vegetables australia

SUMMER 2022/23

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Cover. Hort Innovation Exporter of the Year. **L-R:** Federal Agriculture Minister Murray Watt, Hort Innovation CEO Brett Fifield, Michael Simonetta from Perfection Fresh. *Page 26.*

AUSVEG Hort Innovation

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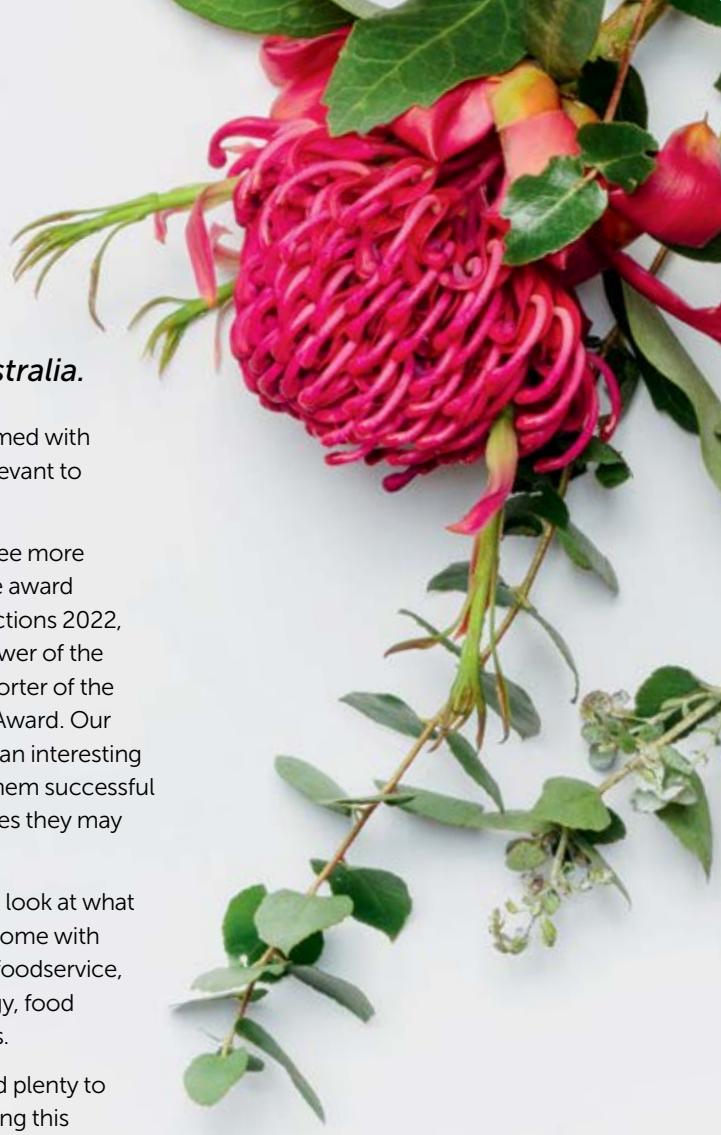
From the Editor



Welcome to the Summer edition of *Vegetables Australia.*

I am the new editor with AUSVEG, coming in at a time when the horticulture industry is slowly recovering from the impacts of covid, with field visits, conferences and events well and truly back in full swing.

Coming from a background in agriculture and livestock, it is interesting to see where the synergies lie between different sectors – biosecurity, cost of production, labour, but also to learn the nuances of vegetables, potatoes and onions, that are making life interesting!

In this issue, our RDOs have spent much of the year on the ground under the VegNET program working with growers in their region to tackle some of the big issues such as Varrao mite, leafminer as well as strengthening a sense of community.

This issue marks the first instalment of communications for the Onion industry, under the Hort Innovation project VN21000. As part of our commitment, *Vegetables Australia* will include dedicated editorial to onions from R&D, to exports, to grower profiles to enable the industry to stay in touch and informed with important information relevant to this sector.

We have also featured three more winning growers from the award presented at Hort Connections 2022, namely the Syngenta Grower of the Year, Hort Innovation Exporter of the Year and the Visy Impact Award. Our grower profiles give such an interesting insight into what makes them successful and some of the challenges they may have faced.

Last but not least we have look at what has been, and what is to come with industry updates such as foodservice, the Bureau of Meteorology, food security and commodities.

There is a lot going on and plenty to get your mind ticking during this summer.

Wishing you a safe season between harvests.

Deborah Hill

Message from the Chair

The past year has given us another 12 months of tough times. As we emerged from the lockdowns of the pandemic, weather events have played havoc with the industry's ability to plant and harvest.

AUSVEG acknowledges the highs and lows of our industry and continues to advocate for growers in areas such as cost of production, labour shortages and the toll difficult events can have on all of us.

It is important as an industry that we stay connected to encourage and support each other through all manner of issues. Events such as Hort Connections 2022, held in Brisbane in June, give us an opportunity to regroup, catch-up, relax and support each other through challenges and to celebrate the wins. It was pleasing to see so many growers and others in the sector come together in-person and offer support to one another. I encourage you to attend the 2023 event to be held in Adelaide next year in June.

AUSVEG's Annual General Meeting held in late November has seen two new faces join the Board, and we say farewell to two directors.

Please make welcome Andrew Moon who is a Queensland vegetable and onion grower from Moonrocks, and Tasmanian vegetable grower Mark Kable, from Harvest Moon, who have been appointed as Grower Directors.

Andrew and Mark will bring significant experience, expertise and passion to their new roles on the AUSVEG Board, and I look forward to their contributions on policies and initiatives that will lead our organisation and the Australian vegetable and potato industries into the future.

On behalf of the Board, I would like to thank Belinda Frentz and Michael Radcliff who have served on the Board for many years. Both have been steadfast and loyal advocates for the Australian vegetable and potato industries during their time on the AUSVEG Board.

I would particularly like to thank Belinda for her outstanding support and dedication as Deputy, particularly during the turbulent times of COVID-19, floods, and rising input costs that have put tremendous strains on all growers around the country.

South Australian vegetable, potato and onion grower Renee Pye will take over the role of Deputy Chair from Belinda, and I look forward to working with her to support growers on the issues that are important to them.

I wish you a safe and happy break during the holiday season, with a prosperous 2023.

Bill Bulmer
AUSVEG CHAIR

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(*Brevicoryne brassicae*)

Silverleaf whitefly
(*Bemisia tabaci* biotype B)

Message from the CEO

2022 was meant to be the year where we bounced back from the hardships and difficulties of COVID-19, but this year has been one of the toughest in recent memory for the vegetable industry.

The Australian vegetable industry has faced significant challenges this year. We are dealing with floods and continuous wet weather that have impacted crops and input costs. It has become increasingly difficult to run a sustainable business, as labour shortages have also made it hard to plant, grow and harvest crops.

The increases to the costs of production, which are impacting all sectors, have been particularly hard for vegetable growers who have been forced to shoulder the burden of cost of production increases.

This year AUSVEG received feedback from growers on their costs of production, expected plantings, and confidence in the industry's outlook over the next 12 months – what we heard back was stark:

1. Cost of production has increased by an average of 25% for businesses in the vegetable sector. Growers have reported to AUSVEG that:
   - Fertiliser prices have increased between 200% and 300%.
   - Chemicals and fuel by more than 40%.
   - Labour / wages by over 20%.
2. More than three quarters of businesses have indicated that their farm business margins have decreased in the last 12 months.
3. More than two-thirds of businesses are not confident about the outlook for the next 12 months, and no business surveyed indicated that they were very or extremely confident.
4. A worker shortage of at least 10,000 individual workers, which equates to many more roles as workers follow the harvest trail for seasonal work.
5. Growers were already operating in a challenging and unpredictable environment prior to the challenges of 2022.

It is in this spirit that AUSVEG has boosted its advocacy capabilities this year to help growers with these and other important issues.

AUSVEG has boosted its reach through its membership of the Food Supply Chain Alliance, which represents over 160,000 businesses with a revenue of over $224 billion, as well as the NFF Horticulture Council and the Fruit & Vegetable Consortium. The Consortium was involved in the development of a KPMG report that highlights the issues regarding potato and vegetable consumption in Australia, which are in decline.

AUSVEG has also expanded its project portfolio to deliver more services for vegetable, potato and onion growers. AUSVEG has secured the following Hort Innovation-funded programs:

- The Vegetable Industry Communications Program, building on the previous contract which has now been completed.
- Accelerating the adoption of best management practices for the Australian onion industry, the new onion industry communications and extension program.
- The Multi-Industry Export Program (Vegetables, Onions and Melons) to refine workstreams, export activities and knowledge to give growers greater outcomes in the export markets.

Planning for the annual horticulture event, Hort Connections is well underway. I would like to extend a thank you to our key strategic partners coming on board so early in the piece. This event represents a unique opportunity for industry to come together and I encourage you to register early to ensure that you can take advantage of the speakers, networking and trade that will be onsite in Adelaide from 5-7 June 2023.

On behalf of the AUSVEG team, we look forward to working toward a successful 2023 in horticulture.

Michael Coote
CEO, AUSVEG

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industry update

AUSVEG welcomes Andrew Moon and Mark Kable as new Grower Directors

AUSVEG has welcomed the appointment of Queensland vegetable and onion grower Andrew Moon, from Moonrocks, and Tasmanian vegetable grower Mark Kable, from Harvest Moon, as Grower Directors of AUSVEG following a Board Meeting and Annual General Meeting held in Sydney on 24 November 2022.

Third generation Victorian leafy vegetable grower Bill Bulmer was unanimously re-elected to the position of AUSVEG Chair, while South Australian vegetable, potato and onion grower Renee Pye was unanimously elected as Deputy Chair.

Andrew will replace Belinda Frentz, who is stepping down after serving seven years on the Board, including four as Deputy Chair, while Mark will replace Michael Radcliff, who is stepping down after three years on the Board.

Moonrocks supplies a wide range of horticulture crops, specialising in broccoli, onions and garlic from St George, Queensland. Harvest Moon Tasmania grows onions, carrots, beans, broccoli and cauliflower on a yearly basis, while its mainland branches in Victoria and Queensland source additional produce from more than 80 growers, giving the business nation-wide exposure through markets and retail networks.

"Both Andrew and Mark are actively involved in the vegetable and wider horticulture industry, with Andrew previously serving as Chair of Onions Australia and Mark the current Chair of the Tasmanian Agricultural Productivity Group," said Mr Bulmer.

"Andrew and Mark will bring significant experience, expertise and passion to their new roles on the AUSVEG Board, and I look forward to their contributions on policies and initiatives that will lead our organisation and the Australian vegetable and potato industries into the future."

"Belinda and Michael have been steadfast and loyal advocates for the Australian vegetable and potato industries during their time on the AUSVEG Board. On behalf of the AUSVEG Board, I would like to acknowledge the contributions of both Belinda and Michael during their tenures and wish Andrew and Mark well in their new roles."

"I would particularly like to thank Belinda for her outstanding support and dedication as Deputy, particularly during the turbulent times of COVID-19, floods, and rising input costs that have put tremendous strains on all growers around the country.

"Despite the challenges faced by growers and the broader community, the last 12 months have been an exciting period for AUSVEG, following our efforts to increase industry collaboration and work with the wider horticulture industry to provide effective services and representation for our growers. This was clearly demonstrated in Brisbane earlier in the year, when we partnered with the International Fresh Produce Association of Australia-New Zealand to deliver Hort Connections 2022 to nearly 3,100 local and international delegates.

"AUSVEG looks forward to continuing to effectively represent Australian vegetable and potato growers in the year ahead and is eager to continue working with the wider Australian horticulture and agriculture industry for the betterment of our growers."

Above. AUSVEG Chair Bill Bulmer

Advocacy continues to improve workforce and training

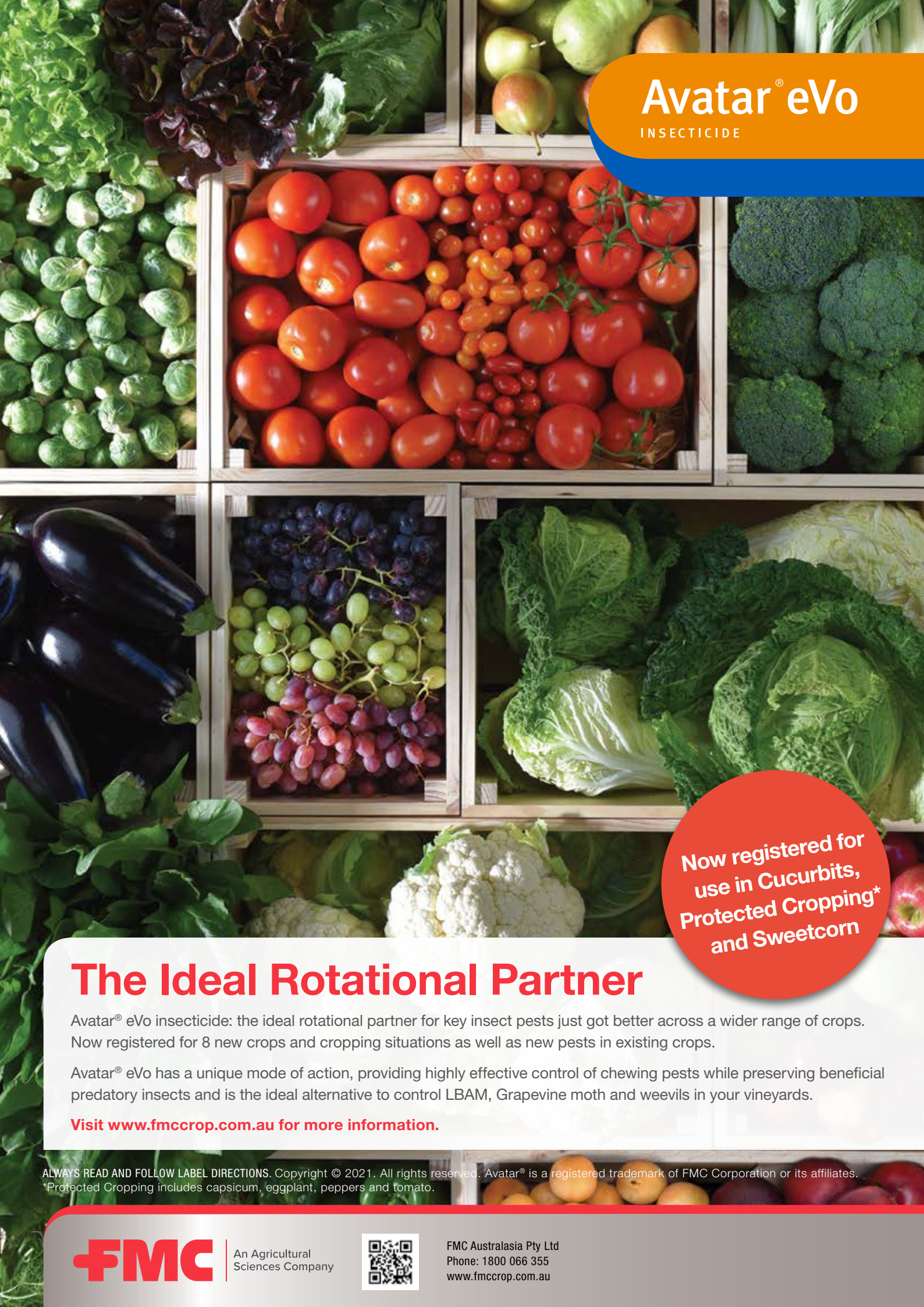
Vegetables, onions and potatoes are an important part of the Australian diet, and a significant contributor to the agriculture framework. Like many agricultural industries, the need for workers for harvesting and providing training continues to be a major focus for advocacy. AUSVEG Policy Officer Chloe Betts provides the latest update on AUSVEG's advocacy activities.

AUSVEG has been heavily involved in the labour space, tackling the issue for long- and short-term outcomes. We have been supporting growers to access labour through Horticulture Industry Labour Agreement (HILA) and the Company Specific Labour Agreement. Consultation involving the Pacific Australia Labour Mobility (PALM) scheme, continues along with promotion and educational resources for school-aged students who are considering their career paths.

A labour intensive industry, the horticulture sector is short by about 10,000 workers, which equates to many more roles as workers move with the harvest trail.

The consequences for businesses are reduced capacity to harvest, and/or less planting, as well as the longer term impact on reduced investment in areas that can improve productivity, efficiency and future profitability.

Workers under contract schemes make a significant contribution to the workforce as can be seen in *Figure 1*.



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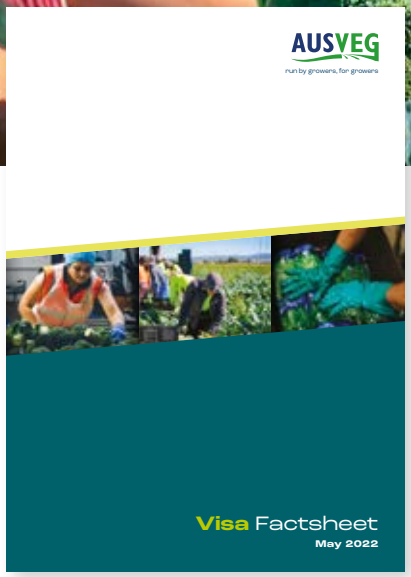
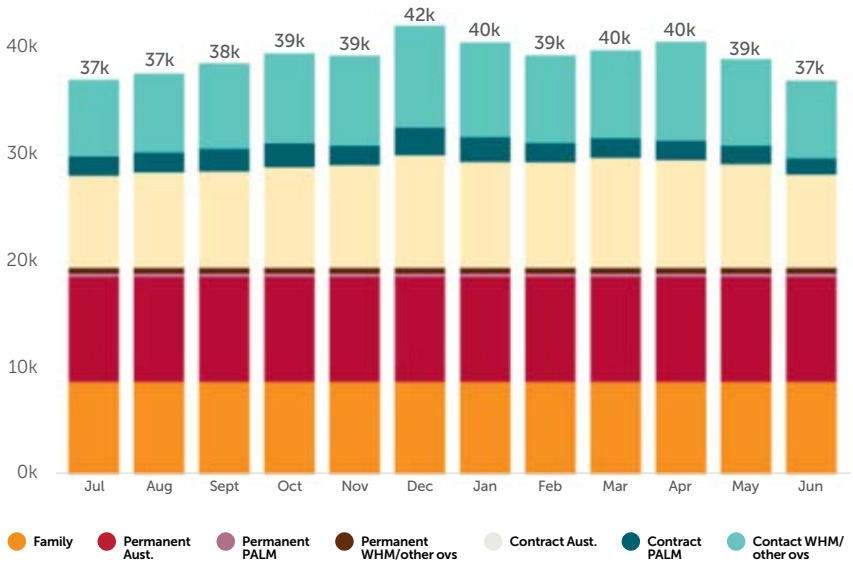


FIGURE 1: BREAKDOWN OF WORKERS BY CATEGORY 2020/2021



According to ABARES, from January 2020 to October 2021, the number of WHMs in Australia declined by 80% from 141,000 people to around 29,000 people. ABARES estimates that around 25–30% of all working holiday makers (WHMs) were employed in horticulture before COVID-19.

The December outlook from ABARES shows that the number of visa workers is likely to increase in the near future based on Visa applications, however, those workers are yet to arrive in the country.

Labour opportunities for growers

Growers can recruit international workers via the following visa schemes:

- PALM Scheme
- Horticulture Industry Labour Agreement (HILA)
- Working Holiday Maker Program

AUSVEG has developed a **factsheet** that explains each of these visas and the roles that they cover. Please note that the Australian Agriculture Visa is being integrated into the PALM scheme. AUSVEG is working closely with government to push the needs of industry and ensure that the PALM scheme aligns with the needs of growers.

Other opportunities

The Company Specific Labour Agreement (CSLA)

This visa cover roles which are not already covered by an industry labour agreement. The HILA currently only covers 31 occupations in horticulture but does not include harvest roles, which are covered in this visa.

The Training Visa (Subclass 407)

This allows internationals to undertake training to improve their skills and gain industry experience in their field of study/work. This is a two-year visa.



AUSVEG is currently advocating for

- The Australian Agriculture Visa or a Harvest Visa.
- Expansion of the PALM scheme to re-engage countries and investigate new countries.
- The development of affordable accommodation for farm workers.
- Implementation of a National Labour Hire Licensing Scheme.
- Exposing primary and secondary students to agriculture through curriculum, farm excursions/ incursions.

Upcoming

- The Pacific Engagement Visa

The new Pacific Engagement Visa (PEV) will start in July 2023 and allow visa holders to come to Australia with their families. The PEV is separate from the PALM visa and is intended to create permanent migration pathways. You do not need to be a PALM worker to apply for the PEV.

FIND OUT MORE

To download the visa factsheet, visit **ausveg.com.au/app/uploads/2022/11/AVG2205001-Visa-Factsheet-WEB.pdf**

Visit the AUSVEG advocacy website to learn more at **ausveg.com.au/ausveg-advocacy**, email Lucy Gregg **lucy.gregg@ausveg.com.au** and Chloe Betts **chloe.betts@ausveg.com.au**.

Up to 3,000 visas will be allocated annually by a ballot process across Pacific countries and Timor-Leste. Those selected from the ballot will be invited to apply for permanent residency once they have secured a written employment agreement in Australia and meet other migration requirements.

Details on the process are still being finalised, but PALM scheme participants in Australia on valid temporary visas will also be eligible to apply for the PEV ballot when applications open.

The PEV will take into consideration previous migration history of applicants. If you have breached Australian visa conditions in the past, your application may be rejected.

The visa is currently in the early stages of design and more information will be provided when it becomes available.

Federal Budget outcomes for labour and training

The October 2022-23 Federal Budget announced that 480,000 fee-free TAFE places would be delivered, as well as boosting the Work Bonus income for older Australians to give the option to work without impacting on their pension.

For migration

- Pacific Australia Labour Mobility participants on long-term placements will be able to bring partners and children to Australia when sponsored by their employers.
- To boost permanent migration from Pacific Island countries to Australia, the Government is creating a new Pacific Engagement Visa. Up to 3,000 permanent visas will be allocated annually to nationals of Pacific Island countries and Timor-Leste in addition to the existing permanent Migration Program.
- To address skills shortages more quickly, additional funding of $42.2 million will be provided to accelerate visa processing, reduce the visa backlog, and raise awareness of opportunities for high-skilled migrants in Australia's permanent Migration Program.
- The permanent Migration Program will be expanded by an additional 35,000 workers to 195,000 in 2022–23.

Supply and Pricing

Coming into the last week before Christmas the concerns of shortages and increased vegetable prices is creating media attention and consumer interest.

The average price for all vegetables has actually declined to the lowest price we have seen in the last 12 months. This does follow a period of high pricing due to severe weather events and shortages that have been pushing prices up over the past 12 months. The total volume of vegetables has also increased, which is expected given we are entering the peak summer harvest period. The increased volume of supply also contributes to the decreased cost. However, not all vegetables have followed this trend.

Due to the relentless flooding and rain, the soft ground has meant many growers have been unable to get crops in or out, leading to crop loss and waste (see Figure 1). One of the biggest impacts has been on potatoes. The flooding will cause shortages and high prices into 2023.

Potatoes are receiving the highest price the market has seen in over two years, and roughly 10,000 tonnes less production than there was this time last year.

Overall, there is weaker consumer demand for fresh produce as consumers look to cheaper options including frozen goods. The reduced domestic demand may impact 2023.

Around 17 per cent of Australian horticulture farms that experienced crop loss in 2021–22 reported that a lack of labour was one of the primary causes for the loss. However, most farms that lost crops in 2021–22 (82 per cent) indicated that environmental factors were the primary cause, with most of this loss occurring pre-harvest and largely outside of their control.

Pallets

Who would have thought something so simple has the potential to be the undoing of the supply chain? The shortage could prevent the delivery of food, groceries, and medicines to retailers over the Christmas period.

At Christmas there are more goods moving around the country so the need for pallets increases. With increased goods moving around the country there is increased demand on the national pallet pool. Many pallets are not fit-for-purpose due to overuse and are taking too long to repair further reducing the pool.

This is yet another uncontrollable challenge growers face in getting their goods to market.

Industry has raised the alarm with the federal government, the ACCC, and the Office of Supply Chain Resilience in fear of the looming pallet shortages.

There is blame being cast on CHEP, the world's largest pallet supplier, for failing to invest to increase pool of pallets, despite that demand has been rising for years. CHEP has said they have invested $100m to increase the pallet pool in Australia.

Stockpiling, timber shortages and prices have also added to the pallet shortage, compounded by a shortage of workers who also make and repair the pallets.

Inputs

Since our last update on November 25, the price of some core inputs has been reduced, however they are still largely elevated since pre-2020 prices.

From December 2020 to December 2022, Crude Oil has increased 23.6 per cent, Urea 127.8 per cent, and DAP 157.5 per cent.

Workforce

The ABARES insights report has shown that among all the workforce shortages, horticulture production has increased. Around 40 per cent of growers brought in machinery to replace workers where possible, while others altered crop plantings for a longer peak harvest.

Another change growers made was to increase the hours worked by the existing workforce. ABARES said that "around 27% of Australian horticulture farms in 2021–22 had their employees working longer hours on average compared to previous years, with these farms employing 35% of the Australian horticulture workforce."

Large horticulture farms experienced the greatest loss in labour over the last three years and also experienced the most difficulty recruiting workers. Permanent labour (excluding family members) decreased by 31 per cent (10,000 workers).

WHMs are returning!

As at 11 November 2022, over 106,000 working holiday makers have arrived in Australia since 15 December 2021 (the week the borders opened to fully vaccinated WHMs). There are currently 93,600 still onshore in Australia. Before the borders closed there were approximately 137,000 WHMs in Australia.

Since the border re-opening the Department has granted nearly 161,200 working holiday maker visas both onshore and offshore. There are nearly 73,500 WHMs offshore who are able to travel to Australia immediately. With winter encroaching on the northern hemisphere there is some evidence to suggest in recent weeks that WHM numbers are increasing. Should these visa holders not decide to come to Australia it is important to understand what the drivers were so that these can be addressed for the future.

