursion of exotic pests, and typically only provide a short-term solution. In 2025, the program successfully secured an emergency use permit for fluazinam (Emblem®) to help manage the spread of potato mop-top virus following its detection in Tasmania. Work is now underway to engage with a registrant and progress a pathway towards a full label claim.

For the medium-term, minor use permits remain a critical tool for maintaining access to crop protection products where no suitable registered options exist. They allow growers to address immediate gaps in pest, disease and weed control, particularly in smaller or emerging crops where full registration is unlikely to be commercially viable. However, permits are not a long-term solution. The APVMA is placing increasing scrutiny on renewals, with greater emphasis on supporting data and clear justification of need.

As a result, the program is focused on securing and maintaining permits where appropriate, while also using them as a pathway toward more sustainable, long-term registration outcomes. Hort Innovation maintains a dedicated minor use team for horticulture, working closely with AUSVEG to develop the technical justification required for permit renewals. Over the past 12 months, 38 permits have been renewed, covering more than 100 crop situations, with a further 21 permits currently in progress.

It's not just about permits. The program is underpinned by a longer-term strategy, with 28 Strategic Agrichemical Review Process (SARP) reports developed across the vegetable, onion and potato sectors. These SARPs clearly identify the key pest, disease and weed challenges, along with the priorities and opportunities for future investment.

The challenge now is to distil these priorities, working closely with industry leaders, and translate them into clear, investable opportunities.

This includes engaging with chemical companies to align industry needs with commercial pathways, ultimately supporting new registrations and more sustainable long-term solutions.

What we need from you

A program like this is only as strong as the input it receives from industry. Growers, agronomists and advisors are often the first to identify emerging issues, whether it's a pest becoming harder to control, a product losing effectiveness, or a gap where no suitable options exist. While identifying issues is important, proposed solutions are equally valuable. Whether it's a potential alternative product, a use pattern, or an idea worth exploring, this input helps ensure effort is directed where it can deliver real outcomes. If there are key gaps or actives you rely on that are at risk, let us know. Early warning is critical.

FIND OUT MORE

For more information or to get involved, contact
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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

Smart nutrient management

SMARTER YIELDS FOR A VICTORIAN VEG GROWER

BY THE SOIL WEALTH ICP TEAM

A collaboration between Soil Wealth ICP and a sixth-generation Melbourne market gardener has produced some eye-opening results – and a rethink of how nutrients are managed in the field.

Rick Butler is a sixth-generation grower running Butler Market Gardens at Skye, south-east of Melbourne.

For the past two seasons, Butler Market Gardens has been working with Dr Doris Blaesing and Carl Larsen (RMCG) from the Soil Wealth ICP team on a project to improve soil health and nutrient use efficiency on the farm's sandy loam soils.

Butler Market Gardens specialises in fresh vegetables and herbs, harvesting, packing and sending produce to market on the same day.

The farm's sandy loam soils do not hold nutrients well, leaving crops vulnerable to deficiency and growers vulnerable to wasted input costs. The Soil Wealth ICP team set out to address this across two seasons.

Initially, the trial explored cover crops as a way to improve nutrient cycling and organic matter. More recently, the team turned its attention to a more targeted question – the subject of a new case study published in February 2026:

Could a biodegradable polymer coated fertiliser outperform the standard mineral compound blend in supplying nutrients to a coriander crop at the right time?

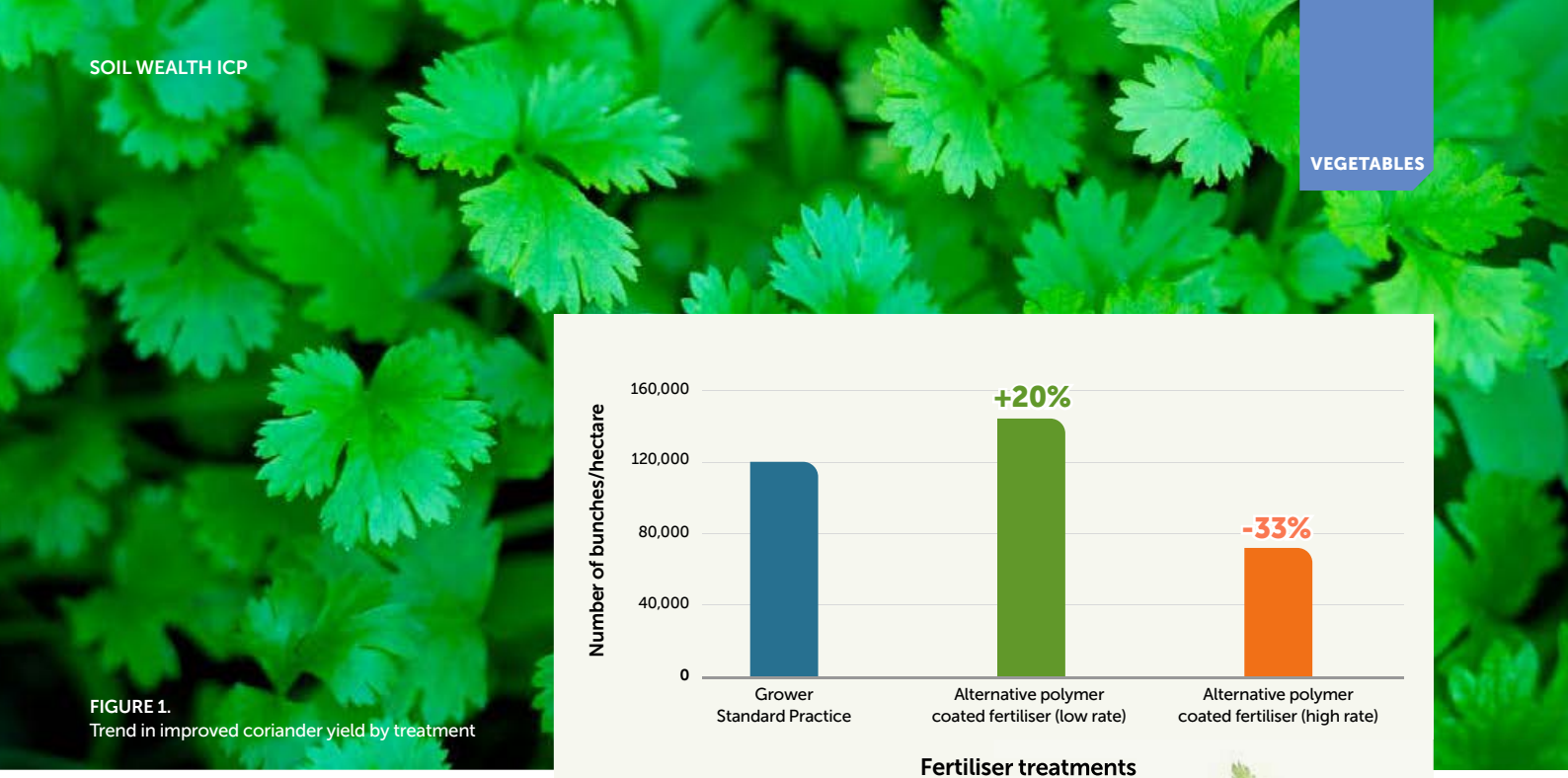


FIGURE 1.
Trend in improved coriander yield by treatment

Timing is everything

The concept behind polymer coated fertilisers is simple in principle but powerful in practice. Rather than quickly releasing nutrients shortly after application, as conventional mineral fertilisers tend to do, coated products are designed to release nutrients gradually, ideally meeting the crop's demands.

In light soils like those at Skye, conventional fertilisers face an added risk: nitrogen and potassium can leach past the root zone with irrigation water before the plant gets to use them.

The May 2025 trial tested three treatments on neighbouring coriander bays:

- The grower's standard mineral compound fertiliser at 200 kg/ha
- A polymer coated nitrogen/phosphorus/potassium (NPK) fertiliser at a lower rate of 200 kg/ha, and
- The same polymer coated fertiliser at a higher rate of 300 kg/ha.

Crucially, monitoring was undertaken during crop growth and harvest. Soil solu-SAMPLERS, devices that draw moisture from the root zone via capillary action, were used to measure electrical conductivity (EC) as a proxy for total nutrient concentration in the soil at three points during the crop cycle.

What the data showed

The EC results told an interesting story. About a month after fertiliser application, all three treatments recorded elevated EC levels in the root zone, an early nutrient flush that was highest in the high-rate polymer coated treatment.

By the second and third measurements, the polymer coated fertiliser at the lower 200 kg/ha rate had maintained EC at optimal levels, while the high-rate treatment had declined more sharply. The standard mineral practice showed the lowest EC readings throughout, suggesting nutrients may have already leached below the root zone in the sandy soil and were therefore unavailable to the crop when it needed them most.

The harvest results were even more striking. The lower rate polymer coated treatment produced 20 percent more coriander bunches per bay than the grower's standard practice – 12,600 bunches compared to 10,500. The nitrogen content in the dry matter was also higher at 4.04 percent, versus 3.74 percent for the standard.

The high-rate polymer coated treatment, meanwhile, significantly underperformed: it yielded only 6,300 bunches per bay, a 33 percent reduction compared to grower standard practice.

The likely explanation? Too much of a good thing. Excess nutrients at the high rate may have suppressed root development – a well-documented response to over-fertilisation which reduces the plant's ability to access soil water and limits overall growth.

Do the economics stack up? Maybe

The polymer coated fertiliser at 200 kg/ha did cost slightly more at $508 per hectare compared to $470 per hectare for the standard practice, an 8 percent premium. But with a 20 percent lift in marketable yield, the gross margin favoured the polymer coated option.

Dale Creed, the farm's previous Operations Manager, acknowledged the value of the trial in practical terms.

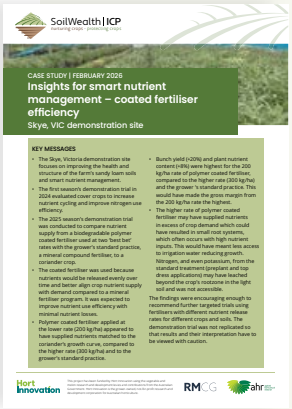
"It's a good opportunity to assess current practices and evaluate opportunities to implement growing strategies within growing cycles and move towards a program that is more nutrient efficient," Dale said.

The team was careful to flag the limits of the data. This was a non-replicated demonstration trial with one treatment per bay and no replication, meaning the results, while encouraging, cannot be treated as definitive proof.

What comes next?

The Soil Wealth ICP team showed the findings were promising enough to warrant follow-on trials, testing polymer coated fertilisers with different nutrient release profiles matched to specific crops and soil types.

For Australian vegetable and herb growers grappling with volatile input costs and increasing pressure to minimise nutrient runoff, the Skye trial offers a valuable proof of concept: that matching nutrient supply to crop demand, rather than simply applying more, can improve both yield and profitability.



SCAN TO VIEW

Download the full case study: *Insights for smart nutrient management – coated fertiliser efficiency*

Acknowledgements

The team extends its thanks to the team at Butler Market Gardens for their engagement and support in hosting 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.

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Hort Innovation VEGETABLE FUND Hort Innovation MELON FUND

Exploring innovation across Europe

INSIGHTS FROM THE AUSVEG EUROPE STUDY TOUR

BY ALEXANDRA LASHCHUK

Earlier this year, a group of Australian vegetable industry representatives travelled across Europe as part of the AUSVEG Europe Study Tour.

In February, the tour brought together growers from across Australia for an intensive program that included the Fruit Logistica trade show, farm visits, research demonstrations, industry meetings and global networking opportunities across Germany and Spain.

The aim of the tour was to expose Australian growers to emerging technologies, innovative production systems and international market trends, while creating opportunities to exchange knowledge with growers, breeders and agribusiness leaders from around the world.

For the participants, the trip offered more than just a chance to see how vegetables are grown in other parts of the world. It provided an opportunity to step away from the day-to-day pressures of running a farming business to gain a broader understanding of where the industry is heading and how innovation, technology and collaboration are shaping the future of vegetable production globally.

Across 10 days, the group travelled from Berlin to Spain's Murcia region, one of Europe's most productive vegetable growing areas, visiting seed companies, growers, technology providers and research centres along the way.

The tour highlighted both the similarities and the differences between Australian and European vegetable production and offered plenty of insight for growers seeking to improve efficiency, reduce costs and stay competitive in an increasingly challenging operating environment.

Above L-R. Nick Blair (Rugby Farm) and Rohan Drummond (Barden Farms) looking at the latest packing line equipment on offer at Fruit Logistica. Understanding interaction between consumer preferences and vegetable breeding priorities at the Rijk Zwaan Retail Centre, Berlin.

A global stage for fresh produce

The first stop of the study tour was Berlin, where participants attended Fruit Logistica, one of the largest fresh produce trade exhibitions in the world.

Each year the event attracts thousands of exhibitors and tens of thousands of visitors from across the globe, bringing growers, retailers, exporters, technology companies, logistics providers and seed companies together under one roof. For many tour participants, it was the first time seeing such a large cross-section of the international horticulture sector in one place.

For the Australian delegation, Fruit Logistica provided an unparalleled opportunity to explore the latest developments in horticultural technology and supply chain innovation.

Automation and labour-saving technologies were a major theme throughout the exhibition. Many companies are now developing systems designed to reduce reliance on manual labour, which continues to be one of the biggest challenges facing horticultural producers worldwide.

Participants observed a wide range of automated solutions designed to handle repetitive or physically demanding tasks in packing sheds and production facilities. Systems for automated crate erection, palletising, grading and packing were prominent throughout the exhibition.

Another key trend was the increasing use of machine vision and artificial intelligence in sorting and grading produce. These technologies are capable of analysing produce characteristics such as size, colour and external defects at high speed, helping growers improve consistency and efficiency while reducing labour requirements.

Several exhibitors also demonstrated emerging weed-detection technologies that use cameras and laser systems to identify and eliminate weeds with high precision. Such tools have the potential to reduce reliance on herbicides while maintaining productivity – an area of growing interest for growers navigating regulatory pressures around chemical use.

The opportunity to speak directly with equipment manufacturers, seed companies and technology developers provided valuable insight into how new tools are being developed and applied in production systems around the world.

Seeing vegetables through the eyes of the retailer

Before diving into Fruit Logistica, the group visited the *Rijk Zwaan Retail Centre* in Berlin – an innovative facility designed to simulate real retail environments and study how consumers interact with fresh produce.

The centre allows breeders, retailers and growers to test new vegetable varieties, packaging formats and merchandising strategies under realistic supermarket conditions. Everything from lighting and shelf layouts to packaging designs and product positioning can be analysed to understand how consumers respond.

For Australian growers, the visit was a powerful reminder that success in horticulture is not determined solely in the paddock.

Consumer preferences, visual presentation and retail strategy all play an increasingly important role in determining whether a product succeeds or fails in the marketplace.

Participants learned how breeders and retailers collaborate to test factors such as colour, texture, shelf life and packaging formats. These trials help inform decisions about which varieties are likely to succeed in particular markets.

The centre also highlighted how consumer preferences can vary significantly between countries and regions, influencing the types of varieties that are developed and marketed.

For growers accustomed to focusing primarily on agronomic performance and yield, the visit offered valuable insight into how marketing and consumer behaviour shape the modern fresh produce supply chain.

While Australian operations may differ in scale, the principles of reducing handling, improving workflow and integrating technology to improve efficiency are universally relevant.

From Berlin to the vegetable heartland of Spain

After several days in Berlin, the study tour group travelled south to Spain, where the second half of the program focused on production systems and field-level innovation.

The Murcia region, located in south-eastern Spain, is one of Europe's most significant vegetable growing areas. The region's climate allows year-round production of a wide range of crops, supplying supermarkets across Europe during the northern hemisphere winter.

Murcia's intensive production systems, strong research infrastructure and close integration with European retail supply chains make it an ideal location for exploring new technologies and production practices.

Over several days, the group visited major growers, seed companies and technology providers, gaining insights into how European producers are managing productivity, quality and sustainability challenges.

Large-scale production at G's Fresh

One of the highlights of the Spanish leg of the tour was the visit to G's Fresh, a major fresh produce company with operations spanning nursery production, field growing, harvesting and packing.

The visit offered a rare opportunity to observe a highly integrated vegetable production system operating at scale.

Participants toured the company's nursery facilities, where seedlings are produced before being transplanted into field production systems. Trials were underway exploring different growing media and cell designs aimed at improving root development and seedling performance.

From the nursery, the group moved into field operations, where large-scale planting and harvesting systems demonstrated the efficiency required to supply major European retail chains.

One of the most interesting aspects of the visit was the level of automation integrated throughout the production and packing process. In some cases, harvesting equipment was designed to combine multiple steps into a single operation – harvesting, packaging and preparation for transport occurring within the same workflow.

Participants also visited the company's internal engineering and workshop facilities, where specialised harvesting equipment is designed and maintained. The ability to develop customised machinery in-house allows the business to adapt quickly to new challenges and optimise operations for specific crops.

For many of the Australian growers on the tour, seeing the scale and integration of these systems was particularly valuable.

Seed innovation and varietal development

Another key component of the study tour involved visits to seed company field trials and demonstration sites. Participants attended field days hosted by Syngenta, Rijk Zwaan and Enza Zaden, where they were able to view extensive trial plots showcasing new lettuce, brassica and leafy vegetable varieties.

These trials play a crucial role in developing new varieties capable of meeting evolving market demands and production challenges. Participants were able to observe how breeders are working to improve characteristics such as disease resistance, shelf life, flavour and visual appearance to align with consumer preferences.

For example, varieties designed to enhance texture and eating experience are being developed in response to consumer demand for more appealing fresh produce.

Participants also had the opportunity to speak directly with plant breeders and research teams about the breeding process and the challenges involved in developing varieties suited to different climates and markets.

Above. G's Fresh post-harvest rapid colling facility.

Scale and collaboration at Unica Group

Another visit that stood out for participants was Unica Group, one of Spain's largest horticultural marketing cooperatives. The organisation brings together a network of cooperatives and growers to collectively market fruit and vegetables across international markets.

For many growers on the tour, the scale of the operation was striking. Unica exports produce to millions of consumers across Europe each day, demonstrating how cooperative structures can allow growers to access large international markets while maintaining farm-level production.

Participants were particularly interested in the way Unica coordinates production and marketing across its member cooperatives. By aggregating supply from multiple growers, the organisation is able to meet the volume, quality and consistency requirements of major retailers.

Several growers also noted the strong focus on sustainability and integrated pest management across Unica's farms, including the use of beneficial insects and biological controls to reduce reliance on chemical pesticides.

For Australian participants, the visit provided insight into how collaboration between growers can create scale and market power while supporting long-term farm profitability. Seeing how Unica operates helped spark discussions among participants about the role that cooperative models and stronger supply chain coordination can play in strengthening horticultural industries.

Retail insights from supermarket visits

To complement the farm and research visits, the tour also included a series of supermarket and market visits across Murcia.

Participants visited several retail chains and fresh food markets, analysing how vegetables are presented and marketed to European consumers. These visits provided insight into pricing, packaging formats and merchandising strategies used by retailers.

For many participants, seeing how vegetables are displayed in European supermarkets highlighted the importance of presentation, branding and packaging in influencing consumer choices. Different packaging approaches, product segmentation and premiumisation strategies were evident across the stores visited.

Understanding these retail dynamics helps growers better appreciate how their products move through the supply chain and ultimately reach consumers.

SCAN TO VIEW

Above. Visit to Unica's organic packing shed, demonstrating the adoption of robotics.

Looking ahead

Across the ten-day journey, participants were exposed to a wide range of ideas – from cutting-edge technologies and new crop varieties to different approaches to labour, infrastructure and supply chains.

While not every innovation will translate directly to Australian conditions, the tour provided growers with valuable perspective on how the global vegetable industry is evolving and the many ways producers are adapting to similar challenges around labour, efficiency and sustainability.

Just as importantly, the tour created space for growers to step back from day-to-day farm operations and reflect on the bigger picture. Seeing how producers and businesses in other parts of the world approach similar challenges sparked conversations, ideas and new ways of thinking that participants will take back to their own operations.

In an industry that is constantly changing, opportunities to learn from global experience remain invaluable. As several participants reflected, seeing new systems in action and discussing them with fellow growers can often spark the ideas that lead to meaningful improvements at home.

For those interested in experiencing these opportunities firsthand, AUSVEG will be running the next set of international study tours later this year and into 2027. Growers who would like to participate are encouraged to submit an expression of interest via the online form: forms.gle/JMEzUpSvWMMomMPd8 or by scanning the QR code below.

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**

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What Europe is teaching Australia about protected cropping

INSIGHTS FROM THE AUSVEG EUROPE STUDY TOUR

BY ALEXANDRA LASHCHUK

Earlier this year, a group of Australian vegetable growers travelled across Europe as part of the AUSVEG Europe Study Tour *(see page 30)*, taking in Berlin's global showcase at Fruit Logistica before heading south into Spain's intensive production regions.

Following the tour, AUSVEG spoke with several participating growers to unpack their key takeaways, especially in protected cropping, an area that emerged as both eye-opening and highly relevant to Australian production systems.

While the tour covered everything from seed breeding to retail trends, it was the scale, diversity and evolution of protected cropping, particularly across Murcia and Almería, that left the strongest impression.

Across a tightly packed itinerary visiting major producers, greenhouse technology providers, and R&D hubs – such as G's Fresh, Auxprotec Hydroponic, Novagric and Technova – growers were exposed to a variety of protected cropping production systems spanning various levels of technological adoption.

Above. Novagric, vertical farming in action.



Above L-R. Aerial view of Almería. Auxprotec, lettuces are packed and dispatched to order across Europe.

A landscape defined by protected cropping

The group's journey into southern Spain provided a striking visual introduction to the scale of protected cropping in Europe.

For Lynley Van Latham from Rugby Farm in Queensland, the sight was immediately impactful and overwhelming.

"When we were driving into Almería, it was just a sea of white," she said. "I'd never seen anything like it, it just goes on and on."

That 'sea of white' – thousands of hectares of plastic-covered greenhouses – is one of the most productive horticultural regions in the world.

South Australian grower Andrew Braham from Butler Market Gardens noted the stark comparison to Australia.

"In South Australia, we might have 1,500 to 2,000 hectares of protected cropping," he said. "In Almería, they're up around 40,000 hectares."

This difference in scale is driven not just by climate or geography, but by market access. European growers are producing for a population of more than 500 million people, supplying major supermarket chains across multiple countries within tight timeframes.

"They've got a market that justifies that level of investment," Andrew explained. "Everything they do is geared towards supplying that market consistently."

This scale also allows for a level of specialisation and integration that is difficult to replicate in Australia, but not impossible to learn from.

A spectrum of systems, not a single model

One of the most valuable insights from the tour was that protected cropping in Europe is not defined by a single approach.

Across visits to infrastructure providers like Novagric, and innovation centres like Technova, growers saw a wide range of systems tailored to different crops, markets and investment levels.

At one end are relatively simple plastic structures – low-cost, high-volume systems that rely on favourable climate conditions and efficient management. At the other end are highly controlled environments, incorporating hydroponics, fertigation, climate control and advanced monitoring systems.

"Some of it is actually quite basic, but it works extremely well," Andrew said. "And then you've got the high-tech setups, it really depends on what they're trying to achieve."

At Novagric, the focus was on infrastructure design, particularly around water management, fertigation systems and greenhouse optimisation.

Given the semi-arid conditions of the Murcia region, efficient water use is critical. Growers saw how greenhouse systems are designed to maximise water efficiency while maintaining consistent crop performance.

At Technova, this was taken further, with demonstration systems showcasing how greenhouse design, irrigation and environmental control can be integrated into a single, highly efficient system.

The key takeaway was not that one system is better than another, but that successful protected cropping is highly context-specific.

Designing for the end market

While much of the tour focused on production systems, the visit to the Rijk Zwaan Retail Centre in Berlin highlighted how protected cropping ultimately connects to the consumer.

The facility simulates real supermarket environments, allowing growers, breeders and retailers to test how different varieties perform on the shelf. From lighting and layout to packaging and presentation, each element is used to assess how consumers respond to different products.

For growers, this reinforced the role that protected cropping can play in delivering consistent, specification-driven produce.

"It showed the possibilities of vegetable variety and packaging changes," one grower noted.

Unlike open-field production, protected cropping systems offer greater control over traits such as size, colour, texture and shelf life, all of which influence purchasing decisions.

The centre also demonstrated how consumer preferences vary across markets, shaping what is grown and how it is presented. There was also a much greater adoption of branded vegetables, such as peppers and snacking tomatoes, which helped drive higher returns.

For Australian growers, the takeaway was clear: protected cropping is not just about production efficiency, but about reliably delivering a product that meets increasingly specific market expectations.

Hydroponics and modular expansion

Hydroponic systems featured prominently across the tour, particularly in facilities focused on innovation and scalability.

For Bryce Lamb (Wickham Farms, QLD), one of the most interesting aspects was how these systems were structured.

"There's a big capital cost to set it up," he said. "But once it's there, it's very modular and easy to scale."

This concept of modularity was reinforced at both Technova and Novagric, where greenhouse systems are often designed to allow staged expansion.

Rather than committing to large-scale investment upfront, growers can build incrementally, adding capacity as demand grows.

"That's something that could work really well in Australia," Bryce said. "You could build it out over time, rather than doing it all at once."

This approach reduces financial risk while maintaining flexibility – a key consideration for Australian growers operating in a more volatile market environment.

Efficiency starts with system design

Across all visits, one message came through clearly: efficiency is not something you add later, it's something you design from the beginning.

This was particularly evident during the visit to Auxprotec's hydroponic demonstration facility in Murcia, where growers saw a fully integrated protected cropping system operating under commercial production conditions, producing fancy lettuces for retail markets.

Using NFT hydroponics, the system enables precise control of water and nutrient delivery, with key parameters such as pH, EC and temperature continuously monitored and adjusted. This level of control delivers consistent crop performance and allows for up to 15 production cycles per year.

The Auxprotec model highlights how well-designed protected cropping systems can maximise productivity while reducing complexity – an approach with clear relevance for Australian growers.

Above. Rufepa's modern research greenhouse. Novagric, vats where fertiliser is mixed for hydroponics.

Labour: reducing reliance, not just replacing it

Labour challenges are not unique to Australia and European growers are addressing them in increasingly sophisticated ways.

At Fruit Logistica, participants saw a wide range of automation technologies from robotic packing systems to optical grading and sorting equipment.

"There was a massive push towards reducing manual labour," one participant observed.

However, what stood out in Spain was not just the use of automation, but how systems were designed to minimise labour in the first place.

"In Australia, we often look at how we can add technology into what we're already doing," Lynley said. "Over there, they've designed the system so it doesn't need as much labour to begin with."

This includes:

- simplified planting layouts
- integrated harvesting systems
- reduced handling points
- and streamlined logistics

In protected cropping systems where labour can be a major cost driver, this approach offers significant long-term benefits.

The shift toward biological systems

One of the most significant insights from the tour was how European growers are adapting to tighter chemical regulations.

"They're losing access to chemicals they've relied on for years," Lynley said.

In response, there has been a rapid shift toward integrated pest management and biological control systems, particularly within protected cropping environments.

One example stood out.

"They were breeding aphids," Bryce said. "Releasing them early so predator insects could establish before the crop was vulnerable."

This proactive approach allows growers to build stable ecosystems within their crops, reducing reliance on chemical interventions. Andrew noted that some growers are taking this even further.

"They're breeding their own beneficial insects," he said. "That's where it's heading."

Protected cropping provides an ideal environment for these systems, offering greater control over conditions and pest dynamics.

Managing risk in controlled environments

Despite the advantages of protected cropping, risks remain, particularly around biosecurity.

The tour highlighted how European growers are managing ongoing challenges such as Tomato brown rugose fruit virus (ToBRFV).

"They've been dealing with it for about 10 years," Andrew said. "And they're still producing."

Rather than eliminating risk entirely, growers are adapting their systems through varietal selection, hygiene protocols and production strategies. This reinforces an important lesson for Australian growers: protected cropping reduces risk, but it does not remove it.

A reality check for Australian growers

While the scale of European operations was impressive, the tour also provided reassurance.

"When you compare yields and systems, you realise we're actually doing a pretty good job," Andrew said.

Australian growers may operate in a smaller market, but they remain highly innovative and adaptable.

"We're not behind," Bryce said. "We're just dealing with different constraints."

That perspective – balancing ambition with realism – was a key outcome of the tour.

From innovation hubs to on-farm application

One of the more valuable aspects of the tour was not just seeing production systems in action, but understanding how innovation is being developed, tested and transferred into commercial operations.

Visits to facilities such as Technova, located within the Almería Science and Technology Park, highlighted the role of dedicated research and extension organisations in supporting protected cropping industries. These centres act as a bridge between technology providers, researchers and growers, accelerating the adoption of new systems and practices.

At Technova, participants were exposed to a range of applied innovations, from greenhouse structure optimisation through to fertigation management and automation integration. Importantly, these technologies were not presented as standalone solutions, but as part of a broader system designed to improve overall production efficiency.

Similarly, the visit to Novagric demonstrated how commercial greenhouse providers are working closely with growers to tailor infrastructure to specific environmental and crop requirements. Rather than offering a standardised product, systems are designed with flexibility in mind, allowing growers to adapt to changing conditions, markets and regulatory pressures.

This close alignment between research, technology providers and growers was a recurring theme throughout the tour.

In contrast, Australian growers often operate in a more fragmented system, where access to emerging technologies can be limited by geography, cost and scale. As Bryce noted during the tour, many of the technologies seen in Europe are not yet readily available in Australia or are difficult to trial without significant upfront investment.

What stood out in Europe was the speed at which ideas move from concept to implementation.

For Australian growers, this highlights an opportunity not necessarily to replicate the same structures, but to strengthen connections between industry, research and technology providers to support faster adoption of innovation in protected cropping systems.

What this means for Australia

While the European model cannot be directly replicated, the principles behind it are highly relevant.

Key takeaways include:

- **Design systems for efficiency from the start**
  Rather than retrofitting solutions, build efficiency into the system.
- **Adopt modular approaches to reduce risk**
  Scalable systems allow for staged investment and growth.
- **Focus on flow, not just technology**
  Efficient movement of product is as important as the tools used.
- **Prepare for reduced chemical reliance**
  Biological systems and IPM will become increasingly important.
- **Continue to innovate and adapt**
  The industry is constantly evolving and so must growers.

Above. Technova have more than 30 demonstration greenhouses in Almería.

Looking ahead

Protected cropping is likely to play an increasingly important role in Australian horticulture.

As growers face labour shortages, climate variability and rising input costs, controlled environment production offers a pathway to greater consistency, efficiency and resilience.

However, the European experience shows that success in protected cropping is not just about infrastructure.

It is about:

- designing smarter systems
- integrating biological solutions
- adapting to regulatory change
- and continuously improving

For Lynley, the biggest takeaway was not a specific piece of equipment or technology.

"You come back with ideas," she said. "Not just about what to do but how to think differently about your business."

And in an industry where change is constant, that shift in thinking may be the most valuable investment of all.

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**

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Growing demand from the ground up:
Why vegetable consumption matters more than ever

Australia's vegetable industry has long focused on productivity, quality and supply. But an equally critical challenge sits beyond the farm gate: demand.

Despite the essential role vegetables play in health and wellbeing, consumption remains critically low and is declining. Only 4.6 percent of Australian children meet the recommended daily vegetable intake.

If Australians ate just one additional serve of vegetables per day, the impact would be significant – delivering an estimated $4.68 billion in health, economic and social benefits, including $1.38 billion in reduced healthcare costs. For the industry, this represents one of the most powerful opportunities for sustained demand growth.

From supply to demand: A national shift

The Plus One Serve by 2030 program, led by AUSVEG and co-funded through Hort Innovation, is designed to increase vegetable consumption. For growers, this is not just a health initiative, it is a long-term market development strategy.

As Plus One Serve Managing Director, Justine Coates explains:

"Plus One Serve by 2030 is about shifting the dial on vegetable consumption nationally. For growers, that means creating real, sustained demand – not just awareness, but measurable increases in how often vegetables are chosen and eaten."

The program is investing in evidence-based R&D to identify what genuinely shifts behaviour – what gets more vegetables onto plates, more often.

Why schools matter for growers

The school environment is one of the most powerful settings for increasing vegetable intake. The *Pick of the Crop* project (HN25001), delivered by Health and Wellbeing Queensland in partnership with AUSVEG and Hort Innovation, is the flagship school-based R&D initiative within the Plus One Serve by 2030 program.

Building on an initiative that has already reached more than 250 schools and over 54,000 students across Queensland, *Pick of the Crop* is designed to generate the robust evidence needed to scale effective school-based interventions nationally.

As Dr Robyn Littlewood, CEO of Health and Wellbeing Queensland, explains:

> "Schools play a powerful role in shaping lifelong food habits. When we create environments where vegetables are accessible, appealing and part of everyday life, we're setting children up with habits that last well beyond the school years."

Through a whole-of-school approach, vegetables are embedded into learning, school environments and community engagement – often supported by direct connections with local growers.

Growers at the heart of the consumption story

A key insight from the program is that growers are not just part of the supply chain – they are part of the solution. Evaluation shows that engagement between schools and local growers is a critical driver of success.

As one participating grower noted:

"Programs like this are about connecting young people and families to where food is grown and to our farming industry. When kids understand that, they're much more open to trying and enjoying vegetables."

Grower groups like Bundaberg Fruit and Vegetable Growers and Bowen Gumlu Growers Association have partnered with schools to support farm visits, classroom engagement and local supply. This connection is already influencing behaviour. Schools report increased availability of locally produced vegetables in tuckshops, alongside ongoing use of gardens and food-based learning.

For growers, *Pick of the Crop* creates a new pathway to market – one that starts with exposure and preference, and builds toward long-term demand.

From proven program to national model

As the flagship school R&D program under Plus One Serve, *Pick of the Crop* represents a step-change for the industry.

While the original program has demonstrated strong outcomes across Queensland, the new *Pick of the Crop* research partnership is designed to test whether these results can be replicated, strengthened and scaled across a much broader and more diverse population.

A key focus of the project is expansion into new schools and regions, including metropolitan, regional and remote communities. Importantly, this includes deliberate engagement with low socio-economic areas and Aboriginal and Torres Strait Islander communities, ensuring that the evidence generated reflects the diversity of the Australian population and can be applied nationally.

This expansion is not simply about reach – it is about generating robust, comparable data across different contexts.

The inclusion of a diverse and representative sample of schools means findings will be directly relevant to different regions, supply chains and communities across Australia.

It means the program is not just building awareness – it is building a repeatable, scalable model for increasing demand.

Insights from *Pick of the Crop* will inform:

- Rollout across other states and territories
- Integration of local grower partnerships
- Expansion of vegetables in school food environments
- Targeting of future industry investment and co-investment opportunities

Importantly, the project is designed for long-term sustainability. *Pick of the Crop* focuses on embedding changes into:

- School curriculum
- Canteen and procurement practices
- Community and grower partnerships

This ensures that once behaviours shift, they are more likely to stick – creating lasting demand beyond the life of the program.

As the program expands into new regions, grower engagement will be central to how the model works in every community, connecting schools with local production and building demand from the ground up.

Building Future Consumers

The long-term value lies in habit formation. When children grow, cook and taste vegetables, they are far more likely to incorporate them into their diets – behaviours that often carry into adulthood. As these habits extend into homes and communities, they begin to influence household purchasing decisions, creating flow-on effects for the entire industry.

Plus One Serve, *Pick of the Crop* features a significantly strengthened evaluation framework:

- **Comparative evaluation** to determine which school-led strategies deliver the greatest increases in vegetable consumption
- **Control groups**, allowing outcomes to be measured against non-participating schools
- **Standardised measurement tools**, capturing changes in student knowledge, attitudes and actual vegetable intake
- **Implementation tracking**, ensuring that what is delivered in each school is clearly documented and linked to outcomes

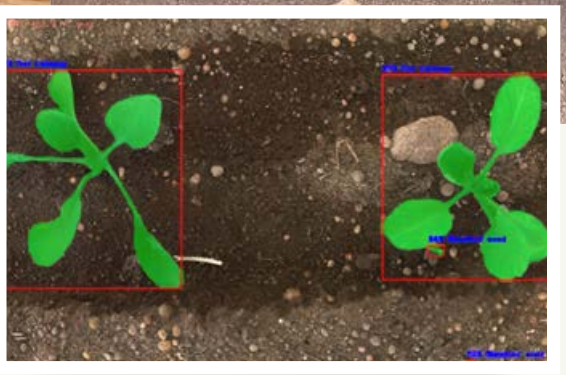
This level of rigour ensures the program moves beyond anecdotal success to deliver evidence that can inform industry investment, policy and national rollout.

This is not just about what works in one school – it's about building the evidence to scale vegetable consumption nationally.

FIND OUT MORE

For further information on Plus One Serve R&D projects, visit plusoneserve.com.au

This project has been funded by Hort Innovation using the vegetable research and development levies and contributions from the Australian Government.
Project Number: HN25001



Demonstrating the future of weed management

OWL IN ACTION

The development of the Open Weed Locator (OWL) project represents a shift toward more accessible, practical, and grower-driven precision agriculture technologies.