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Grow Your Career

AUSVEG created a series of video case studies to showcase different career options available in horticulture to give employees and employees an insight into career pathways and training.

HILA EMPLOYMENT CATEGORY:

Horticulture Section Manager

Isaac Guise

Operations and Sales Manager,
Vanstone Produce Queensland

As Operations and Sales Manager/ Horticulture Section Manager, Isaac Guise oversees the harvest and produce processing at Vanstone Produce's packing shed in Queensland. Vanstone Produce grows shallots, broccolini and silverbeet.

Isaac splits his time working between the office, the field and the packing sheds. In the mornings, Isaac checks on harvesting teams and the quality of the produce in the fields.

He then organises orders and prepares labels for the day's harvested produce, before organising the packing shed team, who he works closely with to ensure quality assurance and safe practice procedures are met.

Isaac also liaises with Vanstone Produce's business partners to ensure things are on track and running smoothly.

What is your role with Vanstone Produce?

My role covers most of the packing sheds. The day starts with getting all the orders sorted, labelled and ready for shipping. The next part of the day focuses on quality control to make sure that the orders that are going to the supermarkets are correct and then talking to our supply growers and checking harvests to ensure what we receive is suitable for us to sell.

How much time do you spend in the office or in the field?

Mornings are normally in the office sorting out invoices and receipts, but then I will go out to help with harvesting the silverbeet and shallots to make sure the quality out there is all good. Once it is in the sheds it is all about getting product processed and packed and despatched on time to where it needs to go. The end of the day is to make sure that the sheds are cleaned and ready to go for the next day.

What key skills help with your role?

Number skills are definitely important to keep on top of orders, freight transport to keep it efficient. Having an eye for quality – what looks good in the vegetables at a glance definitely helps.

What is your career journey?

It was a quick and sudden one, and not one I had planned. I was in retail management looking after the vegetables and farmers, when Vanstone's approached me to join them. It was a big but good learning curve, with lots of challenges, but it has been a good journey so far.

What do you like about your job?

The variation in the day is great. My day can be either in the shed or outside. We help where we are needed to get the job done, we all have a goal to work to. I think having specific skills to come into the job is a common misconception, you can build that on the job.

What training have you done?

A lot of on-the-job training since I arrived, so coming from zero horticulture experience, what blew my mind was the number of different processes to get the veggies from the field into the store. From quality control for supermarkets, it's about learning and adapting to what your clients need.

What opportunities are there for you?

I love working in horticulture because of the opportunities it gives me, such as insights into what happens behind the supermarket shelves and the processes needed to get it there. What happens on the farm gets lost on the supermarket shelf.

For young people looking to get into horticulture I would say give it a go, there is definitely a lot of opportunities. In the current climate, farmers are looking for as many workers as possible, so it is worth giving it a go.

I think having specific skills to come into the job is a common misconception, you can build that on the job.

Grow Your Career video series

FIND OUT MORE

To find out more about the Grow Your Career in Horticulture series, visit **ausveg.com.au/grow-your-career.**

The Grow Your Career in Horticulture series is funded by the Federal Department of Education, Skills and Employment through the Harvest Trail Services Industry Collaboration Trial.

The summer weather ahead from the Bureau of Meteorology

The Bureau of Meteorology has released the December to March forecast outlook, and with a third La Niña for much of the east coast, it will be another wet summer.

Climate will be influenced by La Niña until mid to late summer giving higher rainfall likelihoods in the north and east of Australia. This coupled with the Southern Annual Mode index in positive to neutral territory adds to the chance of above average rainfall for eastern Australian and below average for Tasmania.

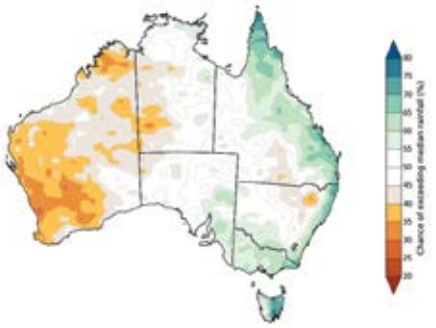
The longer term trend shows that Australia has warmed by ~1.47°C in the period 1920-2021, leading to an increase in the frequency of extreme heat events. In recent decades, there has also been a trend towards a greater proportion of rainfall from high intensity short duration rainfall events, especially across northern Australia during its wet season.

Long-range forecast overview

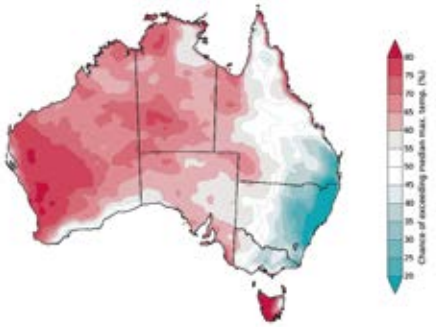
- **Rainfall:** December to February rainfall is likely (greater than 60% chance) to be above median in eastern parts of the eastern states. Below median rainfall is likely for parts of Western Australia.
- **Max temperature:** December to February maximum temperatures are likely to be warmer than median for most of Tasmania, and most of northern and western Australia. Below median temperatures are likely for south-eastern parts of Queensland, central and eastern New South Wales and most of Victoria.
- **Minimum temperature:** December to February minimum temperatures are likely to very likely (greater than 60% to greater than 80% chance) to be warmer than median for most of Australia. Below median temperatures are likely for parts of north-east New South Wales.
- **Climate Drivers:** This wet outlook over northern and eastern Australia is consistent with several climate drivers, including La Niña, a rapidly decaying negative Indian Ocean Dipole event, a positive phase of the Southern Annular Mode, and record warm waters around Australia.

Above median rainfall for December to February likely for large parts of eastern Australia, below median likely for parts of Western Australia

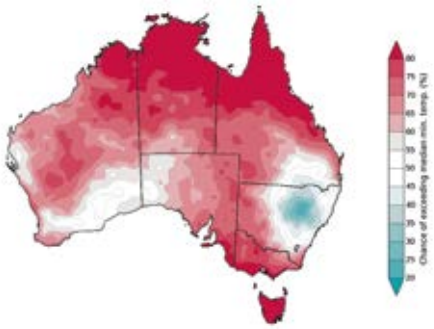
- For December, above median rainfall is very likely for the tip of Cape York and is likely around the Gove Peninsula Coast of Northern Territory, eastern Queensland, the New South Wales south coast and eastern Tasmania. Below median rainfall is likely for most of north-west and central Australia.
- For December to February as a whole, above median rainfall is likely around the Queensland ranges and coast, coastal and southern New South Wales, eastern and central Victoria, parts of south-eastern South Australia and all of eastern Tasmania. Below median rainfall is likely for much of Western Australia.



Chance of exceeding the median rainfall for Dec 2022 to Feb 2023



Chance of exceeding the median maximum temperature for Dec 2022 to Feb 2023



Chance of exceeding the median minimum temperature for Dec 2022 to Feb 2023

Warmer days for December to February likely for western and northern parts of Australia and Tasmania; cooler for the south-eastern mainland

- For December, above median **maximum temperatures** are likely for most of Western Australia, the Northern Territory and into western Queensland and northern South Australia. Below median maximum temperatures are very likely for south coastal Western Australia, most Victoria, New South Wales, Queensland's southeast and Cape York and Arnhem district of the Northern Territory.
- December to February **maximum temperatures** are likely to be above median for most of Western Australia, Northern Territory, South Australia and Tasmania. Maximum temperatures are likely to be below median for Victoria, most of New South Wales except for the far west and south-eastern Queensland.
- For December, **minimum temperatures** are likely to be above median for north-east Australia and for Tasmania. Chances increase to very likely for Far North Queensland and Arnhem district of the Northern Territory. Below median minimum temperatures are likely over southern parts of Western Australia and central and eastern parts of New South Wales.
- December to February **minimum temperatures** are likely to very likely to be warmer than median for most of Australia, except over the Southern Interior of Western Australia, western South Australia and around the Northern Tablelands and Central Slopes of New South Wales extending into southern parts of Queensland where temperatures are more likely to be below median.
- Past accuracy of the December to February chance of above median maximum temperature long-range forecasts is high to very high across most of Australia, with the exception of central parts of Northern Territory, where it is low to moderate.
- For minimum temperatures, accuracy is moderate to high for most of Australia, with moderate to low skill in pockets of the tropics.

FIND OUT MORE

For the full outlook go to bom.gov.au/climate/ahead/outlooks/

Novel mode of action insecticide for tough vegetable crop pests

SIMODIS® insecticide (Group 30) from Syngenta with PLINAZOLIN® technology marks the next evolution in insecticide technology for protecting plant health.

"PLINAZOLIN® technology is an innovation from Syngenta and is a novel mode of action that offers reliable, robust and extended efficacy against hard-to-control pests in our key horticultural crops," said Syngenta Technical Services Lead, Dr Shaun Hood. SIMODIS® insecticide registration was approved by the APVMA in November 2022.

SIMODIS® insecticide will help growers tackle resistant and traditionally hard-to-control pests, with the registration including diamondback moth, two-spotted mite and western flower thrips.

"We've put SIMODIS® through its paces using commercial application equipment on a range of crops across Australia," said Dr Hood. "What impresses people is both its level of control and its residual activity."

Diamondback moth – redefining control

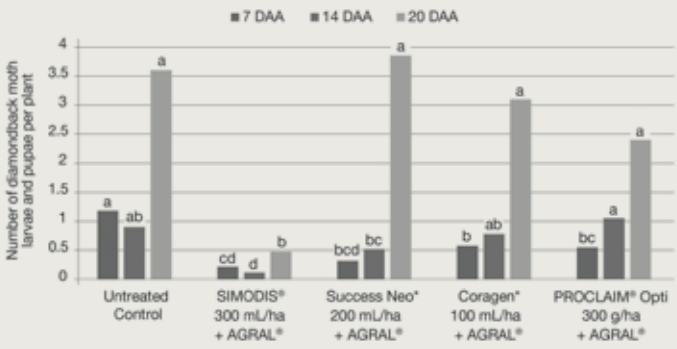
"Around Australia, diamondback moth has become increasingly difficult to manage, with resistance reducing the efficacy of some well-known chemistries," said Dr Hood.

In Gatton, Queensland in 2018, SIMODIS® insecticide (plus AGRAL® spray adjuvant) was compared to industry standards for the control of diamondback moth (DBM) in a cauliflower crop.

Seven days after the application (7 DAA), all insecticides effectively controlled the DBM population *(Figure 1)*. At 14 DAA, SIMODIS® insecticide recorded significantly better DBM control than Success* Neo (Group 5), Coragen* (Group 28) and PROCLAIM® Opti (Group 6). The residual activity of SIMODIS® insecticide was evident at this application timing when the vegetative growth had slowed. By 20 DAA, larvae and pupae numbers increased nearly threefold in the untreated control, suggesting a recent egg lay had occurred. SIMODIS® was the only treatment that continued to control the DBM population at 20 DAA.

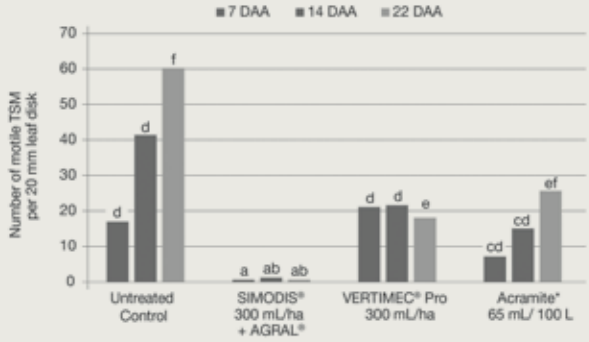
Above. Syngenta Technical Services Lead, Dr Shaun Hood.

FIGURE 1



Mean number of diamondback moth larvae and pupae per cauliflower plant following a single insecticide application when the harvestable cauliflower was at 60% head diameter (BBCH 46). Numbers were assessed 7 days after application (DAA). Gatton, Queensland (2018). Means followed by the same letter are not significantly different.

FIGURE 2



Mean number of motile two-spotted mites (TSM) per 20mm **cucumber** leaf disc plant following a single insecticide application, with treatments applied 5 weeks after transplanting. Numbers were assessed 7, 14 and 22 days after application (DAA). Bowen, Queensland (2019). Means followed by the same letter at the same assessment are not significantly different.

"This is a product that is going to redefine DBM control. It's a highly efficacious insecticide but it's also going to enable brassica growers to regain control of resistant populations," said Dr Hood.

"Monitoring is the key to effective DBM management. Apply SIMODIS® insecticide as soon as the local thresholds are reached, either at egg hatch or very soon after egg hatch to target young larvae."

"Growers should avoid applying SIMODIS® to established populations dominated by large, later instar DBM larvae."

Two-spotted mites – resistance management resource

In Bowen, Queensland in 2019, SIMODIS® insecticide (plus AGRAL® spray adjuvant) was applied on a cucumber crop and compared to industry standards for control of two-spotted mites (TSM).

In the untreated control, the TSM continued to increase throughout the trial, with more than 60 motiles per 20 mm leaf disk recorded 22 days after application (*Figure 2*). SIMODIS® insecticide effectively reduced the density of eggs, nymphs and adult mites to very low levels. SIMODIS® insecticide continued to record strong residual activity out to 22 DAA.

As a contact insecticide, residual activity of SIMODIS® insecticide will be influenced by crop growth stage and spray coverage.

Dr Hood says, like DBM, monitoring is the key to effective management and applying "SIMODIS® insecticide as soon as local thresholds are reached to target the mite population before it becomes established.

"Up to two applications of SIMODIS® insecticide per crop will be permitted, but to manage resistance, growers will need to rotate to a miticide from a different mode of action group before applying a second SIMODIS® insecticide application."

"These trials are a snapshot of what we've observed at numerous trial sites across Australia. SIMODIS® insecticide has consistently delivered reliable and robust efficacy and exceptional crop safety against a range of pests and in a range of crops."

SIMODIS® insecticide has excellent sunlight stability and rain-resistant properties, allowing for long spray intervals.

FOR MORE INFORMATION

For more information or to ask a question, please contact your local Syngenta Territory Manager, the Syngenta Advice Line on 1800 067 108, visit **syngenta.com.au** and **goodgrowthplan.com** or email *Vegetables Australia* at **communications@ausveg.com.au**. Please note that your questions may be published.

The content for this article has been provided to *Vegetables Australia* to educate Australian vegetable growers about the most relevant and practical information on crop protection technologies and their on-farm applications.

Avocado growing family are pick of the crop

A diversified business in avocados and macadamias, combined with marketing and IT interests has earned the Donovan family the Sygenta Grower of the Year award.

Annaleise and Lachlan Donovan have been running Donovan Family Investments together for 25 years, but their growing experience goes even further back. Lachlan's family had been growing avocados in Belfort on the Sunshine Coast for several years, when, in 1991, Lachlan's father passed away.

Annaleise and Lachlan made the decision to move to Bundaberg, buying out the r est of the family from the business in the process.

Fast forward to the present day – not only are the pair running a successful avocado growing operation, they have also diversified significantly. With 600 hectares of avocados, 100Ha of macadamias, a packhouse, marketing company and an IT company offering horticulture solutions, Annaleise and Lachlan are a worthy duo to receive the Syngenta Grower of the Year Award.

A family affair

Both of Annaleise and Lachlan's sons – Miles and Clay – have joined the business.

Lachlan says without them coming on board, he doubts he and Annaleise would have had the appetite to keep expanding and growing.

"If the boys weren't involved, I doubt we would still be growing, or growing at this pace. It's been fantastic, having them come on board and be able to get involved in the vision they have for the future of the business."

Miles is responsible for all outdoor operations, overseeing the farming side of things. Clay is more involved in research and development, working with two agronomists to implement new technology and precision agriculture approaches – which are extensive at Donovan Family Investments.

More than avocados

Ten years ago, Annaleise and Lachlan started Avolution – a marketing operation for their avocados. Now, Avolution represents around 25 per cent of all Australian grown avocados.

Lachlan says the diverse offering is intentional. "You can't have all your eggs in one basket. Streams of income throughout the entire chain is the ideal. So not only do we generate income from our avocado trees, but also the packing of the fruit, then the marketing down the track," he says.

"It provides a buffer – if there's an oversupply of fruit, we're keeping our costs down by packing it ourselves.."

Their packhouse, a 5,000m^2 operation, packs both avocados and citrus. In just the last year, the family has started supplying 40-foot (12m) containers of avocados to Asia via air freight.

"That's the first time 40-foot containers of avocados have been exported from Australia."

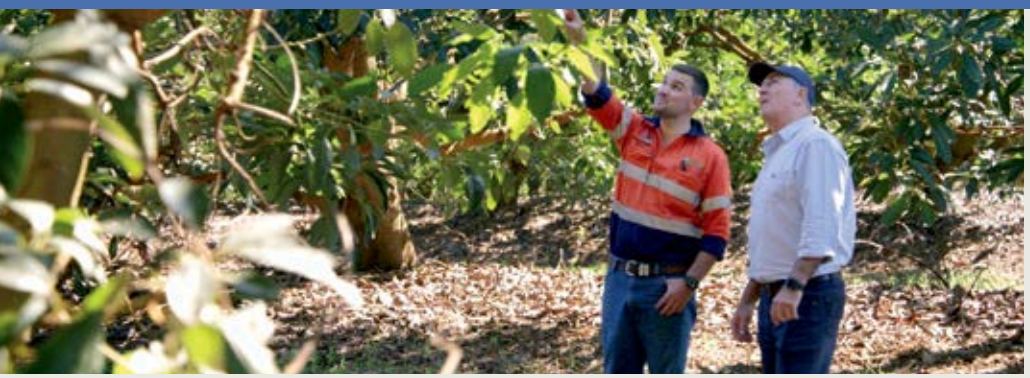
Having the capacity to grow, pack and export large quantities of fruit means the business can offer almost year-round employment to their team.

"It's enough work to build a team and provide consistent employment," says Lachlan.

Giving back to the industry

Donovan Family Investments are the first horticulture enterprise to be accredited with both Fair Farms and Reef Certification. Annaliese was the driving force behind implementing these standards and accreditations, but Lachlan is also community-minded, serving on the Board of Avocados Australia for 15 years.

The team is also paving the way for Australian produce further afield, with their contributions to expanding export markets. "A few years ago, we didn't have the production levels needed to export. A critical mass has now been reached, which has enabled this market to open," says Lachlan.



Pictured left on page 20. Grower of the Year winners Anneleise and Lachlan, with their sons Clay and Miles.
It's a family affair at Donovan Family Investments

Embracing technology

Making the most of technological advances has been a big part of maximising returns across all aspects of the Donovan Family Investments.

The family has implemented a suite of tools, including precision agriculture methods. Fully automated irrigation runs across all farms, with one staff member monitoring and managing the system. Soil probes are used to track moisture – there are hundreds across the farming properties. They also use variable rate technologies to monitor and apply fertiliser and have centralised logistical management of all staff. This tracks employee time spent on different tasks, improving accountability while providing a data source for improving efficiency.

Measurement of tree growth is enabled with more than 200 cameras installed across the orchards taking a photo in the same spot every day.

"We can see when a tree is flowering, when the fruit is at what stage of development, how the fruit fares in different conditions – all of which can be used to tweak our inputs and improve productivity," says Lachlan.

All of this knowledge is available to other growers through HortIT, a leading provider of information and communication technology services that the family started. While Lachlan thinks oversupply is likely to affect avocado pricing in the next couple of years, he is hopeful Australia's good name in export markets will tide the industry over.

"Australian fruit is well regarded, and we have developed new markets in the last couple of years. We have the critical mass of fruit we need, to continue to be a world-leading export supplier of avocados."

Vegetable producers can access a key asset to drive yield and limits loss

Growers looking to capitalise on market prices of vegetables have found a key asset with Trigger™, an engineered humic granule that has the potential to maximise the efficiency of fertilisers and provide a biostimulatory boost to enhance root and shoot growth.

Trigger™ is a next-generation, engineered humic granule containing a high concentration of potent humic acids and an abundance of plant-active, biostimulatory compounds that have had a positive impact on both soil and plant health in a range of trials.

The active ingredients in Trigger™ have been proven in the field for more than 30 years in various parts of the globe, providing growers with a return-on-investment year after year. Australian growers now have access to Trigger™ through Incitec Pivot Fertilisers (IPF). IPF continues to build a bank of local data and results which support the evidence that growers are already seeing.

Conrad Leeks, IPF Technical Agronomist, described humic acid as a concentrated, heterogeneous mixture of organic materials.

"Humic acids are the veritable horsepower in organic matter, millions of years in the making, and are proven to have positive impacts on soil functions such as improved biological activity, nutrient activity, cation exchange capacity, water infiltration, and plant biomass.

"Traditionally, humic acids have been difficult to apply. Growers have been challenged with uneven field distribution, high levels of dust, long dissolution time, and gear being left caked in a black crust.

"With Trigger™, the limitations of traditional dry granular humic products have been engineered out. Producers now have access to all the benefits of one of the most powerful and highly functional sources of humic acids on the market, without the headaches," Mr Leeks said.

Trigger™ was engineered to provide the agronomic benefits of humic acids combined with the fast-acting characteristics of applied fertilisers. Trigger™ dissolves in concert with applied fertilisers, holding leachable nutrients in the root zone for longer periods of time while preventing phosphate tie-up with ions such as calcium, aluminum or magnesium.

In a recent trial of capsicum grown in a sandy loam soil under a plastic polyhouse, Trigger™ was broadcast at 200 kg/ha post-planting. Plants were grown throughout the season under drip tape. Post-harvest soil test results demonstrated that where the Trigger™ was applied, salt levels were much lower:

"Growers have long been aware of the benefits of humic acids and have been looking for the ability to use it in blends.

	Trigger	Control
Electrical Conductivity (sat ex) dS/m	15.3	22.4
Sodium (Amm-acet.) cmol(+)/kg	2.3	3.4
Sodium % of Cations (ESP) %	9.7	12
Chloride (mg/kg)	540	1100

Now they can.

"Trigger™'s uniform size and shape combined with its low-dust attributes make it perfect for fertiliser blends. The tight 2.4 – 2.6mm specification and consistent spherical shape integrates well, allowing for consistent coverage in broadcast or in-furrow applications." Mr Leeks said.

"The low-dust formulation virtually eliminates caking or bridging that can lead to application issues in the field.

"The engineered aspects of Trigger™ allow it to go where no dry humic products have been able to go before. Whether it's broadcast from an airplane or ground equipment, or precision applied through an airseeder, Trigger™'s high-strength, low-dust formulation can withstand the rigours of production equipment, allowing growers to focus on the crop, not the clean-up," Mr Leeks said.

Incitec Pivot Fertilisers 'Trigger™ is the perfect solution to improve your soil.

FOR MORE INFORMATION

visit incitecpivotfertilisers.com.au.

Great crops the reward for South Australian onion growers

A capacity to grow great crops of onions, in some challenging conditions, provides its own rewards for Jarryd Dolling, of Dolling Produce in the south-east region of South Australia.

"Dad's been involved in onions for 40 years and I'm third generation," Mr Dolling said. "I like working with a good group of people and getting great crops."

Onions are grown at various locations in the region and are planted from April through until September.

"We will start harvesting the first week of December and push through till about first week of April, so it's a 12-month operation now," Mr Dolling said.

"We aim for an onion that is going to have a longer shelf life and skin retention, and a hardness and the firmness of the bulb itself. When you are standing in a crop of onions that is starting to push through into size it is quite rewarding."

He said onions were an intensive crop but quite rewarding when they get it right.

"There's always something that's going to bring you unstuck for a little. You just get over one challenge, and the next one arises. It feels good once you get on top of it and change things and learn from it and make improvements."

Downy mildew disease is of concern in onions and can cause major problems if the conditions are not right.

"Weather plays a massive role," Mr Dolling said. "When you start seeing thunderstorms come through, you've got to get onto it. You need to be preventing it before you get it."

He said incidences of the disease have caused major problems in the past with it appearing in the top of the plant and then moving down the canopy.

To counter downy mildew, a prevent-ative program is utilised each season and includes a range of chemistries.

Mr Dolling said Zorvec® Enicade® fungicide is used during times of high humidity and rain at different times of the season.

"When the weather conditions are pressing, Zorvec®, is a good one to go to. It really protects the plant. I think it's just its strength. Zorvec® is one to fall back on."

He said they rotate their chemistries to reduce the risk of resistance building up so that products such as Zorvec® can be available in the long-term.

"We are not going over the top, but really using it in its time and place."

He said growing onions could be nerve wracking as they watch the weather forecasts come through, however Zorvec® is an option they can use to keep disease out of the paddocks.

The enterprise grows red and brown onions, with both shorter and longer season varieties used at different stages of the year.

"We use the right varieties that fit the area and growing conditions and aim at picking the right quality so they will last for a lot longer."

FOR MORE INFORMATION

contact Corteva Agriscience or
visit corteva.com.au/products-and-solutions

Above. Brett and Jarryd Dolling inspecting onions grown with the help of Zorvec® Enicade® fungicide to protect from downy mildew.

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nufarm.com.au/tbb For more information, contact your local Nufarm Business Development Manager

Putting Aussie fruit and vegetables onto the world stage

Hort Innovation Exporter of the Year aims to reward a fresh produce grower or business that has a strong commitment to exporting, and invested in building a sustainable business. The 2022 recipient of the award is Perfection Fresh.

Perfection Fresh has been a stalwart in Australian agriculture for more than 40 years, founded by the Simonetta family in 1978. Perfection Fresh delivers fresh Australian produce locally – about 90 per cent to domestic markets – with the remaining ten per cent to international markets, including the United States, Middle East, Asia and New Zealand.

Michael Simonetta, who joined the company in 1984 in a sales role, has been at the helm as CEO since 1991.

During Michael's tenure at Perfection Fresh, the company has shifted from a traditional wholesaler of fresh fruit and vegetables to a "grower, marketer, wholesaler and processor," says Michael.

Winning the Hort Innovation Exporter of the Year award, for Michael and the team at Perfection Fresh, meant being recognised by their peers.

"It is always good to be recognised for something over and above the norm by your peers in industry. This is a worthy reward and gives us encouragement to continue to strive," says Michael.