Supported through the VegNET Innovation Fund and VegNET WA grower-led AgTech study tour to Europe, the project has drawn on global insights into automation, robotics and open-source innovation. The study tour, delivered in collaboration with the Warren Cauliflower Group and Manjimup Pastures Group, provided Western Australian growers with exposure to leading agricultural technologies in Copenhagen and the Netherlands, helping inform the ongoing development and regional adaptation of OWL.

At its core, the OWL system is a low-cost, open-source weed detection technology designed by Dr Guy Coleman to enable targeted herbicide application. Using cameras, machine vision and artificial intelligence, the system detects weeds in real time and activates spray nozzles only where weeds are present. This contrasts with traditional blanket spraying methods and offers the potential to significantly reduce chemical use while maintaining effective weed control.

"I was driven to develop something that was low-cost and practical, because the existing technology was incredibly expensive – even though the hardware itself only costs a few hundred dollars. OWL was about creating a tool that people could actually access and use." Dr Guy Coleman said.

While the study tour provided valuable international context, the OWL demonstration day in WA was a key moment in translating these insights into practical, on-farm application. The event brought together growers, researchers and industry stakeholders to see the OWL prototype operating in a real horticultural setting, bridging the gap between concept and implementation.

A grower-led solution

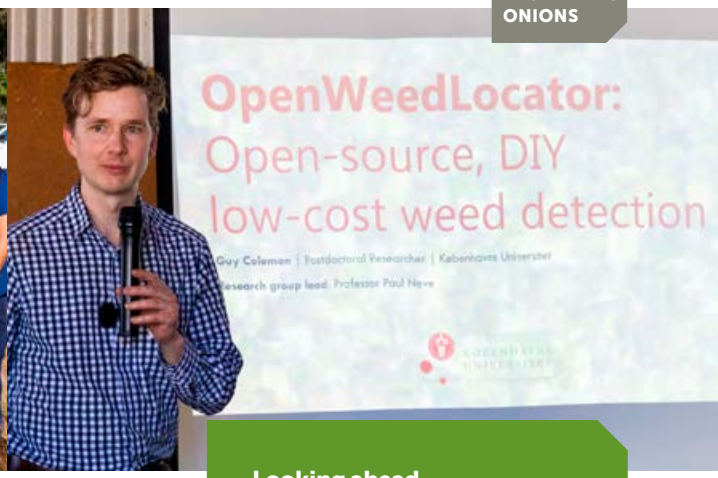
The OWL project has been driven by growers seeking practical alternatives to both rising input costs and the loss of key herbicide options. As highlighted by growers involved in the project, increasing concern around chemical availability and long-term sustainability prompted exploration of new approaches to weed management.

However, many existing robotic or precision weed control technologies remain financially out of reach for small to medium-sized farming operations. Commercial systems can cost hundreds of thousands of dollars, often accompanied by ongoing subscription or support fees. In contrast, OWL provides a more accessible option, with individual camera units costing a fraction of that investment.

"For a small family farm like ours, a lot of the commercial robotic weeding technology just isn't affordable. That's what led us to explore open-source options like OWL – something we could actually build, adapt, and use ourselves." Jake Ryan said.

This affordability, combined with its open-source design, allows growers to take a more active role in developing and adapting the technology to suit their own farming systems.

Above L-R. Jake Ryan and Dr Guy Coleman with the Open Weed Locator (OWL). OWL prototype. **Inset:** OWL AI weed detection visual.



From concept to field application

The demonstration day showcased how the OWL system can be implemented using relatively simple and affordable hardware. Built around a Raspberry Pi computer, camera, and relay control system, the prototype illustrated how machine learning models can be integrated into farm operations without reliance on high-cost proprietary equipment.

During the demonstration, the system was configured to detect weeds within a vegetable cropping system and activate precision spray outputs. Attendees observed how weeds could be identified in real time, triggering individual nozzles to apply herbicide only where required.

Importantly, the demonstration also explored different operating modes, including 'green-on-brown' detection in fallow conditions and the more advanced 'green-on-green' capability. The latter represents a major step forward, enabling weeds to be identified within actively growing crops – an essential requirement for vegetable production systems.

The role of data in driving performance

A central theme of the demonstration was the importance of data in developing effective AI-driven weed detection systems. Machine learning models rely on large volumes of annotated images to distinguish between crops and weeds under varying conditions.

Initial work on the OWL vegetable system has already resulted in the collection of several thousand images, but it was acknowledged that significantly larger datasets will be required to achieve high levels of accuracy and reliability. This presents both a challenge and an opportunity. Growers can play a direct role in improving the system by contributing images from their own farms, even during routine activities like spraying.

Open-source innovation in practice

One of the defining features of the OWL project is its open-source approach. Rather than relying on proprietary systems, all designs, software and documentation are openly available, allowing growers to build, modify and improve the technology themselves.

This model encourages collaboration and innovation, both locally and internationally. Through the study tour and broader OWL network, growers and researchers are sharing data, ideas and solutions across regions and countries. It is not uncommon for growers in WA to engage with researchers in Europe or other parts of the world, contributing to a shared pool of knowledge.

The open-source model also reduces barriers to entry, particularly for smaller operations. While it requires a more hands-on approach compared to commercial 'plug-and-play' systems, it provides flexibility and control, allowing growers to tailor solutions to their specific needs.

Extending knowledge across the industry

The OWL demonstration day was not just about showcasing technology – it was also about sharing knowledge. As part of the VegNET WA extension program, the event ensured that insights gained through the study tour and project development could be shared with a broader audience.

Field days, demonstrations and supporting resources help extend the reach of the project beyond those who were directly involved.

This ensures that growers across Australia, including those unable to attend events in person, can still access and benefit from the knowledge generated.

Looking ahead

The demonstration highlighted both the potential and the ongoing development needs of the OWL system. Future work will hopefully focus on expanding the open-source weed image library, improving detection accuracy and testing the system across a wider range of crops and regions.

There is also significant opportunity to scale the project across different horticultural industries, from brassicas to leafy greens and beyond. As datasets grow and technology improves, the system's applications will continue to expand.

Ultimately, the OWL project demonstrates that precision agriculture does not have to be limited to high-cost commercial systems. Through collaboration, open-source development, and grower-led innovation, practical and affordable solutions can be developed to address real challenges in modern farming.

Above L-R. Group Study Tour. Dr Guy Coleman presenting at the OWL demonstration day.

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

CASE STUDY

A 150 year Lockyer Valley legacy continues

BY SANDRA GODWIN

Gatton vegetable and onion growers Carley and Tim Logan have changed data entry for accounts so more accurate figures are available for forecasting.

Glenette Produce is using Level Up Hort to turn a century and a half of tradition into a more confident, modern farm business, without losing its family feel.

Glenette Produce grows potatoes, beetroot, onions, pumpkins and lucerne across 56 hectares of rich dark soils about 15km south of Gatton in South East Queensland.

Tim Logan is the latest in a long line of Logans farming the property, which has been in the family since 1869 and is thought to be the oldest continuously family farmed property in the Lockyer Valley.

His parents, Glenroy and Lynette, are still heavily involved, and Tim's teenage son, Wyatt, is keen to return to the farm once he has a trade behind him.

Mr Logan has worked on the farm since finishing school, aside from a drought driven stint driving trucks, returning full time around 2017.

After a period when Glenette Produce focused on lucerne, the farm returned to producing vegetables in 2015.

Mr Logan has since added beetroot and watermelons to the crop mix and begun updating equipment to reduce constant repairs, while also taking on the job of learning cashflow budgeting with help from the accountant and bank.

"I'd never done them before, so I had no idea," Mr Logan said.

"Over the last three or four years, I've slowly been learning how to do them and get them more accurate."

Why they joined Level Up Hort

Glenette Produce has been in Level Up Hort from the start, after Mr Logan's wife, Carley, saw the Hort Innovation levy-funded program mentioned in an AUSVEG newsletter.

At that point, Mr Logan's mum handled all the bookwork and cashflow budgets and preferred to keep the accounts simple. This was fine for meeting their tax obligations, but not detailed enough for business analysis.

Mr Logan was looking to better understand where the business was making money and where it was going backwards, as well as answering basic questions such as how much herbicide they used each year or what each crop cost per hectare to produce.

The program's confidential business analysis and benchmarking reports, along with guidance from RMCG consultant Lauren Jones, offered a way to compare Glenette's performance against similar farms.

Early results were confronting, showing the business at the lower end of both cost and income per hectare, with margins thinner than many others.

The reports confirmed what Mr Logan suspected: the family had been running an extremely tight cost structure, influenced by his parents' experiences farming through tough times, but that didn't automatically translate into stronger profitability.

"No one wants to spend more," he said.

"But if we spend in the right places, our income will then improve."

Changing systems and conversations

To get more value from the program, the Logans changed how they collected and recorded information.

Mrs Logan took over data entry, restructuring the accounts so that individual chemicals, fertiliser and packaging were allocated more precisely across crops instead of being bundled together.

This has given Mr Logan and RMCG more accurate figures to work with and allows the family to pull up numbers such as total herbicide use or true per hectare input costs. The program has also supported a rethink of who does what on the farm.

For years the family tried to do almost everything themselves, from harvest through to packing, which meant ground work and planting slipped when crops were coming off. It also put everyone at risk of burnout.

With benchmarking data and Ms Jones's input, Mr Logan has been able to make the case for bringing in local labour contractors and sending more produce to a Gatton packing house, even when that added 20-50 cents to the cost of a bag of onions.

"Our thing is time," he said.

"The extra bit of expense isn't much, it's the time that it takes. We've now got that time over two weeks to get the ground worked and replanted again, instead of a month later."

Gatton vegetable and onion grower Tim Logan from Glenette Produce.

From tension to strategic planning

One of the biggest shifts has been in how the family talks about the business.

Mr Logan recalled a turning point after the initial call with an adviser, when his mother said, "I understand what you're trying to do," and offered to explain the changes to his father.

Now in their 70s, Glenroy and Lynette have become more open to using contractors, investing in inputs that lift quality and yields, and stepping back from the heaviest jobs. This has had the happy effect of freeing up their time in the past two years to travel Australia and join an industry study tour to Europe.

Regular cashflow budgets and Level Up Hort's annual reports have also changed Glenette Produce's relationship with its bank.

Mr Logan now aims to keep forecasts up to date so the bank can see in advance when the business is likely to dip into overdraft and why.

Being able to sit down with managers who understand what is happening across the valley, explain the impact of issues such as onion disease or oversupply of pumpkins, and back that up with detailed figures, has built confidence on both sides.

"They don't mind helping you," he said.

"It's just they need to know when they're going to have to help you. They don't like surprises."

Those same reports are laying the groundwork for future strategic decisions, including whether to drop or expand particular crops and how best to use the farm's equity to invest in new equipment or systems.

> For other vegetable and onion growers, he said the real value was in pairing honest numbers with regular, high level discussions about where the business was headed – and making the time to work 'on the business, not just in it'.

While the Level Up Hort program cannot guarantee a profit in every season, Mr Logan said it had given him a clearer understanding of costs, the confidence to spend where it counted, and a framework for more constructive conversations.

Above. Tim Logan in a field of potatoes. *Photos by Jiriki Media*

What is Level Up Hort?

A five-year initiative fully funded through Hort Innovation, the Level Up Hort program provides high-value, specialised business reviews with a business consultant from experienced project partners Planfarm or RMCG.

It is open to vegetable and onion growers, who receive two annual reports – a full business analysis and a benchmarking report, both private and confidential, comparing their figures against others. Each year the participant data is de-identified, combined and reported on a per hectare basis or as ratios for a national report which completely anonymises growers.

The project team uses targets for key financial ratios enabling consultants to help businesses set internal goals and benchmark against themselves as well as the whole industry. These targets highlight priority areas to address within the business and drive continual improvement year on year.

FOR MORE INFORMATION

To enquire or enrol in the Level Up Hort program, contact project manager Steff Carstairs 0428 712 852 | steff@planfarm.com.au or go to the **website leveluphort.com.au** for more information and FAQs on who to contact in your region.

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

Hort Innovation VEGETABLE FUND

Hort Innovation ONION FUND

The protein transition

A GROWING OPPORTUNITY FOR AUSTRALIAN VEGETABLE GROWERS

BY ASSOCIATE PROFESSOR DJIN GIE LIEM

DR LAURA MARCHESE

ASSOCIATE PROFESSOR MICHAEL TIELAND

Deakin University

Plant-based foods, including vegetables, have long been recognised as central and important to healthy diets.

This importance is only growing as food systems respond to major health and demographic pressures, such as growing and ageing populations. In addition, in high income countries such as Australia, more and more health organisations and researchers are increasingly promoting eating patterns that are not only nutritious, but also environmentally sustainable.

A shift towards eating more healthy plant-based foods, supported by government policy, changes within food service, and facilitated by changing consumer behaviour, has the potential to benefit industries related to the production and sales of plant-based foods.

Against this backdrop, Deakin University recently received funding through the vegetable levy via Hort Innovation (VG24004) to investigate the transition to more plant-based foods in the diet, with a particular focus on protein intake in older adults.

Protein has gained growing attention across the food system, with strong emphasis on protein-rich and high protein diets. This is clearly visible in supermarkets, where protein enriched foods have expanded rapidly over the past decade. This is due to increased evidence that protein is beneficial for those who want to gain strength, as well as a general increased interest from consumers who are health focussed.

While much of this growth has focused on animal proteins or extracted plant protein ingredients, such as soy protein isolate, it highlights a clear consumer message: protein is viewed as functional, valuable and essential for health.

For growers of plant-based foods, this increasing focus on protein presents a strategic opportunity. As consumers seek healthier and more sustainable ways to meet their protein needs, plant-based foods should be positioned not as side dishes, but as central components of protein supportive meals.

Offering appropriate combinations of plant-based foods can help support adequate protein intake while simultaneously improving consumer health and environmental outcomes.

With backing from governments promoting more sustainable food systems, and from health professionals advocating dietary change, this emphasis on plant-based foods has the potential to drive increased demand across the sector.

Whilst the transition towards more plant-based foods presents a major opportunity for Australian horticulture, there are clear challenges ahead. Firstly, there needs to be evidence that a transition to more plant-based foods is not bad for the health of older consumers. Its success in an ageing population will depend not only on increasing supply of plant-based foods, but also on delivering high quality protein within plant-based foods.

In older adults, maintaining muscle mass and function requires sufficient intake of indispensable amino acids, the building blocks of protein, alongside good digestibility and absorption (i.e., protein quality). This is particularly important given age-related loss of muscle health and typically lower appetite, meaning that protein intake must be both adequate and high quality.

Plant-based foods offer clear advantages for sustainability and health, as they are generally higher in fibre and lower in saturated fats, with benefits for cardiometabolic health and cancer risk. However, the proteins present in plant-based foods often have a less optimal amino acid profile and reduced digestibility compared to proteins present in animal-based foods. Therefore, we need to increase total plant protein intake, improving protein density, and strategically combine plant sources (e.g. legumes and grains and vegetables) within meals to enhance overall protein quality.

In other words, it is not just about increasing the consumption of plant-based foods, but about the protein quality of these foods. Getting this right will facilitate the transition to the consumption of more plant-based foods, which will benefit health and sustainability, as well as growers of plant-based foods.

At present, limited evidence exists to show that the regular consumption of plant-based foods can adequately support muscle health in older people, making many health professionals cautious. Strong scientific evidence is needed to demonstrate that the regular consumption of plant-based foods, with a specific care of the protein quality and quantity, can support healthy ageing, rather than undermine it. This evidence is also critical for gaining broader government support and consumer confidence.

Deakin University is addressing this evidence gap through an in depth epidemiological study examining links between the regular consumption of plant-based foods and health outcomes in older Australians, followed by a clinical trial. This trial will assess the impact of the consumption of plant-based foods, with a higher intake of plant-based protein, including vegetables, on muscle health and chronic disease outcomes.

Positive findings would help shift perceptions among health professionals and aged care providers, support greater use of plant-based foods for older adults, and ultimately drive increased demand for plant-based foods.

Another key challenge is making the regular consumption of plant-based foods appealing to older adults. Enjoyment strongly influences food choice, and factors such as taste, texture and age related sensory changes play an important role. These consumer preferences directly shape purchasing decisions and, in turn, demand for plant-based foods.

Understanding what older consumers enjoy, alongside the challenges and opportunities seen by growers, health professionals and food providers, will help identify practical pathways to increase adoption of the regular consumption of plant-based foods and support sustained demand for Australian grown produce.

Over the coming years, this project will translate cutting-edge science into practical insights shared through trade and scientific publications, industry channels, webinars, and mainstream media.

At the heart of this effort is a clear message: the regular consumption of plant-based foods can be accessible, enjoyable, and highly supportive of healthy ageing when designed well.

By ensuring plant-based foods are at the centre of the shift towards more healthy and sustainable food consumption, the sector has the potential to move beyond volume and lead in delivering high-value, nutrient-rich foods that align with both health and sustainability goals. This is not only a scientific priority, but a strategic opportunity for Australian growers to shape future food systems and meet the evolving needs of the Australian ageing population.

Plant-based protein for sustainability and healthy aging project has been funded by Hort Innovation, using the vegetable research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

Project Number: VG24004

Hort Innovation VEGETABLE FUND

Laser weeding in baby leaf production

A PRECISION WEED CONTROL OPTION FOR AUSTRALIAN BABY LEAF GROWERS

BY DR HOANG NGUYEN AND DR ALI BAJWA

While some 'weeds' are perfectly edible, and even considered delicacies in different cuisines, others are decidedly undesirable. Either way, when a consumer buys a bag of spinach, that's all they want to find inside.

However, achieving 100 percent elimination of weeds from baby leaf crops is extremely challenging. Fertile soils, shallow root systems and rapid production turnover make it easy for interlopers to germinate and spread. Even small numbers of weeds can unacceptably contaminate harvested product, disrupt processing and potentially lead to consignment rejection. This is certainly the case if toxic weed species are found, as these can have severe health consequences for consumers.

Hort Innovation has funded a national project *Addressing key challenges in Australian baby leaf production* (VG23014). Improved weed control, along with disease management and improved shelf life, are key research areas for the project. A team of researchers from La Trobe University, led by Dr Ali Bajwa, in partnership with Tripod Farmers, is currently evaluating laser weeding, alongside other weed management strategies, for baby leaf production.

Precision weed control in high-value crops

Laser weeding is emerging as a potential game changer for high-value baby leaf production systems. With limited herbicide registrations, tightening chemical regulations, and rising labour costs, alternative weed control solutions are urgently needed.

Laser weeding systems integrate artificial intelligence (AI), high-resolution imaging and laser technology to detect and eliminate weeds at early seedling stage *(Figure 1)*. Once identified with high resolution cameras, which analyse plant features such as leaf shape, size, colour, and position relative to the crop, a targeted laser pulse destroys the weed's growing point without disturbing surrounding soil or crop.

Unlike mechanical cultivation, laser technology operates without soil disturbance, making it particularly well suited to dense plantings of baby leaf crops. While the technology has shown promising results overseas and is gaining popularity in Australia, independent data on its weed control efficacy, potential crop damage, and economics in Australian conditions is lacking.

Research and field evaluation

Field trials conducted at the Tripod Farmers site in Bacchus Marsh, VIC, during spring 2025 and summer 2026 have delivered promising results. Early findings from the spring trial suggest that integrating a pre-emergence herbicide program followed by a double pass of laser weeding can significantly reduce weed density, improve weed control *(Figure 2),* and minimise weed contamination at harvest in wild rocket, compared to applying a pre-emergence herbicide alone. *Figure 3* shows a clear comparison between an integrated pre-emergence herbicide program followed by a double pass of laser weeding and an untreated control (weedy check) in wild rocket.

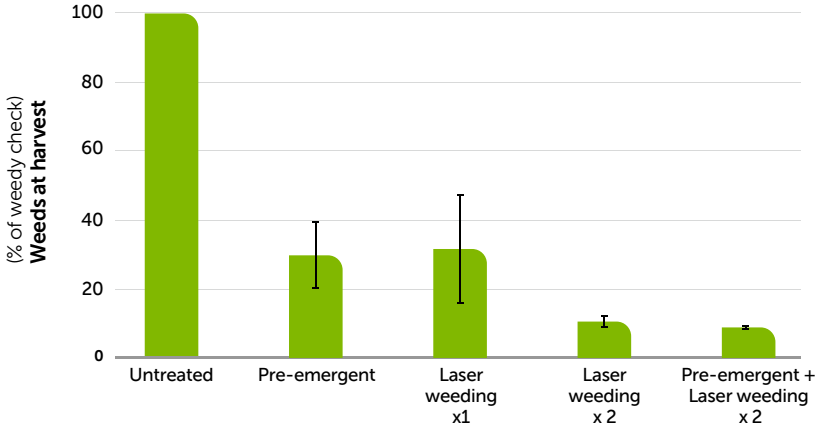


FIGURE 2. Effectiveness of integrated weed management in wild rocket – results from spring 2025 testing combinations of pre-emergence herbicide and laser weeding.

Top. FIGURE 1. A high-power laser weeder in operation during the Bacchus Marsh field trial, targeting weeds at the early seedling stage within baby spinach crop.

FIGURE 3. Pre-emergence herbicide program followed by a double pass of laser weeding (A) versus untreated (B), showing significantly reduced weed density in the treated wild rocket plot at harvest.

However, it should be noted that laser weeder performance is influenced by factors such as:

- Application timing
- Weed growth stage and structure
- Weed species present
- Weed density at the time of application

Only young weeds are killed by the laser; larger plants may be damaged but survive. Moreover, some weeds are easier to differentiate than others at the cotyledon stage. For example, nettles have oval cotyledons difficult to distinguish from germinating wild rocket.

Looking Ahead

As AI-based recognition improves and operational speed increases, laser weeding systems may become more efficient and commercially accessible. However, their role in Australian baby leaf production will depend on further evaluation under commercial-scale conditions. For growers facing regulatory pressure, limited herbicide options and labour constraints, laser technology could form part of an integrated weed management approach. However, it's performance, cost-effectiveness, and practicality need to be assessed across a wider range of environments and production systems.

Other aspect of 'Weeds Pillar' of the project

The 'Weeds Pillar' of the project also includes identification and investigations into the germination ecology of problematic weeds. Understanding the environmental drivers of germination for key weed species, particularly toxic weeds such as thornapple, is essential for optimising weed control timing and maximising efficacy. Another key output will be a guide to weed identification in baby leaf crops, which will include information on potential toxicity.

Stay tuned for more information in coming months.

FIND OUT MORE

For further information contact Dr Ali Bajwa
A.Bajwa@latrobe.edu.au | 0431 194 862

The *Addressing key challenges in Australian baby leaf production* project is funded by Hort Innovation using the vegetable and onion research and development levies and contributions from the Australian Government.
Project Number: VG23014
Weed management research co-funding has been provided by La Trobe University.

Hort Innovation VEGETABLE FUND
LA TROBE UNIVERSITY

Pledge for More Veg

BACKING GROWERS BY DRIVING DEMAND

Australian vegetable growers continue to deliver fresh, high-quality produce for Australian households - but they are doing so in an increasingly difficult environment. Rising input costs and market uncertainty are being compounded by a more fundamental challenge: Australians are not eating enough vegetables.

This reality is why AUSVEG has made increasing vegetable consumption a core strategic priority through Plus One Serve by 2030. Central to this work is the Pledge for More Veg - a national mechanism designed to shift responsibility for lifting consumption onto the parts of the food system that influence it most, including retailers, institutions, foodservice, workplaces, government and the health sector.

The Pledge exists to ensure that the rest of the food system plays its role in supporting Australian vegetable production, regional jobs and long-term industry viability.

Through the Pledge for More Veg, we are calling on individuals, community-based organisations, philanthropic and corporate donors, and the food and health sector to formally sign up and work with us on meaningful commitments that help drive increased vegetable consumption across Australia. By working together, we can deliver better health and wellbeing outcomes for all Australians, support stronger regional economies and local jobs, improve fair and equitable access to fresh food, and build a more sustainable, resilient and future-focused food system for generations to come.

Good for People. Good for Growers. Good for the Nation.

Key impact areas

The Pledge for More Veg is a powerful public-facing instrument designed to attract pooled investment and drive national action through bespoke Action Plans, which will be measured and reported to deliver collective impact. It drives impact in four key areas:

1. **Health & Wellbeing:** Improving diet quality for physical and mental wellbeing, reduced chronic disease incidence, and vitality through better nutrition.
2. **Equity & Access:** Ensuring all Australians - including underserved, CALD, regional and remote communities - can access and enjoy vegetables every day.
3. **Environment & Social Impact:** Building more sustainable and nutritious food systems, curating veg cities, reducing food waste, and greater social wellbeing.
4. **Growers & Supply Chain:** Increasing demand to strengthen farm gate returns, create jobs, bolster supply chain, and support regional communities to thrive.

The Pledge features a Commitments Framework 2025-2030 consisting of 12 overarching commitments (action areas). Each signatory with a vested role chooses from 12 action areas that ladder up to one or more of the four pillars. Signatories will sign individual pledges committing to select items from the Commitments Framework. For food system and health sector organisations with a vested role, there is no direct cost to becoming a signatory – our goal is to keep efforts directed towards action items.

How this will come to life

The Plus One Serve team are proactively engaging with a prioritised list of organisations that have been identified through a comprehensive market review. This outreach is already proving effective, with early conversations being positively received as the team clearly articulates the case for investment and collective action.

Driving positive change through collective national action

Progress against these commitments will be measured with results aggregated and reported through national impact reporting. All commitments will be guided by SMART goals, ensuring accountability and consistency across participating organisations. Below are some of the key metrics we will be reporting on:

Organisations: Number of organisations making a Pledge for More Veg

Volume: Total volume of vegetables sold by type/format

Serves: Total additional number of serves of vegetables

People: Total reach by age, life stage, household and priority populations.

Be part of the movement

The Pledge for More Veg is about bringing the entire food system together behind one clear goal - getting Australians to eat more vegetables, every day.

We are calling on growers to back the Pledge and help drive national action - reinforcing that increasing vegetable consumption is a shared responsibility across the food system, not one carried by growers alone.

This is a coordinated effort to lift consumption, strengthen demand and support the long-term viability of the vegetable industry.

Scan the QR code to learn more or reach out to Plus One Serve by emailing info@plusoneserve.com.au

Above. Sam Birrell MP (Member for Nicholls) who just signed the Pledge with AUSVEG leadership team at Parliament House.

Timor-Leste workforce delivers at Mountford Berries

For horticulture businesses operating on tight margins, the productivity of a seasonal workforce can make or break a season.

At Mountford Berries in northern Tasmania, that workforce is made up almost entirely of Pacific Australia Labour Mobility (PALM) scheme workers from Timor-Leste, whose unique work ethic has made them central to the business's success.

The farm began with just 15 workers from Timor-Leste under the PALM scheme. Today, around 100 form the backbone of Mountford's 120-strong seasonal team.

That growth has tracked closely with the farm's own expansion, from around eight hectares in its earlier years to 30 hectares today. According to HR manager and director Jemma Mackinnon, the Timorese workforce has been central to that trajectory.

"We've had workers from other countries, and they're good, but the competitive nature of the Timorese is a big asset for us. They're all competing to see who can do the best and who can be the best," she said.

"That's a credit to them and their country. They want to work hard to achieve things. I would definitely recommend them to other employers in the berry industry."

Jemma said the commitment and strong work ethic of the Timorese workers had yielded cumulative benefits over time, with many returning for eight or nine consecutive seasons.

"We now say they are professional harvesters," Mackinnon said. "They are professional people who come in, hit the ground running and know how to pick, and they are incredibly efficient.

"I don't think with the margins that are happening with us and all of horticulture we would survive had we not had those same people coming back."

While local labour remains part of the mix at Mountford Berries, which also employs around 50 local staff, seasonal peaks require workforce flexibility that only the PALM scheme can provide.

"Local people don't want to do seasonal work — that's the difficult part. We don't have work for 120 people all year round. So, to be able to have that seasonal nature of workers is incredibly beneficial to us."

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

Vania, from Aileu in Timor-Leste, arrived at Mountford Berries as a picker but was soon promoted to a facility supervisor, overseeing worker accommodation.

"I really like it because I started learning about leadership and how to be a leader for the group," she said.

"My goals are to help my family and make my family happy, firstly my brothers and sisters to help them study at university, and now to build my house and save for my kids' future."

Jemma said that while running a horticulture business was challenging, it didn't compare to the difficulty Vania and other workers faced when separated from loved ones.

"They're all here for the right reasons, they're here to help their families, but it doesn't mean it's not hard. It's hard for us but it's way harder for them," she said.

Approved PALM scheme employers interested in recruiting from Timor-Leste can contact: swp.lsu.tl@gmail.com. For more information about becoming an approved employer please contact palm@dewr.gov.au.

PALM
Pacific Australia Labour Mobility

Advertorial

VEGETABLES

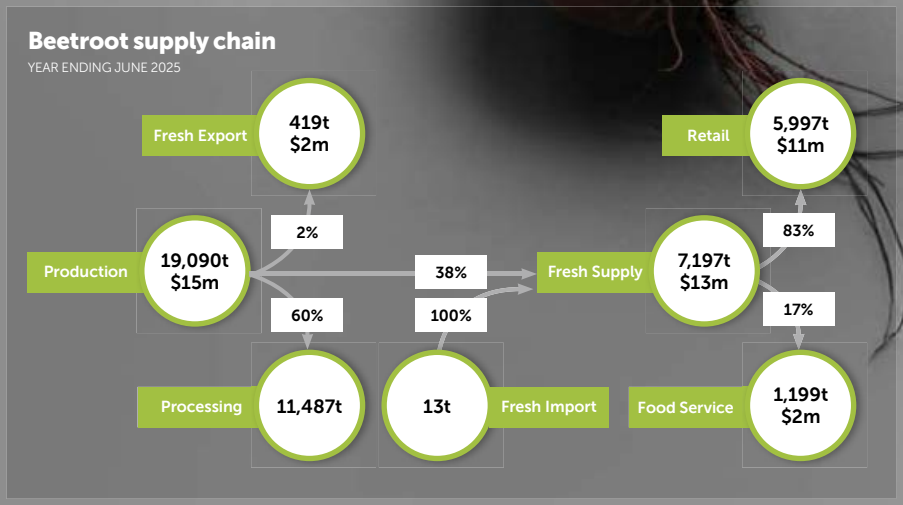
COMMODITY PROFILE

Beetroot

85% of beetroot is grown in Queensland

- Beetroot production decreased by 12 percent in 2024/25 compared to 2023/24.
- Households purchased 200g more compared to the previous year
- Loose beetroot led the growth with half of all volume sold in major supermarkets being loose
- The households most likely to purchase beetroot? Adult homes without children.

Source: NielsenIQ Homescan for the 52 weeks ending 22/02/2026 for the Australian market. *Australian Horticulture Statistics Handbook 2024/25.*



The *Horticulture Statistics handbook 2024-2027* is funded by Hort Innovation using multi-industry research and development levies and funds from the Australian Government. **Project Number: MT24019**

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

SCAN TO VIEW

Australian Horticulture Statistics Handbook 2024/25 was released in February 2026, unpacking the beetroot sector performance during the financial year of 2024/25.

Minor Use Permits

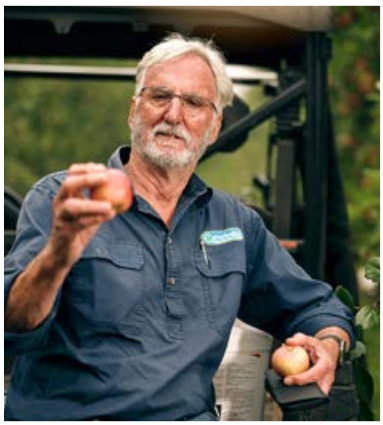
The below minor use permits were recently issued by the Australian Pesticides and Veterinary Medicines Authority (APVMA). This information is circulated as part of Hort Innovation's Growing Innovation e-newsletter, which members and interested horticulture participants receive monthly. **Sign up at**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



Campbells Fertilisers Australasia
30 years grounded in nutrition

In horticulture, there are few constants. Seasons shift, input pressures rise and fall, and production systems continue to evolve. Yet across all of this change, one principle has held firm for Campbells Fertilisers Australasia (Campbells) over the past three decades: nutrition sits at the heart of crop performance.

Since 1996, Campbells has worked alongside growers with a clear focus on helping crops, soils and businesses perform at their best through targeted, specialty nutrition. Today, the business is recognised as the leading force in the distribution and sales of imported horticultural specialty fertilisers in the Southern Hemisphere. As a wholly Australian company with a national footprint across Australia and New Zealand, Campbells combines global product access with local knowledge and on-ground support.

As Campbells marks 30 years in 2026, "Grounded in Nutrition" points to the philosophy that has guided the business from the start. Nutrition is not treated as a single input or a late-stage decision. It is viewed as a foundational driver of plant health, soil condition, yield potential, fruit quality and long-term farm resilience.

That thinking continues to shape how the business supports growers today. Campbells' portfolio spans compounds and granulars, soluble solids, liquids, trace elements and biostimulants, designed to meet the specific needs of different crops, regions and production systems. Whether it's improving nutrient efficiency in vegetables, supporting fruit quality in orchards or managing balance in intensive systems, the focus remains on practical outcomes that growers can see in the paddock.

The growing role of biostimulants is a key part of this evolution. As growers face increasing pressure around input efficiency, environmental conditions and crop consistency, biostimulants offer another layer of support. By improving nutrient uptake, enhancing plant resilience and supporting soil biology, they help unlock more value from existing nutrition programs. Integrated properly, they don't replace traditional fertilisers, but strengthen how those inputs perform in the field.

Importantly, products are only part of the story. Campbells operates within the broader Muir family legacy, a fourth-generation agribusiness built on relationships and regional understanding. Through a combination of wholesale partners and the Muirs Ag Retail Network, growers gain access not only to premium inputs, but also to local service, trusted advice and a team that understands the realities of Australian horticulture.

That connection between technical depth and on-farm practicality has long been a defining strength. Campbells' technical specialists bring decades of experience across Australian horticulture, translating plant nutrition science into decisions that work in real conditions.

Few people represent that continuity better than Bruce Scott, Campbells' National Nutrition Agronomist. Known to many as 'Scotty', Bruce's involvement with the business stretches back even before its official founding. After beginning his career with the Victorian Department of Agriculture, he joined Muirs in 1990 and has held a national role with Campbells since 1996.

Over more than 30 years, Bruce has built strong, lasting relationships with growers, agronomists and researchers across Australia with an approach driven by curiosity and close observation in the field.

Reflecting on that time, he said, "The past 30 years has been a great time to be working in the horticulture industry. There have been lots of changes and innovations, but the growers I've been privileged to work with are just great people - passionate about their crops and keen to adopt new ideas."

Looking ahead, the challenges facing horticulture are unlikely to ease. Input availability, climate variability and the need for greater efficiency will continue to shape how crops are grown. In that context, the role of plant nutrition becomes even more critical in supporting resilience, consistency and long-term sustainability.

For Campbells, 30 years provides a strong foundation, but not a reason to stand still. The business continues to evolve its product offering, invest in technical capability and strengthen industry partnerships, with a clear goal: helping growers make better nutrition decisions that deliver real results.

Thirty years on, Campbells is still grounded in the same belief it was built on — that better nutrition leads to better outcomes. For growers, that's not just a philosophy. It's a practical advantage, season after season.

Campbells products are available through Muirs and other wholesalers nationwide.

Above. Beau White, Commercial Agronomist (left) and Matt Thomas, Regional Nutrition Specialist (right) in a brussels sprout field in South Australia. **Inset.** Bruce Scott, National Nutrition Agronomist has been with Campbells since the very start.

FIND OUT MORE
For more information visit campbellsfert.com.au

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 Cross-RDC Fall armyworm R&D Facilitation

VG25006

DELIVERY PARTNER: **JANE WIGHTMAN CONSULTING**

The overall objective of the project is to create a role that provides a single focal point of facilitation for FAW.

The role will encompass:

- Organise and lead national and regional workshops, as well as establish communication platforms to support effective information exchange.
- Develop independent reports on industry impact and management challenges, as well as regular updates on FAW developments.
- Identify and report on gaps in research and development and opportunities for further investigation.
- A comprehensive communication and engagement (C&E) plan will be developed and implemented to ensure effective stakeholder interaction and information dissemination.
- An M&E plan will be established and executed to track progress, measure effectiveness, and ensure continuous improvement. A steering committee comprising of RDCs investing in this project will guide the development of this plan.

V Foundational data for Farm Gate and Mobile Farm projects

VG24011

DELIVERY PARTNER: **VEG EDUCATION**

This project aims to increase vegetable consumption among Australian children by delivering immersive, hands-on learning experiences through the VEG Education Farm Gate and Mobile Farm Pilot. By engaging students directly with vegetables and the horticulture industry, the initiative seeks to shift attitudes, improve knowledge, and encourage healthier eating behaviours. The program aligns with the Plus One Serve initiative and uses pre- and post-experience surveys to evaluate changes in participants' willingness to try new vegetables and adopt healthier dietary habits.

The project addresses key barriers to vegetable consumption such as affordability, food waste, and preparation challenges. By fostering positive attitudes and behaviours early in life, it supports long-term dietary change and the development of lifelong vegetable-eating habits. The pilot will also generate valuable insights to inform future strategies for sustained behaviour change, contributing to broader public health outcomes and a stronger connection between young Australians and the horticulture sector.