Exports a game changer for Aussie growers

Perfection Fresh is a champion for Australian produce on the world stage, taking its extensive range of fruit, green vegetables and more to international trade shows.

With Australian fresh vegetable exports worth $263 million in 2020, the significance of bolstering export markets cannot be overstated.

"We have participated in many trade shows over the years. This serves us well to meet and connect with new people from different countries and different segments of industry," says Michael.

Perfection Fresh has presented its produce at FOODEX Japan, Gulfood in Dubai, Asia Fruit Logistica in Bangkok and Hong Kong, and more.

"Interacting in these contexts helps us learn more about specific consumer demographics and needs and helps us to understand better how to serve them," says Michael.

Perfection Fresh has made the most of learning about foreign consumers and markets, to not only grow its own distribution, but also the reputation of Australian products. In 2017, they underwent rebranding that added the 'Grown in Australia' label to most packaging.

While COVID-19 brought disruptions, as experienced across most sectors, Michael says all they could do at Perfection Fresh to manage logistical challenges was work as closely as possible with their customers and shipping partners.

From strength to strength

From humble roots as a small family enterprise, Perfection Fresh now employs more than 500 staff.

Growers across Australia produce Perfection Fresh signature products such as Kumato tomatoes, Qukes baby cucumbers, Calypso mangoes and Fioretto cauli blossom.

Its supply extends the offering producing a wide range of fruit, berries, greens such as brussels sprouts and wombok heart, and a ready to cook and snack range. Farms, greenhouses, vineyards and orchards provide the produce for local and international markets.

The Simonetta family has always focused on producing the highest quality fruits and vegetables. This dedication has remained as they have grown. In fact, it's this pursuit of quality that led Michael to the Perfection Fresh proprietary range.

Above. Michael Simonetta, CEO at Perfection Fresh, Exporter of the Year

It started with a desire to ensure supply. Proprietary varieties, the first of which for Perfection Fresh was Broccolini (baby broccoli), are a product subset that enable consumers to recognise and seek out specific produce.

Perfection Fresh looks for proprietary varieties that are consistent, taste great, look good and are ideally available in season for longer periods.

The search has paid off, with many Perfection Fresh signatures recognised by flavour-conscious consumers both in Australia and abroad.

The proprietary variety that started it all – Perfection Fresh Broccolini

Future of the sector

Despite going from strength to strength at Perfection Fresh, Michael is conscious of challenges facing the sector.

"The future of export is quite challenging at present due to restrictive, and non-existent in many cases, trade protocols."

For example, while the European Union is Australia's second-largest trading partner, barriers to agricultural imports put Australian growers at a distinct disadvantage.

"We need whole of government support, from both trade and agriculture departments, to move faster to gain us better, more workable protocols for new and existing export pathways," says Michael.

Accurate packing technology for speed, efficiency and quality

Current labour shortages have highlighted the need to automate and streamline the post-harvest handling of crops. Stringent quality requirements combined with increasing demands for speed and efficiency have created the need for accurate, high output packing equipment globally.

Located in Tasmania, Dobmac Agricultural Machinery is proud of its international partnerships that facilitate the advancement of the Australian agricultural industry to remain competitive. Dobmac has proudly been the AUS/NZ sales and service partner for two Dutch companies, Eqraft and Verbruggen for many years, working together on numerous projects across these regions.

Eqraft specialise in grading, weighing, and packing machinery for a wide range of agri-products. Verbruggen are the experts in efficiently and perfectly stacking, palletising and wrapping bags, boxes, crates and more.

As a dealer, Dobmac assists Eqraft and Verbruggen with each project from concept through to completion and long-term maintenance. Dobmac along with a team of highly skilled engineers can design, customise and develop a solution for your business no matter the size and follow that project from conception to commissioning and support it into the future. Dobmac truly has the ability to create a field to transport solution for you.

Eqraft and Verbruggen are at the forefront of innovative technology development in potato and onion packing equipment. With easy-to-use customer interfaces, programmable recipes and remote support, packhouse machines have never been so intelligent.

Eqraft is taking the very latest in technology and integrating it into their impressive range of sizing, sorting, and packing machinery. Eqraft's extensive range includes standalone packing equipment such as high-capacity combination scales designed specifically for large onions and potatoes, automatic wicket bagging systems, sewing lanes and automatic crate filling systems.

Verbruggen's range of palletisers allows clients to customise options such as semi-automatic and fully automatic to suit their space and requirements. The wrapping options include stand alone or integrated wrapping of net or film wrap, options of check weighing, and slip sheet dispensing are also available.

Dobmac, a second generation family business established in 1983, has built a reputation of on the ground personalised sales and design support. We manage logistics, customs and quarantine giving clients trackability and peace of mind. Skilled mechanical and technical staff conduct onsite installations. Our service doesn't end there, Dobmac offers operator training, spare parts supply and after sales support to ensure customers have what they need to optimise their equipment.

For accurate, innovative packhouse solutions, contact the Dobmac sales team to see what Eqraft and Verbruggen can do for you.

FOR MORE INFORMATION

Contact the Dobmac team. Email **dobmac@dobmac.com.au.**
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Hunger in our community is a reality

In October 2022, Foodbank released the annual *Foodbank Hunger Report*, highlighting that in the 12 months prior, more than 2 million households experienced severe food insecurity. The report shows that children under 18 are particularly vulnerable, but the vegetable industry can help.

The *Foodbank Hunger Report* 2022 reports that in the past 12 months, more than 2 million Australian households (21%) experienced severe food insecurity, which means they ran out of food because of financial limitations and at worst went entire days without eating.

If this is expanded to also include households experiencing moderate symptoms of food insecurity this increases to a third of surveyed households in Australia (33%), or 3.3 million households, experiencing food insecurity at some point in the past 12 months

Households with children were even more likely to experience severe food insecurity, with 32% reporting that they were severely food insecure – 1.5 times greater than the national average (21%). Food insecurity has been on the rise during the past 12 months, with 23% of Australian households perceiving that they now struggle financially to access food more often compared with last year.

Again, those with dependent children were more likely to have felt the pressure than those without. The main reasons reported for experiencing severe food insecurity in 2022 were increased/high living expenses (64%) and "reduced/low income or government benefits" (42%), in addition to other factors such as a change of household living arrangement (24%) or natural disasters (19%).

About the report

The annual *Foodbank Hunger Report* is an initiative of Foodbank, which is the largest food relief organisation in Australia. It currently provides support to more than one million vulnerable Australians every month by working with the food and grocery industry including farmers, wholesalers, manufacturers and retailers.

On any given day, over half a million households in Australia are struggling to meet their food needs. For these 520,000 households this means, for example, they and/or their children are having to skip meals, go hungry and/or reduce the size of meals because they couldn't afford to buy food.

Households that have experienced severe food insecurity, or very low food security, have suffered reduced or compromised quality, quantity and adequacy of food they have access to due to financial constraints and have experienced mental stress associated with such situations

Of the respondents in households suffering severe food insecurity:

- 94% "worried whether food would run out before I/we got money to buy more"
- 90% agreed that "the food that I/we bought just didn't last, and I/we didn't have money to get more"
- 84% "couldn't afford to eat balanced meals"
- 97% had cut the size of meals/ skipped meals, and 60% hadn't eaten for a whole day, because there wasn't enough money for food, for themselves or any other adults in their house0hold.

Of those who did experience reduced meal size/meal skipping, 88% had done so for 3 months or longer over the last 12 months.

Of individuals in households experiencing severe food insecurity:

- 96% had eaten less than they felt they should because there wasn't enough money for food
- 88% reported having gone hungry without eating
- 74% had lost weight because there wasn't enough money for food.
- Among households with children experiencing severe food insecurity:
- 93% stated they "relied on only a few kinds of low-cost food to feed their child/ren because they ran out of money to buy food"
- 79% said they "couldn't feed their child/ren a balanced meal because they couldn't afford that"
- 60% said 'their child/ren was/were not eating enough because they just couldn't afford enough food'.

The duration of food insecure episodes is varied. Across those experiencing food insecurity, the most recent experience lasted for less than a week for the majority (61%). For those who didn't or couldn't overcome the situation within the one-week milestone, however, the situation could deepen into a much longer-term experience.

Reasons for household food insecurity in 2022

The increasing cost of living is the most common reason for food insecurity, followed by reduced or low income. In 2022, increased or high cost of living was the most common reason for food insecurity, affecting 64% of food insecure households.

The second most common reason was reduced or low income affecting 42% of food insecure households. This was then followed by limited access or ability to travel to get food (26%), changes in the household or living arrangements (24%) and natural disasters (19%). For over half (55%) of the food insecure households, their food insecurity wasn't the result of just one reason, but they were affected by compounding factors.

Barriers to engaging with formal food relief support services

The top two barriers to accessing formal food relief for severely food insecure Australians are perceptual rather than physical – shame or embarrassment as well as the belief that others are in greater need of assistance.

Regardless of whether an individual had previously received formal food relief, the research asked those who have been food insecure over the last 12 months about the barriers for them in seeking food relief from a formal service such as a charity or community organisation.

- 'Too embarrassed or ashamed' was the leading barrier (40%), indicating that self-stigmatisation is a critical issue for food relief services to address.
- Second was the belief that 'others are in greater need of assistance' (30%) suggesting that a greater understanding is needed of the broad eligibility criteria for food relief.
- Food insecure individuals finding it 'hard to travel to pick up food relief' (22%), or that they 'don't know about services nearby' (22%).
- Other practical barriers were that 'food provided doesn't suit needs' (16%), 'charities not open at a time that suits' (14%) and 'already exceed the food relief allowed' (10%).

All of these represent potential opportunities for food relief services to improve engagement with the food insecure communities and families, through better understanding their needs.

Households with dependent children are particularly vulnerable to food insecurity

Half (52%) were food insecure in 2022, significantly greater than the national average of household food insecurity at 33%. Altogether, nearly 2.3 million children under the age of 18 were from households impacted by food insecurity in the past 12 months, equivalent to over 330,500 children potentially impacted on any given day.

1.3 million children in Australia lived in severely food insecure households in the past year. Of even greater concern is that a third (32%) of households with dependent children are severely food insecure. Furthermore, single parent families faced even more of a challenge, with 65% experiencing food insecurity vs 49% of two-parent families.

For food insecure households with dependent children, food insecurity is more frequent (at least several times a week for 28% of households) than for the average food insecure household (23%). It was also likely for the households with children to take a longer time than average to recover, with a third (32%) not being able to afford food for longer than a month vs 28% for the average food insecure household.

FOR MORE INFORMATION

For more information on the Foodbank report or to learn more about providing assistance, visit **foodbank.org.au**

A valuable new mite solution set to ease the pressure all round

Michael Tran was a tomato grower for years so he knows first-hand how frustrating mite infestations can be. "They're one of those pests that are really hard to control," he says. "Mites like the hot weather. That's when they populate and cause constant pressure. They hide under the leaves and even if a spray controls 80 per cent, the remaining 20 per cent will multiply and bring the numbers back up in a week."

While Michael says the standard treatments generally work well, there's been a strong need for more options. "All the products are only registered for one or two sprays per crop. After that what are you going to do?"

Michael is now a consultant with E. E. Muir, based at the Werribee South store and specialising in hydroponics and Asian vegetables. So of course, growers now look to him for advice on solutions to problems like the limited chemical rotation for mites.

That's where new Danisaraba from BASF comes in. As the first Group 25 miticide, Danisaraba has introduced a very effective new mode of action for the control of web-spinning mites. As always, the introduction of a new chemical group provides a double advantage. At the same time as doing a great job in its own right, it takes resistance pressure off the older products growers have previously relied on.

Late last summer Katunga Fresh, one of Michael's customers with a large hydroponic tomato program, became the first producer in Australia to use the new miticide.

The late registration timing limited the opportunities to apply Danisaraba before the end of the season, but Michael saw enough on various tomato crops to confirm his belief that it will be widely used.

"We've targeted both the mites on the label – European red mites and two-spotted spider mites – and it's been very effective," he says.

"It's just as good as the existing treatments, and there hasn't been a new option for years. So any new product has a niche in that market."

Michael says he thinks Danisaraba is a good fit for a whole range of other crops he advises on too. They include eggplants, capsicums, chillies and Lebanese cucumbers. The bottom line is pretty simple: effective new chemistry makes mite management simpler because mite pressure can be so constant.

Michael's now looking forward to the hot weather ahead in the southern summer. His customers can now look forward to a productive season and enjoy the benefits of extra protection against those heat-loving mites.

Above. Michael Tran found that Danisaraba was an effective way to control mites on a range of vegetables.

FOR MORE INFORMATION
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The orchard and vineyard specialist – John Deere

Australian orchard, tree nut and vineyard producers spoke, and John Deere listened, creating a new 100 horsepower-plus John Deere 5ML Series of cab tractors, built specifically to meet the unique needs of growers across the country.

The new series offers two front-axle configurations for working widths as narrow as 71 inches and down to 61 inches on the 5ML Narrow, the 5ML will make available a machine carrying premium features at a size suited to exacting applications.

Additionally, it will deliver superior operator comfort as well as a level of precision agriculture technology not before seen in this class.

John Deere Australia and New Zealand Production System Manager, Stephanie Gersekowski, said with 105, 120 and 130 models available, the 5ML will bring unprecedented power to John Deere's orchard tractor offering.

"The 5ML achieves a masterful combination of power, integrated technology and a width dedicated to orchard, tree nut and vineyard production and will prove invaluable in getting jobs like spraying, mulching, fruit handling, harvesting and towing transport wagons done, and done right," Ms Gereskowski said.

"We are extremely excited to bring the 5ML to Australia to respond directly to the needs of growers looking for a low-profile cab, more power and industry-leading digital capabilities typically only available on machines in larger agriculture production systems."

Premium specifications

The 5ML features PFC Hydraulics, a load sensing system which immediately initiates flow when required. When flow is no longer needed, the pump returns to low pressure and to no-flow standby mode, to improve fuel efficiency by up to 30 per cent.

Both the 5ML and 5ML Narrow come equipped with programmable LED lighting, a front hitch to ensure operators can use heavier implements such as almond harvesters, and a front PTO for added versatility. There is also the choice of an easy-to-use PowrQuad™ PLUS or Powr8™ transmission.

The 5ML John Deere range also offers:

- Reconfigurable LCD display to allow customization of operator view, guidance lines and establish headlands,
- Ergonomic design with a flat floor, spacious headroom and well-placed controls for extra operator comfort,
- Category IV Filtration System Kit to prevent external chemical and particulate hazards from entering the operator enclosure, eliminating the need for personal protective wear.

Integrated technology

To grow efficiency and productivity JDLink™ – an industry exclusive in this class – has been added to track machine data remotely.

"This is ideal for large production high value crop customers with fleets of tractors as it allows them to manage equipment location, proactively monitor machine health and productivity, and give their team the information and direction they need to finish jobs accurately and on time," Ms Gereskowski said.

The 5ML is Greenstar/ISOBUS Ready for implement connectivity, to help more accurately apply liquid and dry products in environments where a GPS signal is not available, and to document those applications.

AutoTRAC™ also comes as an option and offers customers the ability to eliminate implement overlap and optimise machine efficiency when completing jobs such as spraying, planting, and mowing.

Above. Offering two front-axle configurations, with working widths as narrow as 71 inches and down to 61 inches, a limb lifter kit can be added to move away low hanging branches.

FOR MORE INFORMATION

or to arrange a demonstration contact your **local John Deere** dealer **deere.com.au**

No flies on us!
Goulburn Murray Valley region uses collaboration and tech to reduce Queensland fruit fly

The Goulburn Murray Valley Fruit Fly Area Wide Management program counters fruit fly outbreaks in the region. By using new technology and novel approaches, the program has decreased the pest's prevalence by 83% in two years. The outcome has given the organisation the Visy Industry Impact award at Hort Connect 2022.

Above. Wright Air SITPlus pilot, John Williams Goulburn Murray Valley Fruit Fly Area Wide Management program coordinator, Ross Abberfield Berrigan Councillor, Col Jones. *Pictured at Tocumwal Aerodrome.*

Right L-R. Ross Abberfield, Coordinator of the Goulburn Murray Valley Fruit Fly Area Wide Management program, shows off a project information pack for community members. Backyard trapping in action.

Fruit fly – a constant challenge for Australian horticulture

Each year, fruit fly costs government and industry hundreds of millions of dollars. This includes the costs of combatting fruit fly and lost potential revenue as a result of restrictions to international markets because of outbreaks.

In 2013, Cobram and surrounding areas were severely affected by Queensland fruit fly. Previously, most of Victoria had been an exclusion zone, but the legislation changed in response to the pest becoming established in the state.

Moira Shire Council, Berrigan Shire Council and the Cobram District Fruit Growers Association came together to discuss whether a broader approach to managing fruit fly could be implemented. With farmers trying to manage the pest on their own properties, there was no resourcing for community and urban areas – such as creeks, channel banks, roadsides, reserves, parks, nature strips, rivers and bushland – even though research demonstrated this is where infestations often start.

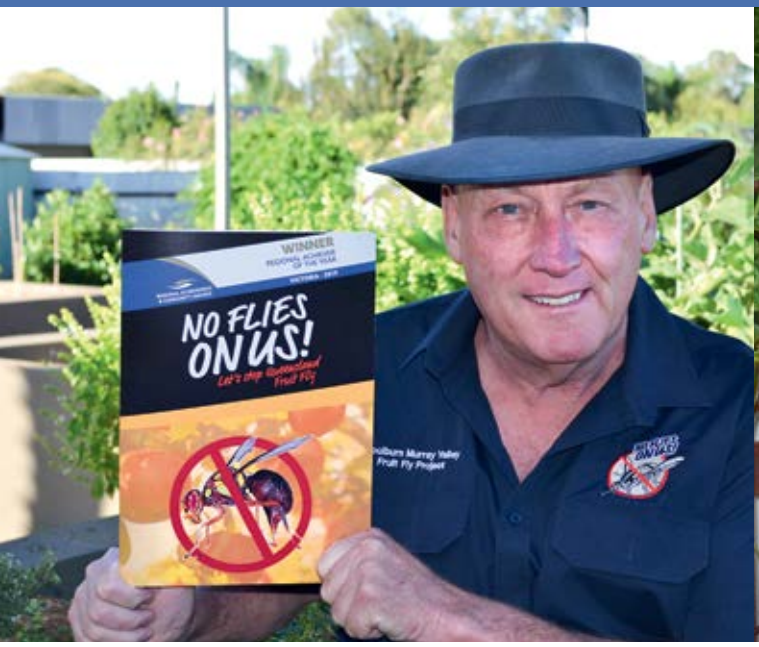
The following year, there was an outbreak in Shepparton. Around that time, a Victorian Fruit Fly Strategy was created, establishing governance groups for horticultural growing regions.

Working together to solve a shared problem

The GMV Fruit Fly Governance Group and Ross Abberfield, Coordinator of the Goulburn Murray Valley Fruit Fly Area Wide Management program, created a shared vision for the different parties involved. Five years later, Ross and the governance group say winning the Visy Industry Impact award is a 'seal of approval' from the horticulture sector for their approach.

Initial funding from Agriculture Victoria enabled the program to generate interest and encourage engagement and investment from other groups.

The program sought to use positive messaging to market the approach, communicating especially to overseas market that Australia was being proactive about fruit fly. The slogan 'No flies on Us' was selected to indicate "that we're on the front



foot – while fruit fly may be established, we're managing it and being proactive" says Ross.

"Overseas trade partners are influenced by reports of fruit fly. This approach conveys that area wide management is being untaken by the broader community.

"We've got everybody on board. Government and community are working on it as well as industry. Everybody needs to work together to solve it and take ownership of managing their areas of responsibility," says Ross.

One of the team's roles is collecting quality data to monitor the program's efforts. Between 2017 and 2019 fruit fly pressure decreased, registering a 60 per cent reduction across the Goulburn Murray Valley region in the program's trapping grids. Area Wide Management involves the wider community taking ownership of managing their fruit and vegetables and reducing hot spots. This is done by using a mix of techniques including trapping, unwanted host tree removal, netting, baiting, good orchard hygiene, cover spraying and reporting of rogue fruit trees along roadsides, channels, creeks and bushland.

One of the first moves from the program was to implement trapping grids, with more than 400 traps in both rural and urban areas of the region to constantly collect and monitor Queensland fruit fly populations.

Making the most of novel approaches

Goulburn Murray Valley Fruit Fly Area Wide Management combined these approaches with Sterile Insect Technique in the Cobram area, resulting in an 83 per cent decrease between 2017 and 2019.

Sterile Insect Technique is where fruit flies are bred specifically to be sterilised and released, mating with the wild insect population. The sterile insects act as a circuit breaker, disrupting wild fruit fly reproduction cycles. The insects are colour coded so they can be tracked and separated from wild fruit flies.

While the program has taken great strides towards its goal of managing Queensland fruit fly, avenues for the future go far beyond this mission.

A scalable model for pest management

The project will? be scaled up with increased investment by the community, industry and government with additional techniques such as automated trapping, real time data availability and using trialling female Queensland fruit fly and exotic fruit fly pest lures.

In demonstrating the effectiveness of Area Wide Management, the communications platform, network of traps, data collection, analysis and dissemination can be utilised to manage other pests as well. The GMV Area Wide Management model is highly regarded by other growing regions and the Governance Group is happy to share its knowledge with other groups fighting the scourge of fruit fly.

"Surveillance is the cornerstone of the program. In addition to us running our trapping grids, what we want is everybody – all the backyard gardeners, all industry, all of the local government organisations – to install traps, monitor them and report the findings. So instead of having 400 traps, there could be 4,000 or even 40,000 monitoring all types of fruit fly," says Ross.

The team at Goulburn Murray Valley Fruit Fly Area Wide Management are also interested in whether a breeding facility for sterile insects could be set up locally. In the past they relied on insects freighted from South Australia. A local facility would make Sterile Insect Technique more readily accessible and economical, to growing regions in Victoria and New South Wales.

Ross says he is looking forward to introducing a broad automated fruit fly trapping grid..

"It will give us the ability to relay real time trapping figures, identify and manage hotspots more effectively. Trialling other trap devices and lures may also help detect exotic fruit fly pest incursions, helping us to become more sustainable and deliver on engagement by our stakeholders – industry, government and community."

A new software program for farmers

Four years ago, sixth generation farmer and Butler Market Gardens owner and CEO Rick Butler identified IT as an area of the business which needed improvement to support growth. The business was using a mixture of different systems and spreadsheets that were outdated and disconnected. This included manual data entry which was time consuming, inefficient and at risk of error.

The business spent some time thinking about its needs and comparing existing off-the-shelf systems. It was decided to build a customised fully integrated system as none of the available software would suit the business. The software would cover all areas of the business, with full integration, and be a system designed by farmers for farmers. Rick partnered with software consultant and integration expert John Stav from ITIQ Solutions to build the system.

John and Rick spent months looking at the business processes in place and started working on initial concepts and ideas. Once a roadmap was in place, the building process began. About six months later, the first prototype was ready for testing. The initial outcomes had an immediate impact reducing the time required to capture and process customer orders. It was a big change.

The potential of the system to make a difference in the industry was obvious to Rick. He knew other businesses had similar challenges and could benefit from the use of the new order management system. After discussions with John, it was decided to take the system to market. The system became 37° South. Since launching in 2022, two other businesses have begun using 37° South and have gained improvements in efficiency, accuracy, and transparency.

Using Butler Market Gardens as a platform for trying new ideas in the software and John's expertise in software engineering, the system has evolved quickly since the first version and now automates orders, deliveries, and invoicing. The vision of 37° South is to continue growing the system to cover all areas of an agribusiness. An all-in-one package that delivers specific needs for fresh produce supermarket supply.

Currently, the system has EDI capabilities and communicates with the supermarkets for all messaging, removing the need to log in to the supermarket web portals. The order management feature allows the flexibility to adjust to multiple customer purchase order changes. The dispatch module automatically handles all equipment transfers so there's no need to log in to the CHEP or VPS portals. Invoicing is integrated with Xero and Dynamics and can be integrated into any other accounts package.

The future of the system will include:

- Farm planning with forecast and availability of crops;
- Tracking sales against customer commitments;
- Traceability features to track batches from harvest locations to customer;
- Barcode scanning when loading trucks to ensure supply chain accuracy;
- Procurement management of input inventory;
- Operational planning of harvest and pack shed teams.

FOR MORE INFORMATION

You can learn more about 37° South by visiting their website **37south.io**, or drop in and say hello at booth 11 at Hort Connections 2023 in Adelaide. **hortconnections.com.au**

BUTLER® MARKET GARDENS

Above. Rick Butler, CEO Butler Market Gardens saw the need to for software to handle business transactions for farmers, and has launched 37° South.

UPGRADE

A&D Touch Screen for Bag Weigher

Newtec are renowned for high quality weighing, packing and sorting machinery. Their systems are engineered and manufactured in Denmark, and they have been supplying to the fruit and vegetable industry all around the world for many years.

One of their most popular machines is the gravity roller system of which there are thousands in use.

Many of these pneumatic roller machines in Australia are quite old, and most units don't have some of the data capture capability that many customers require in these connected times.

With strict Australian QA standards for fresh produce that the horticulture processing and packing sectors are required to meet, most manufacturers are seeking solutions that ensure they have data capture in their operations.

A&D Australasia have designed an intelligent replacement 'box' using the advanced A&D AD4413-CW controller. This improvement to the Newtec systems allows existing Newtec users to upgrade their system with minimal disruption and maximum upside.

The AD4413-CW is supplied in a changeover box that will basically bolt onto the existing Newtec gravity system. Specific parameters can be programmed into the AD4413-CW for various product lines with upper and lower weight limits. Only those products that fall within the set parameters will pass effortlessly through the line. Products that fall outside the set parameters will be seamlessly rejected from the line.

This upgrade utilises the proven and reliable mechanical/pneumatic assembly of the Newtec system and provides ethernet and USB reporting and connectivity plus the many advanced benefits of the A&D AD4413-CW system. A&D can also facilitate remote support using VNC and Team Viewer over an active internet connection.