CODE

O Onion P Potato V Vegetable M Melon

Current projects

HORT INNOVATION VEGETABLE FUND

V Optimising Capsicum and Chilli quality

VG24002

DELIVERY PARTNER: **CQUNIVERSITY**

This project aims to improve the quality and marketability of capsicums and chillis by reducing post-harvest losses and consignment rejections due to defects such as internal rot, silvering, and pitting. By working with leading producers across major growing regions, the project will map and monitor supply chain performance, assess fruit quality using digital and traditional methods, and develop best practice recommendations for both production and post-harvest handling. The goal is to increase the volume of blemish-free, high-quality fruit that meets retailer specifications, ultimately improving grower profitability.

Key challenges addressed include managing harvest maturity, fruit structure and composition, and post-harvest cool chain processes. The project will also explore how production and handling techniques affect fruit quality and develop predictive tools for retail outcomes. With support from regional grower groups, the project will take a grower-led approach to research and extension, enabling broader adoption of improved practices that enhance product uniformity, ripening control, and reduce the risk of rejection in commercial supply chains.

V Evaluating mechanical harvest solutions in Australia

VG24006

DELIVERY PARTNER: **DEPARTMENT OF PRIMARY INDUSTRIES, QUEENSLAND**

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.

V Plant-based protein for sustainability and healthy aging

VG24004

DELIVERY PARTNER: **DEAKIN UNIVERSITY**

This project is providing robust evidence to support the role of vegetable/plant-based protein diets on musculoskeletal outcomes in older adults and a clear understanding of sensory drivers, barriers and motivators for adoption of vegetable/plant-based protein diets among key stakeholders.

In older Australians, increasing vegetable intake and transitioning towards more vegetable/plant-based protein diets (i.e. protein transition), as aligned with their preferences for sustainable diets, holds significant potential for improving human and environmental health.

Barriers to this transition include the perceived negative impact of vegetable/plant-based protein diets on muscle health, and changes in sensory perception of older consumers in the community as well as aged care. Foundational evidence addressing these barriers will increase knowledge, awareness and attitudes towards a sustainable vegetable/plant-based protein transition and drive vegetable demand.

Findings will be shared via scientific and trade journals, industry and aged-care communications (newsletters, social media, websites), and presentations at conferences, ensuring broad reach and impact.

Current projects

FRONTIERS PROGRAM

Hort Innovation Frontiers

VP Progress on bumble bees as commercial pollinators in Australia: update on risks and opportunities

PH23001

DELIVERY PARTNER: **WESTERN SYDNEY UNIVERSITY**

This project is producing the first comprehensive large-scale study of Tasmanian bumble bees, looking at both their impacts on the environment, and their role as pollinators of Tasmanian crops.

The research team is using a mix of cutting-edge technologies such as miniature radio transmitters and audiovisual monitors, as well as more traditional surveillance methods such as visual surveys, flower baggings and pollinator attractive plantings to answer the following questions:

- What are bumble bees doing in Tasmanian ecosystems?
- How are they interacting with different commercially important crops?
- Can their populations be manipulated to achieve conservation and/or pollination service goals?

The findings from this research will inform future decision-making on how to best balance the opportunities and risks posed by bumble bees in Tasmania. The research will also provide growers and the horticulture industry with insights into how landscape features and floral plantings can impact bumble bee and other wild pollinator populations around Tasmanian farms.

VOPM Innovation at Work and the Innovation Experience Action Research Extension Pilot

LP20000

DELIVERY PARTNER: **ELDERS RURAL SERVICES AUSTRALIA**

This investment is exploring new processes for delivering extension within horticultural industries in Australia through a pilot partnership with the private agribusiness sector and other RD&E organisations. This collaboration is an innovative shift in the delivery of RD&E and best management practice outputs to growers.

The pilot project is focusing on high value horticultural crops within the tri-state region of Riverland SA, Sunraysia VIC and Western NSW. The project team is delivering a range of activities within the area that aim to enhance adviser and grower awareness of relevant R&D and best management practices, leading to an increase in grower client knowledge, attitude, skills and aspirations and in turn on-farm practice change.

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.

VOPM Australian horticulture pest innovation program

ST23002

DELIVERY PARTNER: **UNIVERSITY OF MELBOURNE**

This program is supporting the vegetable industry to transition to a more proactive and sustainable approach to integrated pest management through the latest technology.

The research team will:

1. Use endosymbiotic bacteria living inside invertebrate to develop drive systems that can be used to drive useful maternally inherited endosymbionts through pest populations.
2. Enhance the impact of beneficials in vegetable and grain crops by increasing the efficacy of mass-reared beneficials through endosymbiont manipulations and developing predictive frameworks that allow growers to make decisions that appraise the impacts of both insecticides and beneficials.
3. Use comparative genomics and predictive data-driven forecasting to enhance the predictability of future insecticide resistance threats and enable rapid diagnosis of resistance in key pests.
4. Develop grower tools and deliver resources to simplify pest management decisions and reduce industry reliance on broad-spectrum insecticides, with the dual aim of prolonging the life of effective agrichemicals.

VOPM Modernising phytosanitary risk management

AM21002

DELIVERY PARTNER: **CSIRO**

This investment will work closely with domestic biosecurity regulators to strengthen Australia's scientific approach to managing phytosanitary risks, making it easier for growers to conduct safe cross-border trade.

The research team will work closely with State and Federal Governments to develop and refine a fit-for-purpose 'toolkit' that can be used to improve state-level decision-making about biosecurity risks and how these are best managed. The tools will also underpin analyses to support international market access negotiations.

This toolkit will provide Australian growers and exporters who are already effectively managing their production chains to minimise pests and diseases, a way to demonstrate that their fruit, vegetables and nuts present a low biosecurity risk.

The project will build on Australian industry's already excellent practices in this, facilitate better use of data in management of plant biosecurity risks, and will include new and emerging technologies such as optical grading and automated pest surveillance.

CODE

O Onion P Potato V Vegetable M Melon

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

Managing onion canopy diseases through molecular diagnostics

A research project led by Dr Ben Evert in collaboration with plant pathology researcher Dr Noel Knight, microbiologist Dr Neil Wilson and Metagen co-founder Shane Fitzgerald, has delivered a powerful new molecular diagnostic tool to sharpen the fight against onion canopy diseases, particularly Stemphylium leaf blight.

A qPCR test was developed at Metagen's Gatton laboratory and will be commercially available for the upcoming onion season. The testing method will also be published, making it accessible to growers and researchers worldwide.

A growing threat to onion production

Stemphylium leaf blight of onions (SLB), caused by *Stemphylium vesicarium,* is a significant canopy disease affecting onions and other allium crops worldwide. It thrives in warm, humid conditions and is especially devastating in subtropical regions. It presents as necrotic leaves and leads to premature leaf senescence, reduced bulb size and significant yield losses.

In 2023 and 2024, growers in Queensland's Lockyer Valley experienced severe crop losses.

"In the Lockyer Valley, particularly in the last two seasons, growers have been affected very badly," Dr Evert explained. "Some didn't harvest and some have said that they're going to move away from growing onions because it's too hard to manage."

Concerns were raised by VegNET South East Queensland, which led to the initiation of the project titled *Rapid test and fungicide resistant screening for Stemphylium leaf blight in onion* (VN24003). Funded by Hort innovation, supported by AUSVEG and delivered by Queensland-based biotechnology company Metagen, the project set out to answer three critical questions:

- Is SLB the primary cause of crop losses in the Lockyer Valley?
- Is fungicide resistance contributing to control failures?
- Can a reliable diagnostic tool be developed?

"We thought there was a big Stemphylium leaf blight problem in the Lockyer Valley, but we didn't know for certain until we did wide scale testing. And then other gaps [in knowledge] were not knowing the fungicide resistance status of this disease and also not having any rapid, scalable diagnostic tools." **DR EVERT**

Above. Onions growing in Lockyer Valley.

Why diagnosis has been so difficult

Diagnosing onion canopy disease can be challenging. Several pathogens, including Downy mildew (*Peronospora destructor*) and Purple botch (*Alternaria porri*), can produce similar symptoms to SLB. Multiple infections can occur at once, and SLB can remain asymptomatic until environmental conditions trigger visible disease.

Previously, diagnosis has relied on visual assessment.

"Traditionally, diseases [have been] diagnosed just based on either looking at the symptoms, so what kind of marking shows up on a leaf, or looking for spores, like fungal spores or fungal structures that can be used to identify what the pathogen is," Dr Evert said.

"The problem with just looking at the symptoms is lots of different pathogens can cause similar symptoms. There's lots of things that can cause onion leaves to look like they have SLB. So, if you're diagnosing it based on that, it's easy to make a mistake. And that's the same with spores. Lots of fungi can have very similar spores and fungal structures, so it takes a very carefully trained eye to be able to classify an organism based on spores and fungal structures."

The research team turned to molecular diagnostics for greater precision.

"On the other hand, all organisms have unique DNA markers. *Stemphylium vesicarium*, which causes this disease in the Lockyer Valley, has DNA unique to all other fungi and all other Stemphylium species. So, what we can do is we can find a piece of *Stemphylium vesicarium* DNA that only that fungus has and then design a test that will only test for that particular DNA," Dr Evert explained.

"The good thing about that is you can potentially calibrate the test to detect DNA when the fungus is present but before symptoms show up. This would allow growers to know the disease is there before it starts to cause damage and can help them pre-emptively implement management strategies."

"Another possible application could be calibrating the DNA test to be used on seed. Since SLB can be a seed borne pathogen, growers might want to have seed tested before planting."

A new generation of diagnostic tools

The project developed molecular diagnostic tests for SLB, Downy mildew and Purple blotch, which are now commercially available through the Metagen lab.

Field surveys across 17 onion crops in the Lockyer Valley combined disease assessments, lesion sampling and soil chemistry analysis. The results confirmed SLB as the dominant pathogen in the region. Downy mildew was also significant, while Purple blotch appeared only in limited cases.

Importantly, the research showed that SLB can survive over the off seasons on alternative plant hosts, allowing it to persist between onion seasons.

Growers can use the new tests to get a rapid disease diagnosis within 48 hours and check surrounding vegetation for disease. The test could potentially be further developed to allow growers to detect infection before symptoms appear and test seed lots for contamination.

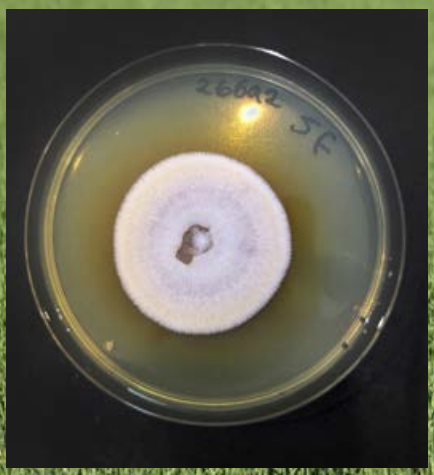
If the test is used regularly each onion season, it will build a long-term data base on pathogen presence and disease prevalence over time.

"If growers are consistently sending in samples for testing every onion season, then we're generating a new database of how often we're detecting this disease. And then we can track it over time," Dr Evert said.

"We can see if the incidence is going up or down, which gives us an idea of if management practices growers are using are helping or not, essentially."

The molecular test will be commercially available next onion season through Metagen. Protocols will also be published for global use, and newly generated genome sequence and phylogenetic data have been uploaded to public databases for the wider research community.

Above L-R. Downy mildew *close up.* Field symptoms of downy mildew in a Qualipac crop.



In a production system where disease pressure is rising and chemical options are under strain, molecular diagnostics offer a proactive way forward.

Fungicide resistance

A critical piece of the puzzle

Globally, there is no single, fully effective control strategy for SLB, however integrated disease management, including fungicides or resistant varieties play a key role. There have been international reports of fungicide resistance emerging in SLB, however the status in Australia was unknown.

The project examined fungicide resistance in the SLB populations. Genetic analysis revealed evidence that recent strains of *Stemphylium vesicarium* have evolved resistance to Group 11 and Group 7 fungicides. This was confirmed by in vitro lab assays on azoxystrobin and penthiopyrad which demonstrated recent *Stemphylium vesicarium* isolates from the Lockyer Valley were significantly less sensitive compared to historical isolates. Surveys to determine how widespread fungicide resistance is in SLB are a crucial next step to determine the risk to disease management.

This finding underscores the need for diversified, integrated management approaches.

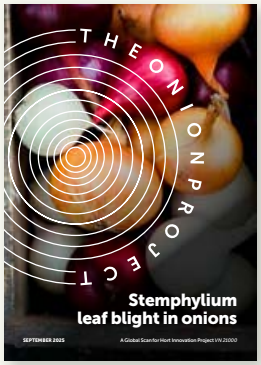
Outcomes for Lockyer Valley growers

Because no single solution is sufficient, the research explored broader disease drivers. The Metagen technical staff worked with growers to monitor and optimise soil health, soil chemistry and thrip damage. They identified possible links between disease severity, certain soil chemistry factors and thrip pressure, highlighting the complexity of canopy disease dynamics.

The project worked directly with approximately ten Lockyer Valley growers last season, providing disease diagnostics and detailed soil reports to help inform management systems and improve disease resistance.

"I think they're pretty happy that there's a new tool out there for them to use to diagnose diseases... the last couple of seasons have been pretty hard for a few onion growers," Dr Evert said.

For onion levy payers and the wider industry, the project delivers accurate rapid disease detection, fungicide resistance insights, regional disease surveillance and a foundation for integrated disease management.



SCAN TO VIEW

Stemphylium leaf blight in onions
A Global Scan for Hort Innovation Project

The *Stemphylium leaf blight in onion* project is funded by Hort Innovation using the onion research and development levies and contributions from the Australian Government.
Project Number: VN24003

Hort Innovation VEGETABLE FUND

Above. Onions growing in Gatton. **Inset.** *Stemphylium vesicarium* samples.

FACTSHEET

Stemphylium leaf blight in onions

Stemphylium leaf blight, caused by *Stemphylium vesicarium,* is a fungal pathogen that affects onions. Spores are spread via wind, rain and contaminated tools or machinery, and survive on plant debris and overwinter in the soil. The fungus presents itself as yellow spots on leaves that expand, causing dieback and reducing yields. Therefore, it's important to detect the disease early and reduce its impact.

Fungicides and level of resistance risk

Active ingredient	Resistance risk level
Fluazinam	Low
Fludioxonil	Low - Medium
Cyprodinil, Pyrimethanil	Medium
Fluopyra, Fluxapyroxad	Medium - High
Azoxystrobin	High

Fungicide resistance management

Cause of resistance: repeated use of same active ingredient/mode of action

Mitigation

- Rotate fungicide modes of action/ FRAC groups
- Reduce number of sprays or switch to biofungicides
- Combine fungicides with cultural controls (e.g. crop residue removal, crop rotation).

Risk management considerations

- Soil/plant DNA testing
- Crop residue reduction or removal
- Management of other host crops/ weeds
- Nutrition management
- Preventative fungicide application
- Annual fungicide sensitivity testing of fungal isolates.

Watch out!

Stemphylium leaf blight can look like other fungal diseases. Be mindful of correctly diagnosing and using suitable control methods.

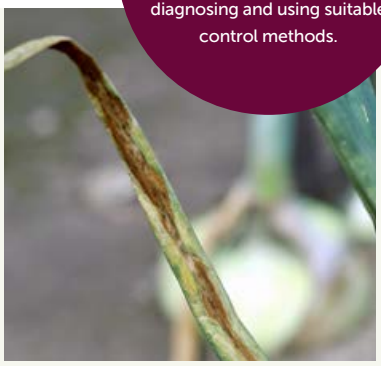
What to look out for

Leaf necrosis

- Necrosis at the leaf tips
- Tan/brown oval lesions on necrotic leaf tips and outer leaves; progressing asymmetrically down the leaf.

Leaf spot

- Tan/brown lesions may appear darker and water-soaked when sporulating
- Black and purple lesions develop on necrotic tissue.



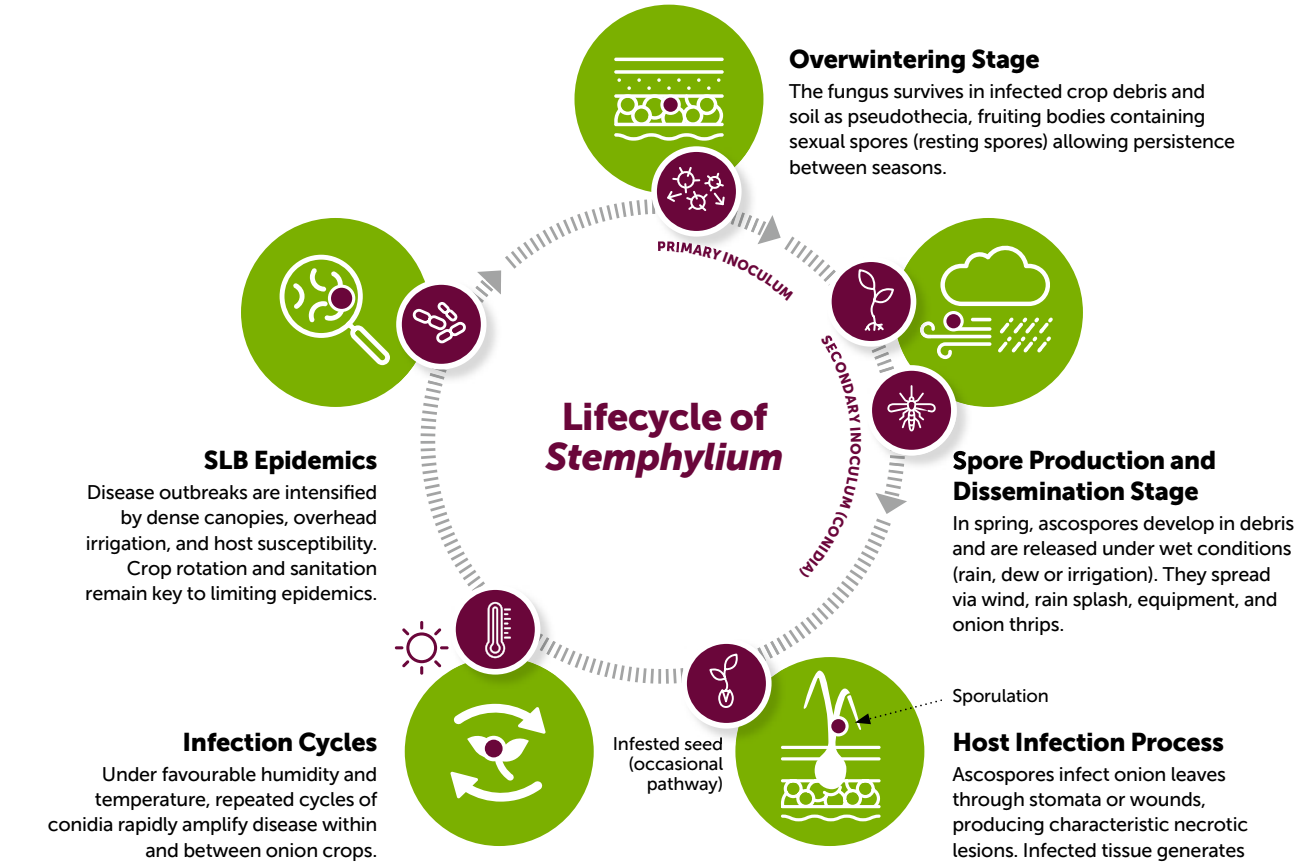
Leaf lesions

- Severe cases (>30%) leaf dieback occurs
- Plants die prematurely and do not lodge normally.

Images © Gossen, B *et al.,* 2021.

Stemphylium leaf blight in onions

Lifecycle of *Stemphylium*



Adapted from Hay *et al.* 2022[1]. Image ©AUSVEG

Other host crops

Allium crops
Brassica crops
Spinach & leafy greens
Some cucurbits
Weeds & non-crop hosts

In subtropical climates, there is no true 'overwintering' phase, and the disease can continue to proliferate on crop residues without interruption.

- The fungus 'overwinters' (survives) in infected crop residues, culled onions, and onion debris left on the soil surface. The fungus remains viable in the soil for at least one year.
- Spores (ascospores and conidia) are released from this debris in the following season under favourable conditions (temperatures between 18°C and 25°C and humidity >95% and leaf wetness > 4hrs).
- The disease may be brought in via infected seed.
- Onion thrips may distribute the disease; they create entry wounds for the fungus.
- Crop rotation away from *Allium* species for 3–4 years can reduce soil inoculum levels.

[1] Adapted from Hay, F. et al. 2022. Stemphylium Leaf Blight of Onion. The Plant Health Instructor Volume: 22, 2022, Article Type: Plant Disease Profiles. Accessed via: apsnet.org/edcenter/pdlessons/Pages/Stemphylium-leaf-blight-Onion.aspx.

Stemphylium leaf blight in onions

Management of Stemphylium

Before planting

Crop rotation

Method

Rotate onions with non-host crops (avoid other Allium crops) for at least 2-3 years to reduce pathogen build-up.

Resistant varieties

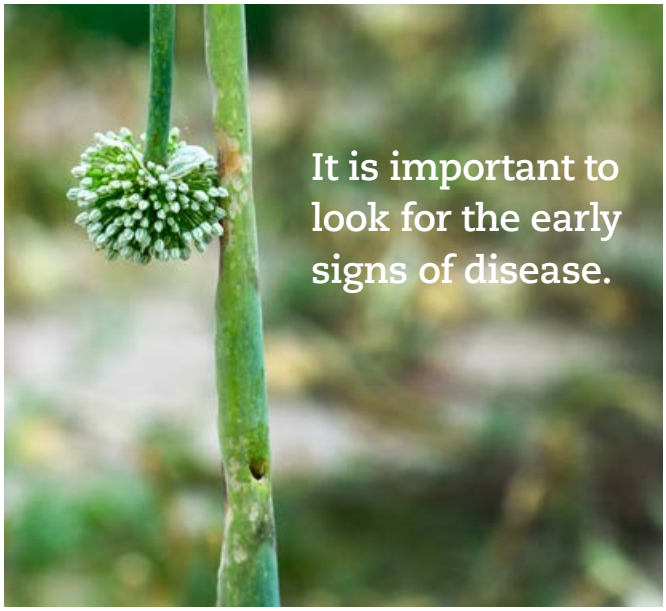
Method

Some onion varieties offer moderate resistance to Stemphylium leaf blight. Consider consulting seed suppliers for suitable resistant options.

Farm hygiene

Method

Remove infected plant debris after harvest to avoid pathogen buildup.



In crop

Monitor & scout regularly

Method

Regularly scout and monitor weather conditions that favour disease (warm temperatures & high humidity) to anticipate outbreaks and apply control measures.

Irrigation management and drainage

Method

Choose well-drained paddocks, irrigate early in the day to allow leaves to dry quickly and avoid overhead irrigation at night, if possible.

Nutrition management

Method

Avoid excess nitrogen application, as this can promote lush, disease-susceptible growth. Ensure balanced nutrition management, particularly with potassium and calcium, to improve plant resilience.

Fungicides

Method

Utilise preventative fungicides or at first sign of symptoms, especially under favourable conditions (warm and humid). Rotate fungicides with different modes of action. Fungicides with active ingredients such as azoxystrobin, pyraclostrobin, and boscalid may be used, but label recommendations must be followed.

Factors affecting development and impact of Stemphylium

- Lack of rotation with non-host crops
- Poor nutritional balance (especially excess nitrogen)
- Overnight temps of 4–25°C / day temps of 18–25°C
- Poor irrigation management
- High humidity
- Farm hygiene

Australian onions

FROM PANTRY STAPLE TO FLAVOUR OBSESSION

BY HORT INNOVATION

Hort Innovation has implemented a bold marketing strategy to reposition Australian onions as not just an ingredient, but the starting point of every great meal.

Driving taste, versatility and health

By tapping into taste, versatility and health benefits, the campaign will get more onions onto more plates, more often.

The campaign unfolds in four distinct bursts, each leveraging a different aspect of Australian life.

- Celebrating meals and the moments we come together – from family dinners to long tables with friends, onions have always been a staple of the meals and moments that bring us together, with their taste and versatility.
- Reflecting on Australia's diverse food landscape, celebrating how onions are a unifying ingredient across cultures – whether in curries, sausage sizzles, pastas, tacos or barbecues.
- Celebrating the winter season. As temperatures drop, onions take centre stage in soups and stews, with messaging focused on their significant health benefits.
- Celebrating everyday cooking as a way to enjoy tasty healthy meals, reinforcing that healthy food can be both simple and flavourful.

The campaign is running from July 2025 to December 2026 and is built on a clear ambition: transform Australian onions from a pantry essential into a flavour obsession.

Despite their near-universal presence in households, only 27 percent of consumers say they actually love onions. The campaign finds its opportunity in that gap between usage and emotional connection.

Last year's messaging established onions as the base of great meals. This year, it's about dialling up the emotional connection. The strategy has evolved to lean into emotion, culture and lifestyle. The goal is not just to remind Australians to use onions, but to associate them with comfort and connection.

At its core, the objective is to stay top of mind for the 8.8 million light buyers who cook 3-4 times a week, driving awareness, consideration and more frequent use – making starting with an onion second nature.

A digital-first approach

The campaign's media strategy leans heavily into social platforms, where food inspiration thrives. Paid advertising on Meta has already reached 2.3 million, with performance tracking steadily toward key targets of the campaign. The next phase will introduce retargeting, serving fresh, tailored content to users who have already engaged and nudging them further down the path from awareness to action.

Meanwhile, TikTok is proving essential for reaching younger audiences, delivering an additional 554,000 in incremental reach to demographics unreachable on Meta. The campaign will continue to optimise targeting by using interest-based criteria and contextually appropriate content to expand reach. By aligning content with trending interests such as slow cooking, comfort food, and hearty winter recipes, the campaign ensures onions stay top of mind as the winter meal season approaches.

Influencers driving inspiration

Content creators have become central to reshaping perceptions. Rather than simply promoting onions, influencers are showcasing inventive, crave-worthy recipes that challenge expectations, positioning onions as a must-have ingredient for all everyday meals.

A standout example came from a Valentine's Day activation. While one content creator's onion tart attracted the most views (2.03 million), brand ambassador Mary Kalifatidis' unique onion recipe garnered significant interest with longer watch durations and considerably higher engagement. Her Creamy Baked Onions recipe garnered over 19,000 interactions and more than 5,000 saves. The takeaway is clear: audiences respond not just to visibility, but to originality and versatility.

Earned media

An earned media moment highlighted onions as a versatile staple in everyday cooking, generating an impressive 19.8 million opportunities to see across nine pieces of coverage. To bring this to life, Australian Onions brand ambassador Mary Kalifatidis appeared in a live cooking segment on *The Morning Show*, with additional coverage extending online through 7NEWS.com.au and *New Idea.*

Strategic paid integration ensures high-impact broadcast placements while reinforcing key messages, and extending the earned concept into social media channels helps drive further reach and engagement.

In-store impact

Beyond screens, the campaign meets consumers where decisions happen – in supermarkets. The in-store sampling program is designed to convert inspiration into purchase, offering shoppers a tangible reminder of onions' potential. In showcasing the taste and versatility of onions, shoppers are reminded how they elevate everyday meals.

Early results are promising. Between late January and March, 130 sampling sessions generated nearly 15,000 engagements and distributed over 11,000 samples. Recipes are tailored to the season, highlighting both red and brown onion varieties and encouraging year-round usage.

During this period, estimated sales included 5,485 loose onions and 1,384 1kg bags. Shopper interactions proved highly effective, with 76 percent engaging in sampling and 61 percent of those going on to make a purchase. These figures are indicative, based on estimates collected through field staff's manual counts.

The winter push

As the campaign moves into its winter phase, the messaging sharpens around health and comfort. Onions are positioned as a simple way to boost immunity with natural vitamin C and elevate cold-weather cooking, backed by the surprising fact that a medium onion counts as two servings of vegetables.

But the tone remains sensory and inviting: the smell of onions cooking becomes a signal of something nourishing and delicious on the way. Australian onions are good for your body and great for your taste buds.

A new role for an old favourite

What makes this campaign notable isn't just its scale, but its reframing of a familiar ingredient.

By combining emotional storytelling, digital precision, and real-world activation, the campaign is attempting to make Australians rethink an everyday habit.

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

Hort Innovation ONION FUND

VEGETABLES
POTATOES
ONIONS

Improving soil health and nutrition

IN MURRAY BRIDGE WITH JOEL WILLIAMS

BY MAYA WALLENS

In April 2026, it was a privilege to host soil health educator Joel Williams from Integrated Soils at Forster Hill Farm in Nildottie. Joel's work focuses on practical, systems-based approaches to soil health – linking plant nutrition, soil biology, and mineral management to improve farm resilience and productivity.

Joel's ability to translate complex soil science into applied strategies attracted growers, researchers, advisors, and industry representatives to this workshop to explore the key constraints and opportunities of the region.

The Murray Bridge area of South Australia is characterised by highly leachable and sandy soils with inherently low organic matter and carbon levels. In combination with the effects of by salinity, sodicity, and climatic variability, the challenges around nutrient retention, soil structure, and biological function are drastically compounded. As a result, many farming systems in the region face declining soil resilience, inefficient input use, and limited capacity for water and nutrient holding.

Rebuilding soil function from the roots up

A central theme of Joel's discussion was the importance of rebuilding soil function through biology-driven processes, particularly those associated with living root systems. Rather than relying solely on surface inputs, emphasis was placed on 'feeding the soil via the plant' and maximising the role of active root growth.

Living roots are one of the most powerful drivers of soil organic matter formation. Through rhizodeposition – the release of sugars, amino acids, and other organic compounds – plants actively feed soil microbes in the rhizosphere. This stimulates microbial activity, aggregation, and the formation of stable soil structure around roots.

The 'dreadlock' appearance of roots often observed in healthy systems reflects this biological activity, where microbial glues and plant exudates bind soil particles together and adhere them to plant root systems.

Importantly, root-derived carbon is significantly more efficient at building stable soil organic matter compared to surface residue alone. While above-ground biomass adds to residue breakdown and nutrient cycling, root inputs directly interact with soil microbes in a protected environment, making them far more likely to contribute to longer-term carbon stabilisation. Greater root mass ultimately increases the amount of carbon delivered below ground, while deeper rooting improves access to water and nutrients across the full soil profile.

Building carbon retention in sandy soils

In low-clay, sandy systems such as those in the Murray Bridge region, one of the major limitations to carbon storage is the lack of stable mineral surfaces for organic matter to bind to. Without these surfaces, carbon inputs are more prone to rapid decomposition and loss.

Joel highlighted the importance of increasing soil reactive surface area through amendments such as clay additions, composts, and biochar. These materials provide sites for organic compounds to attach to, forming organo-mineral complexes that protect carbon from quickly breaking down.

Biochar, in particular, can contribute long-term structural stability due to its porous nature and high surface area, while clay additions can significantly improve cation exchange capacity and nutrient retention in sandy profiles. When combined with active root systems, these amendments help create a more stable framework for carbon storage and nutrient cycling.

Key takeaways from the workshop

The workshop, held across both shed-based discussion and in-field observation, provided a practical and engaging opportunity for knowledge sharing. Participants took away a range of applied insights, including strategies for reducing crop stress through the inclusion of amino acids in spray programs, and the importance of the form of nitrogen in influencing plant energy allocation and efficiency.

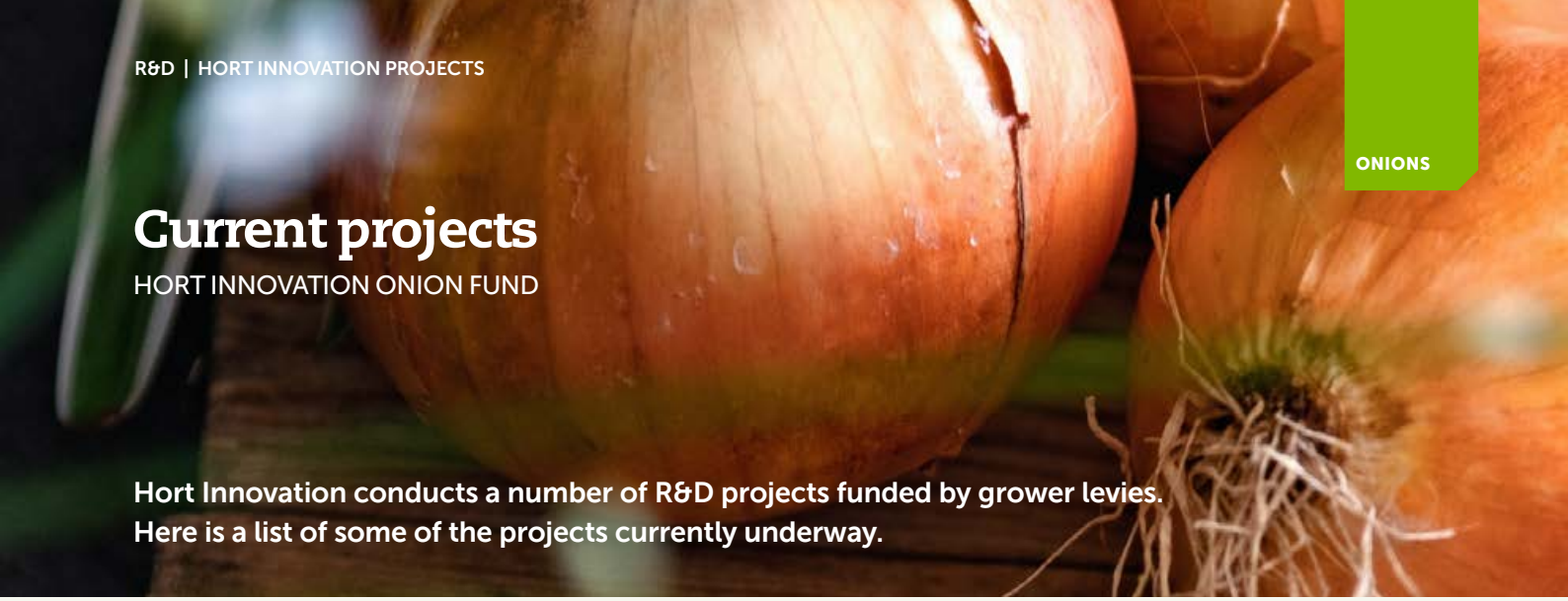
There was also strong interest in on-farm strategies to build soil organic matter through increased root biomass, both in density and depth, as well as the potential for compost production systems that reduce input costs while improving biological function.

Overall, the session reinforced a central message: improving soil health is not achieved through a single input or practice, but through aligning plant growth, microbial activity, and soil structure into a connected, functioning system. The strong engagement and discussion throughout the afternoon reflected a growing appetite for these integrated approaches across the region.

We extend a big thank you to the Haby Family for hosting us at their farm, to the contributions of AUSVEG SA and *PotatoLink* for making the event possible, and to Joel for sharing his time and knowledge with us all.

The *Accelerating the adoption of best management practices for the Australian onion industry* project is funded by Hort Innovation using the onion industry research and development levy and contributions from the Australian Government.
Project Number: VN21000

Hort Innovation ONION FUND



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.

VOM Multi-Industry Export Program Vegetables, Onions, Melons

MT21009

DELIVERY PARTNER: **AUSVEG**

This investment is tasked with providing international trade development support for Australian vegetable, onion and melon growers. The project is working to develop export markets, maintain viable export pathways, develop industry capability and achieve sustained export growth. This cross-industry collaboration is a first for the horticulture sector and will leverage the progress made under the *Vegetable industry export program* (VG16061).

The program focuses on building export capability and capacity in the vegetable, onion and melon industries, collating international market information for decision making as well as business development functions to uplift the ability of exporting growers to service a wider range of markets and channels, and expand international trade opportunities in the future.

VO Quantium Scan tracking FY25/26: Veg and Onion

MT25003

DELIVERY PARTNER: **QUANTIUM**

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 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.

O Future proofing onion health: management of rot diseases of onions

VN24002

DELIVERY PARTNER: **UNIVERSITY OF ADELAIDE**

This project aims to support Australian onion growers in reducing losses caused by Fusarium basal rot (FBR), a major soilborne disease that can result in crop losses exceeding 30 percent. Delivered by the South Australian Research and Development Institute (SARDI), the initiative will focus on developing cost-effective, integrated disease management (IDM) strategies. These will include field trials on crop rotation, soil and moisture management, plant nutrition, and the use of biological, biostimulant and chemical controls, building on proven practices from previous research.

The project will primarily conduct on-farm trials to ensure the strategies are practical and adoptable by growers. At its conclusion, an updated IDM strategy will be delivered as a best practice guide, equipping growers with tools to improve disease control, increase marketable yields, and enhance the economic and environmental sustainability of onion production in Australia.

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

MT25001

DELIVERY PARTNER: **AUSVEG**

This project will set up a baseline of the issue by surveying and identifying the geographic spread of Group 1 herbicide resistance in ryegrass (including collating existing data on herbicide resistance from previous surveys) and the impact on yield and harvestability. It will determine resistance levels in different ryegrass populations across farming regions and benchmark current management practices.

This project will manage whole of rotation demonstration sites and farmer directed peer learning, working with industry to select and manage demonstration sites in key onion and carrot growing regions. It will support growers and researchers to experiment with management methods and learn together. It will develop, through demonstration and peer learning, superior management strategies throughout successive rotation crops.

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

Low-carb potatoes, high-tech solutions and the Pye Group's recipe of success

What started as a leap of faith from New Zealand to South Australia's Mallee region 35 years ago to grow the humble spud has transformed the Pye family into one of Australia's biggest names in horticulture.

Sprouting from 600 leased acres at Parilla, east of Adelaide in 1990, the Pye Group now spans 55,000 hectares, employs about 500 people, and includes a state-of-the-art $45m potato packing facility. Their produce, including the groundbreaking Spud Lite low-carb variety, is supplied to all three major supermarkets and to parts of Southeast Asia.

For third-generation farmer and General Manager, Renee Pye, the essence behind it all is "think big and keep it simple".

"I love growing produce because it's something that we've done as a family for generations," Renee said.

"We're always keen to adopt new technology because it helps us run more efficiently and understand more as a farming operation."

Tradition meets innovation

Another Pye family tradition they brought from New Zealand was the use of John Deere machinery, which for the past 35 years has been supplied by the nearby dealership at Pinnaroo.

A fleet of around 120 John Deere machines includes 30 of the versatile 6 Series tractors, equipped with precision agriculture technology. Innovations like AutoTrac™, JDLink™ and John Deere Operations Center™ have become an integral part of daily operations.

"Ops Center has been great for our business," Renee said.

"I remember as a kid when the tractors were all manual, but now there are screens that deliver so much excellent information and data, from planting rates or how many hectares we've covered, to the location of any tractor on the farms.

"It's reassuring to have Emmetts close by so that if there is a breakdown at a crucial time, we've got parts in stock. But the fact that we have John Deere tractors from all eras still working around the farm shows their reliability."

Emmetts' integrated solution training and product specialist, Mark Trowbridge, said the connectivity of John Deere machines is a major advantage for the Pye Group's highly intensive vegetable business.

"They have a lot of integrated machines, including the 6 Series tractors, and they've put JDLink into other machines to feed back into Ops Center so that they can get live data at all times, with updates every five seconds," Mark said.

"Management can keep track of any of those machines on a phone, tablet or computer, where they are and what they're doing, so it's a huge advantage when they're running an operation around the clock, seven days a week.

"The Pyes have always been innovators. They're a great family to work with, always pushing the boundaries and definitely leaders in the technology field, and we're happy to help them achieve their end goal."

For Martin de Winnaar, the person responsible for all ag management solutions at Parilla, technology is integral to the smooth running of the farms across two states.

"We have a lot of seasonal workers, so we do a lot of troubleshooting using Remote Display Access, which enables me to help them out remotely, because I can't be at all places at once," Martin said.

"I'm always connected. If I'm not on my phone, I'm in the office. If I'm not in the office, I'll be in my ute, so I always have access within two minutes to a screen if I need to help them.

"Using paddock-deployed traceability has also given us years of data through Ops Center, from planting dates, varieties, harvest dates, spray chemicals, fertiliser application and cultivation. Everything is recorded and we can use a lot of those records for audit purposes as well."

With Renee's brother Lachlan also involved in the growing and processing side of the business, the Pye family are likely to remain a familiar feature in the Parilla landscape.

"I have two young boys and when they grow up, it would be great if they wanted to come back to the farm," Renee said.

"I'm sure they'll probably venture out and do some different things and then come back to the farm like my brother and I did."

Above L-R. Third-generation farmer and General Manager, Renee Pye, said they are always keen to adopt new technology. The Pye Group run a fleet of around 120 John Deere machines, including 30 versatile 6 Series tractors.

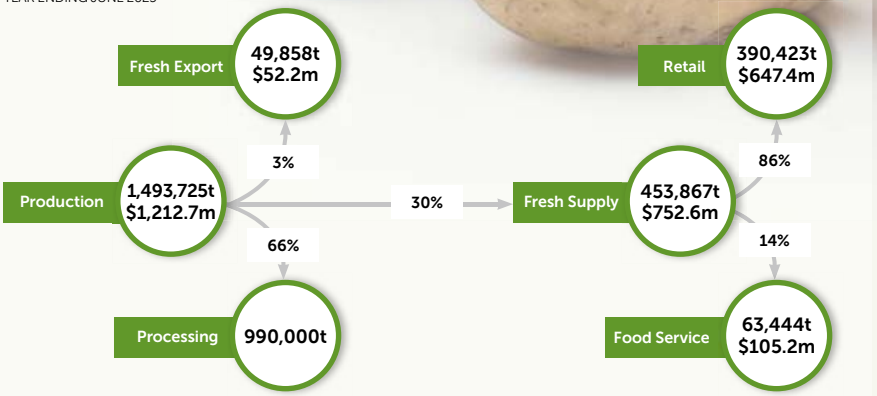
FIND OUT MORE
For more information visit deere.com.au

COMMODITY PROFILE

Potato

Fresh potato supply chain

YEAR ENDING JUNE 2025



SCAN TO VIEW

Australian Horticulture Statistics Handbook 2024/25 was released in February 2026, unpacking the potato sector performance during the financial year of 2024/25.

Fresh potato penetrated 88.9% of households

- Fresh potato was most likely to be purchased by households of senior couples (97.5 percent) or bustling families (93.4 percent) and was least popular with young transitional households (74.7 percent).

Production volume decreased by two percent in 2024/25 compared to 2023/24, though the production value increased by 10 percent.

Export increased by eight percent

in 2024/25 compared to 2023/24.

Source: NielsenIQ Homescan for the 52 weeks ending 22/02/2026 for the Australian market. *Australian Horticulture Statistics Handbook 2024/25.*

The *Horticulture Statistics handbook 2024-2027* is funded by Hort Innovation using multi-industry research and development levies and funds from the Australian Government. **Project Number: MT24019**

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

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INTERNATIONAL TRADE

JANUARY TO DECEMBER 2025

Australian potato performance overview

EXPORT OVERVIEW

From January to December 2025, total potato export value increased by two percent to $49.5 million, while total export volume decreased by two percent to 45,975 tonnes.

South Korea, Taiwan, the Philippines, Indonesia and Singapore were the most popular markets for fresh potato exports over the calendar year. South Korea remained the largest destination, despite a 21 percent decline in export value from AUD$18.7 million to AUD$14.8 million, and an 18 percent decrease in export volume from 24,338 tonnes to 19,587 tonnes.

There was strong growth in the Taiwanese market, with export value increasing by 38 percent from AUD$5 million to nearly AUD$7 million, and export volume rising by 44 percent from 3,341 tonnes to 4,795 tonnes. The Philippines recorded an eight percent decline in export value, from AUD$7.4 million to AUD$6.8 million, alongside a five percent decrease in export volume to 7,248 tonnes.

Indonesia saw significant growth, with export value increasing by 151 percent from AUD$1.8 million to AUD$4.6 million, reflecting a 167 percent rise in export volume from 1,970 tonnes to 5,256 tonnes (*refer to Table 1*).

Change in potato exports by destination

TABLE 1. January to December 2025

Source: Global Trade Atlas 2026

TRADE PARTNER	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total fresh potato exports	**$48,456,809**	**46,991**	**$49,512,013**	**45,975**	**2%**	**-2%**
South Korea	$18,707,357	24,338	$14,865,662	19,857	-21%	-18%
Philippines	$5,031,926	3,341	$6,935,045	4,795	38%	44%
Taiwan	$7,444,536	7,638	$6,826,463	7,248	-8%	-5%
Indonesia	$1,840,571	1,971	$4,624,203	5,256	151%	167%
Singapore	$4,024,404	2,384	$4,037,361	2,117	0%	-11%
United Arab Emirates	$3,126,264	2,161	$3,623,338	2,095	16%	-3%
Malaysia	$2,881,757	1,778	$3,203,144	1,705	11%	-4%
Hong Kong	$2,648,096	1,145	$2,788,159	1,030	5%	-10%
Thailand	$1,095,020	1,115	$716,024	968	-35%	-13%
Fiji	$225,925	165	$603,106	285	167%	73%

IMPORT OVERVIEW

From January to December 2025, the overall frozen potato imports including French fries into Australia has declined by two percent in import value and volume. Import value has declined from AUD$288 million to AUD$281 million, and export volume has decreased from 133,442 tonnes to 131,053 tonnes.

Belgium, Netherlands, New Zealand, Germany and United States were the top five origin markets for frozen potato imports. Total potato imports from Belgium and Netherlands have dropped, whereas frozen imports from New Zealand and Germany have increased.

Belgium's frozen potato import value has decreased by nine percent, from AUD$139 million to AUD$126 million, with a decline of 12 percent in import volume, from 59,649 tonnes to 52,233 tonnes. Netherlands has experienced a decrease of 19 percent in import value from AUD$77 million to AUD$63 million and import volume has dropped by 18 percent from 39,106 tonnes to 32,141 tonnes.

Frozen potato imports from New Zealand have increased by 27 percent from AUD$22.8 million to AUD$29 million and import volume has increased by 21 percent from 15,624 tonnes to 18,890 tonnes. Germany has recorded an increase in import value by 49 percent, from AUD$13.3 million to AUD$19.9 million and import volume has increased by 43 percent from 5,653 tonnes to 8,102 tonnes.

Change in frozen potato imports by destination

TABLE 2. January to December 2025

Source: Global Trade Atlas 2026

TRADE PARTNER	2024		2025		%↑ 2024–2025	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total frozen potato imports	**$288,025,897**	**133,442**	**$281,533,855**	**131,053**	**-2%**	**-2%**
Belgium	$139,350,362	59,649	$126,676,947	52,233	-9%	-12%
Netherlands	$76,993,961	39,106	$62,643,262	32,141	-19%	-18%
New Zealand	$22,833,142	15,624	$28,974,048	18,890	27%	21%
Germany	$13,352,540	5,653	$19,938,412	8,102	49%	43%
United States	$20,609,917	8,136	$18,950,266	7,475	-8%	-8%
India	$2,594,730	1,031	$8,906,293	4,202	243%	308%
China	$1,515,455	617	$6,114,305	2,937	303%	376%
South Africa	$2,247,791	667	$2,933,996	2,905	31%	336%
Vietnam	$1,295,657	171	$1,506,965	391	16%	129%
Canada	$2,370,744	1,183	$1,297,701	687	-45%	-42%

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

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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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 Project coordinator: Integrated disease management for the Australian potato industry

PT25001

DELIVERY PARTNER: **RMCG**

This project will provide strategic coordination for R&D initiatives under PT23002, ensuring a unified approach to integrated disease management for the Australian potato industry. By reducing duplication and fostering collaboration among researchers, consultants, and industry partners, the project aims to deliver more efficient and impactful outcomes.

For growers, this means research will be better aligned with industry priorities, communicated effectively, and translated into practical solutions. Key outputs include coordinated extension materials, risk management frameworks, and monitoring and evaluation systems to maximise return on levy investment. Led by RMCG, the project will strengthen relationships and drive adoption of integrated disease management strategies across the sector.

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

ISSUE 20

POTATO LINK

supplement

SPRAY TECHNOLOGY

DIAGNOSING STORAGE PROBLEMS

GROWER CASE STUDY

POTATO STORAGE

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

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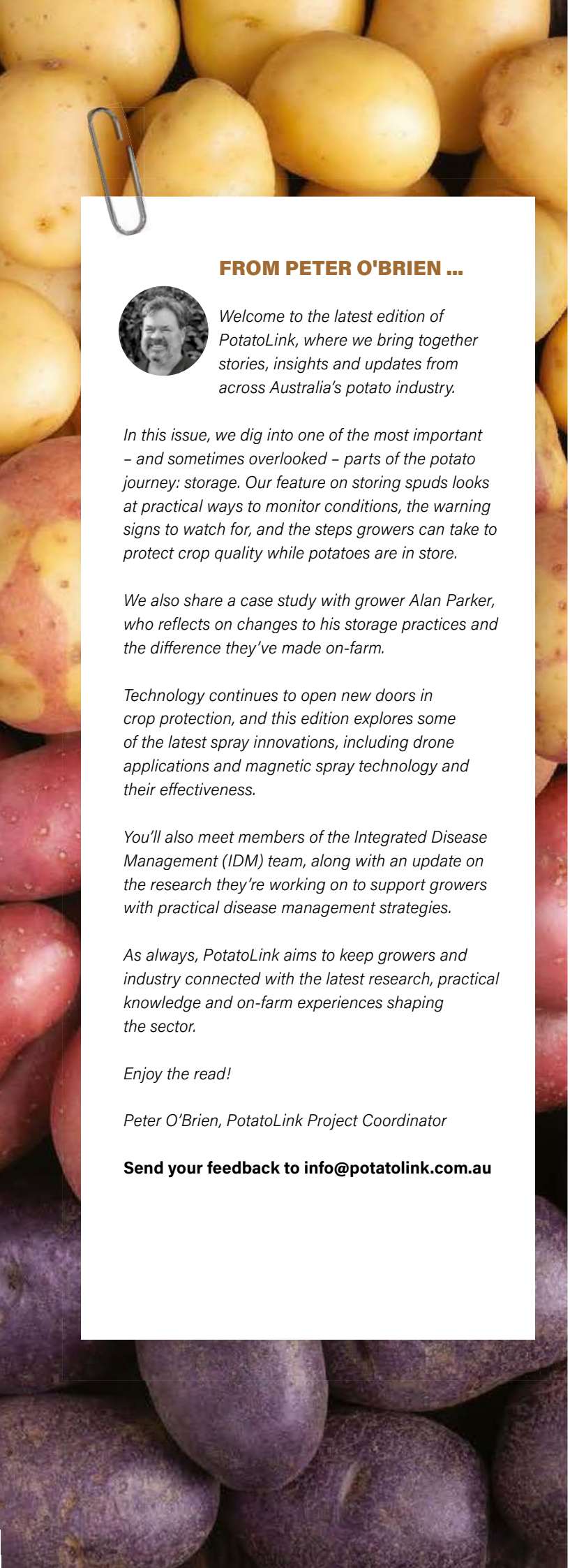

FROM PETER O'BRIEN ...

Welcome to the latest edition of PotatoLink, where we bring together stories, insights and updates from across Australia's potato industry.

In this issue, we dig into one of the most important – and sometimes overlooked – parts of the potato journey: storage. Our feature on storing spuds looks at practical ways to monitor conditions, the warning signs to watch for, and the steps growers can take to protect crop quality while potatoes are in store.

We also share a case study with grower Alan Parker, who reflects on changes to his storage practices and the difference they've made on-farm.

Technology continues to open new doors in crop protection, and this edition explores some of the latest spray innovations, including drone applications and magnetic spray technology and their effectiveness.

You'll also meet members of the Integrated Disease Management (IDM) team, along with an update on the research they're working on to support growers with practical disease management strategies.

As always, PotatoLink aims to keep growers and industry connected with the latest research, practical knowledge and on-farm experiences shaping the sector.

Enjoy the read!

Peter O'Brien, PotatoLink Project Coordinator

Send your feedback to info@potatolink.com.au

IN THIS SUPPLEMENT

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GROWER CASE STUDY: ALAN PARKER ON POTATO STORAGE

Alan Parker runs a family potato enterprise near Manjimup in Western Australia, a well-known potato-growing region with reliable rainfall, mild conditions, and strong links to the state's processing and seed markets.

PotatoLink's Steph Tabone spoke with Alan Parker about how the farm's management practices have evolved in recent years.

Alan Parker may lead the farming operations, but his property is very much a family-run business. Producing around 2,000 tonnes of potatoes each season from their 145 acres, Alan is supported by his wife Jenny, who manages much of the administration and finances, as well as their two sons and Alan's brother, all of whom are also actively involved in the farm.

Production is split between seed (60%) and processing potatoes (40%). During the busy harvest period, the team expands with casual backpackers who assist on the packing and harvest lines. The family completes the harvest themselves, which allows them to maintain close control over crop quality and handling.

Alan is deeply committed to producing high-quality potatoes for his customers and is constantly looking for ways to improve his operations. After identifying opportunities to refine his seed storage and handling practices, attending a PotatoLink event proved to be a turning point, prompting him to translate ideas into action.

Alan and his team were inspired to review their existing systems, trial new approaches, and implement improved practices across their operation. The event delivered a strong foundation in the principles of physiological age and storage required to grow high-quality potatoes, along with the opportunity to observe a best practice storage system firsthand and connect with leading technical experts.

Armed with these practical insights, Alan was able to pinpoint areas for improvement, refine his approach and strengthen on-farm decision-making.

FIRST, A BIT OF BACKGROUND

Production focus

Seed production accounts for approximately 1,200 tonnes of Alan's production each year, including saved seed of early generations. Alan specialises in early-generation seed (G1-G3) and currently grows 16 varieties.

Seed crops run on a 75-day production cycle, with crop desiccation timed so as to achieve the correct tuber size for the seed market.

There is a strong focus on growing seed with specific sizing in mind. The target size range is 35-65 mm, which are sold to customers as whole tubers. Tubers between 65-75 mm are kept and cut for the farm's own planting requirements. Tubers larger than 75 mm are generally unsuitable for cutting.

About 30% of the seed is machine cut, primarily from G2-G4 generations, while earlier generations are always planted whole.

The remaining 800 tonnes of Alan's production are processing potatoes for French fries. These crops have a longer 120-day growing cycle and include varieties such as Bliss, Mac Russet, and Ranger Russet.

Processing potatoes are supplied to WA Chip, an independent processing facility located in Manjimup. The company produces around 14,000 tonnes of product per year and supplies the Western Australian market only, with no current export capability.

Crop rotations

Crop rotation is an important part of the farm's management strategy.

Seed potato paddocks follow a five-year rotation, while processing potatoes are grown on a three-year rotation. Between potato crops, Alan establishes fodder and pasture crops such as oats, clover and ryegrass. These help build soil health while also providing additional value.

Pastures are reseeded every three years with perennial grasses. The farm also provides hay and silage services, adding another income stream while maintaining productive rotations.

Product markets and supply chain

Alan's seed potatoes are marketed across several Australian states, supplying growers in Victoria, South Australia, and New South Wales.

Victoria has a July-August planting window, so timing works well. Queensland is more difficult to service because dormancy means seed can arrive either too young or too old for planting.

Mixed species pasture of white clover, crimson clover and ryegrass.

Seed is sold through potato brokers and agencies, including Elders and other specialists, who help manage both Alan's seed intake and the supply requirements of commercial growers.

To improve market certainty, the business is working toward five-year contracts that guarantee sales of Alan's seed. Some varieties are also protected by Plant Breeding Rights (PBR). These operate under a closed-loop system, where growers receive a guaranteed price and market pathway.

Alan Parker and Otto with the mouldboard plough

Young potato crop under irrigation on Alan's farm.

OUR Q&A WITH ALAN PARKER

What is the overall challenge or opportunity being addressed? Why is this important?

Before we made any changes, seed storage looked quite different to how we do things now.

For early generation seed, we were using a commercial cool store in town. The main problem was we had no control over the conditions – our seed was stored alongside all sorts of other commercial and seed products, so nothing was managed specifically for our needs. We were regularly seeing sprouting in storage, which I put down to poor ventilation and temperature fluctuations during storage. We were basically relying on a system that wasn't designed with early generation seed quality in mind.

For later generation seed – the stuff we sell to commercial growers – it was a different setup but still had its own issues. We were harvesting around mid-March, which in Manjimup can still be quite hot. After harvest, the potatoes would sit in the shed at ambient temperature for about 28 days before grading and then go straight out to customers.
The problem was the heat. Outside temperatures in March and April can hit around 32°C. Under those conditions the seed was physiologically ageing too quickly, so by the time it reached our customers it was often older than ideal.

It's also worth mentioning that processing potatoes aren't part of this change in approach – once those are harvested they go straight to the local processor. Storage has only ever been a challenge on the seed side of the business.

What was the catalyst to change practice?

I'd already been thinking about improving our seed storage for the last five years or so, but things really started to come together after a PotatoLink event held in Manjimup in May 2024. The event brought together a number of speakers and industry people, and it really got me thinking more seriously about how we were managing storage on our farm.

One of the presentations was Dr Jenny Ekman (AHR), who spoke about best practice cool store management and the importance of maintaining the right conditions to preserve seed quality and viability.

The day also included presentations from David Tooke on seed quality and what growers should be looking for when purchasing seed, Wossen Mengesha on the PREDICTA Pt tool for disease prediction and management, and Simon Moltoni on potato biosecurity and protecting crops from pests and diseases.
After the talks, Alex Holding led a tour through the Coldahold cool store facility in Manjimup, which gave everyone a practical look at how a commercial operation manages large-scale storage.

Hearing about the principles behind temperature control, ventilation and monitoring was a light bulb moment for me. It made me step back and ask myself, how thorough and accurate am I actually being with our storage practices?

The event also helped bring a lot of storage issues to the surface. In conversations with other growers on the day, it became clear that many people were facing similar challenges.

Potato planting

Alan's seed potatoes

Drone used for crop scouting.

Some growers mentioned that they "shut the door to the storage room and hope for the best" when opening it months later. There were also stories of product breaking down due to lack of oxygen, or poor airflow creating hot spots where roots and sprouts formed a tangled web that made the potatoes unusable.

For me, reconnecting with Alex Holding from Coldahold was really valuable. I had met Alex previously but hadn't been in touch with him for some time. After the event we started talking more regularly, and he has been a big help as I've looked at transitioning to storing and self-managing our early generation seed potatoes on-farm.

Alex has helped reassure me about some of the things we were already doing well, but he's also shared key principles and practical considerations for achieving good storage outcomes. I've taken a lot of inspiration from the way Coldahold operates and have been applying those learnings to the way we manage our own storage.

Coldahold itself has grown rapidly, with Alex now operating a 3,000 tonne storage facility in Manjimup, which shows just how important good storage is becoming for the industry.

And the new storage practices?

Over the past few years, I've made some significant changes to how we handle and store seed – both early generation seed for multiplication and later generation seed sold to commercial growers. A lot of it comes down to taking more control of the storage process ourselves, and being much more deliberate about timing, temperature, and monitoring.

For early generation seed, the biggest shift was moving away from the commercial cool store in town. I now lease a cool store from a local onion grower, which means I can control the conditions and adjust as needed.
It all starts straight after harvest. The potatoes go through about seven days of ambient curing to set the skin and improve elasticity – that helps to prevent shrinkage in storage as well as prevent nicks and 'sandpaper skin', that can let disease in. After that, they're graded and sized, and into the cool store within about 21 days of harvest. Making sure they're completely dry before going in is critical.

Temperature management is something I'm much more focused on now. I start the cool store two days before loading and bring it down to 12°C, then load around 150 tonnes and hold for two weeks so the pulp temperature, usually 15–16°C at harvest, can come down gradually.

Once that first load stabilises, I add the second 150 tonnes and close the store. From there, I bring it down to around 6°C within three days, then slowly reduce to about 3-3.5°C over the following couple of weeks.

Monitoring is part of the weekly routine. I use room thermometers, tuber probes and thermostats, with the fan cycling on at around 4°C and off at 2.5°C.

I'm aiming for 96-98% humidity. To monitor humidity I actually just keep a bowl of water on the floor – if the level drops too quickly, I know humidity is falling and I'll wet the floor to add moisture and prevent the potatoes shrinking.

Airflow matters too, so I leave 150mm gaps between bins and keep them freestanding so air circulates evenly.

I also open the door for a couple of hours once a week, just to let fresh oxygen in and carbon dioxide out. I usually do this early morning or evening to minimise temperature fluctuations in the store.

The seed is typically stored four to six months. I check regularly for any signs of disease or rot, and if I find a rotten tuber I pull those bins immediately. One bad potato can affect several tonnes if you leave it.

For later generation seed sold to commercial growers, the biggest change has actually been adjusting our crop timing. Instead of harvesting in mid-March when it's still hot, we now plant later so harvest falls in

May, when ambient temperatures are around 12°C rather than 30°C-plus. That alone makes a big difference to physiological ageing.

I also spend more time talking with the growers I supply seed to about when they need their seed and what size profile they want, then work backwards from there to plan timing. Those relationships and conversations are especially important if any issues come up during the season.

For seed going to interstate growers, around 250 tonnes is stored at the Coldahold facility in Manjimup on behalf of the commercial growers. That's coordinated through our broker to best manage physiological age, transport logistics, and timing to match the needs of their operations. The seed is repacked from bins to bulk bags just before shipping in July.

Can you share any results and benefits?

The changes to storage and crop timing have had a pretty noticeable impact. One of the first things we saw was earlier emergence – we used to see crops coming up at 25 - 28 days after planting, and now it's typically 16 - 21 days.

That quicker start translates into stronger establishment and better yields. We're currently averaging around 52 tonnes per hectare, an improvement from our previous yields of 46 tonnes per hectare.

Uniformity has been another big one. Previously, emergence across a paddock could be spread over seven to 10 days – now most crops are up within three to four days. That flows through to harvest, where we're seeing a much more consistent tuber size distribution.

Our target size range is 35-65mm. Before, we were getting about 75% of the crop in that range; now it's around 85%, and some varieties are hitting 90%. That obviously has a direct impact on how much saleable product comes out of each crop. It's also made grading more efficient – we've gone from around five tonnes per hour to closer to seven, simply because the product is more consistent.
Overall quality has improved a lot too. The seed is cleaner, there's no sprouting or shrivelling, and we have much better control over physiological age.

From a business perspective, it all ads up too. Earlier emergence, more product in the target grade, less time and labour on grading, lower disease risk – it flows through to a stronger financial return.

We're hearing similar feedback from the commercial growers buying our later generation seed. Growers planting our seed are seeing that 16-21 day emergence window rather than closer to four weeks, as well as more uniform crops. As a result, demand for our seed has grown strongly.

We're now in a position where we can choose who we supply, rather than just taking whatever orders come in – in many cases we're more of a price maker than a price taker. We recently had an inquiry for 1,000 tonnes that we simply couldn't fulfil with our current capacity.

Financial motivation has definitely been a driver for our change in approach, but whenever we trial something new, we always do it at a small scale first, refine the process and prove the benefits before expanding.

Potato planting

A big part of building demand has been how we approach customer relationships. I put a lot of effort into maintaining and strengthening relationships with the growers who buy our seed. Each year I travel to the east coast to meet our customers face-to-face. Some of those relationships now go back nine years or more. For me, communication is the key. If something goes wrong on their end, they tell me. If we have an issue here, we let them know. That openness is what makes it work.

Looking towards the future

One of the ongoing challenges in the region is the ageing grower demographic. A lot of potato growers here have been in the industry a long time, and that can sometimes make change slower to adopt. That said, I'm starting to see a shift – more younger growers are coming into the industry and taking over family farms, which is encouraging.

Over the past couple of years, I've had about five younger growers approach me wanting to know more about how we manage our seed production and storage. I'm always happy to share what we've learned. We're not claiming to have all the answers, but if our experiences help someone else avoid some of the problems we've faced, that's a good outcome for the industry.

Succession is something we're also actively thinking about within our own business. My two sons are already involved on the farm, and I've started bringing them along when I travel to the east coast to meet customers so they can start building those relationships themselves. The plan is a five-year transition of business management across to them.

My wife Jenny probably sums it up well – she's always said I have a real passion for growing potatoes, but just as importantly, a strong interest in continually improving the way we do things. That mindset is really what drives everything.

My philosophy has always been: "If you're not interested, you're not interesting."

For me that means staying curious, learning from others, and always looking for ways to do the job a little bit better.

EXPLORE FURTHER

Magazine article:
Harvest and storage

Magazine article:
Bruising and storage: Insights from Professor Nora Olsen

EXPLORE FURTHER

Magazine article:
Can you shock a seed?

Magazine article:
Seed potatoes

ACKNOWLEDGEMENT

Many thanks to Alan Parker for generously sharing his time, experience and knowledge. Alan's willingness to openly discuss his practices and the lessons learned along the way reflects his genuine commitment to the industry and to supporting others.

STORING SPUDS

Monitoring, warning signs, and storage solutions

WHY STORAGE MONITORING MATTERS

Maintaining quality becomes a critical task once potato tubers are harvested and placed in storage. Although the potatoes are no longer growing, they remain biologically active, continuing to release carbon dioxide (CO_2), moisture, and heat. If storage conditions are not carefully monitored, these natural processes can quickly affect tuber quality, increasing moisture loss, disease development, and market value.

BEFORE STORAGE: SETTING POTATOES UP FOR SUCCESS

The cold room is not a hospital. Conditions before potatoes enter the store therefore strongly influence storage outcomes. Damage, disease and un-suberised skins can all reduce storage life and increase the risk of losses during storage. Managing crop health in the field, careful harvest handling and proper curing are therefore essential steps in preparing potatoes for storage.

KEY FACTORS BEFORE STORAGE: A QUICK RECAP

Crop health

Disease pressure increases storage risk. Using certified seed and managing crop health in the field limit the introduction and spread of pathogens.

Plant nutrition and environmental conditions can also affect storability and quality. For example, 2024 research in the USA found an interaction between irrigation and storage temperature for processing potatoes. Non-irrigated (stressed?) potatoes were more likely to develop dark colours following low temperature storage. This is likely because stress alters tuber sucrose content and, therefore, the likelihood of undesirable sweetening during storage. Similarly, hot, dry conditions during production shorten dormancy, increasing the risk of sprouting.

Conversely, warm, wet soils are associated with periderm disorder syndrome (PDS), also known as 'pink eye'. The periderm is the protective outer skin of tubers. PDS affects periderm performance, compromising the tuber's protective barrier. Freshly dug potatoes with PDS can have pinkish discolouration, but these usually dry out and become less obvious over time. However, thickened skin patches and brown areas in the flesh can develop during storage.

Harvest

Careful handling during harvest is critical. Tubers are ideally harvested after skins have fully set, and

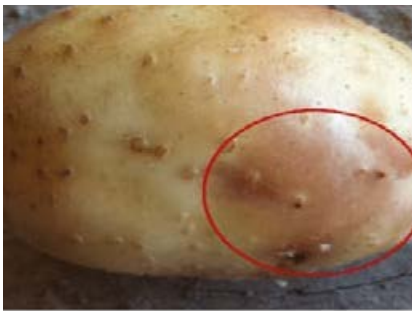

Figure 1. Periderm disorder syndrome is a physiological disorder, caused by wet conditions in the field, which develops further during storage. Image Y Wang and A Gevens, UW-Madison.

when soils are between 10 and 18°C with approximately 60 to 65% available moisture:

- Tubers bruise more easily at temperatures below 10°C.
- High temperatures increase disease risk and tuber respiration.
- Soils should be moist enough to carry the harvested potato and soil to the second conveyor, where the soil should then separate.
- Wet soils can cause lenticels to enlarge, increasing susceptibility to decay, as well as making harvest and curing more difficult.
- Dehydrated tubers from dry soils are soft, so easily bruised and can develop flat spots and even internal sprouting.

Most postharvest pathogens are weak, but wounds provide entry points for infection. Minimising mechanical damage and bruising, as well as removing symptomatic tubers during harvest and grading, limits the potential for inoculum to enter storage.

Curing

Curing, or wound healing, is a crucial step in preparing potatoes for storage. During curing, wounds heal through a process of suberisation. Suberin forms a protective layer on damaged tissue, reducing moisture loss and disease infection.

Curing typically involves temperatures of 10-15°C, high relative humidity (85-90%), and adequate airflow for five to 10 days. However, if freshly harvested potatoes are wet, ventilation should be increased and relative humidity reduced until the tubers are dry, to reduce the risk of storage rots.
Once potatoes enter storage, careful management of temperature, humidity, CO_2, and airflow becomes critical to maintaining quality.

DURING STORAGE

Stored potato tubers are alive. That means they respire, consuming oxygen and releasing CO_2, heat, and moisture. Tubers also respond to their environment, so can start converting starch to sugar (cold induced sweetening), sprouting, or even switching to anaerobic respiration if CO_2 levels go too high. If stressed or under pathogen attack, metabolic activity increases, along with production of ethylene gas. The storage environment therefore needs to vent CO_2 (and ethylene), maintain temperature and prevent condensation.

CO_2 levels

Typical CO_2 concentrations in potato stores are around 3,000 to 5,000 ppm, which is approximately 10x the concentration found in air (0.043%). The higher level of 5,000ppm can be tolerated so long as ethylene is not present; the combination of high CO_2 and ethylene is more damaging than either gas alone. While some storage managers take a conservative line, recommending that CO_2 levels should be kept below 1,500 ppm, this can be difficult to achieve in practice.

Rising CO_2 levels can indicate increasing tuber respiration and insufficient ventilation. Persistently elevated CO_2 can stress tubers, accelerate ageing and increase risk of quality loss, including off-odours, internal discolouration, and increased disease development.

Respiration rates are higher during the curing/wound-healing period after harvest, but generally stabilise during longer term storage. If temperatures go too low, however, chilling-sensitive varieties can become stressed, with the result that respiration rates increase (Figure 2).

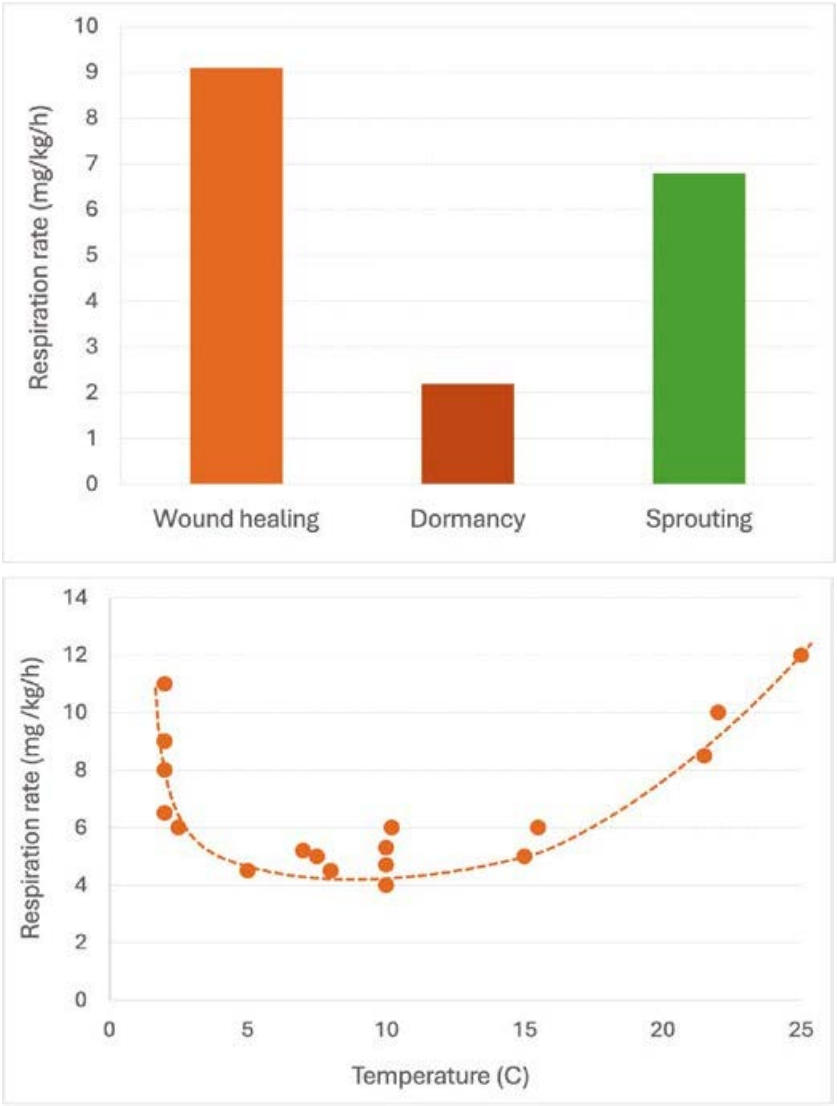

Figure 2. Indicative respiration rates of potatoes during different storage phases (a) and at a range of temperatures (b). Derived from W.G. Burton, 1978.

Temperature and relative humidity

The ideal storage temperature is very much a factor of variety. While processing potatoes are generally stored above 7°C to limit the risk of cold induced sweetening, fresh market tubers and seed potatoes can be colder.

Cooling is also a balance between cost and quality. Optimised temperature management becomes more important as storage time increases.

Temperature fluctuations can result in condensation, particularly at the high relative humidity (RH) levels preferred to minimise weight loss (85-95%). Rooms with large temperature fluctuations inevitably have lower average RH, as well as increased likelihood of damp areas within the store.

Monitoring temperature in different parts of the room, particularly areas closest and furthest from the delivery air, is the best way to understand both spatial variation in temperature and temperature fluctuations.

Condensation can act as a visible warning that there are problems with temperature management, airflow and/or ventilation throughout the store. Condensation occurs when warm, humid air contacts cooler surfaces and excess water vapour condenses into liquid. In potato storage, this can occur on walls, ceilings, ducts, or even on tubers. As condensation creates wet conditions, it can promote disease/rot development, weaken potato skins, shorten storage life, and create wet floor or structural issues in the storage room. Condensation during curing can also restrict respiration in healing tissues and increase infection risk.

To manage both temperature and condensation, it is essential to think about air circulation. Without air circulation, warm humid air from the respiring potatoes can pool inside bins. Air can stratify within the store,

with upper layers remaining warm while lower layers cool, increasing the risk of condensation in transition zones.

Poor fan scheduling, blocked air paths, or uneven storage can create dead zones with stagnant air. These zones trap moisture, leading to warm, damp pockets. Air is "lazy" and will always take the path of least resistance. Actively forcing air through a relatively homogenous load, without allowing short-circuiting to the return air, helps to reduce variation within the room.