Manufacturers who have installed this upgrade like the ease of a touchscreen as well as the ability to record the data easily for record keeping. This data also allows them to understand how much they are producing and how much they are giving away every day.

A short YouTube video on this can be viewed here: **A&D AD4413 Upgrade for Newtec roller checkweigher** youtube.com/watch?v=OE5nx2aLL04

FOR MORE INFORMATION

A&D Australasia Pty Ltd
Contact Julian Horsley Phone: 1800 241 434
Email **Support@Andaustralasia.com.au**

Registrations are now open

HORT CONNECTIONS
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AUSVEG

Hort Connections is the largest horticulture conference and trade show for Australia and New Zealand bringing together members from the vegetable, fruit and floral sectors.

With more than 200 exhibitors and over 3,000 attendees, it is a must-attend event.

The three-day event will be held from 5-7 June 2023 at the Adelaide Convention Centre and will bring together industry leading speakers, networking opportunities and the well-respected Hort Connections National Awards for Excellence presentations.

Hort Connections speakers and exhibitors will showcase the latest research, technologies, and innovations to offer new perspectives on the future of Australasia's horticulture industry.

Among the many event highlights are the offsite AUSVEG Grower Networking Event, and the Corteva Agriscience Young Grower Networking Event at the Weber Grill Academy Adelaide, which will provide opportunities for established and emerging leaders to get together, network and learn from their peers and colleagues from across the country.

EARLY BIRD

All-Access Passes are again on offer

What's included:

- Welcome Reception/ Monday Trade Show
- Perfection Fresh Breakfast (Tuesday)
- Tuesday Trade Show
- Trade Show Speaker Sessions (Tuesday)
- Women in Horticulture Event/ Diversity & Inclusion Speaker Sessions (Tuesday)
- Wednesday Trade Show
- Plenary Speaker Sessions (Wednesday)
- Concurrent Speaker Sessions (Wednesday)
- Hort Connections Gala Dinner (Wednesday) and Hort Connections National Awards for Excellence.

FIND OUT MORE

Take advantage of the Early Bird offer and register to attend, visit **hortconnections.com.au**, or email **info@hortconnections.com.au**.

vegetable fund update

Communication of vegetable levy-funded research and development is funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government.

Hort Innovation
Strategic levy investment

VEGETABLE FUND

New era in vegetable industry communications

AUSVEG has commenced the new vegetable industry communications program V*egetable Industry Communications Program* (VG22000), which will support increased awareness and adoption of industry-funded research and development (R&D) by communicating industry research outcomes, sharing updates on industry news and events, and communicating the return on investment from the vegetable industry R&D levy. AUSVEG Project Lead Shaun Lindhe provides an update on the new project.

Ensuring that growers have access to information on research outcomes will help them improve their businesses to increase quality, yield and profitability, with the ultimate aim of increasing the competitiveness of the sector and securing its financial viability.

This access to information is best complemented through strong, effective and collaborative extension to ensure industry-funded research outcomes are adopted.

A new 5-year strategic levy investment under the Hort Innovation Vegetable Fund, *Vegetable Industry Communications Program* (VG22000) will be undertaken by AUSVEG to increase awareness of the outcomes of research projects.

Vegetables Australia magazine

Vegetables Australia magazine has been a key communications outlet for industry research and development for over a decade and is the most wide-reaching and well-received communications output from previous iterations of the vegetable industry communications program.

The *Vegetables Australia* magazine increased during the previous project period (VG18000) from 56 pages to over 100 pages per edition. This project will continue to publish a magazine of a similar size to allow the magazine to reflect the breadth of levy-funded research and other relevant information for growers.

A big contributor to this is the regular content from VegNET and other major levy-funded investments that produce relevant, regular content, such as the soil wealth project and export development.

The magazine will also take into account the other important industry content that will not be funded by the project but growers are interested in, including grower profiles, industry updates and other important relevant information.

AUSVEG is also the service provider for *Accelerating the adoption of best management practices for the Australian onion industry* (VN21000), which will see the inclusion of onion industry-related information in the publication.

Close alignment with VegNET extension project

AUSVEG will work closely with the VegNET project team to collaborate on ways to deliver efficient, effective and coordinated communications and extension projects, including using VegNET's regional priority areas to guide communications topics, to ensure that relevant materials are provided to each region's officer and that important articles are translated in appropriate languages to increase reach and awareness.

Weekly Update e-newsletter

AUSVEG will continue to publish a weekly e-newsletter (Weekly Update) highlighting R&D and industry issues and events of relevance to growers and other industry stakeholders.

Each newsletter will feature dedicated Vegetable Fund updates linking to project reports, resources and information available via the AUSVEG website, Hort Innovation website and other related websites.

Media and Social Media relations to promote industry R&D

AUSVEG will promote levy-funded research and events through the media, as well as assisting and supporting VegNET regional development officers in promoting events and regional issues through the media.

Maintain R&D sections on the AUSVEG industry website and update R&D catalogue of levy-funded projects

AUSVEG will update R&D sections of the AUSVEG industry website and work to incorporate the R&D catalogue of levy-funded projects to a new dedicated Vegetable R&D online hub.

AUSVEG will liaise with growers, research providers and Hort Innovation to ensure that all content is updated and best meets the needs of industry.

Videos and Podcasts

AUSVEG will produce videos and podcasts highlighting levy-funded R&D and grower adoption of outcomes which will be hosted online and shared through all of its communications channels, including its e-newsletter, social media, *Vegetables Australia* and other relevant channels.

Vegetable R&D online hub

AUSVEG will develop a Vegetable R&D online hub to act as a 'one-stop-shop' for vegetable growers to access information on research outcomes, industry news and events, and VegNET-related activities.

This hub be accessible on the AUSVEG website, and will feature all materials developed by VG22000, as well as grower R&D adoption profiles and relevant information on key projects. The hub will also allow AUSVEG to generate data to better tailor communications materials to its audience and allow for continuous improvement throughout the project.

Translation of R&D articles

AUSVEG will work with VegNET regional development officers to prioritise translation of key R&D articles into LOTE, including Vietnamese, Khmer, Mandarin, Arabic and others that are identified through the VegNET project.

AUSVEG will use translators certified by the National Accreditation Authority for Translators and Interpreters (NAATI) to ensure accuracy of translation, and will distribute these materials to VegNET officers, as well as through its own communications channels.

Quarterly multi-platform case studies

Every edition of the quarterly *Vegetables Australia* magazine will feature an R&D case study topic, where AUSVEG will profile multiple projects related to a specific topic that has been identified through the VegNET regional priorities.

AUSVEG will also develop a range of media content, including grower case study, videos, podcasts, social media content, media promotion and online articles on each case study to provide a suite of communications to promote each topic.

Integrated regional media plan and social media 'influencer' plan

AUSVEG will continue its successful media engagement strategy to promote levy-funded R&D by developing a dedicated regional and rural media strategy to target print, broadcast and online journalists across key platforms to increase the reach of industry R&D.

AUSVEG will develop a dedicated social media 'influencer' plan to engage with key and emerging social media influencers covering horticulture, agriculture and regional Australia to promote innovative research undertaken through the Vegetable Levy, as well as key events and activities undertaken by AUSVEG and VegNET. It is expected that regional champions will be captured as part of this plan.

The program will also be overseen by a project governance group and underpinned by a robust Strategy and Monitoring and Evaluation plan developed with the assistance and expertise by a third-party consultant.

VG22000 will also feature additional elements that will increase the awareness of industry-funded R&D.

FIND OUT MORE

For further information on this project, please contact Project Lead Shaun Lindhe at shaun.lindhe@ausveg.com.au or on 03 9882 0277.

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

Project Code: VG22000

Hort Innovation Strategic levy investment | VEGETABLE FUND

NEW

How To Guide for Smart Farming

FREE TO ALL

A comprehensive guide to smart farming and using sensors on farm has been developed by Applied Horticultural Research as part of an ongoing project to increase the uptake of Smart Farming technologies. It is now available free online.

Soil moisture sensors with communications node. **Right.** Control Tower in use at AustChill. *Image Applied Horticultural Research, 2022.*

There are many reasons why a vegetable grower might want to integrate smart farming technology onto their farm:

- Improving nutrient use efficiency can reduce leaching and lower the cost of fertiliser inputs;
- Monitoring soil moisture can improve water use efficiency;
- Labour costs can be reduced by automating data collection and using cameras to monitor for crop growth and disease.

However, integrating this sort of technology with existing farm management practices can seem like an insurmountable task. Applied Horticultural Research (AHR), as part of the project *Digital remote monitoring to improve horticultures environmental performance*, is aiming to make the task more manageable with its new **Smart Farming How To Guide**.

The guide is available now on AHR's website **ahr.com.au/smart-farming** and covers everything a vegetable grower needs to know to get started installing and using soil moisture sensors, growth models, remote field cameras, and many more types of smart farming equipment.

"The purpose of the guide is to provide growers with an overview of the smart farming technologies that are commercially available now," said AHR's Liam Southam-Rogers, who led the team that developed it.

"We wanted to provide basic guidance on what each sensor does, how to use the data, and how much effort is required to install and maintain each of them."

Environmental monitoring requirements and recording keeping are becoming a normal part of daily life for many of Australia's vegetable growing regions. However, these requirements can add a significant record keeping and labour requirement.

The introduction of smart farming technology onto a vegetable farm, can help automate the collection of these records and help growers meet best management practices (BMPs) or certification requirements.

Is smart farming right for your property?

The term "Smart Farming" covers an extraordinarily large set of tools and practices. This can add to the daunting nature of figuring out where to begin. The 'How To Guide' makes figuring this out a more manageable task with its Key Considerations chapter. This section contains a list of easy to work through questions designed to help growers determine what smart farming practices and what kinds of sensors will provide their business the most benefit. The guide also points to external references for those looking to dig deeper into any of the topics covered.

Shorter 'How To Guides' will soon be available in print versions, with each focusing on a different aspect of smart farming. An updated version of the document will be developed in 2023 with an additional section discussing new methods for digital reporting for environmental management programs.

FIND OUT MORE

Those wishing to learn more about the project, or smart farming in general, can do so by visiting the project website **ahr.com.au/smart-farming** or by contact Liam Southam-Rogers at **liam@ahr.com.au.**

The **Smart Farming How To Guide** has been developed as part of the project *Digital remote monitoring to improve horticulture's environmental performance* (ST19024) funded through the Australian Government's Landcare Smart Farming Partnerships program with contributions from the Vegetable, Nursery and Banana levies and being delivered through Hort Innovation.

Project Number: **ST19024**

Top 10 grower resources from Soil Wealth ICP Phase 2

The Soil Wealth and Integrated Crop Protection (ICP) project works with growers to put soil management and plant health research into practice. As the team wraps up Phase 2, discover the most popular resources from the project during the past five years.

Since 2014, the Soil Wealth ICP project has provided research and development (R&D) extension services, products and communication on improved soil management and plant health to the Australian vegetable industry.

Applied Horticultural Research and RMCG have delivered the extension project on behalf of Hort Innovation and recently concluded Phase 2 which spanned from 2017 to 2022.

In this edition of *Vegetables Australia,* the Soil Wealth ICP team looks back on the 10 most popular grower resources from Phase 2 of the project.

1. Biological Products Database

The most popular Soil Wealth ICP resource every year since it was published was the Biological Product Database. This is a tool to help growers navigate the array of biological products currently available to their farming business.

The database is regularly updated and available in three different formats for ease of use:

- Biological products sorted by trade name
- Biological products sorted by product type and trade name
- Biological products sorted by APVMA registration, type and trade name.

Access the database: soilwealth.com.au/resources/global-scan-and-reviews

2. Soil-borne diseases in vegetable crops: A practical guide to identification and control

Soil-borne diseases present an ongoing challenge to the Australian vegetable industry, with an estimated $120 million in losses annually.

A practical field guide was developed to provide information on the identification and control of the major soil-borne diseases for a diverse range of vegetable crops. Each chapter covers:

- How to identify the most common soil-borne diseases affecting vegetable crops in Australia and conditions which favour disease
- Summary of the methods available for control
- Answers to common questions.

Access the guide: soilwealth.com.au/resources/articles-and-publications

3. Plant analysis for vegetable crops: A practical guide to sampling, analysis and interpretation

Plant analysis allows growers to monitor a crop's nutrient status and identify deficiencies early before yield and quality are reduced. This guide explains how plant analysis can be used to achieve balanced, site-specific nutrient management.

It covers types of plant analyses as well as sampling methods, desirable nutrient concentrations and interpreting results.

Access the guide: soilwealth.com.au/resources/articles-and-publications

4. Soil Biology in Vegetable Production Masterclass

During Phase 2, the Soil Wealth ICP team introduced the first Soil Biology in Vegetable Production Masterclass, which was run online over two days.

A webinar series was developed following the event where growers could access the following presentations from experts, growers and industry members.

- **Part 1:** Introduction and basic principles of soil biology
- **Part 2:** Breakdown of plant biomass and agrichemicals
- **Part 3:** Nitrogen availability
- **Part 4:** Soil structure
- **Part 5:** Soil fumigation – chemical and biological
- **Part 6:** Disease suppression
- **Part 7:** Biological products
- **Panel discussion on soil biology testing**
- **Grower success story:** Andrew Braham, SA capsicum grower

View the presentations: soilwealth.com.au/resources/webinar-recordings/

5. Strip tillage for vegetables and potatoes with Steve Peterson (USA) and Ben Pogiolli (Qld)

Growers are constantly on the look-out for farming practices which can protect soils and produce healthier crops. Strip tillage combines the best of no-till and conventional tillage in the one operation.

This resource brings together local and international experiences of strip-tillage in the field with Steve Peterson, a fourth-

generation farmer and manufacturer of strip-till equipment in the United States and Ben Pogiolli, an experienced strip-till farmer from the Atherton Tableland in Queensland.

Watch the webinar recording: soilwealth.com.au/resources/webinar-recordings

6. The Carbon Series

A hot topic for many in agriculture, the Carbon Series breaks down the practicalities of carbon farming for vegetable growers and the benefits of soil carbon management. The series explored the following topics and provided links to further information and project resources.

- **Part 1:** Carbon farming and its relevance to Australian vegetable growers
- **Part 2:** Soil carbon and carbon sequestration
- **Part 3:** Carbon emissions in vegetable production
- **Part 4:** Carbon accounting / Emissions Reduction Fund.
- **Podcast:** Developing carbon neutral sweet corn in Queensland (Mulgowie Farming Company)
- **Webinar recording:** Carbon management on vegetable farms – emissions, sequestration and beyond.

Access the series: soilwealth.com.au/resources/global-scan-and-reviews

7. Ag-tech trial turns up the heat on weeds

Everyone loves a bit of ag-tech and this case study was no different. It investigated the effect of a prototype unit from Growave which aims to reduce herbicide use within the horticulture industry using microwave technology.

The Australian-first trial of the technology was held at the Soil Wealth ICP Koo Wee Rup demonstration site in Victoria and captured the interest of many growers.

Read the article: soilwealth.com.au/resources/case-studies

8. Cover crops for Australian vegetable growers poster

With so many cover crop species available, this double-sided poster provides a strong starting point for growers to choose a cover crop to suit their farming operation, climate and cover crop objectives. You can find plenty of information on the benefits, growth tolerances, soil conditions, sowing and establishment traits for a range of cover crop species.

Posters were also developed on cover crop termination and using herbicides with cover crops.

Access the posters: soilwealth.com.au/resources/posters/

9. Integrated weed management: Nutgrass, oxalis and volunteer potatoes

Nutgrass (*Cyperus rotundus*), also known as purple nutsedge, Java grass, coco-grass and red nutsedge, is a major problem for the Australian vegetable industry – and its popularity as a Soil Wealth ICP resource is testament to this.

The integrated weed management (IWM) fact sheet provides a range of control strategies on nutgrass. Similar fact sheets were also developed for oxalis (*Oxalis spp.*) and volunteer potatoes (*Solanum tuberosum*).

Read the fact sheets: soilwealth.com.au/resources

10. Maximising IPM practices in protected cropping wrap-up

In 2022, a group of vegetable growers and industry members visited Family Fresh Farms in New South Wales for a Soil Wealth ICP event focusing on how growers can incorporate integrated pest management (IPM) practices in protected cropping.

For those who missed the event, this wrap-up shared the key discussion points on the fundamentals of IPM and ways to improve IPM practices.

Read the article: soilwealth.com.au/resources/articles-and-publications

FIND OUT MORE

For more information, please contact project leaders Dr Gordon Rogers on 02 8627 1040 or **gordon@ahr.com.au** and Dr Anne-Maree Boland on 03 9882 2670 or **anne-mareeb@rmcg.com.au**.

Soil Wealth ICP Phase 2 (VG16078) is a strategic levy investment under the Hort Innovation Vegetable Fund.

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

Project Number: **VG16078**

Hort Innovation Strategic levy investment | VEGETABLE FUND

Vegetable Levy Update

It is Hort Innovation's job to work with industry to invest the vegetable levy and Australian Government contributions into initiatives to help growers be as productive and profitable as possible, through the Hort Innovation Vegetable Fund.

What is the vegetable levy?

Levy is payable on vegetables that are produced in Australia and either sold by the producer or used by the producer in the production of other goods.

The levy rate on vegetables is 0.51 per cent of the gross sale value of the vegetables at the first point of sale.

This levy is collected by the Australian Government and then entrusted to Hort Innovation. It is then Hort Innovation's responsibility to work with industry to invest the levies – together with Australian Government funds in the case of R&D – into strategic R&D initiatives.

You can find full details on the levy rate, plus information on how to lodge a return and make a payment with the Department of Agriculture, Fisheries and Forestry, on the government website at **agriculture.gov.au/agriculture-land/farm-food-drought/levies/rates/vegetables.**

How are levy investment decisions made?

Investments specific to the Hort Innovation Vegetable Fund are guided by the industry's Strategic Investment Plan (SIP) and Annual Investment Plan (AIP). SIPs provide an overarching roadmap for industry to follow, and AIPs detail how levy dollars will be spent each year to achieve industry goals.

What is the vegetable Strategic Investment Plan (SIP)?

The vegetable SIP 2022–2026 is the roadmap that helps guide Hort Innovation's oversight and management of the vegetable investment program. The SIP lays the foundation for decision-making in levy investments and represents the balanced interest of the vegetable industry. The most important function of the SIP is to make sure that levy investment decisions align with industry priorities.

In 2021, the vegetable SIP was refreshed to reflect the current needs of the vegetable industry. The refresh involved close consultation with growers, industry participants and the wider research community.

The vegetable SIP details the industry's strategic goals centred around four outcome areas: industry supply, productivity and sustainability; demand creation; extension and capability; and business insights. Under each of those outcomes, there are industry-specific strategies and key performance indicators that provide guidance on how the vegetable industry will work towards achieving the outcomes.

For the previous vegetable SIP, a performance report has been developed to demonstrate how investments delivered in the Vegetable Fund from 2016/17 to 2020/21 generated impact for vegetable growers. The report provides an overview of key achievements delivered through each levy investment, and how they relate to the industry's SIP outcomes and strategies.

While this performance report provides a five-year review of the vegetable SIP 2017–2021, going forward an annual performance report will be provided for the vegetable SIP 2022–2026.

What is the vegetable Annual Investment Plan?

While the vegetable SIP provides an oversight of investment over the next five years, the vegetable AIP explains how levy funds are going to be invested over a twelve-month period.

AIPs are developed each year by Hort Innovation, informed by the SIP and industry consultation, and then discussed with the industry SIAP for feedback and prioritisation. Investment decisions will be guided by the industry SIP and prioritised based on potential industry impact, as well as availability of levy funds.

The AIP provides detailed information on:

- Funding availability
- How the vegetable industry is investing against their SIP outcomes
- Details on current investments across R&D.

Hort Innovation sends alerts about project updates to its members.

Where do investment ideas come from?

There are many avenues that investment ideas come through – such as growers, delivery partners, previous projects, research networks, industry bodies, regional extension plans, and extension personnel. Before any ideas are progressed, Hort Innovation will investigate whether investment aligns with the SIP and whether investment is needed in this area.

How are investments prioritised?

To gain industry insights for strategic levy investments, Hort Innovation consults with growers through the vegetable Strategic Investment Advisory Panel (SIAP).

Hort Innovation develops draft investment recommendations based on investment ideas that are aligned to the vegetable SIP. Each recommendation includes high-level information on the aims of the project, outcomes, deliverables and budget.

The recommendations are then taken to the relevant advisory panel for feedback and prioritisation based on potential impact and available funding. Details of projects that will be progressing are then featured in the AIP.

The vegetable SIAP consists of industry supply-chain stakeholders, most of whom are levy-paying growers. Panels also include industry representative body representation and, where applicable, a lead agency representative from within the National Horticulture Research Network.

The SIAP is in place to discuss investment ideas, in order to provide advice to Hort Innovation on potential levy investments. The advice they give is guided by the industry's SIP.

The SIAP provides a vital link between meeting the priorities of industry and helping Hort Innovation to make decisions on how, where and when investments need to be made.

How are investments progressed?

After the investment has been prioritised, it's then up to Hort Innovation to get the project up and running. This involves a tender process where the best delivery partner is chosen to undertake the project. Each delivery partner needs to submit regular milestones that report on their progress. At the end of each investment, a final report is produced that is made available to industry on what the project has achieved.

How to keep track of investments

Investments in the Hort Innovation Vegetable Fund are detailed in the Your investments page of the Vegetable Fund section of **Hort Innovation's website**. Resources that are produced by the projects – such as fact sheets and guides – are also available through the Research Reports and More page.

Hort Innovation also sends alerts about project updates to its members. Paying a levy doesn't automatically make you a Hort Innovation member, but signing up is free.

The levy-funded communications program, run through the investment National vegetable industry communications program (VG18000), also provides regular information on levy-funded activity.

FIND OUT MORE

Please visit **horticulture.com.au/growers/vegetable-fund/** to read more about the Hort Innovation Vegetable Fund.

For further details or if you have any questions, please contact Hort Innovation Industry Strategic Partner Mark Spees on 0439 574 173 or email **mark.spees@horticulture.com.au.** Alternatively, you can phone the AUSVEG office on 03 9882 0277.

Hort Innovation Strategic levy investment | VEGETABLE FUND

Hort Innovation Vegetable Fund Investments – Levy Projects 2022

Current Project Name	Project Code	Delivery Partner
Global Masterclass in Horticultural Business	LP15001	University of Tasmania
Attracting new entrants into Australian horticulture	LP15006	Rimfire Resources
National tomato potato psyllid and zebra chip	MT18008	The Department of Primary Industries and Regional Development, Western Australia in collaboration with others
Ex-post impact assessment	MT18011	AgEconPlus
Generation of data for pesticide permit applications in horticulture crops 2019/20	MT18018	Peracto
Stingless bees as effective managed pollinators for Australian horticulture	PH16000	Western Sydney University
Generation of residue, efficacy and crop safety data for pesticide applications in horticulture crops	ST16006	Eurofins Agrisearch
Generation of data for pesticide applications in horticulture crops 2018	ST17000	Eurofins Agroscience Services and Peracto (these providers run separate research projects under the same project name and code)
Generation of data for pesticide applications in horticulture crops	ST18001	Peracto
Nuffield scholarships	VG14065	Nuffield Australia Farming Scholars
Vegetable industry minor use program	VG16020	Hort Innovation
Novel topical vegetable and cotton virus protection	VG16037	The University of Queensland
Tools and interventions for increasing children's vegetable knowledge	VG16064	CSIRO
Soil wealth and integrated crop protection – Phase 2	VG16078	Applied Horticultural Research
Area wide management for vegetable diseases: viruses and bacteria	VG16086	The Queensland Department of Agriculture and Fisheries
National Vegetable Protected Cropping Centre	VG17003	Western Sydney University
Internal fruit rot of capsicum	VG17012	Applied Horticultural Research
Alternative disinfestation for market access for crops affected by tomato potato psyllid	VG17015	The Department of Primary Industries and Regional Development, Western Australia
National vegetable industry communications program	VG18000	AUSVEG
Advancing women's leadership across the Australian Horticultural Sector – Pool 2	LP16000	Women & Leadership Australia
Parasitoids for the management of fruit flies in Australia	MT19003	Victorian Department of Jobs, Precincts and Regions
Horticulture Trade Data	MT19005	IHS Global
Across horticulture support for export MRL compliance	MT19006	Bryant Christine Incorporated
Field-based testing for fall armyworm, *Spodoptera frugiperda*	MT19014	Victorian Department of Jobs, Precincts and Regions
Identifying potential parasitoids of the fall armyworm, *Spodoptera frugiperda*, and the risk to Australian horticulture	MT19015	Queensland Department of Agriculture and Fisheries
Management strategy for serpentine leafminer, *Liriomyza huidobrensis*	MT20005	Queensland Department of Agriculture and Fisheries
Regulatory Support & Response Co-ordination	MT20007	AKC Consulting Pty Ltd
Consumer demand spaces for horticulture	MT21003	Kantar Insights
National Bee Pest Surveillance Program: Transition Program	MT21008	Plant Health Australia Limited
Co-developing and extending integrated *Spodoptera frugiperda* (fall armyworm) management systems for the Australian vegetable industry	VG20003	Queensland Department of Agriculture and Fisheries
VegNET 3.0	VG21000	AUSVEG
Demonstrating the benefits of building capability and capacity in extension delivery in the vegetable industry	VG21002	University of Melbourne
Consumer usage, attitude and brand tracking (pilot program)	MT21201	Fifty-Five Five
Consumer behavioural data program	MT21004	Nielsen
Economic contribution of Australian horticulture	MT21010	Centre for International Economics

Commodity profile

Pumpkins

A HARVEST TO HOME REPORT TITLED *'Pumpkin Comprehensive Review'*, pumpkin saw both dollar (+11.0%) and volume decline compare to a year ago (-5.2%). Total vegetables saw a similar **trend increasing dollar +4.3% & declining volume sales -7.7%.** While volume sold on promotion declined in the latest 52 weeks, pumpkin saw the third highest increase in average price with cauliflower increasing the most in average price across the competitive set vs year prior.

The leading state producers of pumpkins in 2021/22:

48% Queensland

28% New South Wales

18% Western Australia.