Ventilation

Ventilation is crucial to prevent CO_2 build-up, particularly during early storage when respiration rates are highest. Elevated CO_2 levels can also stimulate ethylene production; these can combine to increase fry darkening and off flavours.

However, increasing ventilation rates increases energy costs, moisture loss and the risk of condensation. Keeping potatoes cool reduces respiration and therefore lowers the ventilation requirement.
Recommend practices include:

- Ensuring fans run long enough to properly mix air throughout the storage space.
- Avoiding short fan cycles that fail to effectively circulate air.
- Keeping fan pathways clear of obstructions.
- Ensuring airflow is distributed evenly throughout the storage room.

Understanding dew point

The relationship between temperature and humidity determines when condensation will occur. This can be visualised using a **psychometric chart** (Figure 3). This allows store managers to estimate the dew point. That is, the temperature change at a given humidity at which moisture in the air condenses into liquid.

To find the dew point on a psychometric chart, you need to locate the intersection of the storage temperature (read from the horizontal axis), and relative humidity (curved red lines). From this intersection point, move horizontally to the left until you hit the 100% RH curve to read the dew point temperature (Figure 3).

The chart demonstrates that, as temperature drops, air is able to hold less moisture. This is the **absolute humidity**, or the volume of water vapour the air can hold in kPa. In contrast, **relative humidity** is the amount of water vapour air could potentially hold, compared to the amount it actually holds.

At 25°C, saturated air holds 3.2 kPa, or 2% water. In contrast, at 0°C, saturated air holds 0.6 kPa, or 0.38% water. Inside a potato, the air is always saturated, so 100% RH.

Water loss is driven by the difference in the partial pressure of water vapour (kPa) between the inside of the potato and the room air. If warm potatoes (25°C + 100% RH = 3.2 kPa) are placed in a cold environment (5°C + 90% RH = 1.0 kPa) then there is a large difference in partial pressure. This difference drives dehydration.

Keeping potatoes cool and – most importantly – in equilibrium with the room air is therefore the best way to reduce moisture loss. However, as the room gets colder, smaller temperature fluctuations can create condensation. In practical terms, this means that accurate temperature management is most important at low temperature.

STORAGE DISEASES TO WATCH FOR

Most postharvest pathogens are relatively weak organisms that cannot penetrate an intact potato skin. Some can infect through lenticels, while others rely on wounds as entry points, particularly under moist conditions.

If the skin is compromised during harvest, potatoes are not properly cured, or if tubers exhibit PDM (Periderm Development and

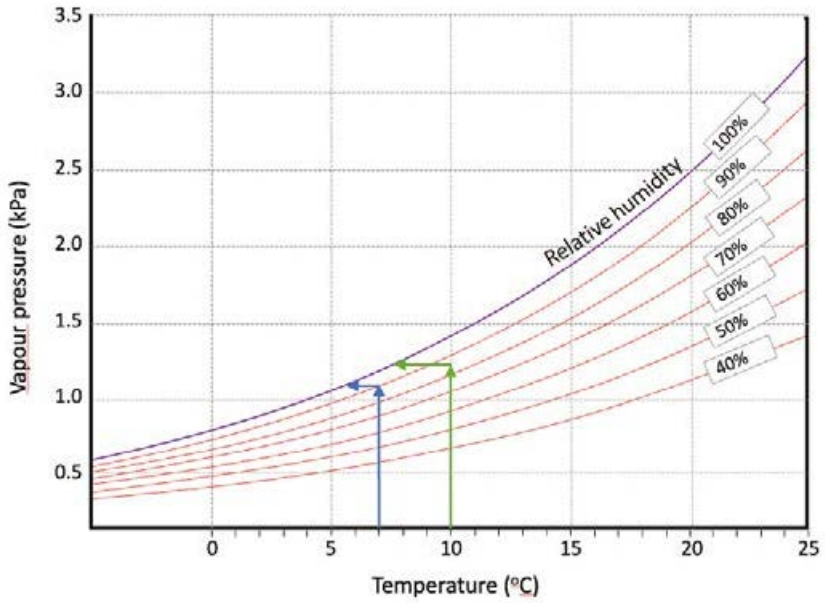

Figure 3. Example of finding dew point using the psychometric chart. At 7°C and 90% RH (blue line), a drop of just over 1°C will result in condensation (RH>100%). Conversely, at 10°C and 85% RH (green line), temperature can drop by approximately 2.5°C before condensation forms.

Maturation), they are more susceptible to storage diseases.

Bacterial soft rot

- Favoured by high moisture, warm temperatures (>16°C) and poor ventilation (high CO_2, low oxygen) in storage.
- Storage temperature below 10°C reduce soft rot bacteria activity, with bacterial progression virtually stopping below 4.4°C.
- Symptoms include soft, slimy mass and breakdowns of tuber tissue, accompanied by a strong odour.

Fusarium dry rot

- Infection usually occurs through wounds, and the rot expands within the tuber.
- Storage temperature below 8°C reduce disease progression, and below 5°C inhibits pathogen growth.
- Symptoms include internal, darkly pigmented dry rot with crumbly tissue.
- As the disease progresses, lesions may expand and hollow out tubers.
- White, cream, or pinkish fungal growth may develop on infected tissue.

Pink rot

- Infection occurs in the field but symptoms develop during storage.
- Favoured by wet soil conditions during growing season or harves.t
- Infection may be apparent at harvest or remain latent and develop during storage.
- Storage temperature below 10°C slows growth, and below 5°C will inhibit spread.
- Symptoms include soft, watery rot that is initially odourless.
- When infected tissue is cut and exposed to air, it typically turns salmon pink to reddish brown within about 30 minutes.

STORAGE SOLUTIONS

Modern storage systems can help growers maintain stable temperature, humidity, and CO_2 levels while reducing labour and energy costs. There are a number of commercial systems available offering automated control of fans, vents, CO_2 removal, temperature and relative humidity. Control may be online and/or using an app., allowing remote access to the data as well as alerts if something goes wrong.

Modern systems are generally far more energy efficient than older units, and not just because new insulation is more likely to be dry and intact. Warm incoming air can be cooled using a heat recovery unit, increasing efficiency. Rooms often vent selectively so as to use cool night air. Some systems are even linked into weather predictions to optimise air exchange. For example, the Tolsma "Weather in Control" monitoring

STORAGE MONITORING CHECKLIST

Parameter	What to look for	Frequency
Temperature	3-8°C, depending on variety, consistent throughout the store	Daily
Relative humidity	85-95% RH	Daily
Condensation	Look for condensation on walls, ceilings, ducts, tubers, and wet patches on floors	Daily
Rot/disease	Inspect for soft rot, Fusarium dry rot, pink rot symptoms	Weekly
CO_2 Levels	Up to maximum of 5,000ppm	Weekly
Sprouting	Look for visible sprout development	Weekly

Figure 4. Bulk storage systems deliver air through vents or ducts on the floor. Image: Heartland Farm

Figure 5. The best bulk storage facilities use fully vented floors. Image: Wolf Systems Canada.

system uses 10-day forecasts to optimise ventilation and refrigeration.

Basic systems fall into a number of categories:

Bulk ventilated storage

Bulk stores can pile tubers up to 5m high, maximising use of space (Figure 4). Loading with a conveyor is fast and efficient and there is no need for boxes, making it the lowest cost storage option. However, there are also downsides, as storing bulk volumes makes homogenous temperature management more challenging and potentially allows disease to spread.

Modern systems include a pressure wall leading into floor vents, forcing air through the stack (Figure 5). Vents can be in the form of above floor ducts, underfloor ducts, fully vented flooring or a raised "pallet" type floor. A fully vented floor offers the best air distribution, but is a more expensive option; the pallet type floor can provide a similar effect with less cost. Bulk storage is far more common in Europe and the USA than Australia, where it is used to store processing potatoes.

Letterboxes

The letterbox system uses the pallet openings as air ducts (Figure 6). The pallets are lined up against a pressure wall, and air is pushed through as many or few of the pallet openings as needed.

Foam bungees are stuffed into the end row of pallets, pressurising the system.

Letterbox cooling works best with fully closed sided, rather than slatted bins.

This means that the air that is forced through the bottom of each bin travels through to the top instead of escaping through the sides.

Letterbox systems are often used in Europe for drying and curing potatoes, with the bins moved to a conventional cool room for longer term storage.

Blowing ventilation

Blowing ventilation systems are perhaps the most popular new

Figure 6. Letterbox systems use the pallet openings as air ducts, with air blown between the pallet skids and up through the bins. Image: Omnivent.

storage option. One example is the new "Coldahold" facility in Manjimup, which is equipped with a Tolsma cold storage management system. Blowing systems can offer automatic control of all environmental variables, including CO_2 and air exchange.

While operating similarly to a conventional cool room, the key difference lies in improved air circulation and control throughout the room. Blowing ventilation systems are usually used with slatted bins. However, the same system can be adapted for bulk storage by adding semicircular ducting for the return air.

Blowing ventilation systems work best where the room is (mostly) full but with gaps left between rows and around the walls, allowing air to circulate. These systems are suitable for all stages of curing, cooling and storing. They are well suited to seed storage due to accurate environmental control.

Figure 7. The Tolsma blowing ventilation system at Coldahold, WA uses large pipes to blow air through the room (left), with additional fans installed at intervals to ensure even distribution (right).

Suction ventilation (Forced air cooling)

Suction systems are very common in other horticultural industries, but uncommon in the Australian potato industry. However, they are starting to find potato industry applications in Europe (such as the Omnivent system showcased at Potato Europe).

The key difference is that air is sucked through the bins instead of blown across the top.

The system only works with slatted or plastic bins. The bins are lined up in rows against a negative pressure box (plenum). Tarpaulins are used to cover the top and sides of each row, leaving only the sides open. Air is pulled through the boxes, sealing the tarpaulin closely against the covered surfaces.

As air always moves from coldest to warmer zones, products can be cooled or dried rapidly without risking condensation. Airflow is very uniform through the bins, so the entire load cools at a similar rate. When used with other horticultural products, cooling times can be reduced tenfold compared to room cooling (blowing systems), even with high airflow. Such rapid cooling reduces total energy costs and minimises weight loss. Suction ventilation systems are most suitable for rapid drying, curing and cooling.

Bins are usually moved to a conventional cool room, or simply de-stacked from the plenum and moved elsewhere in the room, for longer term storage.

Figure 8. The Omnivent suction (forced air) system actively pulls air through bins rather than blowing it over the top, providing rapid drying, curing and cooling. Images: Omnivent.

EYES ON THE WORLD

DISEASE RISK HOTSPOTS IN A CHANGING CLIMATE

Two landmark studies have pinpointed where plant disease risks are highest worldwide — and the findings have direct implications for potato growers facing increasing pressure from bacterial pathogens like potato scab, bacterial wilt, blackleg, and soft rot.

Led by Prof Brajesh Singh from The University of Western Australia, researchers analysed 1,602 soil samples from 59 countries to map where bacterial plant pathogens thrive — and crucially, what keeps them in check. Plant diseases caused by bacteria and fungi already cost farmers hundreds of billions of dollars each year globally, and the pressure is only growing.

HEALTHY SOIL IS YOUR BEST DEFENCE

The findings are clear: pathogen hotspots are most common in warm regions and intensively farmed soils. But there is good news. Soils with greater microbial diversity and higher organic carbon consistently showed lower pathogen levels.

"Soils with higher microbial diversity and more organic carbon tended to have lower pathogen abundance," Prof Singh said.

In practical terms, this means that farming practices which build soil health — cover cropping, reduced tillage, compost application — can directly lower your disease risk. The research also identified specific beneficial microbes, including non-pathogenic *Streptomyces* and mycorrhizal fungi, that appear to naturally suppress harmful bacteria.

As Dr Min Gao explained: "Naturally healthy soil microbiomes may play an important role in suppressing harmful plant bacteria."

For potato growers specifically, this is significant. Increasing soil organic carbon and encouraging microbial diversity could reduce reliance on chemical controls and help protect yields even as resistant crop varieties become harder to access.

A CHANGING CLIMATE IS RAISING THE STAKES

Climate change is reshaping the disease landscape faster than many growers may realise. Predictive modelling from the research shows that major pathogens are likely to spread into new regions under future climate scenarios — meaning diseases you haven't had to manage before could become a real threat.

A companion study published in *Nature Reviews Microbiology* goes further, examining how more frequent extreme weather events like droughts, floods, and heat spikes, are likely to fuel further pathogen outbreaks and undermine crop health.

"Farms including potato crops in Australia and around the world are under increasing pressure from plant disease outbreaks linked to climate change and extreme weather," Dr Xiong said.

"The loss of soil biodiversity and rising pathogen resistance are making the problem worse."

The research team is proposing for an integrated response — one that combines better disease surveillance tools, microbiome-based crop protection strategies, advances in plant breeding, and AI-powered early warning systems to help growers get ahead of outbreaks before they take hold.

FROM GLOBAL RESEARCH TO AUSTRALIAN FARMS

The lead researcher behind these studies, Professor Brajesh Singh, is bringing this science directly to Australian potato growers. Prof Singh is currently leading *PT23002 - Harnessing Microbes and Modern Diagnostics: A National Approach to Potato Disease Management* – a project that translates these global findings into on-the-ground solutions, focusing on soil biology, advanced diagnostics, and on-farm collaboration to manage help potato diseases.

Impacts of climate extremes on plant pathogens, microbiomes and plant health;
Xiong, C., Ge, AH., Gao, M., Singh, B.K. Nature Reviews Microbiology (2026) https://doi.org/10.1038/s41579-026-01290-2

Dominance and natural suppression of bacterial plant pathogens across global soils.
Gao, M., Delgado-Baquerizo, M., Xiong, C. et al. Nat Commun (2026). https://doi.org/10.1038/s41467-026-70233-5

MEET THE SPUDS

POTATO INNOVATION RESEARCHERS DRIVING THE INTEGRATED DISEASE MANAGEMENT (IDM) PROGRAM

At eight months into the 5-year Integrated Disease Management (IDM) Program (PT23002), boots are on the ground and trials are well underway to tackle key soil-borne potato diseases.

Supporting both the fresh and processing sectors, the project targets powdery scab, pink rot, black dot and *Verticillium*, and focuses on two core pillars:

- The development and application of improved disease diagnostics, and
- The implementation of integrated disease management strategies.

Now is an opportune time to meet the project team.

Dr Michael Rettke

Meet the project team

Prof Calum Wilson (UTAS; project lead)

With more than 30 years' of experience in potato pathology, Prof Wilson will oversee all components of the project. This will include driving national and international collaborations and recruiting and mentoring higher degree research students into the project.

Prof Wilson is particularly interested in developing industry relevant strategies for powdery scab disease control. One strategy is to exhaust inoculum present in the soil by promoting zoospore germination away from the root zone. Another involves using beneficial microbes that enhance root growth to compete with the pathogen at the root / soil interface.

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Dr Michael Rettke (SARDI)

Dr Rettke has over 30 years' of experience leading collaborative research projects within the potato, onion and vegetable industries. These have involved soil-borne disease management, optimising pathogen detection and developing commercial risk thresholds.

Michael will lead the diagnostics component of the project. Initial steps will involve developing diagnostics and enhancing understanding of *Verticillium albo-atrum*, blackleg and soft rot pathogens. In collaboration with the national research team, Michael will also direct regionally relevant field trials in South Australia evaluating disease management strategies for black dot, verticillium wilt and powdery scab.

Michael.rettke@sa.gov.au

Dr Audrey Leo (Simplot)

Dr Leo brings more than 10 years of experience leading collaborative research programs on soil-borne and foliar disease management across the potato and grain industries. At Simplot, her work focuses on improving grower productivity while also bridging the gap between on-farm agronomy and the operational requirements of the processing sector.

Within this project, Audrey will work closely with growers and agronomists, ensuring that research outcomes are practical, applied, and easily integrated into commercial farming systems. She will also provide technical leadership in field trial design and establishment, supporting the program's ability to deliver robust, industry relevant insights.

Audrey.leo@simplot.com

Dr Jonathan Amponsah (UTAS)

Dr Amponsah completed a PhD on powdery scab of potato (specifically understanding zoospore chemotaxis) and worked as a crop agronomist in Northern Australia before returning to Tasmania two years ago. Dr Amponsah will look at management approaches for reducing soil-borne inoculum levels prior to planting potato crops. This pre-plant inoculum management approach (germanite to exterminate: G2E) is particularly applicable to powdery scab, and will involve trialling stimulants on grower properties.

Jonathan.amponsah@utas.edu.au

Dr Mark Balendres (UTAS)

Dr Balendres recently returned to Australia after nine years leading nationally funded research projects in the Philippines. His PhD work developing disease management approaches for powdery scab will be harnessed for other related soil-borne diseases. An initial focus on black dot will examine the pathogenicity of *Colletotrichum coccodes* isolates collected from different parts of Australia. He will also test chemical and management approaches that can trigger pathogen germination, thereby reducing soil-borne inoculum.

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Dr Robert Tegg (private consultant)

With 20 years' experience in potato research, Dr Tegg will focus on pink rot and other interacting pathogens. This will include examining how different management approaches reduce or increase soil-borne inoculum levels and drive disease risk. Examples include alternate hosts (weed and/or crop species) and the role of volunteers. His work will also explore other cultural control strategies (cultivar selection, mould (hill) height, improving plant health, etc.) as well as identifying physical soil factors that promote soil-borne disease.

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Dr Robert Tegg

WHERE IS THE PROJECT UP TO?

Field trials for the 2026 potato harvest season are based in Tasmania, where the project can leverage the strong research capability and locally available resources of UTAS and Simplot. Several of these activities are being run as pilot studies, embedded into PhD projects. The aim is to validate approaches locally before scaling into broader national trials.

While field trials are concentrated in Tasmania this season, key diagnostic capability and laboratory support are located in South Australia. This ensures that the program draws on national expertise.

The project is progressing across several key areas. These include the focus on reducing soil-borne inoculum before planting, improving in-season disease management, and strengthening Australia's diagnostic capability.

1. Pre-plant disease management

Many soil-borne pathogens persist for long periods, and residual inoculum is a major driver of in-season disease. Our work is exploring practical ways to reduce inoculum before the next potato crop.

- **'Germinate to Exterminate'** (G2E): Stimulating pathogen germination in the absence of a host to reduce viable inoculum. Up to three trials will be established in Tasmania in March 2026 using stimulants applied on ryegrass, saia oats and fallow soil.
- **Potato volunteers**: A dedicated 2025 growing site is being monitored monthly to track volunteer survival after harvest, and associated inoculum levels. The cost of managing volunteers across multiple seasons before returning the paddock to potatoes will be assessed. Two additional sites are evaluating how different harvest setups influence volunteer numbers.

- **Alternate hosts for pink rot**: We are comparing paddocks under continuous cropping vs. long-term pasture and collecting weed species to identify potential alternative hosts of *Phytophthora erythroseptica*.

2. In-season disease management

We are trialling new and emerging tools to reduce disease pressure during the growing season.

- **Fungicide trial**: Commercially available chemistries and novel biological products are being tested using a small-plot replicated trial within a commercial crop.
- **Copper Gluconate** (CuGluc): Ten semi-commercial sites are examining the effects on powdery scab of integrating CuGluc into normal spray programs.
- **Phosphonic acid**: Another ten semi-commercial sites are testing phosphite applications for suppression of pink rot.
- **Biologicals and amino acid soil amendments**: Three small-plot trials are underway at research and commercial sites. These are testing a bacterial inoculant and separate glutamine (an essential amino acid) treatments.

3. Building national diagnostic capability

Improving diagnostic tools is essential for better disease detection and risk management.

- **Verticillium assays**: Work is underway at SARDI to develop diagnostics for *Verticillium albo-atrum*. Like *Verticillium dahliae*, this species can cause verticillium wilt (early dying), reducing yield. However there is currently no comprehensive testing capacity for this disease in Australia.
- **Blackleg and soft rot diagnostics**: SARDI is developing assays to detect and quantify *Pectobacterium* spp. and *Dickeya* spp. Incorporating these tests into PREDICTA Pt will give growers broader access to reliable pathogen detection from multiple sample types, supporting better-informed risk-based decisions.

The current project team is supported by industry and growers who provide trial support and feedback to optimise research and future priorities. The project team also includes both current and future research students. Their projects, and those of the core project team, will be highlighted in more detail as research progresses.

Please feel free to reach out to any of the research team if you would like to discuss future research ideas, become actively involved and/or provide feedback and industry perspectives.

SARDI
SOUTH AUSTRALIAN RESEARCH AND DEVELOPMENT INSTITUTE

Government of South Australia
Department of Primary Industries and Regions

POTATO INNOVATIONS

Simplot

UNIVERSITY of TASMANIA
TIA
Tasmanian Institute of Agriculture

Hort Innovation POTATO – FRESH FUND

Hort Innovation POTATO – PROCESSING FUND

Drone and tractor preparing for spray application (photo by Len Ibbotson)

DRONE SPRAYING - HOW EFFECTIVE IS IT?

Drones have emerged as a promising technology for crop protection applications, offering flexibility, reduced soil compaction, and access to fields when conventional rigs cannot operate – all while freeing up growers' time for other tasks.

But how do they actually perform in complex, real-field conditions?

A recent PotatoLink demonstration put drone spraying head-to-head with traditional ground rigs to assess efficacy, coverage, and practical limitations. Despite less-than-ideal wind conditions, the exercise provided valuable technical insights into optimising both drone and ground-based application systems.

ASSESSING EFFICACY IN CHALLENGING CONDITIONS

The field demonstration compared a drone and a conventional ground boom rig applying sprays across a potato crop under variable and gusty wind conditions (10–35 km/h). Happily, conditions were calm for short periods during some of the drone passes, especially in the sheltered end of the block.

It's worth noting however that the drone operator wouldn't usually spray under these conditions and only continued for the purpose of the demo event

Various nozzle types and spray quality were evaluated, as well as water rates, and operational parameters (height and speed for drones; travel speed for the ground rig). To assess coverage and deposition, the initial applications contained just water and a wetter, with water-sensitive papers placed throughout the canopy for visual and quantitative comparisons. The second application was made at dusk using water, wetter and fluorescent dye. Results were observed using UV light.

KEY FINDINGS

A moderate and gusty crosswind was the primary factor limiting performance. Even coarse droplets (~500 microns) experienced drift, confirming that drone downwash does not fully compensate for wind in marginal conditions.

Ground rig applications achieved superior coverage and penetration due to slower travel speed, higher water volumes, and boom positioning that allowed proximity to the canopy.

Syngenta's Technical Services Lead and event presenter Len Ibbotson, explained:

"Achieving thorough coverage in a vigorous potato canopy after row closure is inherently difficult."

"Under windy conditions, the ground rig outperformed the drone due to a combination of a slower travel speed, appropriate nozzle technology, higher water rates and better patternation of spray. In addition, the boom was able to be situated close to the canopy."

Water, nozzle, and flight variables

Adjustments to operational parameters had measurable impacts:

- Reducing the tractor speed from 9 to 6 km/hour and increasing the water from 200 to 350 litres per hectare greatly improved penetration into the lower half of the dense canopy
- The spray plume from the drone was badly affected by drift when travelling 2 to 2.4 metres above the ground. It was not possible to travel any closer to the canopy as the rotor downwash began to damage the potato canopy.
- Overall, coverage with the drone looked better when assessed at night under UV light compared to the water sensitive papers.
- Increasing the drone water rate from 40 to 60 L/ha did not appear to materially improve coverage or penetration under these conditions.

Len emphasised that no single setup suits all conditions. For example, it is important to consider the changes in canopy size and architecture as the crop develops. Water rates and sprayer set up need to be adjusted during the growing season to achieve consistent coverage.

- Lower water rates and a faster travel speed (or greater height) may be possible earlier in the season and during optimal application conditions.
- As the canopy thickens, and during periods of higher disease risk, sprayer set up needs to be optimised to ensure coverage and penetration.

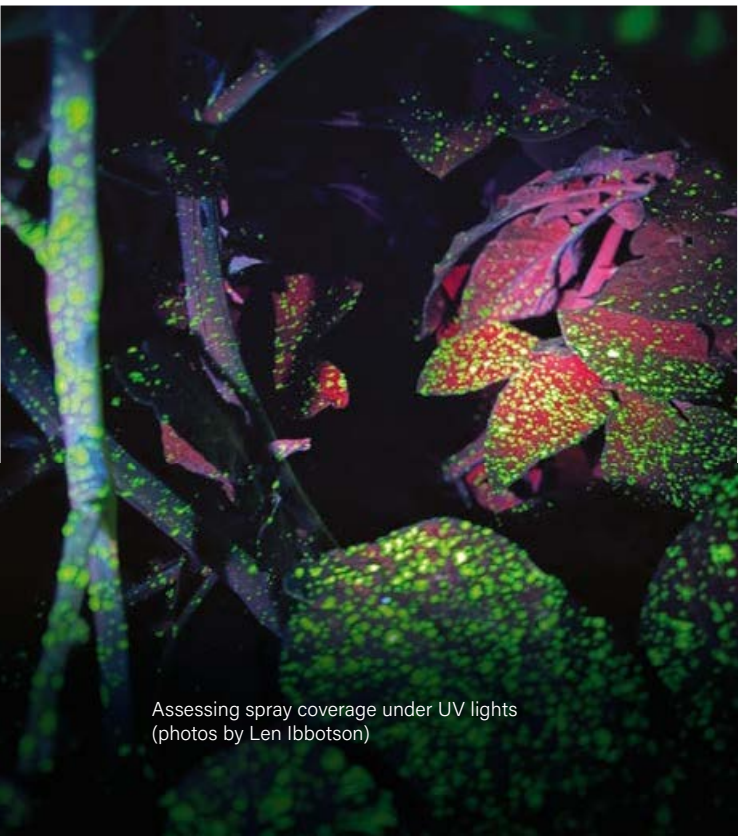
More work needs to be done to understand the suitability of drones for application in potato crops under local conditions and how they compare to other aerial application methods.

UNDERSTANDING WEATHER IMPACT AND PRODUCT BEHAVIOUR

One area of discussion was whether Delta T thresholds apply equally to aerial applications. Delta T is the difference in temperature between a wet bulb and dry bulb thermometer, so the interaction between temperature and humidity. Delta T values of 2–8 are ideal for spraying. Higher Delta T values occur when humidity is low and temperature is high. Under these conditions evaporation is so fast that the chemical may be less effective.

Drone applications typically utilise lower water volumes sprayed from a greater height. This means effectiveness may be more severely impacted if Delta T is high.

According to PotatoLink Regional Representative Stuart Grigg, "the Delta T range we use for ground rigs may not translate directly to drones, especially when spraying translaminar or systemic products. These rely on extended leaf wetness to maximise product uptake. Reassessing the ideal Delta T range for aerial spraying is a critical step to improve efficacy."



Assessing spray coverage under UV lights (photos by Len Ibbotson)

The product mode of action is also important. "Protectant fungicides and systemic herbicides tend to perform reliably under aerial conditions, but results when applying systemic or translaminar insecticides are more variable. Growers really need to understand product behaviour before choosing an application approach."

WHEN DRONES CAN DELIVER A COMPETITIVE ADVANTAGE

Despite lower canopy penetration compared to ground rigs, especially in windy conditions, drones provide important operational and agronomic advantages, particularly after adverse weather.

"After major rain events, drones let growers get back into the crop as soon as foliage dries," Stuart said.

"That's a game-changer for applying curative fungicides when infection is developing but not yet visible."

Key benefits of drone spraying include:

- No soil compaction, supporting controlled traffic farming systems.
- Rapid response time, enabling targeted applications between rainfall events.
- Lower labour and logistics demand, particularly for smaller fields or patch spraying situations.
- Minimising crop canopy damage in mature crops therefore reducing potential disease entry points and maximising yields.

Good drone operators who understand ideal spray conditions can achieve some very impressive results

However, practical constraints remain. Current drones have a limited tank capacity (typically 40 to 100 L). Larger tanks are unable to be fully utilised due to regulatory weight restrictions.

Increasing water rates for better efficacy can quickly undermine efficiency unless larger, more powerful drones, requiring three-phase charging and licensing upgrades, are adopted.

GROUND RIGS STILL BETTER FOR DENSE CANOPIES

Under the marginal conditions tested, the consensus was clear: for high disease pressure or dense canopies, ground rigs remain more reliable. They allow higher water volumes, nozzles positioned closer to the target, and optimised spray angles for deeper canopy coverage, all critical factors in achieving fungicide and insecticide efficacy. As Len concluded:

"When pest or disease pressure is high, ground rigs still give the best assurance of coverage."

"But drones are far from redundant. They're increasingly being adopted by growers in a range of crops, especially where ground access is difficult, for targeted spot spraying, and when other application methods are compromised."

The take-home message echoed jointly by both presenters was straightforward:

"It's horses for courses. Know your product, understand your conditions, and select the right tool accordingly."

ACKNOWLEDGEMENT

Special thanks to Adrian White of RotaVision for generously giving his time to demonstrate his equipment during both the day and evening sessions. Adrian also took the time to share his expertise with the group, which was greatly appreciated.

Left: PotatoLink Regional Rep Stuart Grigg standing in the field as attendees gather at the bottom of the paddock; Right: Growers and advisors gathering for the Q&A (photos by Len Ibbotson)

MAGNETIC SPRAYING PUT TO THE TEST

Image: MagrowTec (left) and conventional systems side-by-side at the end of the trial

In our last issue, Jenny Ekman reported on the magnetic spray technology showcased at Potato Europe. The technology has been attracting growing interest across potato-growing regions worldwide, with manufacturers reporting significant improvements in spray coverage and the potential to reduce water volumes without sacrificing efficacy.

To recap: a substantial proportion of spray product is typically lost through poor canopy penetration and drift. Magnetic field technology aims to address this by modifying the properties of the spray liquid. The system is designed to produce more consistent droplets within an effective size range, improving adhesion to target surfaces and reducing off-target losses when retrofitted to conventional sprayers.

To evaluate the technology under commercial growing conditions, Hira Bhana's potato operation in Pukekohe, New Zealand, hosted a dedicated spray coverage trial in May 2022.

The ISO study was led by MagrowTec's crop science team, with support from Vantage New Zealand, and conducted across mature potato crops (varieties Agria, Rua and Moonlight) at growth stages spanning shoot to tuber development. Canopy cover was approximately 70–80% of the ground, on sandy loam soil with minimal weed pressure.

THE TRIAL

The trial setup was as follows:

- Two John Deere sprayer setups were compared side-by-side: a conventional configuration and a second machine fitted with fitted with MagrowTec magnetic spray assist technology.
- Both sprayers ran 19-metre booms at 11 km/h with 50 cm nozzle spacing, operating at 4.50 bar pressure.
- Two nozzle types were evaluated:
  - Hypro 3D-100-06 (alternating direction, medium spray quality, 2.94 L/min at 4.50 bar)
  - Syngenta GA-110-05 (medium to coarse spray quality, 2.45 L/min at 4.50 bar).
- Four treatments were evaluated, each combining a sprayer–nozzle configuration at a set application rate.
- Each treatment included at least four replications and 24 water-sensitive paper (WSP) sub-samples per repetition - 96 WSP cards per treatment in total.

The trial compared two practical spray scenarios.

- **Treatments 1 and 2** compared the conventional and MagrowTec sprayers using Hypro 3D-100-06 nozzles at a **full application rate** of 320.7 L/ha.
- **Treatments 3 and 4** repeated this comparison using Syngenta GA-110-05 nozzles at a **reduced application rate** of 267.2 L/ha, equivalent to 83% of the full rate.

This design allowed the researchers to assess both the impact of the MagrowTec system and the potential for reducing application volumes while maintaining adequate coverage.

Sampling focused on how effectively droplets reached the crop canopy.

Water-sensitive paper cards (37.5 mm × 25 mm) were attached directly to plants at five sampling points per treatment zone. Each plant had four cards: two in the upper third of the canopy and two in the lower third.

Cards were collected immediately after each spray pass and carefully labelled by treatment, repetition and sub-sample.

Cards were scanned at high resolution (600 DPI, greyscale) and analysed using USDA DepositScan software, with coverage expressed as a percentage of card area covered.

Microclimate conditions, including wind speed, temperature, and relative humidity, were recorded during each spray pass using handheld instruments.

Temperatures during the trial ranged from 19–20.4°C and relative humidity from 70–74% (Delta T = 3).

THE RESULTS

Whole canopy results

Across the combined upper and lower canopy, the MagrowTec system consistently outperformed the conventional setup regardless of nozzle type.

The key question was whether the MagrowTec system could deliver meaningful improvements at the same water rate, and whether it could maintain effective coverage when application volumes were reduced.

The results were encouraging. At the reduced rate of application, the MagrowTec system achieved the highest mean coverage of 30% across all cards, compared with 23% for the conventional setup.

This was effectively the same coverage as achieved using the full application rate, where the MagrowTec and conventional systems achieved 31% and 25% mean coverage respectively.

This result suggests that growers can reduce water and input costs without compromising disease protection.

In summary:

- Full rate: the MagrowTec system delivered 26% better whole-canopy coverage than conventional.
- Reduced rate: the MagrowTec system delivered 34% better coverage than conventional.
- Water savings potential: the MagrowTec system at 83% rate outperformed conventional at 100% rate.
- Practical benefit: MagrowTec system may enable lower spray volumes while maintaining or improving canopy coverage.

Penetration through the canopy

Increased exposure in the upper canopy means it is generally easier for sprayers to reach. In this trial, that proved the case for the conventional spray at full rate, but not for the reduced rate application. While upper canopy coverage fell from 27% to 23% when the rate was reduced, variable results mean this difference was not statistically significant. Moreover, conventional spray units achieved 23% coverage in the lower canopy regardless of application rate (and nozzle).

While upper canopy coverage is clearly important, the lower canopy is where foliar diseases such as Late Blight and Powdery Mildew typically establish, and where dense, overlapping foliage creates the greatest barrier to spray penetration. It is also where the most striking performance differences emerged in this trial.

Lower canopy coverage averaged 30% in the MagrowTec system, compared to 23% using a conventional spray unit. Moreover, coverage was relatively unaffected by application rate. Results from the 100% and 83% applications

Water sensitive papers were placed in the top third and lower third of the crop canopy

Magnetic spray system (MagrowTec) installed on the boom

were not statistically different, averaging 28% and 32% respectively.

This is relevant, as the lower canopy is typically more difficult to reach and is often where disease pressure develops. In effect, spray coverage using the MagrowTec system was consistent across both upper and lower canopy, and largely unaffected by application rate.

In summary:

- Average coverage was 24% for the conventional spray systems, and 31% for the MagrowTec system.
- The MagrowTec system improved average coverage in the upper canopy by 29% and in the lower canopy by up to 37%.
- The technology improved coverage in the hardest-to-reach areas of the canopy where Late Blight and Powdery Mildew establish most readily.
- Depending on label requirements, this could reduce the volume of active ingredient needed.

ARE THERE OTHER STUDIES TESTING THIS TECHNOLOGY?

Magnetic spraying was first demonstrated through tests conducted by the University of Florida Cooperative Extension Service. It was shown that transiently magnetised spray particles are attracted to living portions of the plant. In this example, the sprayer fitted with MagrowTec limited drift to 2% while providing 98% coverage and reducing chemical volume by 75% (Lenhardt, 2001).

Trials conducted at Wageningen Plant Research also found significant reductions in spray drift. Lowering the boom height from 50 to 40cm, using drift reducing nozzles, and adding the MagrowTec spray system reduced drift by 33 to 96% (Stallinga et al., 2017).

Moges et al (2021) showed that equipping a backpack sprayer with a MagrowTec system improved spray uniformity, increased deposition on the upper and middle canopies of a sugarcane crop and significantly reduced drift.

The same author also reported that herbicide volume could be reduced by 30% without compromising efficacy (Moges et al., 2022).

In summary, although peer reviewed evaluation of this technology is limited, results indicate that this is a promising technology, and well worth a look.

Across every canopy layer, the magnetic sprayer consistently outperformed the conventional sprayer by 23–35%, with the biggest gains in the lower canopy where disease pressure matters most. Notably, it achieved statistically significant better coverage at a reduced water rate.