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

For the year ending June 2021,

116k tonnes of pumpkins

were produced at the value of **AUD$89M.** The wholesale value of the fresh supply was **AUD$100M**, with **AUD$84M** distributed into retail and **AUD$16M** into food service.

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

There are a number of pumpkin varieties grown in Australia, including:

50% Kent

31% Butternut and 17% Queensland blue.

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

Veggycation® reports that **several fungi are associated with pumpkin decay during storage including fusarium, pythium, anthracnose** *(colletotrichum)* and gummy stem blight or black rot *(mycosphaerella)*. Alternaria rot will develop on chill-damaged winter squashes. Fruit that are overmature at harvest (>2 weeks beyond optimal harvest date) will tend to have more storage decay.

61% of Australian

households purchased pumpkins with an average of

1.7kg bought per trip.

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

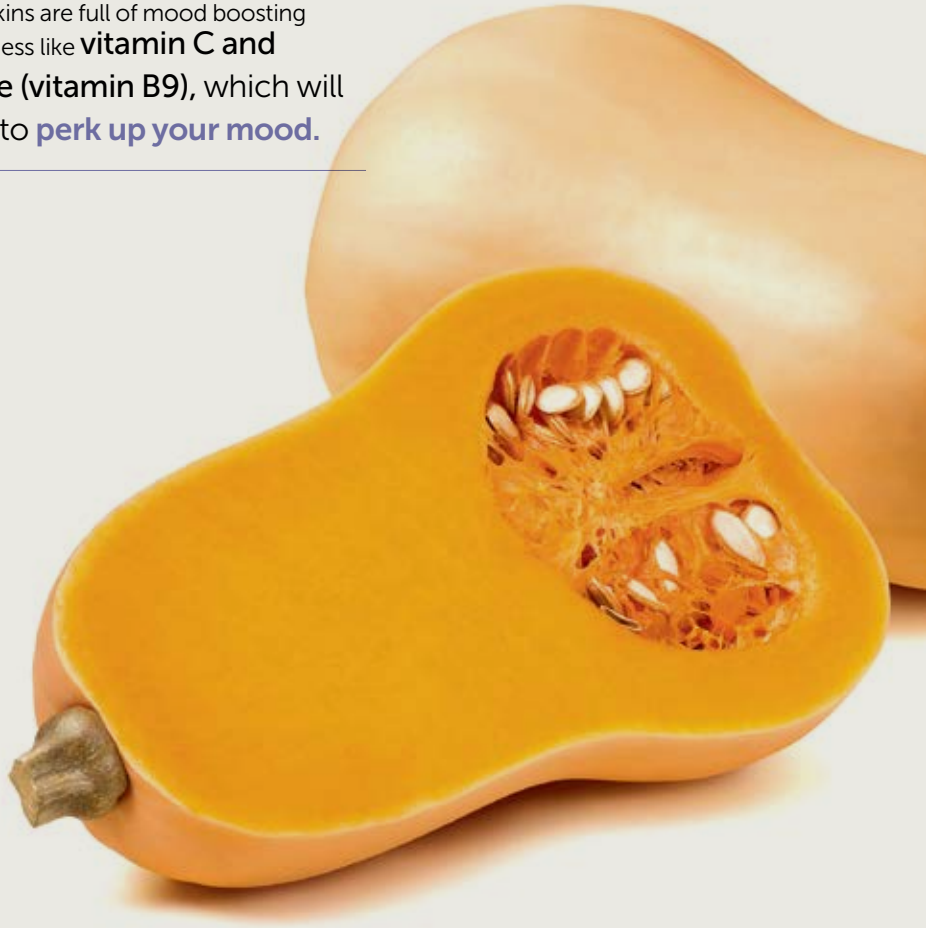
The Good Mood Food states that pumpkins are full of mood boosting goodness like **vitamin C and folate (vitamin B9),** which will help to **perk up your mood.**

In 2020/21 **approx 3.4k tonnes of pumpkins** were exported **77% Singapore** the main destination for Australian-grown pumpkins.

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

A recently-finished Hort Innovation-funded project conducted by Applied Horticultural Research, suggests that the **best way to reduce development of brown etch in pumpkin is to keep relative humidity (rH) low and the crop as dry as possible.** This could mean increasing plant spacing, avoiding planting in damp areas or growing with subsurface drip instead of overhead irrigation.

SOURCE: IMPROVED MANAGEMENT OF PUMPKIN BROWN ETCH (VG15064).



Innovative products, at the right time, in the right way

The Sygenta GrowMore 2022 event, held in November brought together agronomists, advisors, consultants and growers from across Australia for the launch of two products for horticulture: SIMODIS® insecticide and MIRAVIS® Duo fungicide, while supporting best-practice crop management methods.

Top. Agronomists, advisors, growers and consultants gather to see the benefits of SIMODIS® insecticide and MIRAVIS® Duo fungicide.
Above. Belinda Frentz, AUSVEG Board Director - speaking at the celebration event.

"We're proud to be among a small handful of global leaders in agricultural research and development, dedicated to the discovery of breakthrough products in the management of diseases and insect pests," said Syngenta Australia and New Zealand Managing Director Paul Luxton.

"It's not every year we get to bring two breakthroughs to market in horticulture, with immediate benefit to farmers, upon whom we count upon for the ongoing supply of nutritious fresh produce."

Launched four years ago in Gatton, the return to the Lockyer Valley for the launch of SIMODIS® insecticide was deemed vitally important. The Lockyer Valley has in recent times battled Group 28 resistance in diamondback moth (DBM), which has put growers and agronomists under increasing pressure to produce quality crops with few effective control measures.

Syngenta Technical Services Lead Dr Shaun Hood said last week's registration of SIMODIS® insecticide, powered by PLINAZOLIN® technology, was a momentous occasion, representing a breakthrough for managing key insect and mite pests.

"In some regions, diamondback moth has become increasingly difficult to manage, with resistance reducing the efficacy of some well-known chemistries," said Dr Hood.

"SIMODIS® insecticide is an innovation from Syngenta being a novel mode of action, Group 30, offering reliable, robust and extended efficacy against difficult to manage pests in our key horticultural crops."

Top. Dr Sinisa Jelovcan, Syngenta Global Technical Manager Insecticides and Dr Shaun Hood, Syngenta Technical Services Lead – discussing SIMODIS® insecticide in the paddock

Above. Dr Brandy Rawnsley, Syngenta Technical Services Lead – discussing MIRAVIS® Duo fungicide in the paddock.

The event included expert advice on resistance management, and optimisation of product application for superior outcomes on-farm. Dr Simon Baxter, Senior Lecturer in genetics at The University of Melbourne shared insights into his research in DBM diamide resistance. Also in attendance were Dr Sinisa Jelovcan, Syngenta Global Technical Manager Insecticides, visiting from Croatia, and Francois Burghgraeve, Syngenta Product Development Lead for insecticides, visiting from Switzerland, both of whom shared their insights and experience about SIMODIS® insecticide from a global perspective.

The second product launched at the event was MIRAVIS® Duo fungicide, offering outstanding protection against powdery mildew and leaf spot diseases in open field and protected cropping.

"This is an exciting new development in the MIRAVIS® brand family," said Syngenta Technical Services Lead, Dr Brandy Rawnsley.

"The active ingredient pydiflumetofen was introduced in Australia in 2018 and has been a game changer for control of powdery mildew in grapes and target spot (Alternaria) in potatoes. This same active co-formulated with difenoconazole will now be introduced to preventatively control key diseases across a broad range of vegetable crops."

FIND OUT MORE

Contact Jaelle Bajada phone 0438 396 154 or email **Jaelle.bajada@syngenta.com**

Visit **syngenta.com.au** and **goodgrowthplan.com**

The Syngenta GrowMore site at Gatton enabled more than 100 guests to make assessments of various treatments across rockmelon, tomato, carrot, celery, spring onion and broccoli crops.

New research seeks a solution to brown etch of pumpkins

What is brown etch?

'Brown etch', or 'rust mark' is a major problem for butternut pumpkin growers. While damage is superficial, affecting only the skin, etched pumpkins are not saleable. In some cases, up to 50% of a crop can be lost, making it uneconomic to harvest.

Even if harvested pumpkins are graded to remove affected fruit, etch can develop between the farm and wholesale market. Bins arriving with etched fruit must be re-graded at significant cost, with pumpkins potentially downgraded to processing.

It has generally been assumed, both in Australia and overseas, that brown etch is caused by a disease. The key suspect has been gummy stem blight (GSB) (*Stagonosporopsis* spp.). This disease has frequently been isolated from etched pumpkins, but normally causes a soft, black rot, nothing like the symptoms of etch. Other researchers have accused species of Fusarium (*F. oxysporum* and *F. roseum* 'Equiseti') as being responsible, while at least one NSW pathologist proposed that the cause was physiological, triggered by sudden cold.

Even though the cause remained in doubt, there were attempts to find a solution. In 1996, a project funded by HRDC (now Hort Innovation) aimed to breed a butternut variety resistant to brown etch. The process proved extremely challenging; development of symptoms was highly variable, even where plants were inoculated with (their chief suspect) GSB. Despite this, one outcome was commercialisation of "Sunset QHI", that has been stated to be resistant to etch.

In 2015 another Hort Innovation project (VG15064) re-examined the problem. Unfortunately, trials did not find any difference in etch development between Sunset QHI and other commercial varieties. Again, the symptoms were extremely variable; in the first (wet) season of the project, high rates of etch occurred at many sites. In the subsequent (dry) seasons, there was virtually none, anywhere.

Attempts to induce brown etch by inoculating it with disease organisms produced inconclusive results. Fungicide programs, plastic mulch, foliar nutrients and defence stimulators all failed to either increase or decrease etch.

According to project leader Dr Jenny Ekman (AHR), the one clear finding was the increased risk of etch following prolonged wet periods. "For example, if pumpkins stayed wet for more than 24 hours during the month leading up to harvest, more than 10% were likely to develop etch."

"If developing fruit stayed wet more than 50% of the time, our models suggested that at least one in four pumpkins was likely to develop etch. And that still didn't take into account pumpkins etching after harvest," said Dr Ekman.

The project also confirmed that, if etch is found in the field, then grading at harvest can't guarantee clean fruit. "We were surprised to find that pumpkins that looked perfect at picking could suddenly develop etch, sometimes up to two weeks after harvest," commented Dr Ekman. "The one positive was that most new etch appeared in the first few days. This means that if harvested pumpkins can be stored for a week before grading and transport to a distant market, most fruit will arrive clean."

Now, University of Sydney PhD student Ting Huang is taking on the brown etch challenge.

Ting aims to expose the mechanism by which etch occurs. He will then use this information to develop management strategies for field control.

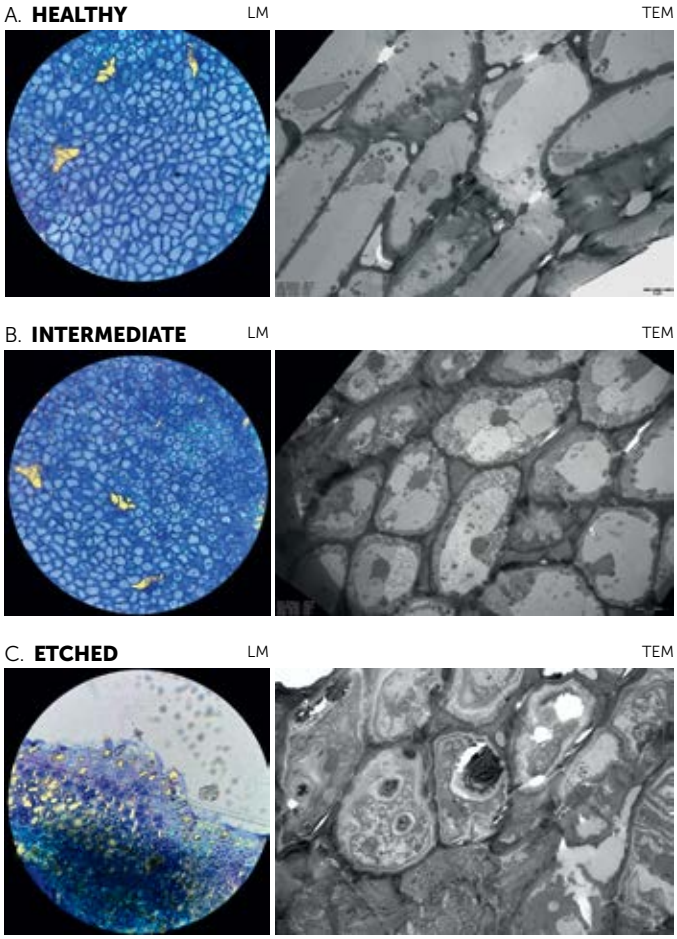
The truth may be in the DNA

His initial work has examined the DNA of samples of etched pumpkin skin to determine whether any of the suspected causal pathogens are present. The isolated DNA was compared to DNA samples of several pumpkin pathogens.

While more work needs to be done, PCR sequencing of a specific region of DNA indicated that none of the pathogens tested was present in etched pumpkin skin. In this trial only pumpkin DNA was found.

As etch develops, it is usually initially a rich, chestnut colour. As the area dries out, it develops a characteristic whitish appearance, likened to petrified wood.

The next step will be to sequence the DNA of healthy pumpkin skin, early stage etch, and 'petrified wood' pumpkin skin



TEM: transmission electron microscope. LM: light microscope.
Light microscopy images (left) and corresponding transmission electron microscopy images (right).
A. Healthy tissue sample. **B.** Intermediate sample. **C.** Etched sample.

samples. The samples will also be used for 'transcriptome analysis' that analysis RNA. This will show what genes are activated, or silenced, as the etch develops.

This will have two key benefits. Firstly, comparison with pathogen DNA libraries will reveal, once and for all, whether a disease directly causes etch symptoms observed, or even if it is simply the trigger.

Secondly, the transcriptome analysis will identify molecular targets for breeding. Once we understand which genes are responsible for development of symptoms, these can be directly targeted and shut down. This could occur through conventional breeding and screening or, potentially, through the new breeding technique CRISPR. As no foreign DNA is introduced, CRISPR can directly target genes in a non-GMO manner. It simply accelerates processes that could take many years using conventional breeding techniques.

Left. University of Sydney PhD student Ting Huang with some etched pumpkins.

The authors acknowledge the technical and scientific assistance of Sydney Microscopy & Microanalysis, the University of Sydney node of Microscopy Australia.

Looking inside pumpkin cells

Ting has also used both light and transmission electron microscopy (TEM) to develop some stunning images showing exactly what is occurring in the pumpkin skin as etch develops.

According to Ting's supervisor, Associate Professor Brian Jones, these pictures of pumpkin cells are unique.

"The images clearly show progression of programmed disruption that is occurring in cells at the edge of etch and within the etched tissue. Healthy cells have clear, defined and uniform structures, with an intact nucleus near the edge, and a large single vacuole in the centre of the cell.

"As etch starts to develop, the vacuole becomes less distinct and the nucleus moves towards the centre of the cell. This is typical of the process known as programmed cell death (PCD), where cells effectively commit suicide. Finally, in fully etched pumpkin tissue, the cell structure has completely broken down and the cell walls have become lignified."

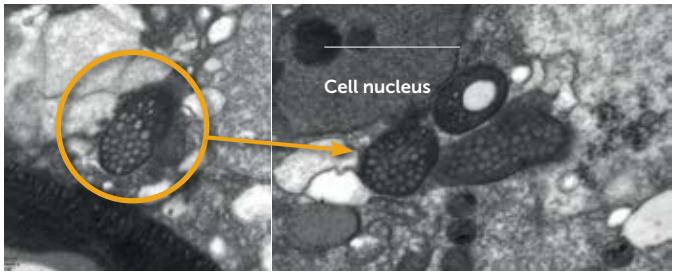
PCD may be initiated by stress associated with overaccumulation of water in the spaces between the cells. Carotenoids (responsible for the pumpkins orange colour) break down and lignins (a key material found in the wood of trees) accumulate in the cell walls. As the outside layers of cells die, etch scars develop.

"What is also notable here is that the TEM magnification levels are so high (up to 50,000x) that Ting would be able to see fungi or bacteria if they were present. The DNA and RNA analyses will show whether any viruses are present. An absence of pathogens would provide more evidence that etch is a physiological disorder, not a disease," states Professor Jones.

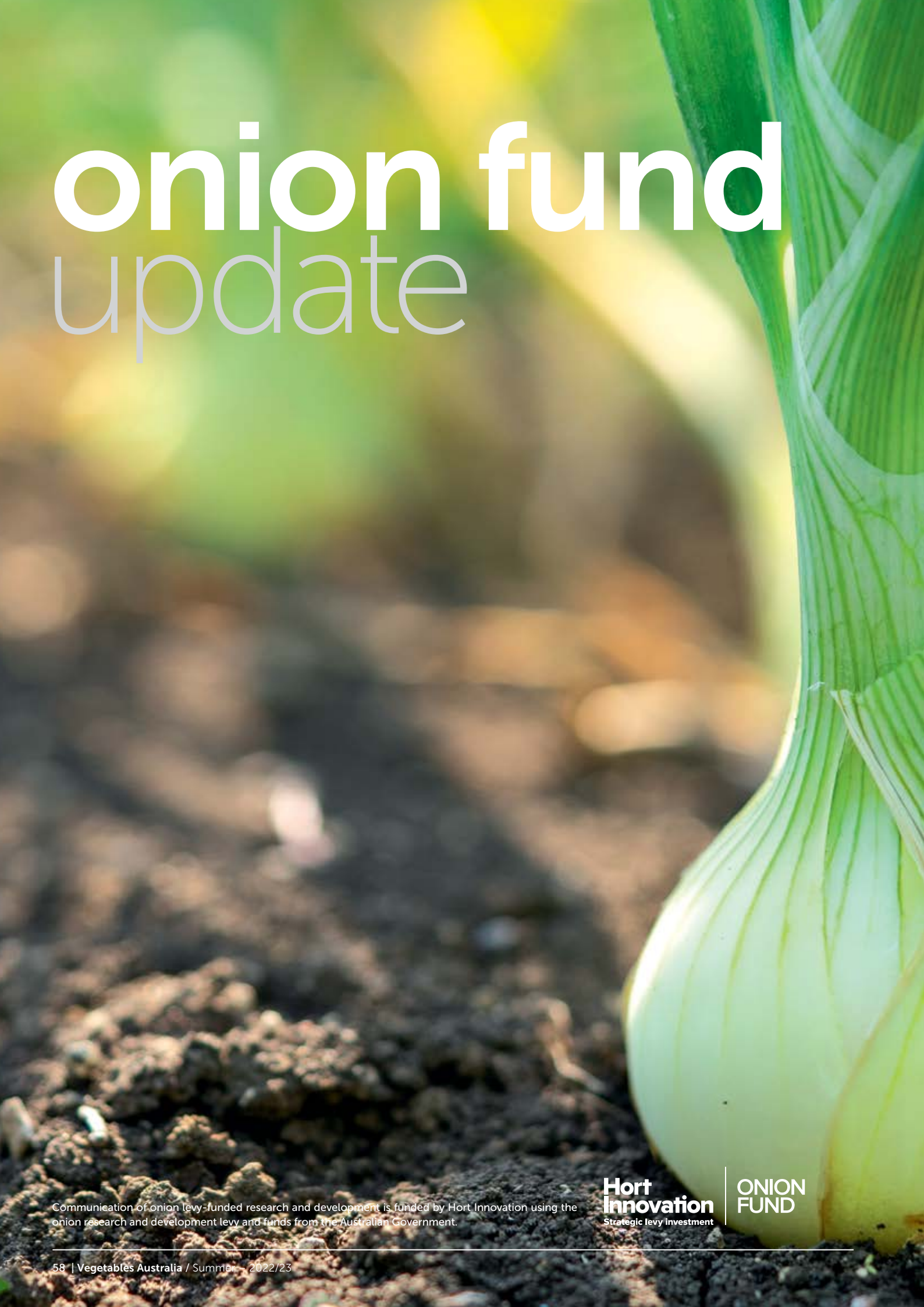
Although the research is in early stages, Ting has already won two university prizes for his work. This is quite an achievement, as he is conducting his project part time while doing other lab work.

However, with these new tools and techniques, and a better understanding of the mechanism by which brown etch occurs, we feel confident that we are finally on the path to managing this otherwise baffling and costly condition.

Below. Sac like structures form near the cell nucleii within etched areas of pumpkin skin, as observed under transmission electron microscopy.



onion fund update



Communication of onion levy-funded research and development is funded by Hort Innovation using the onion research and development levy and funds from the Australian Government.

Hort Innovation
Strategic levy investment

ONION FUND

Commodity profile

Onions

A HARVEST TO HOME REPORT TITLED *'Fall in Vegetable Consumption as Prices Continue to Remain High'*, onions are the **third largest category** in volume terms. Onions' sales trends over the past year **down -4.2%** in volume up **+3.3 % in sales.** followed a similar pattern to total vegetables. Apart from the decline in the average volume bought, the other consumer metrics held relatively steady for onions.

The leading state producers of onions in 2021/22:

48% South Australia

22% Tasmania, 12% Queensland 10% Western Australia.

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

For the year ending June 2021,

272k tonnes of onions

were produced at the value of **AUD$203M.** The wholesale value of the fresh supply was **AUD$210M**, with **AUD$152M** distributed into retail and **AUD$58M** into food service.

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

There are a number of onion varieties grown in Australia, including:

79% Brown onions

19% Red onions, 1% White onions, <1% Shallots/spring onions.

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

Veggycation® advises that mild onions should be stored up to **one month** at 0°C. Pungent onions can be stored up to 9 months at 0°C depending on the cultivar. Onions are susceptible to freezing injury and symptoms include soft water-soaked scales that rapidly decay from subsequent microbial growth.

According to Veggycation®, **onions are susceptible to a range of pathogen-causing rots.** Rots can be minimised by harvesting only at full maturity, proper drying and curing, minimising bruising and scraping damage, and maintaining proper storage conditions to prevent condensation from forming on the bulbs.

75% of Australian

households purchased onions with an average of **837 grams bought per trip.**

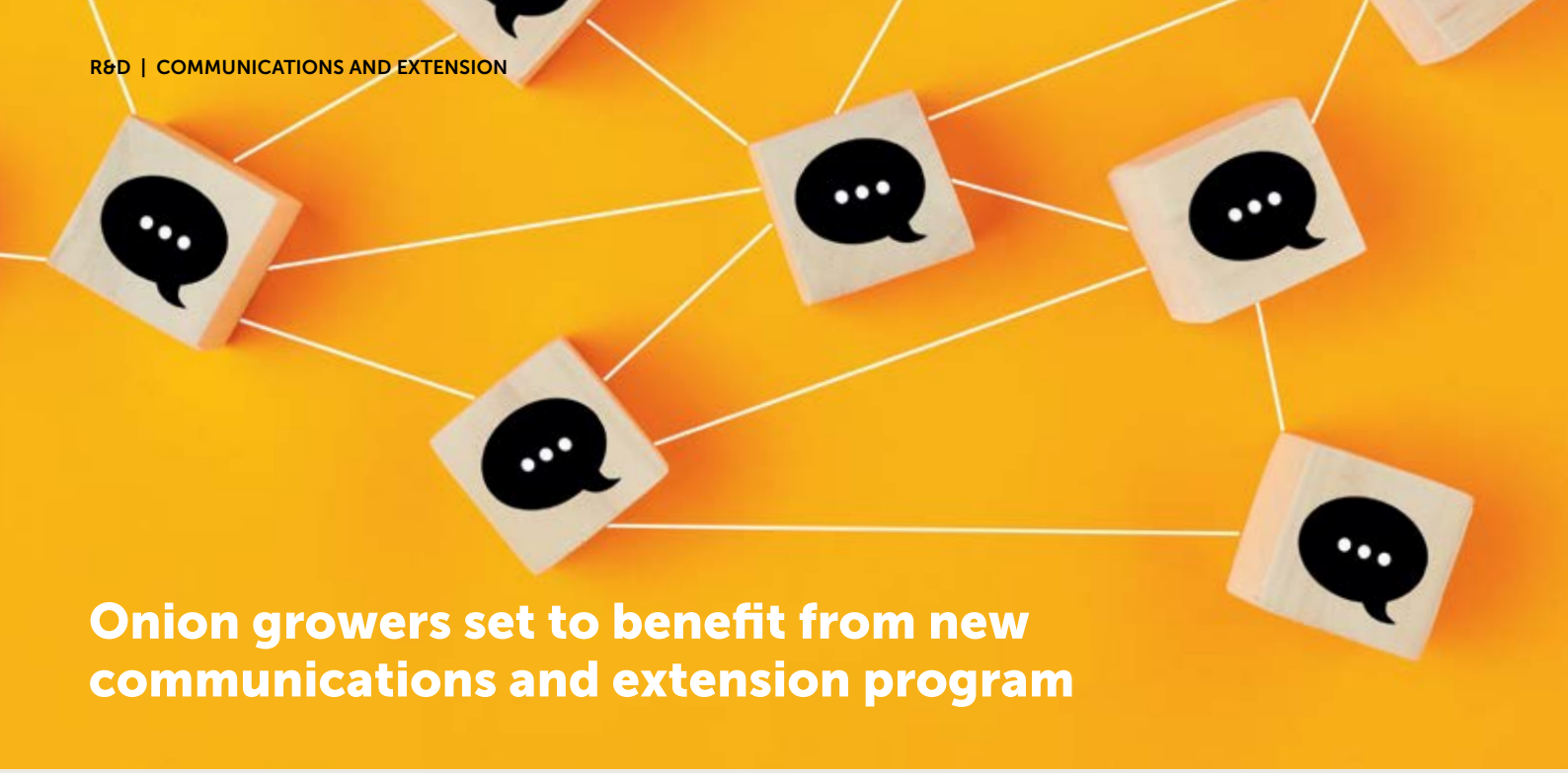
SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.

The Good Mood Food states that onions contain prebiotic fibre, which is the perfect gut-loving nutrient to keep your gut happy and your mood boosted. Onions are available all year-round and contain folate, vitamin B9, Vitamin C, antioxidants and dietary fibre, which all boost mood.

Approx 45k tonnes of onions

were exported in 2020/21. **Thailand 9.6k tonnes, Taiwan 8.1k tonnes and Malaysia 5.1k tonnes.**

SOURCE: AUSTRALIAN HORTICULTURE STATISTICS HANDBOOK 2021/22.



Onion growers set to benefit from new communications and extension program

VN21000 *Accelerating the adoption of best management practices for the Australian onion industry* is an investment under the Hort Innovation Onion Fund that supports increased awareness and adoption of industry-funded research outcomes for onion growers.

The onion industry is one of the most significant contributors to the national vegetable industry, with a farmgate volume of 272,000 tonnes and a value of over $200 million in 2020/21.

For the industry to continue on its growth trajectory, it requires a well-informed, engaged and connected growing community to generate new innovative ideas and adopt the latest research outcomes to grow and thrive.

To help achieve this aim, Hort Innovation has contracted VN21000 *Accelerating the adoption of best management practices for the Australian onion industry*, which is the onion industry's new communications and extension program. AUSVEG was selected by an independent evaluation panel to deliver this project, which is a strategic levy investment under the Hort Innovation Onion Fund.

The program takes advantage of the existing program structures of VegNET and the National Vegetable Industry Communications Program to ensure that onion growers can benefit from the scale and breadth of resourcing that is available to vegetable growers through these programs.

PROJECT OVERVIEW

VegNET

VegNET is the vegetable industry national extension network run by AUSVEG and delivered through 10 'boots-on-the-ground' extension officers (RDOs) in key regions across Australia. It incorporates a third-party monitoring and evaluation (M&E) framework delivered by industry experts RM Consulting Group.

The VegNET RDOs act as a conduit of information for growers and connect growers with information and solutions to issues that are occurring on their farms and in their businesses. The RDOs also hold events, farm demonstration sites and are a source of support and information for growers on a wide range of topics.

Through VN21000, AUSVEG will incorporate the onion industry into VegNET. Onion growers who are already engaged with VegNET through their vegetable levies will be able to get assistance from VegNET on onion-related issues, reducing the burden on growers.

VegNET was developed by AUSVEG and Hort Innovation as an industry-leading extension program that assists in the adoption of research and best management practice to growers and incorporates third-party, expert advisory, M&E and governance measures. Given most onion growers also grow other vegetables, they are already included in this program.

FOR MORE INFORMATION

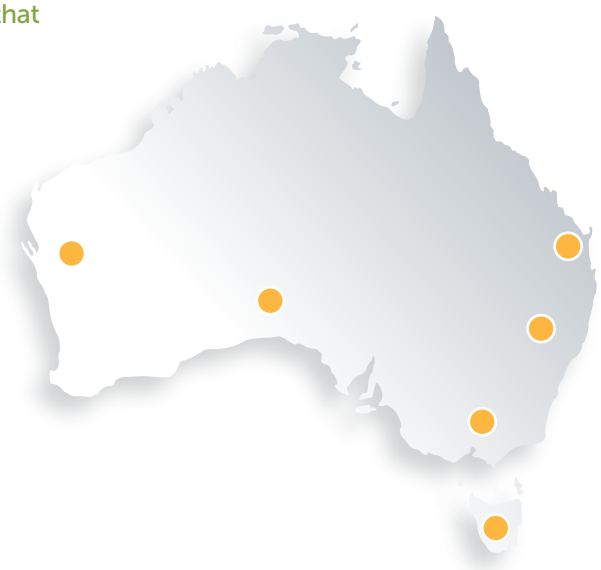
Project resources created in VN21000 will be made available on the AUSVEG website (ausveg.com.au). If you would like to speak with AUSVEG about this project, please contact Project Lead Zarmeen Hassan at **zarmeen.hassan@ausveg.com.au.**

Project Code: **VN21000**

Hort Innovation Strategic levy investment | ONION FUND

There are six key regions that AUSVEG will focus for the onion industry:

- South Australia
- Western Australia
- Queensland (with a key focus on the Lockyer Valley)
- Tasmania
- New South Wales
- Victoria.



For growers who do not already grow vegetables, AUSVEG will have resourcing and capability to reach out to these growers in the first instance, and then incorporate them into VegNET to ensure they get the benefits from inclusion into a bigger industry project.

Communications

AUSVEG is the delivery partner for the Vegetable Industry Communications Program, which includes an array of print, online, social and other communications targeted at growers to increase awareness of industry-funded R&D.

As part of VN21000, AUSVEG will produce:

- Quarterly onion industry content in *Vegetables Australia* publication;
- Onion-related content in AUSVEG Weekly Update e-newsletter;
- Four videos and four podcasts per year;
- Annual R&D scan;
- Annual disease alert poster;
- R&D website updates;
- Four factsheets per year;
- Four case studies;
- Dedicated section on vegetable R&D online hub;
- Translation of R&D articles;
- Quarterly multi-platform case studies; and
- Integrated regional media and social media plan.

AUSVEG will include at least 36 pages of onion levy-funded and onion industry-related content on R&D and marketing into its *Vegetables Australia* magazine, which is published quarterly as a printed magazine. AUSVEG will also make the onion-specific content available as a separate file online for onion growers.

AUSVEG will include onion industry-related content in its weekly e-newsletter, and develop onion specific videos, podcasts and R&D profiles to promote onion industry research and marketing activities funded by the Onion Levy.

AUSVEG will also develop a 'one-stop-shop' online portal that will host all content developed by the program, and links to other relevant materials for onion growers to have access to industry research and updates on their marketing activities.

AUSVEG will also develop onion industry-specific materials as part of VN21000, including disease posters, fact sheets and work with the VegNET team to have relevant materials translated into LOTE depending on regional requirements.

Benefits of this combined approach to onion and vegetable communications and extension?

Aside from the significant cost savings that are delivered through the Onion Fund by incorporating the onion industry within existing vegetable-funded programs that include most onion growers (who also grow other vegetables), VN21000 delivers other benefits to Australian onion growers:

- Through a consolidated approach that utilises the Agriculture Systems Innovation Approach adopted by VegNET, onion growers will benefit from the wide-ranging expertise of the resources available through AUSVEG and the VegNET RDOs.
- VegNET works with a range of state-based and regional grower groups in key onion-growing regions through the extensive reach within AUSVEG and existing regional grower groups.
- AUSVEG will modernise the delivery of onion industry communications through a new online portal that will serve as a 'one-stop-shop' for vegetable and onion growers to access information on research outcomes, marketing activities, industry news and events, and extension-related activities.
- AUSVEG produces all of its communications and extension on behalf of growers with growers 'front and centre', making it uniquely placed to deliver the highest-quality communications and extension project.

Onion Levy Update

Hort Innovation works with industry to invest the onion levy and Australian Government contributions into initiatives to help growers be as productive and profitable as possible, through the Hort Innovation Onion Fund.

What is the onion levy?

The levy is payable on onions that are produced in Australia and either sold by the producer or used by the producer in the production of other goods. Hort Innovation manages the onion levy funds portion directed to R&D set at $2.90 per tonne and the marketing levy, which is set at $1.00 per tonne.

These levies are collected by the Australian Government and then entrusted to Hort Innovation. It is then Hort Innovation's responsibility to work with industry to invest the levy – together with Australian Government funds in the case of R&D – into strategic R&D and marketing initiatives.

You can find full details on the levy rates, plus information on how to lodge a return and make a payment with the Department of Agriculture and Water Resources, at **agriculture.gov.au/agriculture-land/farm-food-drought/levies/rates/onion** .

How are levy investment decisions made?

Investments specific to the Hort Innovation Vegetable Fund are guided by the industry's Strategic Investment Plan (SIP) and Annual Investment Plan (AIP). SIPs provide an overarching roadmap for industry to follow, and AIPs detail how levy dollars will be spent each year to achieve industry goals.

What is the onion Strategic Investment Plan (SIP)?

The onion SIP 2022-2026 is the roadmap that helps guide Hort Innovation's oversight and management of the onion investment program. The SIP lays the foundation for decision making in levy investments and represents the balanced interests of the onion industry. The most important function of the SIP is to make sure that levy investment decisions align with industry priorities.

In 2021, the onion SIP was refreshed to reflect the current needs of the onion industry. The refresh involved close consultation with growers, industry participants and the wider research community.

The onion SIP details the industry's strategic goals centered around four outcome areas:

- demand creation;
- industry supply, productivity and sustainability;
- extension and capability; and
- business insights.

Under each of those outcomes, there are industry-specific strategies and key performance indicators that provide guidance on how the onion industry will work towards achieving the outcomes.

What is the onion Annual Investment Plan?

While the onion SIP provides an oversight of investment over the next five years, the onion AIP explains how levy funds are going to be invested during a twelve-month period.

AIPs are developed each year by Hort Innovation, informed by the SIP and industry consultation, and then discussed with the industry Strategic Investment Advisory Panel (SIAP) for feedback and prioritisation. Investment decisions will be based on potential industry impact, as well as availability of levy funds.

The AIP provides detailed information on:

- Funding availability;
- How the onion industry is investing against their SIP outcomes;
- Details on current investments across R&D and marketing.

Where do investment ideas come from?

There are many avenues that investment ideas come through – such as growers, delivery partners, previous projects, research networks, industry bodies, regional extension plans, and extension personnel. Before any ideas are progressed, Hort Innovation will investigate whether investment aligns with the SIP and if it is needed in this area.

How are investments prioritised?

To gain industry insights for strategic levy investments, Hort Innovation consults with growers through the onion Strategic Investment Advisory Panel (SIAP).

The onion SIAP consists of industry supply chain stakeholders, most of whom are levy-paying growers. Panels also

Hort Innovation sends alerts about project updates to its members.

include industry representative body representation and, where applicable, a lead agency representative from within the National Horticulture Research Network.

The SIAP is in place to discuss investment ideas, in order to provide advice to Hort Innovation on potential levy investments. The advice they give is guided by the industry's SIP.

The SIAP provides a vital link between meeting the priorities of industry and helping Hort Innovation to make decisions on how, where and when investments need to be made.

Hort Innovation develops draft investment recommendations based on investment ideas that are aligned to the onion SIP. Each recommendation includes high-level information on the aims of the project, outcomes, deliverables and budget.

The recommendations are then taken to the relevant advisory panel for feed back and prioritisation based on potential impact and available funding. Details of projects that will be progressing are then featured in the AIP.

How are investments progressed?

After the investment has been prioritised, it's then up to Hort Innovation to initiate the project. This involves a tender process where the best delivery partner is chosen to undertake the project. Each delivery partner needs to submit regular milestones that report on their progress and at the end of each investment, a final report is produced that is made available to industry on what the project has achieved.

How to keep track of investments

Investments in the Hort Innovation Onion Fund are detailed in the Your investments page of the Onion Fund section of Hort Innovation's website. Resources that are produced by the projects – such as fact sheets and guides – are also available through the Research reports and more page.

Hort Innovation also sends alerts about project updates to its members. Paying a levy doesn't automatically make you a Hort Innovation member, but signing up is free.

The levy-funded communications program, run through the investment *Accelerating the adoption of best management practices for the Australian onion industry* (VN21000), also provides regular information on levy-funded activity.

FIND OUT MORE

Please visit **horticulture.com.au/growers/onion-fund** to read more about the Hort Innovation Onion Fund.

For further details or if you have any questions, please contact Hort Innovation Industry Strategic Partner Mark Spees on 0439 574 173 or email **mark.spees@horticulture.com.au.**

Hort Innovation Strategic levy investment | ONION FUND

Current investments
Hort Innovation Onion Fund

Accelerating the adoption of best management practices for the Australian onion industry (VN21000)

KEY RESEARCH PROVIDER: AUSVEG

What's it all about?

This investment ensures the onion industry is equipped with the information and resources needed to adopt best management practices. Onion growers will be brought into the existing VegNET 3.0 program for the vegetable industry to support increased awareness and adoption of R&D.

VegNET is a nationally coordinated, regionally-delivered extension program that increases the industry's awareness of and engagement with best practices in high-priority areas. The program has regional development officers (RDOs) in ten key vegetable growing regions around Australia.

A vital component of the program is the establishment of five regionally based onion grower groups in Tasmania, Queensland, New South Wales, Western Australia and South Australia. The relevant RDO will work with each group to identify issues facing regional onion growers and work with them to host seasonal activities, including demonstration sites, field days, and grower walks.

A wide range of communications outputs will be delivered to onion growers, including:

- The quarterly *Vegetables Australia* magazine, with 36 pages of dedicated onion content;
- The *AUSVEG Weekly Update* e-newsletter, with onion content;
- A range of onion-focused content such as videos, podcast, case studies, factsheets, media releases and social media;
- An annual disease alert poster.

Find your local VegNET regional development officer on the AUSVEG website.

Epidemiology and management of fusarium basal rot in onions (VN20006)

KEY RESEARCH PROVIDER: THE UNIVERSITY OF ADELAIDE

What's it all about?

This investment is developing an integrated pest and disease management (IPDM) strategy to reduce the impact of fusarium basal rot in onions. Infection of bulbs in the field has resulted in substantive losses in storage from this soilborne disease. The epidemiology of the disease is not well characterised which limits capability to develop an appropriate management strategy.

In order to develop a best practice, cost-effective IPDM strategy, this project will improve understanding of the pathogen and its epidemiology, and evaluate the use of chemical, biological and chemical controls.

Optimising chemical and cultural control of onion white rot (VN20007)

KEY RESEARCH PROVIDER: ARVENSIS

What's it all about?

This investment is developing a more effective integrated disease management strategy for control of onion white rot. Onion white rot (OWR) is a highly destructive fungal disease of commercial onion crops. The project seeks to improve current control methods for the disease, as well as identify new methods that can be used to combat onion white rot.

The research will incorporate:

- Development of a pre-plant soil DNA test to identify disease risk prior to planting;
- Identification and development of natural germination stimulants to reduce disease inoculum levels prior to planting;
- Optimisation of spray timing and dose rates of current fungicides and understand efficacy of disease behaviour in the soil;
- Identification of new fungicides and biological controls for onion white rot.

The project team will work closely with the onion industry to extend any new findings to onion growers. Regular updates will be provided to industry, as well as trial sites visits to demonstrate the integrated onion white rot management program development.

Project update: July 2022

The soil DNA test methodology, based on extracting PCR quality DNA from soil samples for testing by PCR for specific detection of *sclerotium cepivorum*, has been developed by SARDI. The project is now focused on validating the test to determine sampling procedures and disease thresholds.

A detailed study protocol for two fungicide efficacy and crop safety trials has been prepared by Arvensis Research, with input from Hort Innovation and the product manufacturers to evaluate new products for disease efficacy and crop safety.

The two trials from the first season have been completed and a report has been submitted to Hort Innovation. The trials have identified a range of new fungicides with new modes of action for control of OWR.

The data is being used to develop the protocols for the second season of fungicide trials. Two of the new fungicides included in the trials are currently being assessed by the Australian Pesticides and Veterinary Medicines Authority for potential registration for control of OWR in Australia.

Another field trial was also completed to look at the factors effecting the efficacy of triadimenol, which is currently used for post-crop emergence for control of OWR. This trial has been completed and a final report has been provided to Hort Innovation.

Sclerotia have been produced in the laboratory and a methodology has been developed to evaluate sclerotia germination stimulants, which will commence this year.

National Bee Pest Surveillance Program: Transition program (MT21008)

KEY RESEARCH PROVIDER: PLANT HEALTH AUSTRALIA

What's it all about?

This investment is delivering a national coordinated bee pest surveillance program to help safeguard honey bee and pollinator-dependent industries in Australia. The National Bee Surveillance Program was established in 2012, supported by the previous ***National Bee Pest Surveillance Program*** **(MT12011)** and ***Enhanced National Bee Pest Surveillance Program*** **(MT16005).**

The program will conduct surveillance for 13 pests that impact honey bees (mites and beetles), and pest bees that could either carry hitchhiking parasites or could themselves cause detrimental impacts to honey bees. The program activities include upgrading sentinel hive arrays and strengthening relationships with surveillance operators. The surveillance is designed to enable the early detection of high-priority pest incursions that can impact on honey bees, providing the best opportunity for successful pest eradication.

Several levy industries are contributors to the work, and the program is part of the Hort Frontiers Pollination Fund. Hort Frontiers is Hort Innovation's strategic partnership initiative, with more information available at **hortfrontiers.com.au.**

For more information on Varroa Mite read Page 81 for the latest biosecurity update.

Management strategy for serpentine leafminer, *Liriomyza huidobrensis* (MT20005)

KEY RESEARCH PROVIDER: QUEENSLAND DEPARTMENT OF AGRICULTURE AND FISHERIES (DAF)

What's it all about?

This project is developing and delivering targeted R&D specifically for serpentine leafminer in response to the incursions detected in late 2020.

The project is building on the initial work of recently completed ***RD&E program for control, eradication and preparedness for vegetable leafminer*** (MT16004).

Areas of work include:

- Identifying and monitoring parasitoids;
- Refining development and validation of surveillance and diagnostic protocols;
- Using predictive forecasting to manage and assess the risk of serpentine leafminer;
- Delivering an industry communication program;
- Developing an industry management plan, grower guides and industry focused workshops.

Regulatory support and coordination (pesticides) (MT20007)

KEY RESEARCH PROVIDER: AKC CONSULTING

What's it all about?

This project provides the Australian horticulture industry with key information regarding domestic and international pesticide regulation. A component of this is the production of Ag Chemical Updates, which provide information on any developments in regulatory oversight of relevant chemicals. It is an opportunity for industry to consider and develop responses to issues arising from actions proposed that may impact on grower ability to access and use needed pesticides.

To assist strategy planning with respect to future pest management options, the project also develops regulatory risk assessments. These highlight potential threats to agrichemicals currently approved for the management of pests and diseases in various crops, as well as current initiatives aimed at addressing identified pest management deficiencies.

For more information

Access past Ag Chemical Updates and agrichemical regulatory risk assessments produced by the predecessor to this project ***Regulatory support and coordination (pesticides)*** (MT17019).

Download Ag Chemical Updates produced by this current iteration to date:

- October 2022
- June 2022
- April 2022
- September 2021
- December 2021

Download the September 2022 agrichemical regulatory risk assessments for Onion.

Multi-industry export program (Vegetables, Onions and Melons) (MT21009)

KEY RESEARCH PROVIDER: AUSVEG

What's it all about?

This investment provides 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. By collating international market information for decision making and business development functions, the aim is to uplift the ability of exporting growers to service a wider range of markets and channels and expand future opportunities. 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 export program comprises the following activities:

1. Export skills and capability development
2. Market planning and market entry
3. Market engagement and trade facilitation
4. Market intelligence and trade expansion
5. Trade policy, protocol and risk management
6. Communication and industry engagement
7. Assistance, advice and resource development
8. Export strategy implementation.

With differing export maturity of businesses across and within the vegetable, onion and melon industries, tailored approaches and pathways will be implemented.

Read more about what the AUSVEG International Team are doing to support onion exporters on Page 74.

Onion marketing campaign overview

Above. Emma Day, Marketing Manager, Hort Innovation

The recent Onions Australia AGM hosted a presentation by Hort Innovation on building the awareness of onions to the home cook of its usage beyond a base ingredient to be a feature ingredient and increase sales of onions.

For many home cooks, onions are the basis of cooking, used to build the flavour base of a dish. Market research has shown that the sound and smell of cooking onions is associated with positive family experiences, can provide a calming experience when cooking and the smell of cooking onions is a sign of good things to come.

Typically, the onion buyer in the household aims to provide a healthy, nutritious meal but is often time poor and more likely to buy onions when the pantry stock is low or a specific recipe calls for it. Recipe inspiration is often via online platforms by way of a mobile device.

According to Emma Day, Marketing Manager with Hort Innovation, there was a clear need to inspire and educate consumers to think beyond the traditional use of onions and use it as a hero ingredient to drive purchase frequency.

"The marketing campaign around onions was built on that emotional connection of onions on the barbecue, or the start of a pasta sauce, that we all have, but highlights that there is more to onions than that," said Ms Day.

"The campaign takes that 'more to onions' premise and raises it to be 'more sizzle', or 'more caramelised' or 'more aroma'. Conceptually we have come up with 10 'more' statements that can then be associated visually with the idea of onion as the hero ingredient.

"For example, a caramelised onion tart, roasted onions or red onion in a salad."

First rolled out in FY22, the "There's More to Onions.." campaign was uploaded to the Australian Onions website **australianonions.com.au**, social media platforms such as Facebook and Instagram, print media for food and hospitality, YouTube videos and utilising influencers to promote the use of onions.

The results of the campaign met and in some cases far exceeded expectations, with website traffic increasing significantly, and social media performing strongly. Recipes developed by the influencers performed well on the website and in print media.

What's in store for FY23?

"The FY23 marketing plan for onions is to continue to work with a variety of influencers to create video content, recipes and health and nutrition information," said Ms Day.

"The strategy for social media on Facebook and Instagram will continue, but we will also be partnering with Mum Central, an online community that connects more than 950,000 mums to help promote and increase awareness of onions."

Here is our top performing recipe on Facebook, Roasted Onions with Parmesan Breadcrumbs.

Roasted Onions with Parmesan Breadcrumbs

INGREDIENTS

6 brown onions, peeled

2 tbsp extra virgin olive oil

sea salt & black pepper to season

6 tbsp panko breadcrumbs

2 tbsp butter, melted

2 tbsp fresh herbs - mix of oregano, parsley or basil

2 cloves of garlic, minced

3 tbsp parmesan, freshly grated.

METHOD

1. Preheat oven to 210°C.
2. Cut the onions into thick slices, approx. 2cm thick.
3. Place the onion slices on a large baking tray and drizzle with olive oil and season with salt & pepper.
4. Cover with foil and cook for 1–1 hour 15 minutes until soft and onion layers are coming apart slightly.
5. While the onions are roasting, prepare the parmesan breadcrumb topping. Combine the parmesan, breadcrumbs, butter, herbs and garlic in a mixing bowl and stir until evenly combined.
6. Take the roasted onions out of the oven and sprinkle parmesan breadcrumbs over the onions.
7. Top with extra salt and pepper if desired. Bake in the oven for another 20 minutes until golden. Serve immediately.

Recipe created by Lisa Holmen for Australian Onions.

FIND OUT MORE

For more information, please contact Hort Innovation Marketing Manager Emma Day 02 8295 2305, or email **emma.day@horticulture.com.au**.

Marketing activities for the onion industry are funded by Hort Innovation as part of the Hort Innovation Onion Fund.

Hort Innovation Strategic levy investment | ONION FUND

Foodservice post-pandemic presents opportunities for horticulture

Recognising the opportunity to increase engagement within the foodservice industry, Hort Innovation has completed the MT20211 project to provide industry members with foundational market insights.

PUBLISHED AUGUST 2022

The potential for greater uptake of horticultural produce in foodservice across commercial (restaurants, cafes, catering, airlines, tourism and ready-meals) and institutional (defence, health, education and mining) food services is extensive. The industry is currently valued at $65.4bn, and projected to revenue from 2022 to 2027 is at 5.1 per cent. The project was in reference to seven horticultural categories:

- Onions
- Sweet potatoes
- Vegetables
- Avocados
- Melons
- Mushrooms
- Papayas

The project aimed to give industry the tools to create targeted strategies on engaging with food service providers to effectively direct their efforts to expand in this market segment. Key outcomes from the project were Market Profile, Segmentation Report, Value Chain Map and Market Intelligence Reports.

Market Profiles

In an era of significant impacts on foodservice with COVID-19, the past two years have influenced how consumers and supply chains have responded in terms of market size, volume, consumer behaviour and how the industry recovers.

Key Takeaways

- Consumers are more aware, and place greater value on, the ingredients used in foodservice. Attributes include high quality, locally grown, sustainably sourced, fresh, plant-based and organic,
- Impacts on the supply chain will continue to linger post-Covid-19, geopolitical influences, transport logistics and labour resources,
- Changing consumer lifestyles is driving a change to increased dining out, busier lifestyles, cross-cultural diets, and convenience eating (and ordering),
- Educational campaigns by government and industry are influencing consumer choices, and subsequently menus, particularly in institutional foodservice sectors,

- Restaurants and cafes have mostly recovered from COVID-19 influences, but sectors such as airlines and tourism are expected to operate at lower levels for the next 2-3 years,
- Complex logistical challenges specific to defence and mining need to be considered if growth in these areas is a priority for suppliers.

Cafes in particular were found to have the greatest growth opportunities with more agility to change menus and ingredients based on seasonal and available produce. The sector is also more likely to focus on ingredient attributes such as indigenous, sustainably sourced, paddock to plate or locally grown. Airlines, tourism and ready-meals are more likely to focus on wellness and health conscious menus. As a result, developing relationships with suppliers and distributors is more highly valued by procurers who source fresh produce, particularly those who are able to respond to rapid preference changes.

For institutional channels, the defence industry is particularly looking for Australian grown produce, with many adopting 'buy Australian first'. For the health sector, canned, frozen and dried fruit and vegetables continue to be sourced overseas, but locally sourced ingredients are adopted when commercially viable. Institutional avenues are increasingly placing an emphasis on providing safe, quality and nutritious foods. From a supply point of view, this sector of food service needs to be able to supply large produce batch sizes with extended shelf-life.

For the horticulture industry, the project revealed that fruits and vegetables accounted for the largest portion (25%) of total foodservice volume, with the potential to capitalise on operator preference for fresh, healthy and locally sourced ingredients.

Airlines, tourism and ready-meals are more likely to focus on wellness and health conscious menus.

The highest demand produce categories for restaurants and cafes include:

- Tomatoes in slices for salads, burgers and sandwiches, or as a base ingredient for soups, stews and sauces;
- Potatoes, fresh and processed;
- Spinach as fresh leaves for salads
- Lettuce as fresh leaves for salads and sandwiches;
- Mushrooms sliced or chopped for grilled and fried, or as a base ingredient for soups, stews and sauces;
- Carrots cubed, sliced for hot meals. Sliced or grated to serve raw;
- Onions as a base ingredient, or thin sliced for hot meals;
- Cucumber fresh or pickled for salads, burgers and sandwiches;
- Avocados served fresh and prepared immediately before service;
- Berries used whole in salads, smoothies and garnish for desserts;
- Melons in cubes or slices for fresh salads and desserts.