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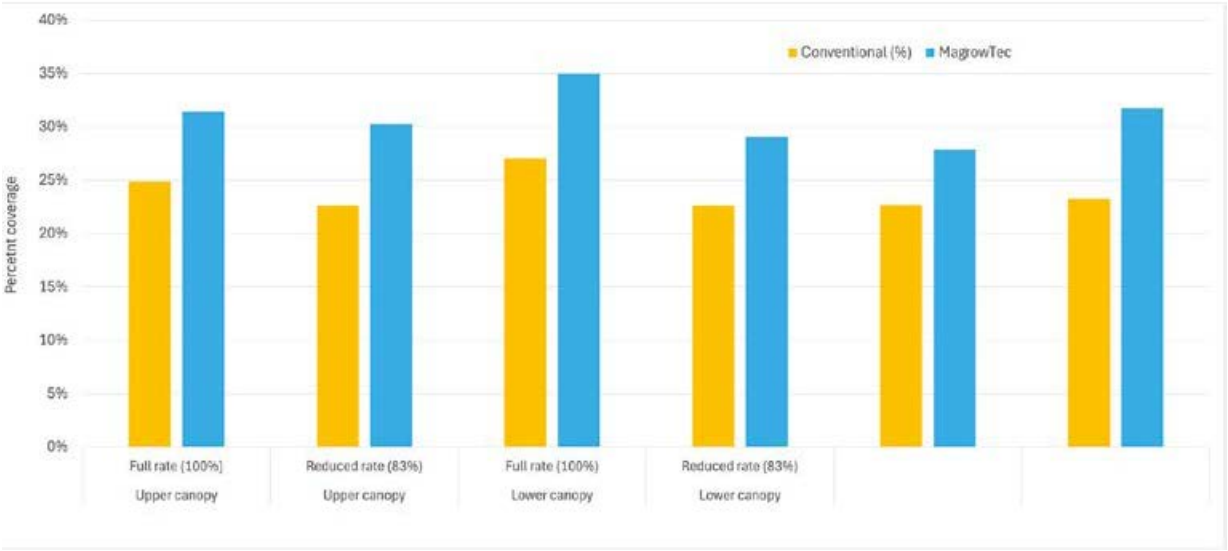

Mean spray coverage results from the upper third and lower third of potato plants sprayed using a conventional or magnetised system, and at 100% or 83% of normal spray application volume. Bars indicate the standard error of each mean value (n=4)

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R&D + biosecurity update

Why pest monitoring and surveillance matters – and why it's tricky

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VegWatch

Building a framework for pest surveillance for the vegetable industry

When a new pest or disease arrives, timely detection is critical. Early identification enables rapid decision-making on appropriate responses – be it containment, eradication, or adaptation of production systems – and allows affected farming businesses to access support and resume trade as quickly as possible.

Beyond immediate response activities, monitoring and surveillance also play a vital long-term role. Demonstrating that a threat is absent from a region or country provides the robust evidence base required to support market access and maintain trade agreements.

The challenge is that searching for an exotic pest or disease that has not yet established is inherently difficult to motivate. Growers and crop advisors are often time-constrained, and the value of looking for something that may not be present is not always clear.

There is also a widely acknowledged concern that growers may be reluctant to report a new detection for fear of quarantine, loss of income and business disruption. Building a surveillance program that people trust and willingly participate in is, therefore, as much a social challenge as a technical one, and it is a challenge the VegWatch program is actively addressing.

Just as monitoring for pests and diseases on farms supports timely application of management options, detecting a new pest threat sooner gives government and industry the greatest chance for eradication or control. That's why surveillance networks are one of the most powerful tools industry and government have. Timely pest detection is most effective when supported by a systematic and trusted surveillance framework. This is exactly what the VegWatch program, led by AUSVEG and delivered collaboratively by industry, government, universities, and research organisations, with funding from Hort Innovation, is designed to establish.

Modelling for smarter pest monitoring

A key strategy within VegWatch has been the development of pest hazard maps to inform where to target surveillance activities. Using Tomato potato psyllid (TPP) as a model, the Centre of Excellence for Biosecurity Risk Analysis (CEBRA) has used jurisdictional and industry surveillance data, seasonal population dynamics and biological, climatic, vegetation and demographic information to develop hazard maps that identify the locations where TPP is most likely to spread, and therefore where targeted surveillance efforts should be focused.

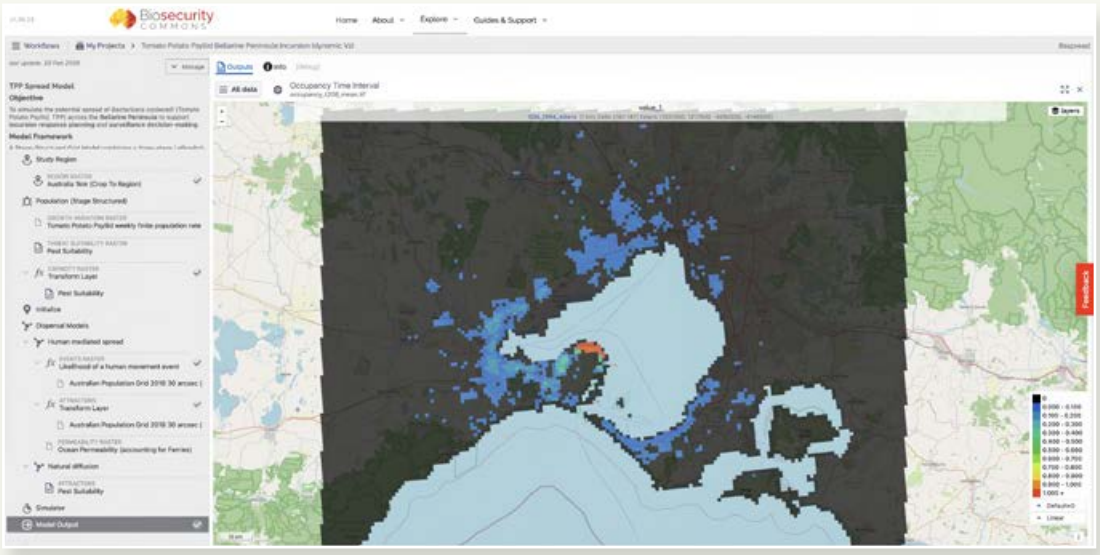
Tomato potato psyllid was selected as a model organism because it represents a realistic and current domestic biosecurity challenge for the Australian vegetable industry. It has already established in some regions, while continuing to spread, making it well suited to test and refine surveillance approaches under real-world conditions.

This hazard map was developed and hosted on the Biosecurity Commons platform, based at CEBRA, and is currently being piloted for use in transforming surveillance from a resource-intensive exercise into a targeted, evidence-based activity.

While these models provide a powerful tool for targeting surveillance, they are inherently subject to uncertainty, particularly where data is limited or assumptions are required. Their effectiveness also relies on strong participation from growers, agronomists and the broader community to generate the data needed to continuously refine and improve the system.

Putting it into practice

Drawing on the nationally recognised Technical Reference Guide (TRG) for TPP surveillance to identify the most effective monitoring tools, along with the hazard maps on Biosecurity Commons, VegWatch is piloting a multifaceted program to monitor TPP and develop a comprehensive vegetable pest surveillance framework. Together, the TRG and the hazard mapping approach provide a complementary framework for surveillance. The TRG defines what surveillance methods to use, while the hazard maps determine where those methods should be applied to achieve the greatest impact.



Left. Predicted spread of TPP in Victoria on Biosecurity Commons. Incorporating seasonal population dynamics, driven by temperature that reflect the reality that TPP populations fluctuate with the seasons, gives a more realistic picture of how and when TPP could move and establish across Australian growing regions if it arrived there. *Image courtesy Biosecurity Commons.*

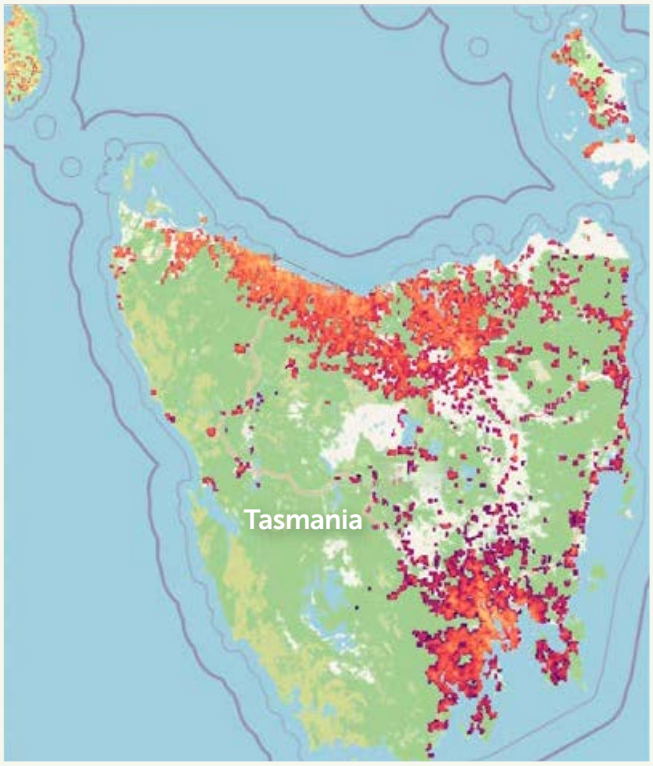
"For the first time, we're not just reacting to pest incursions – we're anticipating them. That changes how industry prepares, responds, and ultimately recovers."

The Victorian example

Agriculture Victoria has trialled a variety of surveillance approaches under its network, including targeted jurisdictional surveillance, enhanced public reporting (known as biosecurity blitzes), community-led adopt-a-trap programs and a partnership with Bunnings Warehouse.

CEBRA has developed a suite of TPP hazard maps based on different spread and establishment assumptions. These assumptions are largely informed through the TPP - TRG being developed under the VegWatch Program, as well as expert elicitation with program partners.

These hazard maps were initially used in Victoria to guide the placement of an evidence-based restricted area and inform subsequent surveillance activities for TPP. Now that TPP is considered established in Victoria, Agriculture Victoria is using spread modelling to guide the selection of sites for delimitation surveillance, with the aim of demonstrating the absence of the associated pathogen, CLso.



Left. Hazard map for TPP in Tasmania. Relative risk of TPP establishment in Tasmania based on climate suitability, land use and proximity to established populations on mainland Australia (Warmer colours = regions of higher risk of TPP establishment). *Image courtesy Biosecurity Commons.*

The data generated through this surveillance is then used to refine and improve underlying model assumptions, leading to more accurate predictions and more effective surveillance design over time. In addition, the surveillance results can be used to quantify confidence that CLso remains absent from Victoria despite having its vector.

> "These models don't just tell us where TPP might go, they tell us where to look, and how much surveillance effort is needed to be confident TPP is absent from Tasmania. That is a game changer for an industry-led program operating with finite resources."
>
> DR JAMES CAMAC, CEBRA

IN SIMPLE TERMS

DATA → MODEL → SURVEILLANCE → NEW DATA → IMPROVED MODEL

Insights from the Victorian experience and the subsequent improvements to the model have enabled the program to pilot this approach in Tasmania, marking the first vegetable industry-led implementation. This pilot uses modelling to inform the development of a timely detection surveillance network. CEBRA has also developed a range of optimised surveillance designs for the Tasmanian context, tailored to different budget scenarios, so that surveillance resources can be deployed where they will be the most effective.

Monitoring in Tasmania

The VegWatch team is working closely with industry and Biosecurity Tasmania to deploy traps to monitor for TPP. In February 2026, a workshop was held for growers and crop advisors to raise awareness of the program and encourage participation. The Tasmanian public were also invited to opt-in to broaden the monitoring network into home gardens and community growing spaces.

Tomato potato psyllid has not been detected on traps as part of this pilot. The data being collected through these trapping networks is collated into AUSPestCheck, the national platform for biosecurity pest monitoring data. Monitoring network participants also receive feedback on their individual traps.

For industry, this approach delivers practical benefits beyond early detection. By focusing surveillance in the highest-risk areas, it supports more efficient use of limited resources, reduces unnecessary monitoring costs, and enables faster, evidence-based decision making. Over time, the ability to demonstrate pest absence through structured surveillance data may also help reduce trade risks and support continued market access.

Tomato potato psyllid (TPP)

Native to North America, TPP is a small sap-sucking insect that can devastate solanaceous crops including tomatoes, capsicums and potatoes, both through direct feeding damage and by transmitting the destructive pathogen *Candidatus Liberibacter solanacearum* (CLso), which causes Zebra chip disease in potatoes.

The pest was first reported in Western Australia in 2017, and since 2025 is considered established in Victoria. It was chosen as the model organism to pilot the development of a surveillance framework for the vegetable industry as it is already present in some states.

Tomato potato psyllid in Australia is not known to carry CLso. TRGs have informed the use of sticky traps for monitoring of TPP in Tasmania and Victoria.

Above left. Sticky trap amongst tomato crop. **Top right.** Closeup of TPP nymphs and eggs. **Top bottom.** Closeup of TPP adults. *Image courtesy Department of Primary Industries and Regional Development (DPIRD), Western Australia.*

Tomato potato psyllid prefers warmer temperatures, so the program will pause over winter, starting up again to continue over the spring and summer of 2026-2027.

In Tasmania, the focus is on collecting zeroes to support absence of TPP providing growers and biosecurity regulators with confidence that TPP is not present, and in the longer term to demonstrate that this data could be used to support market access and trade. The surveillance also supports early detection and evidence-based decision making to enable a more rapid response.

AUSVEG continues to work with Biosecurity Tasmania and others to determine what a detection of TPP in the state means for growers and to support market access. Currently, TPP would not impact on movement of potatoes from Tasmania to the mainland.

Why zeros matter

Zeroes indicate that a pest was not detected during surveillance. This absence data is increasingly required to support interstate market access and is important for quantifying confidence that a threat is truly absent, while recognising that surveillance methods are not always 100 percent effective.

The goal for VegWatch is to collect pest absence data to support market access for growing businesses or regions. By using TPP in the pilot and to develop the framework, the goal is, that should TPP be detected, we are able to demonstrate the use of pest absence data (zeroes) to support return to trade and reduce the short- to medium-term impacts on vegetable growers.

Building a national framework for the long term

The pilot pest surveillance programs in Tasmania and Victoria are the first steps toward a national framework allowing industry to play an active, coordinated and vital role in vegetable biosecurity surveillance. When a new pest arrives, that framework could mean faster, evidence-based decision making, smoother adjustment to a changed production environment, and a supported path back to market access.

The *Vegetable Industry Biosecurity and Business Continuity Strategy* is funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government.

Project Number: VG22004

Hort Innovation VEGETABLE FUND

Protecting our patch

A NEW VEGETABLE INDUSTRY BIOSECURITY PLAN THAT SHOULD MATTER TO YOU

The Australian vegetable industry has always been resilient, but we face ongoing pest and disease biosecurity challenges that no individual farming business or industry member can tackle alone. Whether it's a new beetle hitching a ride on imported goods or a recently arrived pest spreading to new regions, biosecurity threats are a constant reality in our industry.

SCAN TO VIEW

The *AUSVEG Farm Biosecurity Manual: Your Guide to Farm Biosecurity Planning* guide is available at the AUSVEG website ausveg.com.au/knowledge-hub or scan the QR code.

The development of the *AUSVEG Farm Biosecurity Manual: Your Guide to Farm Biosecurity Planning* has been funded through by Hort Innovation, using vegetable research and development levy and contributions from the Australian Government, and the Plant Health Levy through Plant Health Australia, demonstrating the industry's commitment to protecting Australia's vegetable production from biosecurity threats. Don't wait for a pest incursion—start planning today.

Hort Innovation VEGETABLE FUND

Addressing the vegetable industry's biosecurity needs

Plant Health Australia, together with AUSVEG and government partners, has updated the Biosecurity Plan for the Australian Vegetable Industry (Version 4.0) – a comprehensive five-year (2025–2030) framework that puts the vegetable industry's needs at the centre of Australia's plant biosecurity efforts.

This is your industry's biosecurity plan, developed using your levy funds with input from pest and disease specialists, government and industry representatives to ensure it prioritises pest threats based on their potential impact on farm profitability, market access and long-term industry sustainability.

The 2025–2030 Biosecurity Plan focuses on four strategic areas:

- **Pest threat identification and risk assessment** ensure we're always looking ahead to identify new risks before they arrive.
- **Risk mitigation and preparedness** provide a roadmap to reduce exposure to new pests, and ensure information and resources are available to help make informed decisions if a new pest arrives.
- **On-farm biosecurity support.** A new Farm Biosecurity Manual for Vegetable Growers has been developed by AUSVEG to help you assess the biosecurity risk pathways onto your farm and implement measures that fit your operation while contributing to industry-wide protection.
- **Communication and reporting systems** ensure you have clear pathways to report suspect pests and are informed about responses, management options and available support programs.

Biosecurity - a numbers game?

More than 845 plant pests and diseases currently not found in Australia that could impact local vegetable production were assessed to develop the shorter list of 28 high priority pests. This assessment included nine major vegetable crop groups that drive our industry's $6 billion annual value.

Each potential pest threat was rated on four key factors:

- how likely it is to get into Australia
- whether it could establish itself here
- how quickly might it spread, and,
- what kind of economic damage it could cause?

By assessing the risk of each potential pest, resources can be directed to those that pose the greatest threat.

How the plan is put into action to benefit your farming businesses

The Biosecurity Plan includes an Action Plan that sets out specific priorities for industry, R&D organisations and government to work together to deliver tangible benefits for industry. Each component of the biosecurity plan represents investment in the long-term profitability and sustainability of Australian vegetable production. Enhanced diagnostic capabilities, improved surveillance systems and informed decision making all contribute to reducing the costs and risks associated with pest arrival and management.

The importance of surveillance and diagnostics

Surveillance or monitoring programs that target priority pests can demonstrate that a pest is absent from a growing area. These zeros can be used to support market access. Monitoring can also support earlier detection of new pest threats, giving more time to implement response or management options before problems become widespread.

Improving diagnostic capabilities will provide faster, more accurate identification of pests, reducing the guesswork and crop losses that come with delayed or incorrect diagnosis.

Strengthening market position and trade opportunities

The plan also strengthens our industry's ability to maintain and expand domestic and export markets. Trading partners want assurance that produce comes from a biosecurity-conscious source. Jurisdictions are increasingly asking for data to demonstrate the absence of certain pests, while international markets increasingly demand evidence of robust biosecurity systems and pest data. The Biosecurity Plan demonstrates our commitment to producing safe, high-quality vegetables that meet global standards. Strong biosecurity credentials help Australian vegetables compete against imports and support expansion into new export markets.

Our collective role in biosecurity success

The Biosecurity Plan for the Australian Vegetable Industry represents our collective commitment to maintaining Australia's position as a leading vegetable producer. By identifying and preparing for high-risk threats before they arrive, we can protect our industry's profitability while building resilience against future challenges. Success depends on active participation from industry, government and other stakeholders. This includes implementing recommended on-farm biosecurity practices, participating in surveillance programs, and reporting and responding appropriately to unusual pests promptly to support productivity, profitability and trade.

Clear pest priorities
for vegetable industry biosecurity

The Biosecurity Plan organises the pests into categories that help us understand which matter the most:

- **High Priority Pests (HPPs)** are those exotic pests that pose the greatest risk to vegetable production – the ones that could devastate crop production, shut down markets, or force costly management changes.
- **Exotic Pests to Monitor (EPMs)** include pests that pose a threat but currently have a lower likelihood of entry, establishment, or spread than the HPPs. Staying alert to these threats helps us prepare before they become problems.
- **Other Pests of Biosecurity Significance** these pests are economically important to the vegetable industry and meet at least one of the following: (i) currently under quarantine arrangements or restricted to certain regions in Australia, (ii) notifiable by law, or (iii) have market access implications.

This three-tier system ensures resources focus on the biggest threats while maintaining awareness of emerging risks that could affect your farm in the future. Of the 845 exotic pests assessed, 28 (3.7 percent) were identified as HPPs and 118 (13.9 percent) were identified as EPMs.

KEY PESTS TO LOOK OUT FOR AND MONITOR

COMMON NAME	Yellow decline	Chinese rose beetle	Black bean aphid	Tomato chlorotic spot virus (TCSV)	Leaf miners
SCIENTIFIC NAME	*Candidatus Liberibacter solanacearum.* *Haplotypes C, D, E*	*Adoretus sinicus*	*Aphis fabae*		*Liriomyza spp.*[1]
HOST(S)	Carrot, celery & other apiaceous plants.	Hosts include beans, brassicas & solanaceous crops.	Hosts include onions, beetroot, capsicum, beans & cucurbits.	Capsicum, lettuce, bean & tomato.	Hosts include spinach & potato.
IBP STATUS	**High priority pest not known to occur in Australia**	**High priority pest not known to occur in Australia**	**High priority pest not known to occur in Australia**	**Exotic pest not known to occur in Australia**	**Australian pest of biosecurity significance** Some leaf miners remain under official control in Australia due to restricted distribution, while others, such as Tomato leaf miner, are not known to occur in Australia.
IDENTIFYING FEATURES	 Carrots infected with *Candidatus* Liberibacter *solanacearum* showing curling & purple discolouration of foliage (left), leaf curling (centre) & symptomless infected carrots (right). *©Joseph E Munyaneza. USDA-ARS*	 Two adult Adoretus sinicus on a leaf, showing typical interveinal feeding damage. *©Grant T McQuate. USDA-ARS, Pacific*	 Mourad Louadfel, Retired.	 TCSV symptoms on lettuce. *Gerald Holmes, ©Bugwood.org*	 Leaf miner adult with mines visible on the leaf surface. *©Bugwood.org*

[1] Includes vegetable leafminer (*Liriomyza sativae*), serpentine leafminer (*Liriomyza huidobrensis*) and American serpentine leafminer (*Liriomyza trifolii*).

MOST UNWANTED
Vegetable Pests & Diseases

IF YOU SEE ANYTHING UNUSUAL CALL THE EXOTIC PLANT PEST HOTLINE

1800 084 881

Chinese Rose Beetle
Adoretus sinicus

Host plants: Brassicaceae (Brassicas), Poaceae (Grasses), Solanaceae (Solanaceous crops).

Rice Armyworm
Mythimna unipunctata

Host plants: Poaceae (Grasses – wheat, barley, corn)

Onion Leaf Blight
Botryotinia squamosa

Host plants: Alliaceae (Onion family – onion, garlic, leek, shallot)

Goss's Bacterial Wilt and Leaf Blight
Clavibacter nebraskensis

Host plants: Poaceae (wheat, barley, corn)

Yellow Decline
Candidatus Liberibacter solanacearum

Host plants: Apiaceae (carrot, celery, parsley, parsnip)

Spotted Cucumber Beetle
Diabrotica undecimpunctata howardi

Host plants: Cucurbitaceae (cucumber, pumpkin, zucchini, melon)

Silver-Y Moth
Autographa gamma

Host plants: Wide host range, Alliaceae (onion, garlic, leek, shallot), Apiaceae (carrot, celery, parsley, parsnip), Asteraceae (lettuce, sunflower, endive), Fabaceae (peas, beans, lentils, chickpeas), Solanaceae (potato, tomato, capsicum, eggplant)

Brown Marmorated Stink Bug
Halyomorpha halys

Host plants: Polyphagous, Poaceae (wheat, barley, corn), Alliaceae (onion, garlic, leek, shallot), Amaranthaceae (spinach, beet, quinoa), Asteraceae (lettuce, sunflower, endive), Cucurbitaceae (cucumber, pumpkin, zucchini, melon), Fabaceae (peas, beans, lentils, chickpeas), Solanaceae (potato, tomato, capsicum, eggplant)

Potato Tuber Nematode
Dictylenchus destructor

Host plants: Wide host range, Poaceae (wheat, barley, corn), Alliaceae (onion, garlic, leek, shallot), Amaranthaceae (spinach, beet, quinoa), Apiaceae (carrot, celery, parsley, parsnip), Cucurbitaceae (cucumber, pumpkin, zucchini, melon), Solanaceae (potato, tomato, capsicum, eggplant)

Image Credits (left to right):
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AUSVEG · Agriculture Victoria · Plant Health Australia · Hort Innovation Vegetable Fund · cebra · Department of Primary Industries and Regional Development · Queensland Government · RMCG · VegWatch

VEGETABLES MOST UNWANTED

Spotted, striped, banded and ready to feed: **meet the cucumber beetles**

Cucumber beetles are among the most damaging insect pests affecting cucurbit crops across North America and are an increasing concern in vegetable-growing regions worldwide. Two species dominate in America - the spotted cucumber beetle *(Diabrotica undecimpunctata howardi)* and the striped cucumber beetle *(Acalymma vittata)*. Neither of these beetles occur in Australia.

The spotted cucumber beetle has made it into the top 10 priority pests for the vegetable industry in the new Industry Biosecurity Plan.

Two species, slightly different diets

The two species differ considerably in host range. The striped cucumber beetle feeds almost exclusively on cucurbits, while the spotted cucumber beetle is highly polyphagous, attacking more than 200 plant species including cucurbits, beans, corn and potatoes.

Lifecycle

In warmer regions, such as southern America, adult beetles can overwinter under leaf litter, crop debris, woodlots and fence rows. They become active when temperatures rise above 13–18°C. Early in the season, they feed on pollen and nectar from spring-flowering plants – particularly those in the rose family (*Rosaceae*) – before migrating to host crops as seedlings emerge. Non-crop hosts can serve as early-season refuges and disease reservoirs.

After mating, females deposit eggs in clusters in moist soil at the base of host plants, typically over several weeks. Newly hatched larvae feed on root hairs and outer tissues, while older larvae burrow deeper into the root. Larval damage reduces water and nutrient uptake and can result in yield losses.

Pupation occurs in the soil over four to seven days, after which new adults emerge to feed on foliage, flowers, pollen, pods, and fruit. The complete lifecycle takes 30–60 days depending on weather conditions.

Feeding damage and disease

Adults often feed in groups, targeting new leaves, stems and flowers, while larvae feed on seedling roots. Beyond direct feeding damage, both species vector several plant diseases, including bacterial wilt (*Erwinia tracheiphila*), cucumber mosaic virus, squash mosaic virus and cucurbit yellow vine disease, and can contribute to the spread of gummy stem blight.

Movement and dispersal

Adult beetles are highly mobile. In North America, the spotted cucumber beetle ranges from southern Canada to Mexico; populations in northern regions typically overwinter in southern states and migrate northward each season, arriving two to four weeks after striped beetles. High-altitude air currents can disperse striped cucumber beetles up to 800 km in just three to four days, making field-to-field spread rapid and unpredictable. Border vegetation and weed hosts play a significant role in more local movement.

Economically, cucumber beetles cause both direct and indirect losses. Their feeding can be particularly damaging early on, sometimes killing plants before they fully emerge. Damage to flowers can reduce fruit set, while visible external damage to produce can affect both marketability and shelf life. Larvae tunnelling through roots can stunt plants and predispose them to disease. In many cases, the indirect losses from disease transmission can be more significant than the damage caused by direct feeding alone. In the US Midwest, commonly used economic thresholds are typically one beetle per plant where bacterial wilt risk is present, or approximately 20 beetles per sticky trap over a 48-hour period.

Spotted cucumber beetle

Diabrotica undecimpunctata howardi

- Small (6–9 mm), oblong beetle with a green-yellow body, black head and 12 black spots on the wing covers.
- Larvae are yellowish-white with dark brown heads, a dark patch at the tail end and three tiny pairs of legs.
- Larvae feed on corn roots and other crops.

SCAN TO VIEW

For more information on spotted cucumber beetle, scan the QR code to view the new fact sheet.

©Bugwood.org

Management

Effective management begins with regular monitoring. Cultural controls reported from the USA include reflective mulch, which can reduce beetle numbers below economic thresholds by disrupting host-finding, as well as row covers or fine mesh netting to physically exclude beetles during the vulnerable seedling stage, removed at flowering to allow pollination.

Other methods to reduce pressure include delaying planting to avoid the first beetle flush, rotating crops well away from the previous season's fields, destroying crop residues, and establishing perimeter trap crops around paddocks using varieties that are attractive to the beetles. Natural enemies include braconid wasps, tachinid flies, carabid beetles, wolf spiders, and entomopathogenic fungi such as *Beauveria bassiana*, all of which can play a meaningful role in suppression.

Striped cucumber beetle

Acalymma vittatum

- Small (6 mm), pale yellow beetle with a black head and three black longitudinal stripes on its back.
- Larvae feed only on cucurbit roots, unlike spotted cucumber beetle larvae which feed on a wider range of crops.

©Ric Bessen, Entomology, University of Kentucky. extension.usu.edu

Five fun facts about cucumber beetles

- In its larval form spotted cucumber beetle goes by a different common name – the southern corn rootworm. It is considered a serious pest of corn entirely independently of its adult life on cucurbits, essentially having two pest careers in one lifetime.
- Research has shown that spotted cucumber beetles locate their host plants largely through volatile chemical cues, particularly cucurbitacins – the bitter compounds cucurbits produce as a defence. Even trace amounts trigger compulsive feeding, which researchers exploit in trap baits.
- Female spotted cucumber beetles are so good at detecting wolf spiders that males are 16 times more likely than females to be caught and eaten.
- The beetle's yellow-green body and twelve black spots are thought to mimic the appearance of unpalatable or toxic insects, a form of protective mimicry that discourages some predators.
- The spotted cucumber beetle is an efficient vector of bacterial wilt. It doesn't just spread the disease through feeding wounds. It can carry *Erwinia tracheiphila* in its gut over winter and introduce it to the first plants it feeds on in spring, effectively rebooting the disease cycle each season.

Banded cucumber beetle

Diabrotica balteata

? WHAT IS IT?

- Small (5–6 mm) beetle with a red head and yellowish-green wing covers featuring three distinct green or blue-green bands. A thin longitudinal green line runs down the centre of its back.
- Active in warm conditions and does not tolerate freezing temperatures.

Image. ©Bugwood.org

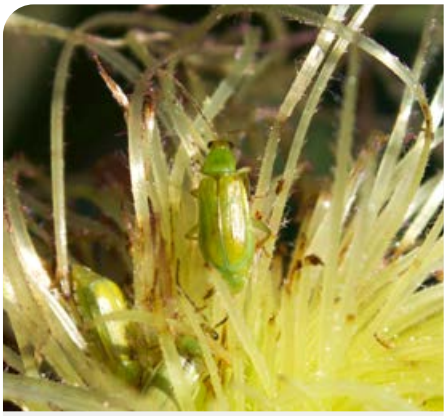
Western corn rootworm

Diabrotica virgifera virgifera

? WHAT IS IT?

- Slightly larger beetle (5–7 mm). Males are mostly dark brown or black fading to dull yellow at the rear, while females resemble striped cucumber beetles, although the stripes do not extend to the end of the wing covers.
- Adults feed on corn silks, leaves and pollen, as well as cucurbits, beans and other crops. Larvae feed on corn roots.

Image. ©Bugwood.org



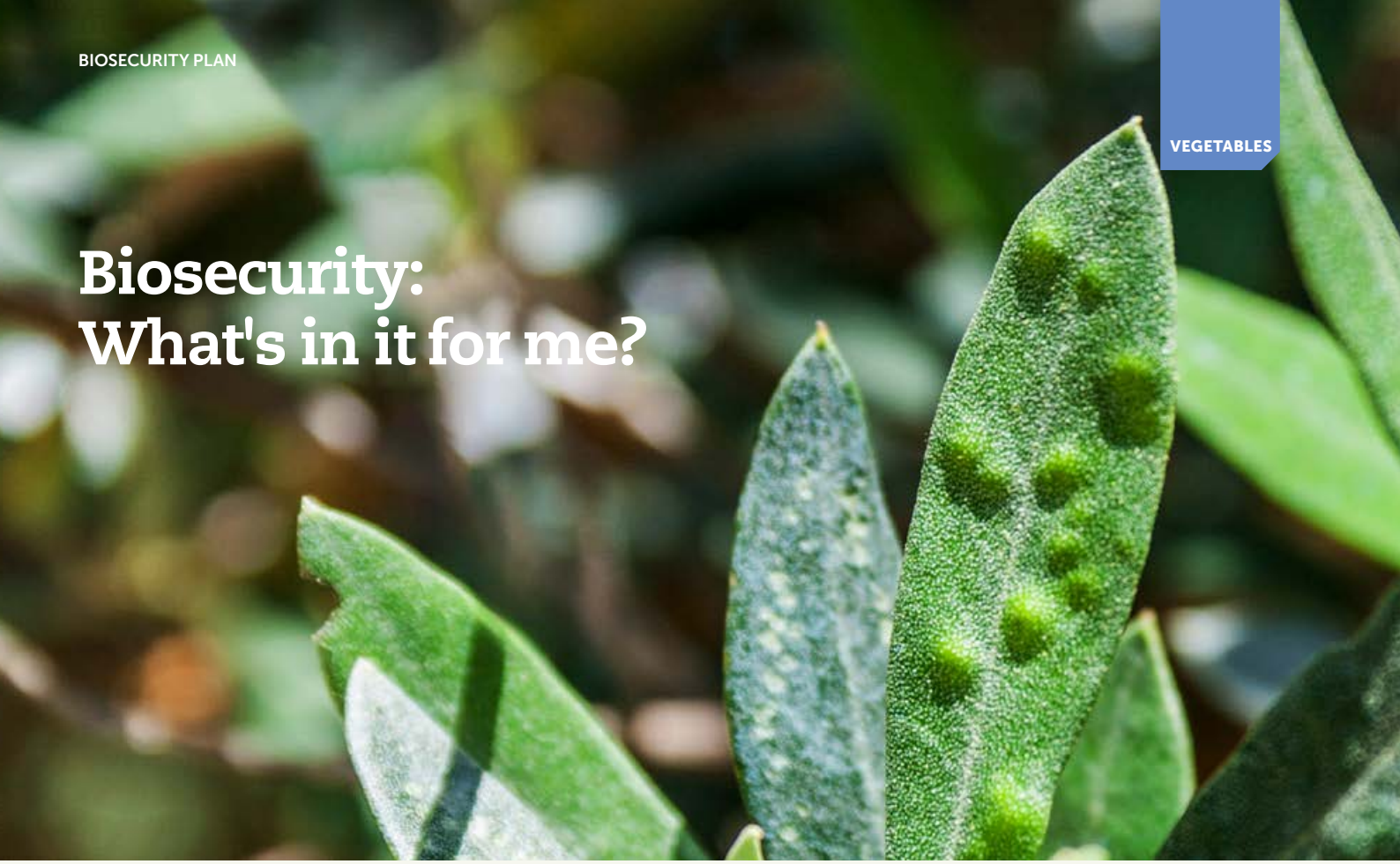
Northern corn rootworm

Diabrotica barberi

? WHAT IS IT?

- Uniform pale green beetle.
- Larvae primarily feed on corn roots, while adults feed on pollen from weeds, cucurbits, legumes and other flowers.

Image. ©Adam Sisson, Iowa State University, Bugwood.org



Biosecurity: What's in it for me?

Over the next several issues of *Australian Grower,* we will explore what happens when a hypothetical plant pest enters Australia, and what that means for the Australian vegetable, onion and potato industries.

Why biosecurity matters

For many vegetable growers, crop advisors and farm staff, biosecurity can feel like another layer of red tape in an already complex business. In reality, implementing biosecurity practices is one of the simplest and most cost-effective ways to protect a farm's productivity, profitability and long-term viability.

In an industry where margins are tight and crop cycles are short, even a single pest or disease incursion can cause major disruption, not just to an individual business, but to neighbouring farms, regional supply chains and broader market access. The stakes are high, and the risks are shared. This shared risk reaffirms that biosecurity is a shared responsibility, requiring everyone in the supply chain to play their part.

Importantly, biosecurity is something the vegetable, potato and onion industries can directly influence. By being prepared and developing risk mitigation strategies, farm businesses can meaningfully reduce their exposure to pest risks and help support the resilience of the wider industry.

Learnings from plant pest incursions

The potential impacts of exotic plant pest incursion are well demonstrated through global and domestic examples. Exotic plant pests are fungi, bacteria, nematodes, viruses, insects or weeds that are not present in a given region or country and have the potential to establish and become invasive if introduced.

Current global examples highlight the scale of this risk. Ongoing outbreaks of *Xylella fastidiosa* continue to impact olive production in southern Europe, particularly in Italy. brown marmorated stink bug (BMSB) remains a significant challenge for horticultural producers across Europe and North America due to its wide host range and mobility. Huanglongbing, spread by the Asian citrus psyllid, has caused sustained decline in citrus production in regions across the United States.

More recently, Tomato brown rugose fruit virus (ToBRFV) has spread rapidly through global tomato and capsicum production regions, with many transitioning from eradication efforts to long-term management. This virus caused major disruptions to nursery and tomato production when it was detected in South Australia in 2024.

In each of these instances, affected horticultural production areas are under severe stress and are declining significantly due to either the disease pressures or the cost of control.

CASE STUDY

Huanglongbing (HLB)

also known as citrus greening, has decimated citrus industries worldwide, demonstrating the potential devastating long-term production and economic consequences of an established pest or disease.

Since the initial 2005 incursion in Florida, USA, the citrus grove-bearing area has declined by 30 percent along with a 74 percent decline in production. The disease, caused by the bacterium *Candidatus Liberibacter asiaticus*, is vectored by the Asian citrus psyllid, *Diaphorina citri*, and results in misshapen fruit, blotchy mottling, leaf drop and leads to tree decline and death.

Prior to the spread of HLB, Florida was the largest citrus producer in the USA. However, since 2016–2017 California has become the largest producer, producing over 80 percent of national orange production.

Tomato Brown Rugose Fruit Virus (ToBRFV)

The detection of ToBRFV in South Australia in 2025 had implications far beyond the initial detection site, impacting not only on the infected businesses, but also affecting movement of produce domestically, as well as the export of tomatoes and capsicum to New Zealand and other countries in the Pacific.

Tomato Brown Rugose Fruit Virus (TOBRFV). ©gd.eppo.int/ - Symptoms on pepper fruits (Palestine, 2016) Dr Raed Alkowni.