In addition to the above, airlines, ready meals and tourism also favoured garlic, corn, pumpkin, sweet potato and broccoli. In all instances the report found that opportunities exist to advocate fresh, locally sourced produce as well as exploring opportunities to include other fruit and vegetables to expand the range of product available for ingredients.

FIND OUT MORE

This project has been funded by Hort Innovation using the avocado, melon, mushroom, onion, papaya, sweet potato and vegetable research and development levies and contributions for the Australian Government.

Project Number: MT21011

To read the full reports visit
Hort Innovation | Foodservice foundational market insights (MT21011)
horticulture.com.au

Hort Innovation
Strategic levy investment

Segmentation Report

The overall findings of the Segmentation Report suggests that the key trends providing potential opportunities are based on an ageing population, increased focus on nutrition, ready-to-use product formats, fresh and locally grown. The challenges for the horticulture industry is the increase in seasonal issues (eg floods, drought) pushing up price and availability; limited familiarity with the product; rising business costs (eg energy, transport, labour); need for longer shelf-life particularly for more remote destinations (mining); preparation complexity and competition from imports.

The ready meal segment has shown to have the greatest growth potential and therefore presents horticulture with the greatest opportunities. It has the greatest potential for direct engagements with the channel due to the shorter supply chain, and gives scope to include fresh, nutritious and complementary ingredients.

The report identified key considerations that the horticulture industry needs when taking the next steps.

- Relationship development with supply chain into foodservice channels;
- Adaptability to meet changing market requirements;
- Environmental, social and governance considerations (eg sustainability practices, energy management);
- Versatility – how produce can be used in different ways for example Sweet potatoes as mash, chips, in curries and soups;
- Supply and demand relationships to forecast volumes and when;
- Market specific awareness to identify opportunities to reach foodservice more efficiently.

Value Chain navigation

The supply and value chain nuances at a high level will be relatively similar, but each foodservice channel will have its own nuances.

Growers: Grow, harvest, store and sell. May have own packing facilities.

Horticultural category: In what packaging the produce moves through the supply chain.

Case: The type of packagaing.

Pallet: Used to move packing units and protects produce.

Transport: Moving from one point to another – truck, rail, air.

Packer/repacker/shipper: Aggregating, packing, selling and shipping such as a cooperative or pack house.

Wholesaler: Store, sell and ship produce once produce has left the farm.

Distributor: Organise the transport of produce to a designated premises once sold.

Foodservice: The preparation of food outside the home.

Consumer: someone who uses a foodservice channel as a source of food and nutrition.

For most vegetables, including sweet potato and onions the report shows that challenges lie in breaking into what is mostly a mature and established relationship with many foodservice channels, particularly larger institutional channels such as defence, mining and health. These channels also require bulk volumes where coldchain storage may be required. Additional federal and state government regulations for food safety pose more challenges for the supply chain to deliver safe, quality food.

The opportunities that have come to light include leveraging technology to align supply with demand, monitor shipments and increase efficiencies. For some horticultural enterprises, a vertically integrated approach may be beneficial to reduce touchpoints and give direct engagement from the producer to the consumer

The findings for Vegetables and Onions

Vegetables and Onions have two prioritised food service channels – defence and mining. Defence has an increased focus on nutrition, while the mining sector by its locations needs understanding of the extensive lead times that mining foodservice will need.

Defence contracts are in a mature and established phase, so new suppliers will find it more difficult and may require greater effort to build a new relationship. Many defence locations are remote, requiring bulk transport and cold chain management. Troops may be offered meals cooked on-site, or given heavily processed ration packs that require a shelf life of up to five years.

The Defence Science and Technology Group are responsible for setting procurement and catering standards. See **defence.gov.au/business-industry/procurement Procurement & Contracting | Business & Industry | Defence** for more information.

Mining locations are typically rural, requiring large scale transport and cold chain management and often use caterers for food service needs. Procurement and quality standards aim to improve the health and nutrition of staff and look to minimise cost.

Decision making

Defence	Prefer locally grown from Australian growers	Prepared in bags whole or sliced	Ordered in bulk on a regular basis	High volume, used as a base ingredient, considered as flavoursome	May be consumed off-site
Mining	Cost effective and consistent supply	Value-add onions (sliced and packaged) used by caterers	Bulk orders on a 14 day rotation	High volume, base ingredient, considered as flavoursome	Cold chain management and transport is important

The findings for Sweet Potato

Restaurants and Cafes are the major channels for sweet potato. Demand has increased in recent years – understanding the formats and volume will give greater understanding of the current value chain.

In the larger restaurant environment, volumes will be higher and cold chain management may be required. Increasingly the use of technology for supply chain and inventory management where point of sale systems are integrated with supply chain management solutions. The ability to trace the origin of sweet potatoes is also on the rise.

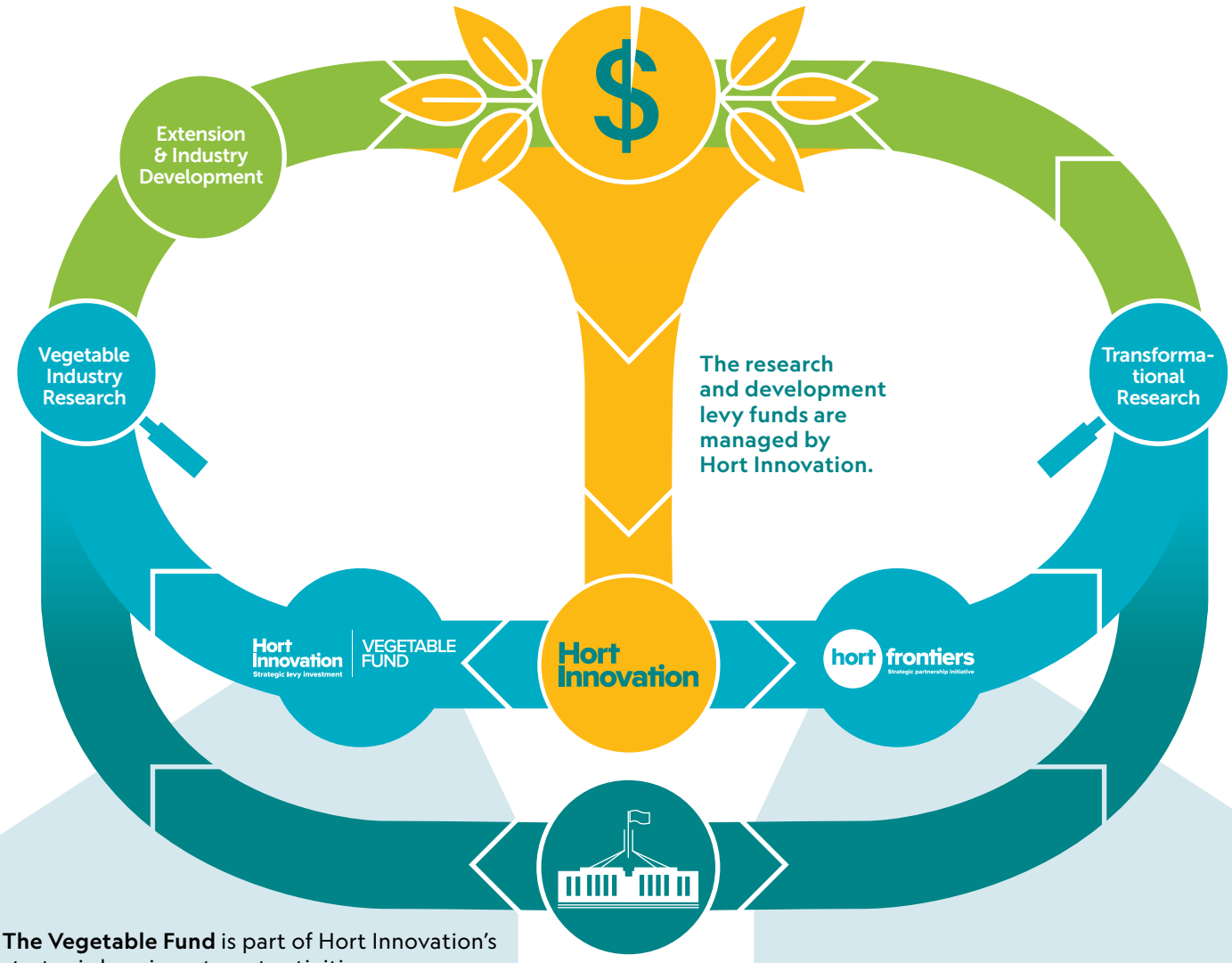
Cafes by nature will be smaller operators and will often re-evaluate suppliers and distributors more frequently. Staff are also more likely to have a greater knowledge of the provenance of the produce. Cost and consistency tend to be the major drivers. As with restaurants, cafes are also shifting to technology for inventory management for procurement and to reduce food costs and waste.

Decision making

Restaurants	Becoming increasing popular in a variety of formats – washed, peeled, diced, sliced, chopped, puree	Typically order 2-4 times per week, dependent on usage	Order quantities fluctuate based on menu changes and changing consumer preference	For larger restaurant chains, orders will be based on location and availability in cold storage	Consumers have high sweet potato familiarity
Cafes	Growers can influence buying decision based on ethical/ environmental considerations	Becoming increasing popular in a variety of formats – washed, peeled, diced, sliced, chopped, puree	Order 2 times a week in small volumes	Order quantities fluctuate based on menu changes and changing consumer preference	Consumers are familiar and like sweet potato for nutritional and palatability.

How does the vegetable R&D levy work?

Vegetable growers currently pay a levy of **0.51%** at the first point of sale.



+ **The Vegetable Fund** is part of Hort Innovation's strategic levy investment activities.
+ All of these investments are made with advice from the industry's Strategic Investment Advisory Panels (SIAPs) and informed by the industry's Strategic Investment Plan.
+ The Vegetable Fund invests in R&D that is designed to directly benefit growers in the vegetable industry.
+ Research projects are supported by a multi-platform industry communications project, as well as a comprehensive extension project (VegNET) to support growers, and to increase awareness and adoption of research outcomes.

+ **Hort Frontiers** is a strategic partnership initiative and does not involve grower levies, unless an industry chooses to become a co-investor.
+ These projects have a long-term focus and are designed to solve major and often complex challenges to secure the future of Australian horticulture.

Hort Innovation Strategic levy investment | VEGETABLE FUND

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

Watch the explainer video:

export + trade update

Australian vegetable industry returning to ASEAN markets for the first time since the pandemic and the outlook for 2023

2022 has been an eventful year for the Australian vegetable industry in the international trade space with the *Multi-Industry Export Program (Vegetables, Onions, Melons)* contracted to AUSVEG for delivery. This is a refined five-year program with new industries, workstreams, and activities being added to the program to generate greater benefit for growers and outcome for the industry.

The second half of 2022 saw AUSVEG leading trade mission delegations to two most prominent trade events in ASEAN region - FHA F&B, Singapore, and Asia Fruit Logistica, Thailand. The industry international trade development program has been one of the most popular programs for Australian vegetable growers and it was great to see the formal inclusion of onion and melon industries, for growers from these industries being able to part-take in the trade mission.

AUSVEG Chair Bill Bulmer and CEO Michael Coote hosted The Hon Will Hodgman, Australian High Commissioner to Singapore at the AUSVEG stands and discussed the Singaporean market and Australian fresh produce.

FHA F&B 2022

In early September 2022, AUSVEG led a trade mission delegation to attend and exhibit at FHA Food & Beverage 5-8 September – Singapore's largest B2B trade show. It was the first time since the pandemic that it had been held in person. There were five vegetable and onion levy-paying growers that participated in this trade mission.

Singapore is the top export destination for Australian fresh vegetables industry worth $49 million at 27,500 tonnes annually. The trade show exhibition and market sentiment were buoyant with strong interest continuing to be shown for Australian fresh fruits and vegetables.

The trade mission to FHA Food & Beverage saw AUSVEG include onion levy-paying growers officially in the international market development activities for the first time as part of the multi-industry export program. The delegation visited a range of retail stores in Singapore as part of a market insights tour and met with various prospective customers and buyers from across Asia throughout the four-day event.

The next FHA Food & Beverage will be held from 25 to 28 April 2023 at Singapore Expo.

Asia Fruit Logistica 2022

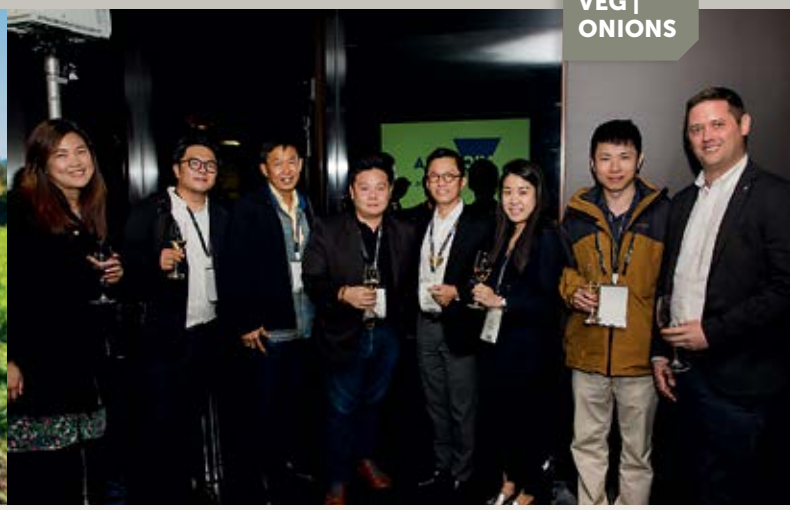
In early November 2022, AUSVEG led a trade mission delegation to attend and exhibit at Asia Fruit Logistica in Bangkok, Thailand. The Asia Fruit Logistica 2022 version was moved to Bangkok where the first-ever edition of Asia Fruit Logistica was hosted back in 2007, coinciding with Asia's most prominent fresh produce event celebrating its 15th anniversary in 2022.

Thailand is an emerging export destination for Australian fresh vegetables industry. The Thai market is worth $14.9 million at 19,118 tonnes annually, with the topmost exported crops being onions, potatoes (processing), carrots, and lettuce. Vegetable crops such as broccoli, baby broccoli or broccolini, coloured cauliflower, baby cauliflower (or caulini) are gaining a lot of traction in the Thai market. The Australian vegetable industry currently has open market access to Thailand, however, potatoes (fresh for consumption), sweet corn, chillies and tomatoes are prohibited for import into Thailand.

The trade mission to Asia Fruit Logistica saw Melons Australia co-exhibit with AUSVEG for the first time as part of the multi-industry export program. The Australian melon industry currently does not have market access into Thailand, but it is still an important exercise for the melon industry to be represented at the Asia's most prominent fresh produce show. The melon industry is currently developing its five-year export strategy, which will be supported by AUSVEG under the multi-industry export program for the strategy implementation.

As part of the market insights tour, the delegation visited an importer facility and a range of high-end retailers in central Bangkok. The overall Thai market sentiment was strong with Australian vegetables heavily promoted in a few of the retailers. Asia Fruit Logistica 2022 also attracted fresh produce buyers from across the ASEAN and Asian region.

The next Asia Fruit Logistica is tentatively held in September at Hong Kong Asia-World Expo.



Australian vegetable exports performance overview

January to September 2022

Total vegetable exports have seen a modest decline compared to the same period in 2021. Based on data from the Global Trade Atlas, there was a 6 per cent decrease in export value, from $192 million to $181 million and total export volume dropped by 12 per cent from 179,520 tonnes to 157,969 tonnes. The top four markets for fresh vegetable exports were Singapore, United Arab Emirates, Malaysia, and Thailand. There was strong growth recorded for the ASEAN region, South Korea, Taiwan and Japan from January to September 2022 *(refer to Table 1)*.

Singapore continued to be the top Australian fresh vegetable export destination and has recorded a slight decline in both export value and volume in 2021. The export value dropped by 16 per cent from January to September 2022, from $36 million to $30 million; export volume decreased by 19 per cent from 21,024 tonnes to 17,128 tonnes. The UAE fresh vegetable export market grown by 1 per cent in value and declined in volume by 6 per cent. Malaysia recorded a 23 per cent decrease in export value and 34 per cent increase in tonnage. There are various factors contributing to the overall decrease in fresh vegetables exports during this period, including persistent weather events, pressure from cost of freight, and labour shortages, limiting the availability and capacity to export.

TABLE 1. CHANGE IN VEGETABLE EXPORTS BY DESTINATIONS JANUARY TO SEPTEMBER 2021–2022
Source: Global Trade Atlas 2022

Trade Partner	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Singapore	$35,937,662	21,024	$30,210,352	17,128	-16%	-19%
United Arab Emirates	$23,351,613	26,009	$23,691,420	24,563	1%	-6%
Malaysia	$21,722,801	22,879	$16,827,786	15,062	-23%	-34%
Thailand	$12,453,241	16,244	$16,612,825	16,731	33%	3%
Korea, South	$11,014,759	16,807	$12,743,411	18,677	16%	11%
Hong Kong	$13,938,368	6,712	$11,832,648	5,654	-15%	-16%
Saudi Arabia	$11,897,762	13,429	$11,220,592	11,909	-6%	-11%
Taiwan	$7,336,056	9,709	$8,227,878	7,163	12%	-26%
Japan	$4,815,999	2,103	$5,952,611	4,315	24%	105%
Qatar	$6,906,432	7,140	$5,906,805	6,240	-14%	-13%

Left. International delegates visit Australia on reverse trade missions to learn about Australian growers and products. **Right.** Andrea Lin (L) and AUSVEG CEO Michael Coote (R) meet with international guests to Hort Connections to discuss export opportunities

What's new in Multi-Industry Export Program

Vegetables, Onions, Melons

The Multi-Industry Export Program is a five-year strategic levy investment under the Hort Innovation Vegetable, Onion, and Melon Fund. Hort Innovation, working with AUSVEG, Melons Australia and the onion industry have brought three different industries together for the first time to collaborate on a combined industry export program.

The new Multi-Industry Export Program will be led by AUSVEG, partnering with stakeholders in the melon and onion industries, and encompasses service delivery in the following areas:

- Export Skills and Capability Development
- Market Planning and Market Entry
- Market Development and Trade Facilitation
- Market Intelligence and Trade Expansion
- Trade Policy, Protocol and Risk Management
- Communication and Industry Engagement
- Assistance, Advice and Resource Development
- Export Strategy Implementation

The 'Market Intelligence and Trade Expansion' is a newly created and designed workstream to allow provision of strategic trade data, specific market insights, competitor analysis, channel and category trends as well as growing international business innovation through mentoring to assist with decision making and expanding into high growth markets.

This workstream is underpinned by two program activities:

AUSVEG Portal supported by Export Connect

Vegetable, onion and melon levy-paying growers or businesses can now gain access to a centralised platform provided by Export Connect. The platform includes up-to-date market specific insights, competitor analysis information and trade statistics for 15 crops, 15 international markets, for up to six retailers per market and up to five sub-categories per crop.

International Business Innovation Mentoring Program

A newly designed program to support Australian vegetable, onion, and melon growers with one-on-one mentoring and direct strategy assistance that strengthens business innovation, value adding and international trade opportunities. There is limited funded positions available each year for this strategic focussed program. Growers can gain access to 12 months of service and assistance through monthly support activities to achieve strategic milestones for the business once you have been signed up.

Vegetable exports by crops

January to September 2022 highlights

Root vegetables such as carrots, potatoes and onions remained as the top three export crops for the industry *(refer to Table 2)*.

TABLE 2. CHANGE IN VEGETABLE EXPORTS BY CROP FROM JANUARY TO SEPTEMBER 2021–2022
Source: Global Trade Atlas 2022

Trade Partner	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Carrots	$66,300,071	75,749	$66,863,756	69,995	1%	-8%
Potatoes	$32,917,908	39,660	$35,922,415	43,056	9%	9%
Onions	$32,408,519	48,427	$28,540,472	33,266	-12%	-31%
Cauliflowers & Broccoli	$10,922,736	2,317	$8,583,187	1,449	-21%	-37%
Lettuce	$6,440,484	936	$5,469,147	834	-15%	-11%
Celery	$6,148,417	3,401	$5,177,044	2,774	-16%	-18%
Tomatoes	$3,815,978	808	$4,003,288	676	5%	-16%
Beans	$5,576,389	1,102	$2,895,665	368	-48%	-67%
Pumpkins	$3,368,159	2,434	$2,837,672	1,915	-16%	-21%
Asparagus	$3,700,523	382	$1,655,242	134	-55%	-65%
Spinach	$2,220,566	233	$1,620,031	178	-27%	-24%
Capsicum	$1,581,877	410	$1,567,821	232	-1%	-43%

International trade events 2023

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

Trade Partner	Trade Mission Date	Location	Expected EOI Date
Gulfood	20–24 February 2023	**Dubai World Trade Centre** DWTC	Applications open: December 2022 Applications close: January 2023
Foodex	7–10 March 2023	**Tokyo Big Sight** Japan	Applications open: December 2022 Applications close: January 2023
FHA F&B	25–28 April 2023	**Singapore Expo**	Applications open: February 2023 Applications close: March 2023
Reverse Trade Mission (inbound)	June 2023	Various states within Australia	Invitation only event
Asia Fruit Logistica	September 2023 (TBC)	**Asia World Expo** Hong Kong	Applications open: June 2023 Applications close: July 2023

Exports for new markets and strengthening existing business

The Multi-industry export program is designed to increase capability of growers in the vegetable, onion and melon industries and develop sustainable export markets.

The program provides a holistic international trade development framework for Australian growers to develop export markets and pathways and increase their knowledge and networks for international trade.

With more than 10 years' experience in the export market space, AUSVEG have developed a strong network of contacts and knowledge to assist Australian growers. This cross-industry program is a first the horticulture sector and leverages the progress made in the previous iteration of the vegetable industry export program to benefit vegetable, onion and melon growers.

Individual growers benefit from the Multi-industry export program through a range of activities and resources such as trade missions, market intelligence and insights information and participating in international trade shows such as the FHA Food & Beverage, Singapore exhibition held annually.

Two Australian growers who have benefited from the program are Zerella Fresh and AustChilli.

Above. Renee Pye from Zerella Fresh. *Photo Glenn Power*

Zerella Fresh marketing potatoes to the world

Renee Pye is the marketing and media manager for Zerella Fresh, a major producer and supplier to the domestic market of potatoes, onions and carrots, based in South Australia. Renee has overseen the development of Zerella Fresh' Spud Lite range, a low carbohydrate potato which has contributed significantly to the company's recent growth.

She is also Deputy Chair for AUSVEG nationally and Deputy Chair for AUSVEG SA.

Renee was keen to understand how the AUSVEG Multi-industry export program could provide advice on marketing potatoes from the R&D aspect to export markets. The AUSVEG team assisted Renee to assess the assets already on hand such as marketing brochures and videos, and how the company could present itself to potential business partners.

"One of our strengths is that our business is based on clean and green operations which is attractive to overseas markets," said Renee.

"We also identified that we had gaps that needed to be resolved to be export ready, such as export logistics, freight forwarders and business partners.

"By attending trade shows, we were able to establish those contacts and establish relationships to give us a foothold in export markets."

Renee sees that export markets are very important to Australian growers in that it gives an opportunity to diversify the customer base and mitigates the risks of relying on domestic markets that can fluctuate from time to time.

"I encourage you to look at the opportunities that export markets can give you, including diversifying your customer base, but it also means you can be more competitive in an international market given Australia's reputation for quality produce," she said.

AustChilli strengthens relations with export markets

AustChilli is the largest grower of chillies in Australia and southeast Asia, based in Bundaberg, Queensland. The company has been advocating Australian grown chillies internationally to countries such as Brunei, Singapore, Pakistan, Oman and Hong Kong. The company's journey started more than 25 years ago in Malaysia, supplying KFC for sweet chilli sauce. As the business has evolved, the

Ben Horwood, from AustChilli at the AUSVEG trade stand in Singapore with Andrew Moon from Moonrocks.

key message to export markets is to showcase the premium quality produce and production systems.

Ben Horwood, Head of Sales at AustChilli, said in a recent AUSVEG podcast that the AustChilli story is really now about best in class, sustainability practices such as solar panels, waste-water management and soil and agronomy practices that resonates with export markets looking for premium products.

"To participate in the AUSVEG Multi-industry export program was exciting and a relief at the same time," said Ben.

"After COVID, with limited ability to connect one-on-one with our international markets, that ability to connect again firsthand and to understand what the 'new normal' looks like outside of Australia was really beneficial."

AustChilli participated in the AUSVEG trade stand at FHA Food & Beverage Singapore exhibition in September 2022, that acted as a central point for industry specialists, government representatives and trade partners to visit and learn more about Australian produce. As part of the visit to FHA Food & Beverage Singapore, delegates were taken on a tour of different retail outlets in the city, to give a broader outlook on the type and origins of produce that consumers are looking for.

"Participating in the AUSVEG trade stand in Singapore provided the opportunity to build networks and relationships with export market representatives. I now know that many markets around the world faced the same issues that we did, and we can work more closely to solve problems together," said Ben.

"We are fortunate that Australian produce is held with such high regard with global consumers. The opportunity to meet in person through events like Singapore means we can cement that trust and provide consumers with the very best products."

FIND OUT MORE

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

The Multi-industry Export Program is a strategic levy investment under the Hort Innovation Vegetable, Onion and Melon funds.

Project Number: **MT21009**

Hort Innovation Strategic levy investment | VEGETABLE FUND

Hort Innovation Strategic levy investment | ONION FUND

Hort Innovation Strategic levy investment | MELON FUND

AUSVEG has a wide range of export development resources and opportunities available for all levy-paying Australian vegetable growers at all levels of export experience.

AUSVEG's International Trade team assists levy-paying vegetable growers in the following ways:

- Assisting businesses become export ready
- Assisting with market entry strategies
- Facilitating direct relationships between growers and international customers
- Connecting growers with international trade stakeholders in the supply chain and government officials in Australia and international markets
- Identifying export opportunities
- Providing the latest market data and information
- Resolving market access issues and challenges.