Within Australia, responses to incursions highlight key lessons for the vegetable industry. These include:

1. Knowing how the biosecurity system operates empowers those involved to make informed decisions, reduce uncertainty and anxiety, and support stronger, more resilient business continuity.
2. Accurate record keeping is essential for claiming Owner Reimbursement Costs.
3. Understanding what is needed at the farm business and regulatory levels in advance is important to support trade.
4. Knowing where producers are and what they grow is vital in managing an outbreak.
5. Regulators need to know, quickly, how and what the standard industry practices are when determining control measures.
6. Scientific research data and evidence is important in driving accurate decision making.
7. Regional industry personnel need to be trained to perform their functions as part of any response.
8. Emergency responses, although run by the 'host state,' are national, and decisions must consider both national and regional interests.
9. The social and personal cost to affected individuals can be very high and people involved need support.
10. Even if the pest is not a problem for the crop you grow, you may still be affected.
11. It is important to be prepared by having biosecurity measures and a plan in place.

How to mitigate plant pest incursion risks

Biosecurity planning is essential to enable farms to implement best management practices and reduce their risk profile in the face of a potential incursion.

While plant pest incursions cannot be eliminated entirely, we can retain some level of control through preparation and practical on-farm measures to actively manage biosecurity risks.

AUSVEG's biosecurity manual and interactive planner help growers identify and manage key biosecurity risks across the farm. The diagram below highlights six common biosecurity risk pathways.

Six Risk Pathways

- Vehicles and equipment
- Staff and farm visitors
- Farm inputs
- Waste and weeds
- Packaging, bins and pallets
- Weather

By learning from past incursions and strengthening preparedness, the vegetable industry can minimise the impact of future pest events and improve resilience at both the farm and industry level.

AUSVEG can support your business to develop a biosecurity plan. If you would like support in developing a biosecurity plan for your business, please email info@ausveg.com.au

SCAN TO VIEW

The *AUSVEG Farm Biosecurity Manual: Your Guide to Farm Biosecurity Planning* guide is available at the AUSVEG website ausveg.com.au/knowledge-hub or scan the QR code.

vegnet update

National Vegetable Extension Network
VegNET

AUSVEG
Hort Innovation VEGETABLE FUND
Hort Innovation ONION FUND

VegNET overview

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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.

NATIONAL

From marking a major VegNET milestone, to welcoming new Regional Development Officers and celebrating women in horticulture, there is plenty to reflect on.

VEGNET
National
UPDATE

This year, VegNET turns 10!

This is a huge milestone that is worthy of celebration.

Ten years of working directly with vegetable and onion growers across the country. Ten years of Regional Development Officers (RDOs) showing up for their regions, building relationships, and helping connect growers with the research, tools and networks that make a real difference on the ground.

It has not always been a straight road. Like any long-running program, VegNET has evolved, adapted and faced its challenges along the way. But what has stayed constant is the people and the growers who have engaged with the program, the RDOs who have committed to their regions, and the broader team who have kept things moving behind the scenes.

The impact of that work over a decade is hard quantify. It shows up in the growers who tried something new after a conversation with their RDO, in the connections made at a field day that led to something bigger, in the knowledge shared, the problems worked through together, and the small wins that add up over time.

We are proud to be celebrating this milestone at Hort Connections this year. If you are heading along, come and find us.

We would love to see you there and mark 10 years together.

Hort Connections HC Adelaide 2026

FIND OUT MORE

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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

Welcome to the VegNET team

We have some exciting new faces that have recently join the VegNET team and they are already doing great work on the ground.

Angela Tarbottom

Western Australia

We are thrilled to welcome Angela Tarbottom to the VegNET team as the new RDO for Western Australia. Angela joins us from Foodbank WA, bringing with her a wealth of sector knowledge, strong industry relationships and a clear understanding of the challenges currently facing growers across the state. She has already hit the ground running, facilitating field days and roadshows in Manjimup, Carnarvon and Geraldton, with more regional events already in the planning stages.

Angela is most excited about getting out and talking to growers, whether that's working through a specific challenge, connecting them with the right research and support, or simply having a conversation. We cannot wait to see the contribution she makes to the industry in Western Australia.

L-R. Angela Tarbottom, Chi Nguyen. Chris Dang.

Chris Dang

Northern Territory

The VegNET Team is excited to welcome Chris Dang as the new RDO for the Northern Territory. Born and raised in Darwin, Chris has spent the last 20 years living in the Marrakai region, where the land and community have helped shaped who he is.

With five years of hands-on experience as an Asian vegetable grower, Chris brings a genuine understanding of the realities growers face day to day, along with a deep appreciation for the agricultural life and the people within it. His background in the field means he knows firsthand what it takes to grow in the Territory's unique conditions, and that practical knowledge will be invaluable as he connects with growers across the region.

We look forward to seeing the contribution Chris makes to the vegetable and onion industry in the Northern Territory and where this new chapter will take him.

Celebrating women in horticulture

On the 4th of March, the VegNET national coordinating team attended the AUSVEG International Women's Day Luncheon.

The event brought together women from across the horticulture industry for an afternoon of connection and conversation. It was great to be in the room with so many incredible women doing amazing work across the sector.

Special guest speaker Jacqui Felgate was a real highlight of the day. Jacqui is one of Australia's most well-known journalists, with a career spanning more than 20 years across print, television and radio. She spoke openly about her career journey, and what stood out most was her candid reflection on resilience.

Many would also know Jacqui from her work during the COVID-19 pandemic. At a time when information was confusing and changing daily, she used her Instagram account to break down the news in a way that was clear and easy to understand. She personally responded to thousands of messages from people trying to make sense of what was happening. It was a strong example of using a platform for good.

It was a wonderful afternoon and a great reminder of the talent and strength that exists across our industry. I'm already looking forward to attending next year's event.

Above. Amanda Gould, Gippsland VegNET RDO, Emily Corbett, VegNET Support Officer, Kate Zagami, AvaGrow Farms. **Left.** Jacqui Felgate. *Photos courtesy Marcel Aucar Photography.*

VEGNET
New South Wales
REGIONAL UPDATE

Establishing a soil health demonstration site to benefit growers

This initiative set out to establish a long-term soil health trial site that builds on the work from the Soil Wealth and Integrated Crop Protection (ICP) project to demonstrate the long-term benefits of a range of improved soil management practices.

Established in July 2024 at NSW Local Land Services' (LLS) Demonstration Farm in Richmond Lowlands in the Hawkesbury Valley, the site became a hub for field events and practical learning.

Various improved soil management practices were undertaken and monitored over time, alongside the development of a range of extension resources designed to support grower adoption. Soil testing was conducted every six months throughout the trial to track changes in the soil biology and structure.

First steps

The first in a series of NSW Vegetable Innovation Field Days was held in December 2024 at the NSW LLS Demonstration Farm. It was a hot summer's day, and it was fantastic to see more than 80 growers and industry come together to share insights and innovations. Umberto Calvo and Sophia Thach from Applied Horticultural Research (AHR), alongside the Soil Wealth ICP project team, led in-field discussions and demonstrations, showcasing the improvements made after only one cover crop cycle.

The second and third soil health field walks were held in June 2025. The Asian Vegetable Innovation Field Day was held exclusively for the Australian Chinese Growers' Association of NSW. The following day, the Weeds, Bugs and Brassicas Field Day was held for industry and field vegetable growers, primarily from the Greater Sydney region.

The cool mornings and sunny days provided ideal conditions, bringing together more than 107 growers and industry representatives to share insights and innovations over the two days.

FIND OUT MORE

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Above L-R. Crimping of rye corn cover crop in process Nov 2025. Crimped rye corn results Jan 2026. The Wildeye soil moisture probe.

NEW SOUTH WALES

SCAN TO VIEW

We plan to continue maintaining the soil health demonstration site and keep improving the soil in other areas of the Demonstration Farm. A control area using conventional farming techniques will also be retained for ongoing comparison.

Next steps

The desiccated rye corn cover crop was left to sit for two months from December 2025. In contrast, the conventionally treated area was left fallow and managed with herbicide to suppress weed growth. Crimping the desiccated rye corn proved effective, with no weeds penetrating through the dried rye corn. However, in the other section where the desiccated rye corn was mowed and mulched, some weed growth occurred. The use of the cover crop provided clear benefits, including increased soil carbon and organic matter, which encourage soil fauna.

The ground was then prepared for an autumn planting of cabbages. These crops will be assessed for plant health, vigour and yield (by weight) to determine if there are any differences between the two treatments. The final soil tests will be taken in April, with the results shared at a final farm walk in May.

Sizing up soil moisture monitoring tools

As part of VegNET and LLS' National Heritage Trust Climate Smart 'WaterWise' project, we are demonstrating a range of soil moisture monitoring tools. These include the Chameleon soil water sensor and the GDot soil moisture sensor, which measure soil moisture tension.

We have also installed Wildeye and Sentek soil moisture probes, which measure volumetric soil water content. The aim is to support growers in improving their irrigation efficiency and gaining a better understanding of soil-water relations. These tools enable better decision making, enhanced water use efficiency and ultimately an increase in crop production.

National Ag Day celebrations and demonstrations

On Friday 21 November 2025 a National Ag Day Field Experience was held at the demonstration site. An unseasonal cool and showery day didn't keep the attendees away as 60 people experienced the day at LLS Demonstration Farm including vegetable growers, high school agricultural students, teachers, the 'Young Horties' network, local industry representatives and researchers.

Umberto Calvo from AHR discussed the findings of the Soil Wealth ICP demonstration which showed the differences between low till and conventional cultivation. Rye corn cover crops were planted prior to the field day, with one of the experimental areas of the cover crop mowed, while the other was sprayed with a knockdown herbicide and crimped.

Results showed that the low till area had good porosity, crumbly structure, good root penetration and soil fauna present compared to the conventionally treated area, which had no soil structure, no stability and showed signs of compaction. Umberto has published a video on the Soil Wealth ICP website showcasing the results of the demonstration 18 months into the commencement of this site. **Scan QR code above to view video.**

Above L-R. The GDot soil moisture probe. Umberto Calvo from Applied Horticultural Research presenting at the National Ag Day event in Nov 2025.

VEGNET FAR NORTH
Queensland
REGIONAL UPDATE

Labour, leadership and the land

Securing the future of farm workforce in North Queensland

The North Queensland horticulture industry continues to face one of its most persistent challenges: securing a reliable, skilled and sustainable workforce. In response, the recent North Queensland Agriculture Workforce Forum provided a timely opportunity to bring growers, workforce providers, government and industry representatives together to focus on practical solutions.

Held by the Bowen Gumlu Growers Association's (BGGA) Gillian Russell, Workforce Development Officer for the Queensland Agriculture Workforce Network (QAWN) program, and supported by VegNET, the forum created a valuable platform for open and constructive discussion. Growers shared firsthand insights into the realities of managing labour on-farm, including seasonal shortages, the complexity of migration pathways and the increasing compliance burden. These conversations reinforced the need for workforce systems that are both efficient and aligned with on-ground conditions.

The program featured a strong mix of policy, program and grower-led perspectives. Representatives from the Department of Employment and Workplace Relations, including Murray Lehmann and Eliza Glasson, provided an overview of current workforce settings and employer engagement, helping growers better understand available support and program direction.

International labour pathways were a key focus, particularly the Pacific Australia Labour Mobility (PALM) Scheme and the Pacific Engagement Visa (PEV). Sessions outlined how PALM continues to support peak seasonal demand, while the PEV offers a longer-term pathway aimed at workforce continuity, regional settlement and building leadership capacity within businesses. Together, these programs highlight the evolving mix of labour options available to growers.

At the same time, there was a strong emphasis on building local workforce capability. TAFE Queensland representatives Julia Wheway and Annmarie Redsell, alongside Department of Trade, Employment and Training staff, demonstrated how traineeships can be used to develop skills, improve retention and create clear career pathways within businesses. This theme was reinforced by the 'Growing Our Own' panel, which included local students and explored how industry can better engage the next generation and strengthen local employment pipelines.

FIND OUT MORE

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Above. Panel members at the North Queensland Agriculture Workforce Forum discuss practical workforce solutions for the horticulture industry.

Grower experience remained central to the conversation, with an industry panel featuring Megan Pettitt, Melita Jurgens, Megan Spannagle and Justin Heaven. Panellists shared how they are balancing a mix of labour sources, including PALM workers, working holiday makers and local employees, while managing seasonal peaks and maintaining productivity. The discussion reinforced that there is no single workforce solution, and that flexibility, planning and investment in people are critical to long-term success.

Workforce retention also emerged as a key theme throughout the day. While attracting workers remains challenging, maintaining a skilled and engaged workforce is also important. Many growers highlighted that improvements in workplace culture, communication and staff development can have a significant impact on retention and overall business performance.

The forum also addressed the growing compliance and risk landscape facing employers. Sessions delivered by Workplace Health and Safety Queensland and Australian Retirement Trust outlined key obligations and emerging risks for 2026. The focus was on practical steps growers can take to protect their workforce and ensure their businesses remain compliant in an increasingly regulated environment.

Looking ahead, Queensland Farmers' Federation's Kate Reardon emphasised the importance of workforce planning. Her session encouraged growers to take a more proactive approach by identifying future labour needs, addressing skills gaps and aligning recruitment and training strategies before challenges arise. This approach was positioned as critical to improving workforce continuity and reducing risk.

Beyond the formal sessions, one of the most valuable outcomes of the forum was the opportunity for connection. Bringing together growers, service providers and decision-makers helped strengthen relationships and create more direct pathways for support and collaboration across the region.

BGGA played an important role in facilitating grower engagement and ensuring North Queensland perspectives were well represented. Through its involvement in VegNET, BGGA continues to connect growers with information, services and advocacy, helping to ensure regional priorities are reflected at a broader industry level.

VegNET's support of the forum highlights its ongoing role in strengthening the vegetable industry through regional extension, knowledge sharing and capacity building. By investing in initiatives like this, VegNET ensures growers have access to practical tools, relevant networks and timely information to navigate workforce challenges. Just as importantly, it provides a mechanism for regional voices to inform national discussions and policy development.

While there is no single solution to workforce challenges, the forum reinforced that progress lies in collaboration, planning and the effective use of available tools and programs. The North Queensland Agriculture Workforce Forum has helped shift the conversation from challenges to solutions, providing a strong foundation for ongoing work.

Farm Jobs Queensland launches

Adding to the suite of workforce support tools available is the newly launched Farm Jobs Queensland website. The platform provides a central hub for advertising roles and connecting employers with job seekers across the state, offering another practical avenue for growers to attract workers in a competitive labour market.

It is free for employers in the agricultural industry to post jobs, and free for job seekers to register their profiles. Farm Jobs Queensland expedites the connection between employers and job seekers by offering streamlined search functions such as location, skillset and availability, and is perfectly timed for the NQ picking season.

Visit farmjobsqld.com.au

With continued support from VegNET and collaboration across industry, there is a clear opportunity to strengthen workforce stability and better equip growers to meet both current and future labour demands.

NORTHERN TERRITORY

VEGNET
Northern Territory
REGIONAL UPDATE

KEY TAKEAWAYS FROM THE

2026 Thailand Vegetable Industry Study Tour

In February, a group of growers undertook a week-long study tour in Thailand, exploring advancements in vegetable and tropical fruit production across key growing regions.

The group – comprised of seven vegetable and mango growers, an agronomist and two representatives from NT Farmers – travelled to Thailand on 21 February as part of an industry-focused learning initiative. The tour was made possible through the long-standing relationship between NT Farmers and the Department of Agriculture Extension (DOAE) in Bangkok, which facilitated access to a range of farming operations participating in the Young Smart Farmer program.

Site visits spanned multiple regions and included organic farms and operations specialising in melon, finger root, mango and a variety of tropical vegetables. While each commodity presented its own insights, several overarching themes emerged – particularly around practices that are driving improvements in production, sustainability and profitability across Thailand's agriculture sector.

The art of adding value

Across nearly every farm we visited, one theme stood out: a commitment to value added products. Some growers leaned into the charm of on farm stores and cafes, while others expanded their reach with online shops. Many combined both approaches to create a steady, diversified income stream.

This strategy was most striking at a coconut farm we visited. Selling raw coconuts alone brought only modest returns, often barely offsetting the production costs.

But by transforming their harvest into oils, creams, snacks and other speciality goods, the farm unlocked a far more profitable market.

Their vision also stretched beyond products, embracing agri-tourism by shaping the property into a serene, almost dreamlike retreat where visitors could stroll through coconut groves, purchase freshly made goods and unwind in hammocks or shaded benches to soak in the quiet beauty of the landscape.

It was a compelling reminder that sustainability in agriculture often flourishes where creativity takes root.

Where precision meets profit

One of the most noteworthy examples of innovation came from a melon farm producing premium rock melons priced at an extraordinary $60 AUD each. This level of value was achieved by growing them in a meticulously controlled hydroponic environment and pairing that precision with a clever, confidence-building marketing strategy.

Technology was also transforming production on a nearby coconut farm. Through the use of weather stations, moisture probes and VPD monitoring, growers were able to refine and optimise their irrigation practices with remarkable precision. The results were astonishing: a staggering 49 percent increase in production over just three years. This was driven not by expanding land or labour but by embracing data as a quiet, powerful partner in the growing process.

Where nothing goes to waste

Another defining theme across the sites visited was a deeply circular approach to production. This was most vividly brought to life at Nine Smart Farm, where a remarkably complete circular economy has been carefully cultivated. Even the food scraps from its cafe are folded back into the system as compost, ensuring that little goes to waste.

As Trista explained, they look after 'the nurture'. Fertilisers are made on-site using leaves and animal waste, while fallen foliage is never burned. Instead, it becomes part of a regenerative cycle that supports both the environment and the farm's productivity.

Trees are planted not only for shade but as natural windbreaks, their fallen leaves gathered and fed into the composting cycle, which in turn nourishes the farm's growing areas. It's a closed loop rhythm that feels both intentional and effortless, a reminder that sustainability isn't just a philosophy here, it's woven into the daily life of the farm itself.

Above L-R. Premium rock melons priced at an extraordinary $60 AUD each. The study tour group at Smart Nine Farm.

FIND OUT MORE

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QUEENSLAND
SOUTH EAST

VEGNET SOUTH EAST QUEENSLAND
Lockyer Valley
REGIONAL UPDATE

Bridging research and practice in onion production

A recent breakfast workshop delivered key updates on current research, industry projects, disease management developments and changes impacting onion production systems.

For growers across South East Queensland, sessions like this play a critical role in bridging the gap between research and on-farm application. The region's high intensity production systems, along with variable weather conditions and increasing regulatory pressures, require growers to continually adapt in order to maintain productivity and stay competitive. Access to timely, locally relevant information allows growers to make more confident decisions around crop management, input use and risk mitigation.

Expert insights with local relevance

This session fostered collaboration between researchers, technology providers and industry professionals while equipping attendees with practical, science-based strategies to enhance productivity, sustainability and crop performance.

Dr Noel Knight from the University of Southern Queensland provided insights into research and agronomic considerations relevant to onion production, with a focus on strategies to improve crop performance under local growing conditions.

Dr Ben Evert from Metagen presented on a project currently being delivered for Hort Innovation, outlining its objectives, methodology, and the anticipated benefits for growers.

His presentation highlighted the importance of soil and plant health data in supporting informed management decisions, particularly by helping growers better understand variability within their production systems and target inputs more effectively.

Omer Zehavi from BioScout shared emerging research from New Zealand relating to Downy mildew, offering valuable insights into disease monitoring and early detection technologies. The discussion emphasised the role of improved surveillance and data-driven approaches in strengthening disease management strategies, including the potential for 'joint ownership' across the Lockyer Valley region. This concept reinforces the value of a coordinated approach, where shared data and collective awareness enable more timely and effective responses to disease threats.

Scott Sheppard from Agnova addressed recent changes within the chemical landscape affecting onion production, particularly the removal of a key herbicide previously relied upon by growers. This prompted discussion around alternative management strategies and the need for adaptive weed control practices moving forward, highlighting the importance of staying ahead of regulatory and market-driven changes.

Collaboration and industry impact

This collective approach strengthens the industry's ability to respond to emerging issues such as pest and disease threats, changes in chemical availability, and the adoption of new technologies. For South East Queensland growers operating in a highly productive yet increasingly complex environment, access to these insights is critical.

The ability to learn from both research outcomes and peer experiences is invaluable in supporting more informed decision-making, improving on-farm efficiency, and building resilient, sustainable production systems into the future.

FIND OUT MORE

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VEGNET VICTORIA
Gippsland
REGIONAL UPDATE

Farm World 2026: Showcasing innovation, resilience and a strong future for Gippsland agriculture

Farm World continues to cement its place as one of Gippsland's most significant agricultural events, bringing together growers, industry leaders, technology providers and the broader community for three days of innovation, networking and inspiration.

Despite challenging weather conditions, farmers, growers and community members showed up in droves, demonstrating the resilience and strong sense of community that defines Gippsland agriculture. Despite the rain and mud, the event buzzed with energy as conversations, connections and opportunities took shape across the site. It was a strong reminder that while conditions may change, the dedication of the people within the industry remains constant.

A key event for Gippsland growers

For local Gippsland growers, Farm World is far more than an event – it is a critical touchpoint in the agricultural calendar.

With extensive displays and hands-on demonstrations, growers had the opportunity to explore emerging machinery, compare products and services side-by-side, and gain practical insights that can be taken straight back to the farm. It's one of the few places where so many parts of the supply chain come together in one location, making it an efficient and valuable use of time for busy growers.

Beyond the equipment and demonstrations, it's the conversations that really matter. Farm World creates space for growers and farmers to connect with each other, share experiences from the season just gone, and talk through challenges and opportunities. Those informal chats often provide just as much value as any formal presentation – offering reassurance, new ideas and a sense of shared experience across the region.

VegNET Gippsland: A reflection from the ground

Farm World is always a great opportunity to step away from the day-to-day and really connect with growers face-to-face – and this year was no different.

Spending time on the ground, having honest conversations and hearing directly what growers are dealing with right now was incredibly valuable. It gave a clear picture of the pressure growers are under, but also the opportunities they're seeing.

A big takeaway was just how much resilience there is across the region. Even with a tough season and less-than-ideal weather at the event, people still showed up, still engaged, and still made the effort to connect.

It also reinforced the importance of making sure everything we deliver through VegNET is relevant, timely and genuinely useful. Hearing directly from growers helps shape where the focus needs to be – whether that's events, trials, or simply making sure the right information is getting to the right people at the right time.

Farm World provides that valuable feedback loop. It allows us to test ideas, sense-check priorities and ensure that what we're working on aligns with what growers actually need on the ground.

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Project Number: VG21000

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Driving regional impact

The impact of Farm World extends well beyond the gates of Lardner Park. The event plays a vital role in supporting regional economic activity and showcasing Gippsland as a leading agricultural region.

It also provides an important bridge between urban and rural communities, giving the broader public an opportunity to engage with agriculture, understand where their food comes from, and appreciate the work that goes into producing it. This connection is critical in building long-term support and understanding of the industry.

For organisations like Food & Fibre Gippsland, Farm World offers a unique platform to engage directly with industry, strengthen partnerships and ensure that programs and initiatives remain grounded in real-world needs.

Launch of Food & Fibre Gippsland's Strategic Plan and branding

A key highlight of this year's event was the launch of Food & Fibre Gippsland's new Strategic Plan alongside the unveiling of their new membership offer and refreshed branding, including the introduction of Gippsland Trusted, "a brand that will drive the values of our quality Gippsland produce into retail markets across Gippsland, Victoria and beyond".

This marks an exciting step forward for the organisation and the region, reinforcing a clear and unified identity for Gippsland's food and fibre sector. The Strategic Plan sets a strong direction for the future, with a focus on supporting growers through innovation and extension, strengthening resilience and sustainability, and driving greater collaboration across the sector. It also aims to create new opportunities for growth, investment and workforce development, ensuring Gippsland remains competitive and well-positioned into the future.

Importantly, the plan has been shaped by industry input, ensuring it reflects the priorities and challenges faced by local growers. This alignment is critical in delivering meaningful outcomes that support the region at both a business and community level. To learn more about the launch at Farm World and Food & Fibre Gippsland's Strategic Plan, scan the QR code below.

Looking ahead

Farm World continues to evolve alongside the agricultural industry, reflecting the increasing role of technology, sustainability and collaboration in modern farming.

For Gippsland growers, it remains a cornerstone event – one that not only showcases the latest advancements but also reinforces the strength and future of the region's agricultural sector.

The strong turnout along with the launch of Food & Fibre Gippsland's Strategic Plan, new membership and new branding, signals a confident and united future for Gippsland agriculture. With a clear direction and continued collaboration across industry, the region is well placed to navigate challenges and build on the opportunities ahead.

SCAN TO VIEW

VEGNET
Tasmania
REGIONAL UPDATE

Growing regeneratively kicks off in Tasmania

Interest in managing soil biology and plant nutrition is continuing to emerge across Tasmania's vegetable and onion industries.

Growers are increasingly looking at how regenerative agriculture principles can fit within commercial systems. Opportunities to improve input use efficiency and reduce reliance on synthetic products are key drivers. In response, VegNET Tasmania has developed *Growing Regeneratively*, a 12-month interactive program for young growers to build knowledge of regenerative approaches they can apply in their farming operations.

Growing momentum

In mid-2025, Julius Joel from G's Group, one of Europe's leading fresh produce companies, spoke at a VegNET Tasmania event following his presentation at Hort Connections. Julius shared G's Group's journey in trialling and adopting a range of regenerative practices, driven by the need to find alternative management approaches in response to rising input costs and the pressure to remain profitable.

G's Group's early success with its Johnson Su compost trial and other aspects of regenerative vegetable production, combined with farm visits such as the Mulgowie Farming Company farm tour during the VegNET Gatton Ag-tech Study Tour, has sparked strong interest amongst Tasmanian growers in using soil biology and smart plant nutrition management to lower input costs and increase system resilience.

Prue and Tayla, the VegNET Tasmania team, are responding to vegetable growers' interest with a simple focus: how do we build the confidence needed to turn interest and ideas into practical, on-farm action?

That's where the *Growing Regeneratively* program comes in.

Kicking off in April 2026, this new 12-month program has been designed specifically for Tasmanian vegetable and onion levy-paying growers, along with a small group of industry advisors. It will have a mixture of on-farm learning, study tours, and both in-person and online sessions with external experts.

Growing Regeneratively aims to support growers who want to build healthy, resilient soils and crops, and are ready to trial or implement change in their business. The program will focus on building confidence in starting small and trialling new ideas on farm, with the added support of a local grower and advisory group to share experiences and learn from each other.

Above. Joel Williams presenting to the attendees.

Delivered by VegNET Tasmania and funded through Hort Innovation using the vegetable and onion R&D levies (with contributions from the Australian Government), the program is structured to be flexible and fit around the key production periods. The activities will evolve with the group's interests to ensure the program remains relevant and valuable.

By the end of the 12 months, growers will have developed a simple, practical regenerative production plan for their farm with clear goals and actionable steps to take forward. They will also have the confidence to test new ideas and make decisions that suit their own operation. The VegNET team is committed to keeping the program practical and fun while equipping growers with the tools, ideas and networks needed to successfully apply regenerative approaches in vegetable production systems.

From theory to paddock

Joel Williams unpacks the 'how'

In March, VegNET Tasmania welcomed Integrated Soils' soil and plant health educator, Joel Williams, to talk with the Tasmanian industry about opportunities to reduce and replace inputs and redesign systems.

This was done in an all-day interactive event as part of the *Growing Regeneratively* program, in collaboration with the vegetable levy-funded Soil Wealth and Integrated Crop Protection Project. One of the key focus areas for the day was on integrated nutrient management, with a simple message that it's not always about putting more on but getting more out of what you've already got.

Joel explained the concept of 'losing less and using less' – focusing on improving efficiency rather than increasing inputs. To help frame this idea, he introduced the ESR approach: Efficiency, Substitution and Redesign.

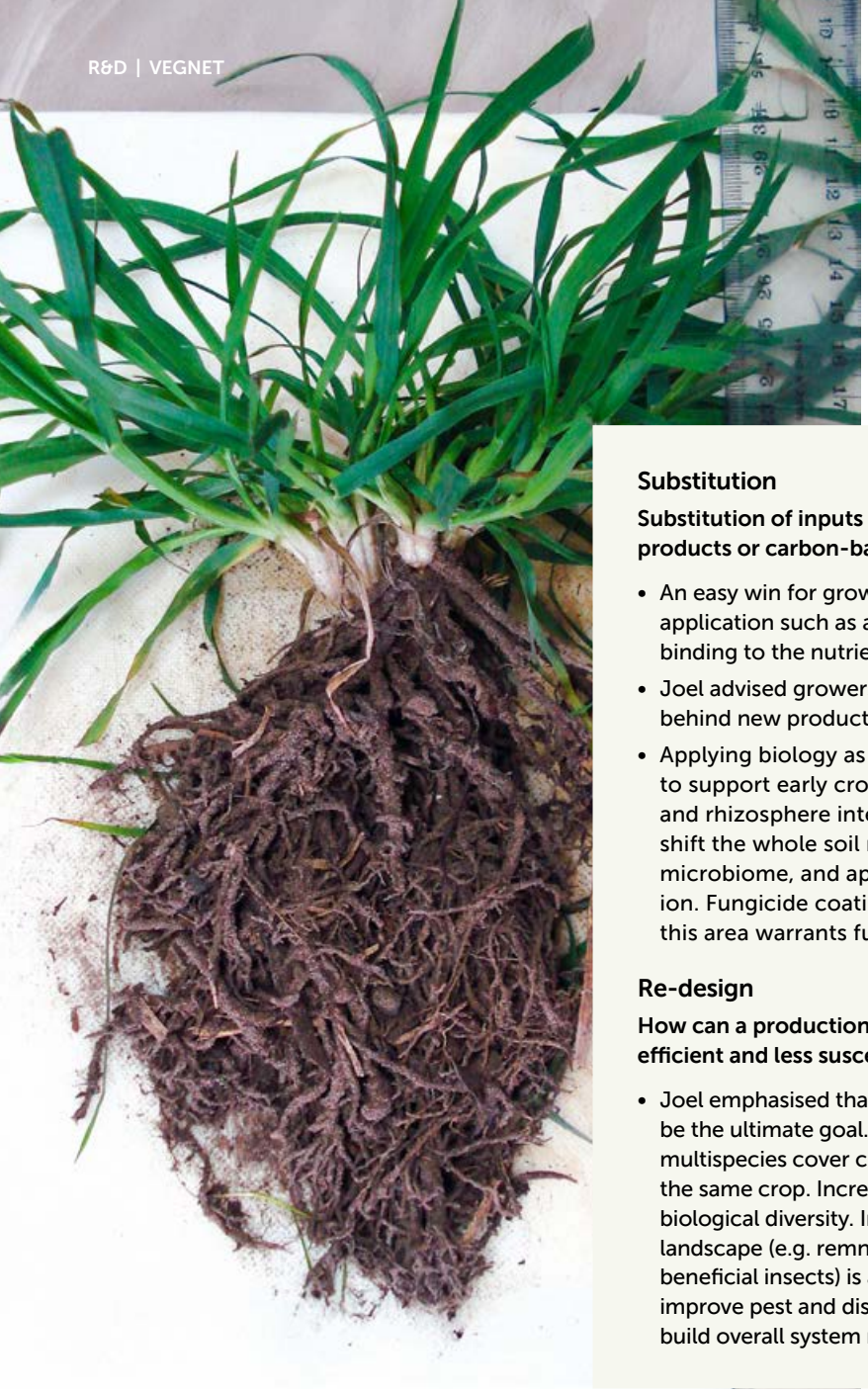
HERE ARE SOME OF OUR KEY TAKEAWAYS

Efficiency

For most vegetable growers, the starting point is improving efficiency.

- For nutrient use efficiency, growers were reminded to start with good information – such as soil tests and data on crop nutrient removal – to make informed decisions about application type, rate, timing and placement. Utilising tissue or sap testing during the season can also help identify what the crop actually needs – because if it doesn't need it, it's not going to take it up.
- Targeting input timing based on crop growth stages.
- Testing spray water quality is often overlooked, but it can impact how well any foliar applied product works before it's even left the tank. Salinity and pH >6 as well as turbidity can reduce efficacy.
- Foliar feeding was positioned to complement soil nutrition rather than replace it, useful for targeting deficiencies or imbalances especially when root uptake is delayed or hindered due to soil conditions or weather. By applying nutrients directly to the leaf, growers can work around inefficiencies in the soil such as root zone restrictions, nutrient tie-up or leaching or effects of extreme temperatures, and have a much faster plant response with lower input costs.
- Adding organic matter in different forms can improve soil health, support soil life diversity and enhance nutrient use efficiency.

Above L-R. Group discussion at the Joel Williams guest speaker event. Prue Rothwell, Doris Blaesing and Tayla Field from the VegNET Tasmania and Soil Wealth ICP team.



Substitution

Substitution of inputs involves looking at alternatives like biological products or carbon-based inputs.

- An easy win for growers is integrating a carbon source with nutrient application such as a humic or fulvic acid, which can act as a sponge, binding to the nutrients and making them more available to plants.
- Joel advised growers to always ask questions and look for the data behind new products, rather than taking claims at face value.
- Applying biology as a seed treatment can be a simple, effective way to support early crop establishment. It targets root development and rhizosphere interactions, often more efficiently than trying to shift the whole soil microbiome. Seed already carries its own natural microbiome, and applying a suitable treatment can support its function. Fungicide coating may interfere with biology around seed, and this area warrants further exploration.

Re-design

How can a production system be re-designed to be sustainably efficient and less susceptible to pests, weeds and diseases?

- Joel emphasised that diversity, especially functional diversity, should be the ultimate goal. This can be achieved through crop rotations, multispecies cover crops and pastures, or even variety blends within the same crop. Increasing above-ground diversity will supports soil biological diversity. Incorporating plant diversity in the productive landscape (e.g. remnant bush, riparian plantings, wind breaks, hosting beneficial insects) is also key part of re-design. When done well, it can improve pest and disease management, enhance resource use, and build overall system resilience.

Across the board, one theme kept emerging: roots matter and soil compaction is a major challenge. Building root mass below ground plays a big role in crop resilience and building soil carbon. Large, healthy root systems in well-structured soil support microbial activity, improve nutrient cycling, reduce reliance on external inputs, and reduce irrigation needs. On the flip side, crops with plenty of top growth but limited root systems tend to need more support to get through the season.

For those in the room, the value of the day was in keeping things grounded. No silver bullets, unicorns or 'silver unicorns' as they were named on the day – just a range of practical ideas that can be tested, adapted and applied depending on the farm. *Growing Regeneratively* will carry this approach forward as it gets underway this season.

FIND OUT MORE

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Above. Plant rhizosphere sample.

VEGNET

Western Australia

REGIONAL UPDATE

Supporting growers across WA

It's been a busy and rewarding period for VegNET WA over the last month, with plenty happening across the state to support our growers, connect people, and showcase new ideas and technologies. From demonstration days and study tours to regional roadshows and on-farm visits, the focus has remained the same – making sure growers have access to practical, relevant information and the opportunity to be part of industry conversations.

One of the highlights has been the Open Weed Locator (OWL) demonstration day, which brought together growers, researchers, and industry to see this exciting technology in action. OWL is a low-cost, open-source system that uses cameras and artificial intelligence to detect and target weeds, rather than spraying entire paddocks.

Seeing it operate in a real-world setting really helped bring the concept to life and sparked plenty of discussion about how tools like this could fit into different farming systems. It was also a great example of how innovation doesn't always have to come with a high price tag – something that really resonated with growers.

We also had the opportunity to attend the Gatton Drone Demo Day, where the focus was on the growing role of drones in agriculture. From crop monitoring and mapping to targeted spraying, it's clear that drone technology is evolving quickly.

Events like this are invaluable for getting a better understanding of what's possible and how these tools could be adapted for WA conditions. It's one thing to hear about new technology, but seeing it in action makes a big difference. There are other demonstration days locked in for the next few months across WA.

Closer to home, the Carnarvon and Geraldton roadshows were a fantastic chance to connect directly with growers in regional areas. These sessions are always a highlight, providing a space for open conversations about what's happening on the ground – what's working, what's challenging, and where there are opportunities for improvement. Every region is different, and these roadshows are an important way to make sure extension activities are relevant and tailored to local needs.

Alongside these larger events, a big part of VegNET WA's work happens through on-farm visits and one-on-one conversations. Getting out to farms, meeting growers, and seeing operations firsthand is invaluable. It helps build strong relationships and ensures that the support we provide is grounded in real-world challenges. It's also a great way to connect people – whether that's linking growers with new ideas, research, or each other.

What stands out across all of these activities is the willingness of growers to engage, share their experiences, and explore new approaches. Whether it's trialling new technology, attending an event, or simply having a conversation, that openness is what drives the industry forward.

Looking ahead

There's plenty more to come, and we're particularly excited for the upcoming Myalup roadshow in May. It's shaping up to be another great opportunity to connect with growers, share updates, and continue the conversations around innovation and industry development.

If you're keen to get involved or want to stay up to date with what's happening, keep an eye on the VegetablesWA and AUSVEG socials for more information on upcoming events and activities.

Top L-R. Lisa Hasson and Angela Tarbottom. Presentation at the Carnarvon roadshow.
Right. Gatton Drone Demo Day.

Beyond extension
Delivering real outcomes for WA growers

Vegetable growers across Western Australia are facing increasing pressure from rising input costs, water constraints and pest challenges, reinforcing the need for practical, targeted extension that delivers real on-farm outcomes

Delivered as part of the Hort Innovation funded project *Partnering with Vegetables Western Australia to strengthen VegNET engagement of culturally and linguistically diverse communities* (VG25001), these activities focused on improving engagement with culturally and linguistically diverse (CALD) growers, particularly Vietnamese speaking communities. They also strengthened access to information, training and industry support through regional roadshows, on-farm engagement, trials and bilingual training.

Turning engagement into action

A key focus of the project is to move beyond information sharing and deliver practical outcomes for growers.

Through ongoing engagement, growers have been connected with the WA Government's Horticulture Water Use Efficiency Grants, supporting investment in infrastructure and practices that improve water efficiency and resilience. With support from VegetablesWA, several growers have secured funding to implement changes such as installing permanent netting, upgrading irrigation systems, improving water quality and transitioning to protected cropping.

For many growers, this was the first time accessing funding support, turning awareness into real on-farm change.

These investments are already delivering results. One capsicum grower reduced water use by up to 60 percent after installing netting, while also improving crop quality. In another case, irrigation upgrades helped reduce heat stress and improve performance during summer.

Alongside this, on-farm trials are supporting more informed, data-driven decisions on irrigation and soil management. A soil moisture probe demonstration trial is tracking moisture, salinity and temperature in real time, helping growers fine-tune irrigation practices.

Early results are promising. A Brussels sprout trial improved irrigation efficiency over the summer, with the work now continuing in spring onions to extend learnings across crops. In parallel, a soil amendment trial in cherry tomatoes, delivered with DPIRD, is testing bentonite clay to improve soil health and moisture retention.

The project is also strengthening grower capability through bilingual training. Accredited chemical training delivered in English and Vietnamese has engaged 44 growers across Carnarvon and Perth, improving confidence in chemical use, safety and compliance. It has created a supportive learning environment where growers can share experiences and learn from each other.

Above. RDO Chi Nguyen during an on-farm trial.

FIND OUT MORE

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The *Partnering with Vegetables Western Australia to strengthen VegNET engagement of culturally and linguistically diverse communities* project is funded by Hort Innovation using the Vegetable research and development levy and contributions from the Australian Government.
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"Prices keep going up, and it's getting harder to plan. But coming to events like this helps; we get the latest information and know we're not dealing with it alone." CARNARVON GROWER

Carnarvon and Geraldton roadshows

VegetablesWA's Carnarvon and Geraldton roadshows, coordinated by Regional Development Officer Chi Nguyen in March 2026, highlighted the impact of targeted, inclusive extension, particularly for CALD growers.

Delivered at a critical time for the industry, the roadshows provided an opportunity to reconnect with growers face-to-face while delivering practical, regionally relevant information. The program covered key topics including fall armyworm (FAW) management, regional updates, vegetable research, crop nutrition, postharvest innovation and soil-borne pest management. Just as importantly, the events created space for open discussion, giving growers the chance to ask questions, share experiences and connect directly with the industry.

A standout feature was the extension beyond the meeting room and into the paddock. On-farm visits focused on FAW, one of the most pressing pest challenges currently facing the sector. These visits enabled real-time identification and discussion, particularly around distinguishing FAW from similar pests such as cluster caterpillar and helicoverpa. This hands-on approach reinforces the value of the VegNET model, supporting growers not just with information, but with practical, on-ground application.

Seeing pests in the field builds confidence, and accurate identification is the first step to effective management.

Accessibility remained a strong focus throughout the roadshows. Vietnamese language resources were provided, along with translation and interpretation support during presentations and discussions. This ensured growers could fully engage with the content and participate in conversations. For many CALD growers, this removed a long-standing barrier to extension and helped build trust.

Across both events, more than 70 people attended, with growers making up over 40 percent of participants. Despite ongoing uncertainty, the overall sentiment was one of resilience.

Just as important as delivering information is listening. Across both regions, growers spoke openly about the pressures they are facing. While pest pressure, water availability and production costs were all raised, one issue stood out: rising fuel and fertiliser costs. These insights ensure extension remains relevant, responsive and grounded in the real needs of growers.

Looking ahead

As the vegetable industry continues to navigate rising input costs, water constraints and increasing pest pressure, the need for practical, well-connected extension has never been greater.

This project highlights what effective extension looks like, bringing together on-farm support, access to funding, data-driven decision-making and targeted capability building to deliver real outcomes. It also reinforces the importance of a more inclusive approach, ensuring CALD growers are not only reached but actively engaged as part of the broader industry.

Looking ahead, VegetablesWA will continue to build on this momentum through VegNET, strengthening regional engagement, expanding on-farm trials and scaling bilingual training. A key priority will be developing local capacity and partnerships to support a more sustainable, grower-led model of extension.

Importantly, the learnings from this work extend beyond Western Australia, contributing to a broader national effort to support a more inclusive, responsive and effective approach to grower engagement across Australia.

Top L-R. Bilingual training in progress. VegetablesWA's Geraldton roadshow.

VEGNET QUEENSLAND
Wide Bay Burnett
REGIONAL UPDATE

Post-flood recovery in the Wide Bay Burnett

Following intense rainfall and rising river systems across the Wide Bay Burnett, many growers have faced inundated paddocks, infrastructure damage and production delays. While some welcomed the rain, others have quickly shifted focus to recovery.

As the Burnett River and surrounding catchments rose, low lying production areas were hit the hardest, with floodwaters moving through vegetable blocks, orchards and farm infrastructure. Impacts have ranged from crop losses and waterlogged soils to erosion and damaged irrigation systems.

As waters receded, growers began assessing damage and planning next steps. Flooding can cause crop loss, increase disease risk due to waterlogging, and leave behind sediment and debris that require clean up before operations can resume. In vegetable systems, these disruptions can significantly affect planting schedules and supply commitments.

Across Bundaberg and surrounding areas, growers have been determining which crops may recover, where replanting is needed, and checking critical infrastructure such as pumps, irrigation and access roads for damage.

Soil health remains a key focus. While flood sediments can add nutrients, they may also introduce contaminants, pests and weed seeds. Many growers are allowing paddocks to dry before re-entering and using soil testing to guide recovery decisions.

For surviving crops, close monitoring is essential, as water-stressed plants are more vulnerable to disease, particularly under humid conditions. At the same time, growers are carefully managing biosecurity and food safety risks, especially where floodwater may have contacted edible produce.

Support networks have played an important role throughout recovery. VegNET has been assisting growers on farm and attending the Bundaberg and Gayndah disaster recovery drop-in centres, helping connect producers with information, services and support. Industry groups and extension staff continue to provide practical guidance on recovery, soil health and risk management.

Despite the challenges, the region's growers have shown strong resilience, with many beginning clean up and planning within days of floodwaters receding.

While flooding remains a part of farming in the Wide Bay Burnett, events like this highlight the importance of preparedness, strong support networks and industry collaboration. The resilience of local growers ensures the region will continue to play a vital role in supplying fresh produce across Australia.

Above L-R. VegNET Regional Development Officer Jessy Logan and Department of Primary Industries Officer Andy Mead.

Additional resources

SCAN TO VIEW

Exceptional Disaster Assistance Recovery Grants of up to $75,000 are available to assist directly impacted producers cover the cost of clean-up and reinstatement following the weather event and subsequent flooding.

SCAN TO VIEW

The VegNET Regional Development Officer Jessy Logan has developed a **Post Flood Recovery factsheet for horticulture growers** to reference and seek additional information.

FIND OUT MORE

Please contact Jessy Logan Regional Development Officer on 0407 366 797 | vegnet@bfvg.com.au

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VEGNET NORTH, WEST & SOUTH-EAST

Victoria

REGIONAL UPDATE

ChemCERT upskilling for CALD workers

VegNET Victoria has rolled out an Innovation Fund initiative designed to increase access to ChemCERT certification for CALD (Culturally and Linguistically Diverse) workers across key vegetable-growing regions in Victoria.

A ChemCERT certification is a legal requirement in Australia for anyone working with hazardous agricultural chemicals. It underpins safe, compliant pesticide and chemical use on farm.

However, many Registered Training Organisations (RTOs) can only deliver the course in English, which creates a significant hurdle for workers who are more confident learning and being assessed in another language. For CALD workers, this barrier can limit employment options, restrict progression into higher-responsibility roles, and reduce confidence when dealing with chemical labels and safety directions.

For growers and employers, limited availability of qualified staff increases pressure on existing teams, reduces flexibility during peak periods, and can create business risk if chemical tasks cannot be allocated to appropriately trained personnel. The Innovation Fund initiative addressed this skill and access gap by offering a subsidised pathway to certification with bilingual delivery.

While the program was not restricted exclusively to CALD participants, it was intentionally structured to remove language barriers that can prevent capable workers from meeting mandatory chemical-handling requirements. The initiative was subsidised by Hort Innovation through the Vegetable Fund and coordinated by VegNET Victoria as part of its broader focus on workforce capability building.

Training was delivered in both English and Vietnamese by VEG Education, an award-winning RTO. Where required, the format supported clarification of complex concepts in Vietnamese, while reinforcing the standard compliance language used in Australia.

A key focus of the rollout was the large Vietnamese community in the Werribee, Lara and Springvale districts, many of whom own and operate farms that make up a significant portion of the workforce in surrounding areas. Feedback to VegNET Victoria indicated that access to accredited training in participants' first language would meaningfully improve participation and outcomes.

The core goal of the project was to support Vietnamese-speaking growers and farm workers to access ChemCERT training in Vietnamese, while still ensuring participants could engage with the English terminology commonly used on labels, safety data sheets and workplace documentation.

The Vietnamese Growers' Association played a crucial role in supporting the initiative by covering the participant contribution on behalf of its members, which significantly boosted uptake and trust.

In total, 25 students successfully completed the training and received a ChemCERT qualification, with the strongest uptake in Lara, reflecting its high concentration of independent Vietnamese growers.

The result is an increased pool of ChemCERT-qualified workers and growers who can safely and legally manage agricultural chemicals, improving workforce capability and supporting compliance at farm level.

Michael Tran, a leader and agronomist in the Lara Vietnamese community, noticed many positive changes in the farms that completed their ChemCERTs. Growers developed a better understanding of the risks associated with the chemicals they use, were able to convert application rates more accurately, understood withholding periods and used corrective protective equipment. Growers were also able to get FreshCare-certified, enabling access to a wider range of markets. This represents real change with economic and health benefits for Victorian vegetable farmers.

High levels of satisfaction were reported for the training, with the majority of participants indicating they were very happy with the outcomes. The next step for VegNET Victoria will be to assess whether this program should be extended to additional skills or language groups.

Above L-R. One of the graduating classes. The Vietnamese trainer from VEG Education

FIND OUT MORE

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VEGNET
South Australia
REGIONAL UPDATE

Skilled growers, strong systems
Extension in a time of disruption

Exploring how South Australia's horticulture sector is navigating fuel, fertiliser and biosecurity challenges through the combined strength of skilled growers and extension, this piece highlights the vital role of extension in translating policy into practice, supporting decision-making, and feeding real-time insights into advocacy – ensuring growers remain informed, connected and resilient in an increasingly complex and uncertain risk environment.

Above L-R. Capsicum production, processing cucumbers and a grower loading produce for transport.

The expanding role of horticulture extension in times of systemic risk

South Australia's horticulture sector has long been defined by its adaptability, technical capability and the deep, practical knowledge of its growers. From intensive protected cropping systems to broadacre vegetable production, growers operate at the intersection of biology, climate, logistics and markets – making complex decisions daily that directly influence productivity, profitability and food supply.

In recent months, however, this complexity has intensified. Ongoing uncertainty around fuel supply, fertiliser access and mounting biosecurity pressures has created a layered risk environment unlike anything seen in recent years. In this context, the role of the horticulture extension officer has evolved significantly. No longer confined to knowledge transfer alone, extension now operates at the critical junction between agri-politics, policy, biosecurity and on-farm decision-making – ensuring that growers are not only informed but equipped to act.

At the centre of this system are the growers themselves: highly skilled, deeply experienced business operators who continually adapt to shifting conditions. Extension does not replace this expertise – it amplifies it, providing the clarity, coordination and confidence needed to respond under pressure.

Grower capability at the core

It is important to recognise that South Australian vegetable growers are not passive recipients of information or support. They are active problem-solvers, innovators and risk managers, demonstrating a high level of technical and operational competence.

The recent fuel and fertiliser challenges have once again highlighted this capability. Faced with rising costs, uncertain supply and logistical constraints, growers have responded with resourcefulness – reviewing input efficiency, negotiating supply arrangements, exploring alternative products, and adjusting crop scheduling where necessary.

However, even the most capable operators require access to accurate, timely and relevant information to make confident decisions, particularly when conditions are changing rapidly. This is where extension plays a critical role.

The agri-political landscape: turning insight into influence

The response to fuel and fertiliser concerns has underscored the importance of coordinated agri-political engagement. While government efforts have focused on maintaining national fuel reserves and stabilising supply chains, the realities in regional production zones have been more nuanced.

FIND OUT MORE

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Industry bodies such as AUSVEG SA carry the responsibility of representing these realities, ensuring that decision-makers understand the operational impacts of policy settings, market volatility and supply chain disruptions. But effective advocacy depends on credible, real-time evidence and extension, particularly through programs like VegNET.

Extension officers act as interpreters of uncertainty. They distil government briefings, policy updates and market signals into clear, practical insights that growers can apply immediately. At the same time, they ensure that grower experiences – often diverse and region-specific – are captured and communicated back to advocacy channels.

In times of disruption, information becomes one of the most valuable resources available to industry. Extension officers play a central role in gathering, validating and distributing this information, effectively operating as an intelligence network across the horticulture sector.

This network functions in two critical directions:

- It translates external developments into on-farm implications. Government policy, biosecurity directives, fuel supply updates and fertiliser market trends are analysed and contextualised, allowing growers to understand not just what is happening, but what it means for their business.
- It captures the lived experience of growers. Extension officers engage directly with producers to identify emerging risks such as regional fuel shortages, AdBlue constraints, fertiliser delivery delays, workforce disruptions and cost pressures. These insights are then fed back into advocacy and policy discussions.

This two-way flow of information is essential. It ensures that growers are not operating in an information vacuum, and that policymakers are not making decisions without understanding their practical consequences. Importantly, it also reinforces the value of grower knowledge. The observations and decisions made on-farm are not isolated – they contribute to a broader understanding of industry conditions and inform responses at a systemic level.

Navigating complexity on farm

The convergence of fuel and fertiliser challenges created a particularly complex decision-making environment for growers. Fuel underpins nearly every aspect of production – powering irrigation systems, machinery, harvest operations, freight and biosecurity responses. Fertiliser, meanwhile, directly influences crop performance, yield potential and soil health.

These inputs are not independent. Disruptions in fuel supply can affect fertiliser distribution. Fertiliser shortages can alter crop scheduling. Together, they have implications for market supply, pricing and long-term sustainability.

Above L-R. Extension Officers Kirsty and Peta on farm. Lettuce crops, Northern Adelaide Plains.

Growers are responding to this complexity with a high degree of skill. Many are reassessing input use efficiency, optimising application timing, and exploring alternative nutrient sources. Others are strengthening relationships with suppliers, coordinating logistics more closely, and building contingency plans into their production systems.

Extension officers support these efforts by providing context and clarity. They help growers interpret market signals, understand potential scenarios, and evaluate options within the framework of their specific enterprise.

Crucially, extension also provides confidence. In situations where information is incomplete or rapidly evolving, having access to a trusted, knowledgeable advisor can make the difference between reactive decision-making and strategic action.

The road ahead: a coordinated approach

As ongoing uncertainty around fuel supply, fertiliser access and mounting biosecurity pressures continues to shape the operating environment, the horticulture sector is navigating a level of layered risk unlike anything seen in recent years. In this landscape, the combination of grower expertise and a strong, responsive extension network will be critical. Growers bring the skill, experience and adaptability to respond, while extension ensures they are supported with the intelligence, connections and clarity needed to act with confidence. Together, they form a system that is not only capable of managing disruption, but of adapting and strengthening through it.

TASMANIA
CASE STUDY

National Vegetable Extension Network
VegNET
TASMANIA

CASE STUDY

Seeding change: Enhancing soil health with cover crops in Tasmanian vegetable production

Introduction

Tasmania's north-west region supports some of the most intensive and diverse vegetable cropping systems in Australia. Key crops include potatoes, onions, carrots, brassicas, peas, beans, poppies, pyrethrum, and cereals, with fallow periods occasionally used.

Rotations change frequently and are typically planned only 1-3 years in advance, which is largely driven by annual or short-term contracts to meet market demand for both processing and fresh market crops. Major vegetable packers and processors – alongside extraction crop industries – hold most grower contracts and have some level of influence over agronomic decisions through field officers, while most growers employ their own agronomist.

These high-intensity systems often involve heavy tillage, disturbance with planting and harvest, and regular chemical use – practices that can degrade soil structure and biology over time. While there is interest in greater cross-industry communication to share paddock history, this remains limited, and practices like cover cropping are often not prioritised due to the fast-paced nature of rotations and adaptations to initial rotational plans.

The nature of these intense rotations means there is the opportunity to increase awareness and build knowledge with local growers and agronomists on long-term soil health and weed management strategies, and look at the practicalities of implementing these into the production systems.

Soil management has been an ongoing regional priority for VegNET Tasmania, working with businesses, local industry and other national vegetable levy-funded projects – such as the Soil Wealth and Integrated Crop Protection (Soil Wealth ICP) project – to share knowledge on practices such as cover cropping as a tool to improve productivity and profitability for growers in vegetable production systems.

VegNET Tasmania has worked closely with local growers such as Harvest Moon to promote cover cropping and other soil health practices.

Key messages

- In Tasmania's high-intensity vegetable and cropping systems, heavy tillage and regular herbicide use are common for soil preparation and weed control, particularly in rotations including extractive crops such as poppies and pyrethrum.
- Multi-species cover crops can be used as a rotation crop in vegetable production to improve soil structure, biology, nutrient cycling, weed control and erosion management.
- Harvest Moon, a Tasmanian vegetable grower and packer, has spent three years using multi-species cover crops to enhance soil health in its rotations and is working on a trial with Cradle Coast NRM to quantify the impact of multi-species cover crops on soil biology.
- VegNET Tasmania will share the results of the trial and continue providing information and support to help vegetable growers explore the benefits of soil health management strategies such as cover cropping.

TASMANIA
CASE STUDY

Seeding change: Enhancing soil health with cover crops in Tasmanian vegetable production

A local business and its evolution over time

Harvest Moon is a privately owned fresh produce business based in Forth, on Tasmania's north-west coast, operating since 1981. It supplies major national retailers and acts as a local wholesaler, consolidating produce and servicing Tasmania's independent network.

To ensure year-round supply – especially during Tasmania's shoulder seasons – Harvest Moon expanded its farming operation to Narrandera, NSW enabling counter-seasonal production and greater resilience to extreme weather. The company also partners with growers in Gatton, QLD and Werribee South, VIC to maintain consistent supply of key crops such as carrots, onions, broccoli, cauliflower, spinach and beans, growing and supplying more than 15 varieties.

In Tasmania, Harvest Moon contracts 60-70 growers each season, supported by field officers from planting to harvest. It also leases land long-term to manage production directly and monitor paddock conditions over time.

Producing more than 15 vegetable varieties at scale presents challenges for soil health strategies, especially when driven by commercial demands. However, for Chief Agricultural Officer Jono Craven – who joined the business four years ago – prioritising soil health is a long-term evolution aimed at improving crop performance and future farm resilience.

Building the foundations

According to Mark Kable, Harvest Moon Managing Director, significant change was sparked in the business by a Bayer Crop Science Australia grower group focused on soil health and cover cropping.

"Twenty-five years ago, there was no focus on soil health – we'd rotary hoe repeatedly," Mark recalled. "The grower group brought in global experts on cover cropping and reduced tillage, which helped upskill and inspire those involved."

Since then, Harvest Moon has adopted practices to improve soil health and optimise yields, including strip tilling in its brassica program. Where six cultivation passes were once needed, strip tilling and intercropping have nearly halved that number – cutting costs and reducing soil impact.

The company also began using single species cover crops such as annual ryegrass, tillage radish and caliente mustard. The biofumigant properties of the mustard have proven particularly effective before carrot crops, with Mark noting it has "worked exceptionally well".

Image: Agro-ecologist Ali Dugand has played a significant role in introducing and scaling multi-species cover cropping at Harvest Moon.

During this time, Mark invested in a Wilcox machine to trial an alternative to power take-off (PTO) driven equipment. Jono explained: "It's a chopper-roller system for light cultivation and residue cutting. We can use it to crimp knee-high cover crops, replacing chemical termination." This approach lowers input costs and helps organic matter break down naturally into the soil.

Mark and Jono also acknowledged the ongoing support of extension projects like VegNET, Soil Wealth ICP and Cradle Coast NRM in promoting soil health practices locally.

Investing in cover cropping at Harvest Moon

Chemical use has long been a major tool in agriculture, but Jono explains that its role is changing.

"Ag chemistry has been heavily relied on, but restrictions are increasing for many reasons. We need to expand the toolbox," he said.

For Jono, cover cropping is a crucial tool, especially alongside new technologies and machinery that will shape future farming practices. Harvest Moon estimates cover crops save over $1,000 per hectare in chemical costs.

Recognising this, Mark brought agro-ecologist Ali Dugand on board in late 2022 to build the team's expertise. Ali has played a key role in introducing and scaling multi-species cover cropping at Harvest Moon. She points out that multi-species mixes outperform single-species options, showing results in six to eight weeks, though longer rotations provide even greater benefits. As a result, Harvest Moon has adopted multi-species cover cropping as standard practice over the past three years.

Ali highlighted several benefits, including weed

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suppression, absorption of residual herbicides and improved soil structure. This is particularly valuable when following high herbicide-use crops or farming on hillsides prone to erosion, where cover crops – even grasses sown in wheel tracks – have helped to stabilise soil.

When designing a mix, species are selected for complementary traits, such as root structure and interactions with soil microbes, to optimise soil health and nutrient cycling. Prior to joining Harvest Moon, Ali and agronomist Josh Wing collaborated with local farmers and seed suppliers to develop a simple, widely available blend (three cereals, two legumes, one herb) to encourage adoption across the north-west region.

Improving grower productivity, profitability, preparedness and competitiveness

Ali and the Harvest Moon team are working with Cradle Coast NRM as a part of its Natural Advantage Project which is measuring the benefits and practicalities of incorporating multi-species cover crops into north-west Tasmanian production systems, with a focus on putting a price on changes in soil biology at the Harvest Moon trial site.

"Cover cropping is a passion of mine – something that has evolved over time," Ali said. "It's also become quite complex, because in this space, you can have targeted 'recipes' for almost anything. One of the biggest barriers to adoption is the confusion growers face – questions like, 'How do I even grow one of these?'"

Speaking about working with growers to implement cover cropping programs, Ali emphasised: "Growers are people who produce crops for a living – they're specialists. So, it's about starting with a simple mix to help build their confidence, not just with growing cover crops, but also with managing the cover crop termination."

The team has commenced a trial comparing a bare fallow plot with one planted with a multi-species cover crop, measuring soil and plant health through physical, chemical and biological attributes.

Initial results from the cover crop plots are encouraging. They include:

- Moderately lower soil penetration resistance to 20cm, with further improvement between 20-40cm
- Higher soil nitrate levels, while most other chemical traits between the plots are similar
- Increased nutrient solubilisation, nutrient cycling, disease and drought resistance, residue breakdown and microbial balance
- Higher Haney soil health score, microbial respiration, total carbon and organic matter.

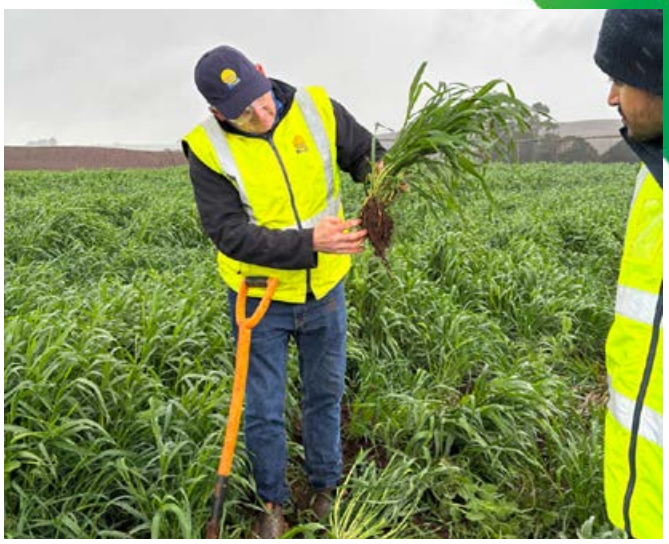

Image: Harvest Moon Chief Agricultural Officer Jono Craven looking at root development in the demonstration site.

Cradle Coast NRM and Harvest Moon team demonstrating the use of a penetrometer which can be used to provide an indication of compaction.

The project is also engaging with the Tasmanian Institute of Agriculture (TIA) which is working on interpreting data collected through its electronic nose, the QUOLL®, and relating this to soil biology at the trial site.

These early indicators are positive, however final trial

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results will be available in 2026 via Harvest Moon and Cradle Coast NRM, with resources shared through the Soil Wealth ICP project and VegNET Tasmania.

The challenges of change

Implementing change takes time, and one of the main challenges Harvest Moon faces in integrating cover cropping across its full rotation is balancing commercial priorities with agronomic benefits. With over 15 vegetable crops and tight planting schedules driven by retailer demand, fitting cover crops into the rotation is complex. Land often needs to be ready on time, limiting windows for cover crops or forcing chemical termination methods.

Still, the business is evolving. The field team works closely with contracted growers to build understanding of how multi-species cover crops can improve soil health and system resilience. While uptake varies based on grower timelines, perceptions, and resources, interest is growing as adoption increases.

Harvest Moon's long-term goal is to make cover cropping a standard practice – integrated into daily operations and rotational planning across its farms in Tasmania and NSW, and within its grower network.

Next steps

Ongoing support from VegNET Tasmania and the Soil Wealth ICP project, along with engagement from Cradle Coast NRM, is vital to raise awareness and guide growers to adopt these practices.

VegNET will be working with the Harvest Moon and Cradle Coast NRM teams on an extension event for growers and industry to come together and discuss the outcomes of the demonstration site when further, multi-season results are available in 2026.

Updates on the project will be shared through Cradle Coast NRM, VegNET Tasmania social media and newsletters. You can subscribe to the VegNET Tasmania newsletter here: tasfarmingfutures.us11.list-manage.com/bscribe?u=98bb2e9102d39f92ae387b183&id=f555bcb776

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Further information

Contact VegNET Tasmania Regional Development Officer Tayla Field at taylaf@rmcg.com.au or 0429 391 538.

The Natural Advantage project is supported by the Australian Government through funding from the Natural Heritage Trust under the Climate-Smart Agriculture Program and delivered by Cradle Coast NRM, a member of the Commonwealth Regional Delivery Partners panel.

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Read more about the QUOLL e-nose:
utas.edu.au/tia/research/research-projects/project/agricultural-systems/the-quoll-e-nose-microbes-against-climate-change

Haney Health Score

Read more about the Haney Health Score:
scu.edu.au/media/scu-dep/services/environmental-analysis-laboratory/documents/Haney-total-soil-health-example-report.pdf

The Haney Health Score is collaborated to US soils and this needs to be taken into account with test interpretation with samples from Australian soils.

Image: Harvest Moon and Cradle Coast NRM team demonstrating water infiltration rates at the cover crop demonstration site.

SOUTH AUSTRALIA
CASE STUDY

National Vegetable Extension Network
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SOUTH AUSTRALIA

CASE STUDY

Building capability, connection and confidence for on-farm resilience

Introduction

Vegetable growers operate in an increasingly complex and competitive environment where success depends on more than growing high-quality produce. Building business capability skills – such as strategic planning, marketing, governance, risk management and workforce development – is essential to remain viable and sustainable.

Like many growers, Andrew and Zuri Braham of Braham Produce in the Northern Adelaide Plains were so busy managing their day-to-day operations that long-term business planning was delayed. Their son Evan had recently joined the business, keen to upskill and make his mark in the industry, but with limited exposure to structured business development opportunities.

Braham Produce has operated for nearly 25 years, initially producing cucumbers and tomatoes before transitioning to premium capsicums under protected cropping. The business now manages 60,000 greenhouse plants with advanced climate control systems, supplying major market agents from November to July. Despite their technical capabilities and commercial success, the business recognised the need to address governance, marketing and operational efficiency to prepare for future challenges and generational transition.

VegNET SA collaborated with AUSVEG SA to deliver the Farm Business Resilience (FBR) Program, supported by the Future Drought Fund. The program aimed to improve farm business resilience, drought preparedness and risk management. The FBR Program delivered a series of targeted masterclasses for growers, covering marketing, lean management, water management and succession planning and governance. The goal was to equip growers like Braham Produce with practical tools, strategies and connections to strengthen their operations now and into the future.

Key messages

- Braham Produce is a leading producer of premium capsicums under protected cropping and has operated from the Northern Adelaide Plains in South Australia for almost 25 years.
- Despite their advanced production knowledge and technical strengths, growers Andrew and Zuri Braham were keen to improve the resilience of their business, including governance, marketing and operational efficiencies, to prepare for the future and facilitate the transition of the business to their son, Evan.
- VegNET SA and AUSVEG SA delivered the Farm Business Resilience Program to vegetable growers in South Australia, which supported greater adoption of resilient business practices, drought preparedness and risk management strategies.
- Andrew and Evan attended four masterclasses as part of the program, which focused on succession planning, lean management, marketing and water management. They have since applied the learnings and insights from these sessions to the day-to-day operation of their business. The sessions also facilitated networking, allowing the Braham family to strengthen existing relationships and share knowledge with peers.

In 2025, Andrew and Evan participated in four masterclasses aimed at building business capability and resilience.

SOUTH AUSTRALIA CASE STUDY

Building capability, connection and confidence for on-farm resilience

Succession planning: Acting at the right time

Succession planning ensures the smooth transition of a farming business from one generation to the next, protecting both the operation and family relationships. Good governance involves setting clear decision-making structures, formalising roles and ensuring legal and financial arrangements – such as trusts and insurance – are in place. Having these plans established early can provide certainty, reduce conflict and safeguard the long-term sustainability of the business.

Like many growers, Andrew and Zuri are deeply involved in day-to-day operations, often leaving little time for long-term planning. While Andrew understood the importance of succession planning, it was something he admits he had "not got around to doing". The Succession Planning and Governance Masterclass was the catalyst he needed.

"It came at the appropriate time," Andrew said. "As a result of the masterclass, we're going to implement the succession plan."

The session's practical guidance on indemnity insurance, coupled with working through the "plan on a page" process, gave Andrew reassurance and clarity on what actions were essential – and what was already in place. The masterclass also provided networking opportunities, sparking productive conversations with other growers, including a friend already progressing through his own succession plan with his accountant.

A new generation stepping up

Evan is aiming to develop his skills and establish himself in the industry. As a young grower in an ageing sector, Evan found the FBR program to be a rare opportunity to access targeted professional development. Attending all four masterclasses, he took away practical tools and industry contacts that he could apply immediately.

Lean management is a systematic approach to improving efficiency by identifying and eliminating waste. In agriculture, it applies principles such as continuous improvement (kaizen), workflow optimisation, and problem-solving to processes like planting, harvesting, packing and distribution – helping growers reduce costs, improve product quality and streamline operations.

From the Lean Management Masterclass, Evan embraced the kaizen principle of continuous improvement, applying it to streamline packing operations by making small, incremental changes. This led him to seek further advice from presenter Jon Ferguson on upgrading to a new grading machine – demonstrating the program's value in fostering ongoing professional connections.

Image: Braham Produce capsicums.

The Marketing Masterclass reshaped Evan's understanding of promotion. Initially viewing digital marketing as unnecessary, he has since launched his own LinkedIn profile, connected with other growers, and refined his personal and business branding.

"It's not just about selling produce," Evan explained. "It's about showing who you are, asking why people should buy your product, and understanding your unique selling point."

A one-on-one consultation with Georgie Roberts from Pitstop Marketing helped Evan and Andrew combine their different perspectives into a unified marketing approach – blending generational insights into a stronger strategy.

Marketing in agriculture is more than selling produce – it's about building relationships, telling a farm's story, and creating a strong, recognisable brand. This includes understanding unique selling points, identifying target customers, and using channels such as digital platforms, social media and industry networks to connect with buyers and peers. Effective marketing builds trust, increases visibility, and can open new market opportunities.

SOUTH AUSTRALIA CASE STUDY

Building capability, connection and confidence for on-farm resilience

Exploring new technology in water management

Despite operating a high-tech site with climate-controlled greenhouses, Evan was inspired by the presentation in the Water Management Masterclass to explore more precise soil moisture measurement. This led to a follow-up site visit to investigate trial automation for water monitoring, aimed at improving soil health and irrigation efficiency.

Water management in agriculture focuses on using water efficiently and sustainably to support crop health, maximise yield and preserve resources. This can include monitoring soil moisture, adopting precision irrigation systems, and planning water use based on seasonal availability and crop needs. Growers can use data-driven tools and technologies to improve irrigation efficiency, maintain soil health and adapt to changing climatic conditions.

Improving grower productivity, profitability, preparedness and competitiveness

VegNET SA and AUSVEG SA leveraged their vegetable industry relationships, sector-specific knowledge and experience in extension and grower engagement in the delivery of the FBR Program. With deep understanding of the unique challenges facing vegetable producers, VegNET SA tailored the program to local needs, connected participants with relevant experts and resources, and integrated FBR content into ongoing support activities. The established communications channels and trusted presence in the industry ensured high participation rates, effective delivery and efficient use of funding, maximising the program's reach and long-term impact.

The content and format of the masterclasses in the FBR Program were relevant and led to positive outcomes for Braham Produce, including:

- Commencement of a formal succession plan
- Expansion of digital marketing activities and personal branding for the next generation
- Exploration of automation in water management for improved efficiency and soil health
- Stronger peer-to-peer learning and industry connections.

In the long-term, Andrew and Evan are confident they have gained the necessary knowledge and skills to help them continue their business into the future.

For Andrew, the program brought clarity and reassurance that many processes were already in place while highlighting where action was needed. He valued the timing and practical tools, noting: "We worked out what we need to do and what we don't need to do."

For Evan, the program delivered tangible skills and new perspectives, transforming his approach to marketing, operations and technology adoption. The masterclasses not only improved his confidence but also gave him strong industry contacts.

Together, their experience shows how structured, targeted learning can accelerate decision-making, spark innovation, and bridge generational transition in farming businesses.

Next steps

The FBR program provided Braham Produce with practical tools to strengthen their business for the future. For VegNET SA, the work now is to build on this momentum and continue supporting growers as they put learning into action.

VegNET SA will support growers who are ready to formalise succession plans, refine marketing strategies, or trial new technologies in water and operational efficiency, by connecting them with the specialists they need. As one grower reflected, "The session gave us the push we needed to finally start our succession plan – it's now a conversation we're having as a family, not just putting off."

Peer-to-peer networks will also be fostered, creating space for growers to share lessons and strengthen business capability across the industry. These connections have already proven valuable, with one participant noting: "Networking with other growers was just as valuable as the sessions – we're all facing similar challenges and it helped to share ideas."

Highlighting outcomes like those achieved by Braham Produce will showcase the value of structured learning and encourage more businesses to adopt resilient practices. As another participant observed, "The structured learning format made it easy to focus on the bigger picture without being overwhelmed."

Looking ahead, VegNET SA will deepen connections with specialists, expand opportunities for young and emerging growers, and continue tracking program impacts to demonstrate improvements in resilience and preparedness. Together with partners, they will also explore funding opportunities to ensure more South Australian vegetable growers can benefit from the knowledge, networks and confidence built through the program.

Hort Innovation VEGETABLE FUND Hort Innovation ONION FUND

AUSVEG AUSVEG SA

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Building capability, connection and confidence for on-farm resilience

SOUTH AUSTRALIA CASE STUDY

Helpful resources

- Future Drought Fund Programs (Department of Primary Industries and Regions South Australia – PIRSA): pir.sa.gov.au/emergencies_and_recovery/drought/future_drought_fund_programs
- Ultimate Guide to B2B Marketing in the Food Industry – B2B Marketing Team Coach: b2b-marketing.org/ultimate-guide-to-b2b-marketing-for-the-food-industry
- Fruit and Vegetable Wholesaling in Australia – Market Research Report (2015-2030) – IBIS World: ibisworld.com/australia/industry/fruit-and-vegetable-wholesaling/369/
- Consumer usage and attitude tracking 25/26 (MT24201) – Hort Innovation: horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/mt24201/
- Develop your succession plan – Australian Government: business.gov.au/planning/business-plans/develop-your-succession-plan
- Business Succession & Restructuring – Mellor Olsson Lawyers: molawyers.com.au/services/business/succession-planning
- Ask an Expert – Waterfind Australia: waterfind.com.au/services/ask-an-expert/
- Water Markets Intermediaries Code – Australian Competition and Consumer Commission (ACCC): accc.gov.au/business/industry-codes/water-markets-intermediaries-code
- Lean Enterprise Australia: lean.org.au

Further information

Contact VegNET South Australia Regional Development Officer Peta Coughlin at peta.coughlin@ausveg.com.au or 0409 029 745

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