Want to know more about the Multi Industry Export program?

As a starting point, contact the International Trade team at AUSVEG to get started on your journey.

Check out the **AUSVEG website** for information, newsletter and quarterly magazines to learn more about the program or learn from others.

"We have been operating now for 10 years to assist Australian vegetable growers to develop export markets for their business," said Andrea Lin.

"Talk to others in your industry, talk to your neighbouring farm about their experience, and get involved in export specific activities such as trade missions and exhibitions."

biosecurity + minor use update

Frontline Biosecurity – staying vigilant

The AUSVEG biosecurity team provides regular updates and news on pest alerts and events via the Frontline e-bulletin.

Guava root-knot nematode

First identified in Australia in October 2022, this microscopic pest has caused issues for farmers worldwide and has now been found in the Northern Territory on sweet potato, cucumber, capsicum, butternut pumpkin, snake bean, zucchini and chilli plants at a commercial farm, two residential gardens and a community garden. According to a report on ABC in October, Chief Plant Health Officer Anne Walters said that work was under way to trace the links between the properties.

Since then, a full time project manager has been appointed by the NT Government to increase understanding of the nematode and coordinate increased surveillance across Darwin.

The pest has been detected in Malak, Rapid Creek, Anula and Leanyer in Darwin, Palmerston, Middle Point and on Croker Island.

DNA samples have been provided to the Queensland and Western Australian Governments to check historical samples to confirm this nematode is not present in other jurisdictions.

Formal engagement with growers will commence late December, which will include visiting growers, undertaking tracing, collect samples, providing advice for management and developing protocols for pest free place of production.

Guava root-knot nematode spreads through the soil attached to machinery, tools, footwear, and plant products. It causes severe knotting of a plant's root system and can cause stunted growth, wilting and the yellowing of leaves. However, it has been reported that many growers may not realise their crops are infected until the end of the season when crops are harvested, and the heavily galled root systems are observed.

Crops reported in several countries to become infected with guava root-knot nematode include (but are not limited to):

Vegetables and herbs: sweet potato, cucumber, watermelon, squash, pumpkin, cantaloupe, luffa, pepper, tomato, eggplant, potato, broccoli, lettuce, okra, carrot, celery, basil, parsley, common bean, sugar beet, ginger, arrowroot, white yam, salvia

Field crops: tobacco, soybean, cotton, cowpea, sugar cane

Fruits and trees: grape, plum, peach, almond, fig, guava, banana, mulberry, jujube, jackfruit, dragon fruit, coffee, papaya

Ornamentals: Jamaican poinsettia, snapdragon, gardenia, lantana, willow

Weeds: pigweed, nutsedge, morning glory, Jerusalem cherry, nightshade, velvetleaf, wild mustard

To report a suspected case of Guava Root-Knot Nematode, call the exotic plant hotline on 1800 084 881 or email images to the Plant Biosecurity team at NT Department of Industry, Tourism and Trade at plantbioscecurity@nt.gov.au.

Brown marmorated stink bug risk season

The brown marmorated stink bug (BMSB) is one of Australia's **most unwanted exotic pests**. It eats over 300 plants, including fruit and vegetables. Affected crops include sweet corn, tomato, cucumber, capsicum, carrot, beans, beets, eggplant, lettuce, peas, tomatoes, apples, peaches, apricots, and figs.

The pest is often found in cargo entering Australia from the northern hemisphere. The **threat of incursion increases between September and April,** and each year **seasonal measures** are put in place at Australia's border to prevent the pest from entering the country. If BMSB establishes itself in Australia, it could infest our homes and gardens, cause economic and environmental harm, and threaten our fruit and vegetable industries.

For the 2021-22 BMSB season, measures will apply to targeted goods manufactured in or shipped from **target risk countries.** Targeted high risk goods vary from wood products to glassware so it is important to check any overseas packaging or post for hitchhiker pests.

Brown marmorated stink bug. **Below.** Nymphs and eggs. *Image: Wilbur Hershberger*

If you spot anything unusual, make a report to the Exotic Plant Pest Hotline on 1800 084 881 or contact your local department of agriculture.

AUSVEG has several resources available for further reading:

- **BMSB -Biosecurity Alert**
- **BMSB - Factsheet**

For further questions, contact **science@ausveg.com.au**.

Varroa Mite update

As at December 2022, the New South Wales Department of Primary Industries has identified 106 infested premises under the Emergency Order (No. 31). The two most recent hives in the purple zone are at properties in Tumbi Umbi on the central coast, and Mulbring in the Hunter. Both are outside the eradication (red) zones, which means the current eradication zone will be expanded to cover these infected premises.

During December 2022, a program to euthanise wild European honey bees in the red areas around Narrabri commenced. To date, around 92% (17,086) of hives have been euthanised around the Newcastle/Hunter areas

"Wild European honey bees, which are the same species as honey bees kept in managed hives, build their nests in tree hollows and other enclosed spaces," said Dr Satendra Kumar, chief plant protection officer with NSW DPI.

"Removing these bees from the environment of red eradication zones is necessary to reduce any chance of the Varroa mite parasite existing undetected within wild hives."

Dr Kumar said the baiting program has been developed to include strict guidelines to protect and ensure the safety of all people, animals, livestock and the local environment and that NSW DPI has been authorised by the Australian Pesticides and Veterinary Medicines Authority to use fipronil to remove wild European honey bees.

The bait stations are designed to exclude other animals and insects, and to prevent contamination of soil and water. They will remain in place for up to 12 months, but only in active use with insecticide for very short periods of time, to a maximum of 3 hours each session.

"During active use, bait stations will be monitored by trained staff, to minimise the risk of off-target impacts. Experience to date has shown zero feeding in stations by off target species. Bait stations are placed at least 2kms away from the edges of the red eradication emergency zones to reduce the risk of European honey bees from outside the eradication zone interacting with the bait stations."

Generally, there is a standstill on all bee and hive movement in NSW. The Emergency Order specifies the limited conditions under which, if any, movements may occur in each Zone. Both registered recreational and commercial beekeepers are permitted to move their hives within low-risk areas of the State, using the Hive Movement Declaration.

Registered beekeepers in red eradication emergency zones whose hives have been euthanised continue to be eligible for compensation. Commercial registered beekeepers in the purple surveillance emergency zone are also now eligible for reimbursement.

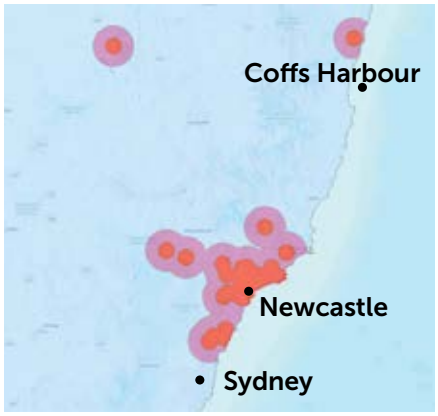
"In line with the program guidelines set by the NSW Rural Assistance Authority, only registered beekeepers will be eligible for reimbursement, so I strongly encourage any beekeepers in those zones to make sure they're a registered beekeeper in NSW," Dr Kumar said.

Varroa Destructor *Image: Scott Bauer, USDA Agricultural Research Service, Bugwood.org*

Planning and preparation of the baiting program has been conducted by NSW DPI in consultation with the Environment Protection Authority and NSW National Parks and Wildlife Service. All beekeepers within the eradication and surveillance zones must report their hives, preferably online by completing the **Beekeeper Notifications - Varroa mite online form.**

The Varroa Emergency Response Hotline, accessed via the Exotic Plant Pest Hotline 1800 084 881, is operational Monday to Friday 9am - 5pm. For urgent matters outside of these hours you can call the hotline number for instructions on accessing the on-call function for the Varroa Emergency Response Hotline.

For updated information please visit dpi.nsw.gov.au/varroa.



Emergency zone map: Varroa mite emergency response (nsw.gov.au)
Red = eradication zone (10km)
Purple = surveillance zone (25km)
Blue = general emergency zone (NSW)

Minor use Permits Onion Industry

The Hort Innovation Onion Fund supports the submission of applications for new and renewed minor use permits for the industry, as well as data generation activities to support chemical permits and registrations, and strategic agrichemical reviews. Together these efforts provide industry access to safe, relevant and effective chemicals for the management of pests, weeds and diseases. **Learn more about minor use permits on below.**

Current minor use permits

Below is a list of minor use permits for the onion industry, current as of 15 August 2022.

Permit Number	Description	Date Issued	Expiry Date	Permit Holder
PER13119 Version 5	Diazinon / Onions / Onion thrips (TAS only)	6 Mar 12	31 May 23	Hort Innovation
PER14602 Version 4	Boscalid (Filan), Iprodione (Rovral Aquaflo) and Chlorothalonil (Bravo) / Onion seed and onions / Neck rot (*Botrytis alli*)	24 Jul 14	30 Sep 23	AOIA C/Hort Innovation
PER13698 Version 3	Phosphorous acid / Lettuce (leaf and hydroponic), fennel and bulb (Alliums) vegetables – bulb onion, garlic, leek, shallot, spring onion and tree onion / Downy mildew	01 Oct 12	30 Sep 22	Hort Innovation
PER14773 Version 3	Bentazone-sodium (Basagran) /Onions / Broadleaf weeds	16 Apr 14	31 Jan 23	AOIA C/Hort Innovation
PER80282 Version 3	Alpha-Cypermethrin / Onions / Onion thrips	16 Dec 14	30 Nov 25	Hort Innovation
PER84734 Version 2	Haloxyfop (Verdict) / Bulb onions / Storksbill and various weeds	19 Dec 17	31 Dec 24	Hort Innovation
PER84808	Ethofumesate (Tramat) / Bulb onions / Broadleaf and grass weeds as per product label	20 Feb 18	28 Feb 23	AOIA C/Hort Innovation
PER81876 Version 3	Abamectin / Various Vegetables including Bulb onions / Vegetable leafminer (suppression only)	24 Jun 16	30 Apr 24	Hort Innovation
PER89331	Spinetoram (Success Neo insecticide) / Bulb onions / Fall armyworm (*Spodoptera frugiperda*)	23 Mar 20	31 Mar 23	Hort Innovation
PER89293	Methomyl / Bulb onions / Fall armyworm (*Spodoptera frugiperda*)	10 Apr 20	30 Apr 23	Hort Innovation
PER89185	Flonicamid (Mainman) / Bulb vegetables (onions, shallots, chives, leeks, fennel (bulb) and spring onions) / Suppression only of onion thrips and western flower thrips	6 Aug 20	31 Aug 23	Hort Innovation
PER89991	Dimethenamid-P (Outlook herbicide) / Onions / Annual ryegrass	5 Feb 21	28 Feb 24	Hort Innovation
PER89720	Abamectin (Tervigo nematicide) / Bulb onions / Root lesion nematode, root knot nematode and stubby root nematode (All States and Territories)	15 Sep 21	30 Sep 23	Onions Australia

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.

Why minor use permits?

As pest management practices and the crop protection marketplace due to a range of factors, from environmental considerations to consumer demands – growers of horticultural crops require access to safe and effective chemicals for strategic use. However, a lack of access to *registered* crop protection products can be encountered.

The problem may be that while a relatively small crop area is valuable in an agricultural sense, it may not be of sufficient size for agrichemical companies to justify the expense of registering a product use on that crop. Alternately, the disease, pest, or weed problem may be regional or spasmodic, meaning agrichemical companies are less inclined to bear the initial high cost of registering a suitable chemical product.

The APVMA's national permit system adds some flexibility to the approval process and provides a legal framework to allow growers access to products for 'minor use' purposes.

The Onion Fund project ***Onion industry minor use permit program*** **(VN16000)** facilitates the submission of renewals and applications for these minor use permits as required.

What about pesticide data generation?

The generation of pesticide residue, efficacy and crop safety data is required to support label registration and minor use permit applications that are made to the APVMA. Hort Innovation's data generation work is supported by assistance grants, which Hort Innovation seeks on behalf of industry through the Australian Government's Access to Industry Uses of Agricultural and Veterinary (AgVet) Chemicals program.

Details on data generation investments relevant to the onion industry can be found in the **Your investments** section of Hort Innovation website, or by using the 'Related projects' section.

Related information and resources

Strategic Agrichemical Review Processes (SARPs)

SARP reports are funded by Hort Innovation to investigate pest problems, agrichemical usage and pest management alternatives for horticulture industries across Australia. The results provide a clear view of gaps in existing pest control options and are intended to assist each industry with agrichemical selection and usage into the future. It provides direction for the industry to pursue for chemical registrations with agrichemical companies, or minor use permits with the APVMA.

The current SARP report release in 2020 for the onion industry is available to **download at our website.**

This report is not a comprehensive assessment of all pests and control methods used in the industry but attempts to prioritise the major problems.

Ag Chemical Updates

Hort Innovation distributes Ag Chemical Updates for the Australian horticulture industry, as part of the project ***Regulatory support and coordination (pesticides)*** **(MT20007)** and formerly, ***Regulatory support and coordination (pesticides)*** **(MT17019)**. These updates provide information on any developments in regulatory oversight of relevant chemicals and are an opportunity for industry to consider and develop responses to issues arising from actions proposed that may impact on grower ability to access and use needed products. Ag Chemical Updates can be accessed from their **dedicated page at horticulture.com.au.**

Non-performance reporting form

You can access the *Non-Performance Reporting Form for Horticultural Pesticides* from our website **horticulture.com.au/growers**. This form should be completed when an adverse experience occurs as a result of using a minor use 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 permit or label directions.

Permits, maximum residue limits and the food standards code

Users are advised that while a product can be applied legally under an APVMA minor use permit, there can be a significant delay until the maximum residue limit (MRL) gazetted by the APVMA is adopted in the Australia New Zealand Food Standards Code (FSANZ). 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** to confirm if there are MRLs established by the Australia New Zealand Food Standards Code.

Minor use Permits Vegetable Industry

Permit Number	Crop	Pesticide Group	Active	Pest/Plant disease/ Target weed	Date Issued	Expiry Date	Permit Holder	States
PER86245 Version 3*	Sweet Corn	Fungicide	Azoxystrobin + Tebuconazole (Veritas Opti)	Sweet corn	17 Dec 2018	28 Feb 2026	Hort Innovation	All States & Territories, except VIC
PER14494 Version 3	Silverbeet, Spinach, Chicory & Endive	Fungicide	Trifloxystrobin (Flint 500 WG)	Cercospora leaf spot & Septoria leaf spot (Field only)	1 Oct 2014	31 Aug 2027	Hort Innovation	All States & Territories, except VIC
PER87773 Version 2	Brassica Vegetables (transplant only)	Herbicide	Napropamide (Devirol-C 500WG Herbicide)	Broadleaf and Grass weeds as listed on the product label & Suppression of Chickweed	22 Aug 2019	31 Aug 2027	Hort Innovation	All States & Territories, except VIC
PER86482 Version 3	Taro Corms	Fungicide	Thiabendazole (Tecto Flowable SC Fungicide)	Taro post-harvest rots and moulds	4 Dec 2018	30 Jun 2027	Hort Innovation	All States & Territories, except VIC
PER14318 Version 3^	Lettuce grown as winter crop, in clay to clay-loam soils	Fungicide	Metalaxyl-M (Ridomil Gold 480)	Damping-off (Pythium and Phytopthora species)	23 Dec 2013	31 Jul 2027	Hort Innovation	All States & Territories, except VIC
PER14596 Version 4~	Brassicas	Insecticide	Chlorpyrifos	Vegetable Beetle (Adults) (Bait)	1 Oct 2014	30 Sep 2024	Hort Innovation	WA only
PER85103 Version 3	Green Beans	Insecticide	Imidacloprid	Silverleaf Whitefly (furrow treatment)	12 Sep 2017	30 Sep 2025	Hort Innovation	Qld only
PER88032 Version 2	Eggplant	Biofungicide	Bacillus amyloliquefaciens (Serenade Opti Biofungicide)	Early blight (*Alternaria solani*), Botrytis grey mould, Powdery mildew, Suppression only - Bacterial spot (*Xanthomonas* spp.)	14 Oct 2019	31 Aug 2027	Hort Innovation	All States & Territories, except VIC
PER88018 Version 2+	Sweet corn	Insecticide	Chlorpyrifos	African Black Beetle	23 Nov 20 20	30 Sep 2024	Hort Innovation	All States & Territories
PER12221 Version 5	Various Vegetables	Insecticide	Petroleum Oil	Aphids, Green mirid, Green vegetable bug, Grey cluster bug, Leafhoppers, Mites, Rutherglen bug, Thrips & Various Whitefly	29 Jun 2012	30 Sep 2027	Hort Innovation	All States & Territories, except VIC
PER7909 Version 4	Cucumber	Fungicide	Pyrimethanil (Scala)	Botrytis rot	5 Apr 2012	30 Sep 2027	Hort Innovation	All States & Territories, except VIC
PER13698 Version 4**	Leafy and hydroponic lettuce, Fennel and bulb (allium) vegetables – bulb onion, garlic, leek, shallot, spring onion and tree onion, Coriander and Parsley	Fungicide	Phosphorous acid	Leafy and hydroponic lettuce – Downy Mildew. Fennel and bulb (allium) vegetables – bulb onion, garlic, leek, shallot, spring onion and tree onion Downy Mildew (suppression Only) Coriander and Parsley - Damping off. (Pythium spp., *Phytophthora* spp., *Fusarium* spp. and *Rhizoctonia* spp.)	1 Oct 2012	30 Sep 2025	Hort Innovation	All States & Territories, except VIC

* **NOTE:** Permit updated to include alternative to existing product and new concentration. ADAMA advised they discontinued production of Veritas Fungicide (120 g/L AZOXYSTROBIN and 200 g/L TEBUCONAZOLE) and replaced with the new higher loaded product, Veritas Opti (APVMA Number 89698), a suspension concentrate formulation containing 370 g/L tebuconazole + 222 g/L azoxystrobin.

^PER85103v3 - Continued issuance of this permit is subject to the outcomes of the current APVMA review of neonicotinoids. This permit may be impacted by the outcomes of this review.

~PER14596v4 - Continued issuance of this permit is subject to the outcomes of the current APVMA review of chlorpyrifos. This permit may be impacted by the outcomes of this review.

+ **NOTE:** Continued issuance of this permit is subject to the outcomes of the current APVMA review of chlorpyrifos. This permit may be impacted by the outcomes of this review.

****NOTE:** Bulb onions - The APVMA requires this use to be registered in a major crop.

^ Continued issuance of this permit is subject to the outcomes of the current APVMA review of chlorpyrifos. This permit may be impacted by the outcomes of this review.

vegnet update

VegNET is funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government.

National Vegetable **Extension Network**

Introducing your VegNET National Regional Development Coordinator

Cherry Emerick

Passionate about the horticultural industry and motivated to share her knowledge and skills Cherry Emerick has taken on the VegNET National Coordinator role. This national role will see her working with each of the 10 Regional Development Officers and their partner groups to continue to deliver a consistent extension program working with growers to achieve productive, profitable businesses.

Cherry has an extensive background in horticulture with more than 10 years of working in a large corporate farming business; part of VegNET as an Industry Development Officer in Far North Queensland and, working in Natural Resource Management in policy and engagement to support landholders in reducing fine sediment going out to the Barrier Reef. Her most recent role was communication and engagement for the Serpentine Leafminer project.

As VegNET enters its second year RDOs are on the ground continuing to grow strong relationships to ensure that all growers are seeing the benefits from resources provided and support to improve their businesses.

GET IN TOUCH **VegNET RDOs are located in all Australian major vegetable growing regions. For further details or to become involved, please contact your local representative.**

Region	Regional Development Officer	Contact Email	Phone
New South Wales	**Sylvia Jelinek** Local Land Services, New South Wales	Sylvia.jelinek@lls.nsw.gov.au	0427 086 724
Northern Territory	**Mariah Maughan** NT Farmers	ido@ntfarmers.org.au	0410 067 422
Queensland North and Far North	**David Shorte** Bowen Gumlu - Growers Association	rdo@bowengumlugrowers.com.au	0419 429 808
Queensland Wide Bay Burnett	**Andrew Halpin** Bundaberg Fruit and Vegetables Growers	vegnet@bfvg.com.au	0407 366 797
Queensland Southern	**Caley Croft** Lockyer Valley Growers Inc	ido@lockyervalleygrowers.com.au	0456 956 340
South Australia	**Olivia Pineau** AUSVEG SA	Olivia.pineau@ausveg.com.au	0406 618 339
Tasmania	**Ossie Lang** RM Consulting Group	ossiel@rmcg.com.au	0430 380 414
Victoria Gippsland	**Bonnie Dawson** Food and Fibre Gippsland	Bonnie.dawson@foodandfibregippsland.com.au	0407 683 938
Victoria Northern, Southern and Western	**Danielle Park** AUSVEG	Danielle.park@ausveg.com.au	0432 324 822
Western Australia	**Michael Bartholomew** Vegetables WA	Michael.bartholomew@vegetableswa.com.au	0427 373 037
National	**Cherry Emerick** AUSVEG	Cherry.emerick@ausveg.com.au	0418 389 680

Innovative new Agtech showcased at North Qld field day

Bowen Gumlu Growers Association's (BGGA) Innovation Field Day was held at the Department of Agriculture and Fisheries (DAF) research station in Bowen in November 2022. This event was a huge success, attracting over 150 producers, industry stakeholders and agribusiness from across North Queensland.

Top. The Innovation Day hosted by Bowen Gumlu Growers Association, gave attendees an opportunity to see Agtech developments such as the Global Unmanned Spray System.
Above. NQ Aerovation, demonstrated their drone technology to deploy beneficial bugs.

The field day was designed to encourage industry and growers to come together, share information and learn about some of the newer innovative technology, products, services, and robotic advancements in the horticulture sector. The field day also provided local growers and industry with solutions to enhance the management of farming issues in the region. The day also focused on increasing awareness and understanding of pests and diseases currently affecting fruit and horticulture crops across North Queensland.

Ry Collins CEO of BGGA said it was a key business priority to collaborate with industry and provide growers with information and access to the latest Agtech products and services that helped them improve on-farm efficiency, reduce input costs, and remain profitable. The event highlighted to producers the importance and benefits of trialing and adopting innovative technology that would assist with pest and disease management in remote locations.

"It is vital that we continue to pursue new ways to meet and adapt to challenges, be more productive and sustainable and ensure our industry can continue to be prosperous into the future," he said.

Growers and innovators come together

The Innovation Day included a comprehensive program of speakers, displays and demonstrations, including Robotti, a fully autonomous vehicle that can weed, seed, spray, and slash horticultural fields. Global Unmanned Spraying System (GUSS) was another fully autonomous spray vehicle designed to spray a range of products on any tree crops. A robotic arm designed to pack produce into boxes by LYRO was also demonstrated.

Local business, NQ Aerovation, demonstrated their drone technology that is currently being used in the region to deploy beneficial bugs and AUSVEG exhibited the iMapPESTS sentinel, which traps pests to help with identification, research, and management. Presentations from a range of scientists working with Boosting Diagnostics provided valuable updates on the major pests and diseases including nematodes, begomovirus, powdery mildew, gummy stem, and downy mildew.

Growers in the region are acutely aware of the impact of exotic pests and disease on production systems and profitability. Fall armyworm has spread rapidly across Australia since it was first identified in 2020 causing 20 – 80 per cent sweet corn crop losses, including millions of dollars in damage in the region. Bowen Department of Agriculture and Fisheries (DAF) entomologists demonstrated potential predators and parasitoids that are showing promise in their battle to suppress the enormous damage Fall armyworm is doing to horticulture crops across the country.

Bowen Gumlu Growers also invited high schools across the region with the focus on students studying Science, Engineering and Agriculture to the Innovation Day. Colette Williams BGGA workforce officer said: "It is imperative that we involve inspiring young minds to understand technological advancements across the agriculture industry, 'plant a few seeds' and encourage youth to stay in the region and see future career pathways in the Agtech space".

Mr Collins added that: "The new fixed wireless tower and data centre being installed in Bowen is a positive step forwards for improving digital connectively in the region and industry. We hope the increased connectivity will allow producers to implement additional Agtech to their farms and provide better access to wireless sensors, internet-enabled devices, automation, and other precision technology to improve their production and efficiency."

"Horticulture is looking to a future strongly aligned to innovative new Agtech to supplement an ever-diminishing workforce. Advances in artificial intelligence (AI), a stronger focus on data driving business decisions captured on smart new software applications, smart farm machinery and equipment are all available right now. Agtech is becoming more mainstream in modern horticulture farming. Technology is changing the way we think about horticulture production. Increased efficiencies leading to reduced input costs and ultimately more profitable farms must be the outcome" he said.

Above L-R. Fall Armyworm presentation focussing on parasitoids and predators. Bowen Department of Agriculture and Fisheries discuss ways to combat pests such as Fall armyworm.

FIND OUT MORE

Please contact BGGA's Regional Development Officer, David Shorten on 0419 429 808 or email **rdo@bowengumlugrowers.co.au**.

VegNET 3.0 is a strategic levy investment under the Hort Innovation Vegetable Fund.

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

Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

NORTHERN TERRITORY

Top End trial investigates Fall armyworm and Serpentine leafminer control with IPM communications

Pests are a significant threat to vegetable production in the Northern Territory, like many parts of Australia. While aphids are a long-standing pest pressure in the Top End, new pests which have entered the region in recent years – such as Fall armyworm (*Spodoptera frugiperda,* FAW) and American serpentine leafminer (*Liriomyza trifolii,* ASLM) are also a threat to vegetable production.

Overview

- Following the detection of Fall armyworm and American serpentine leafminer in the Northern Territory's vegetable growing regions, a second trial following the 2019 IPM trial was introduced to test the effectiveness of integrated pest management (IPM) systems in controlling these and other common vegetable pests.
- NT Farmers under the VegNET 3.0 project conducted the trial in partnership with local government and service providers at the Coastal Plains Research Farm, Middle Point, with encouraging results to date.
- Key trial findings and broader information on IPM systems are shared with vegetable growers through field walks, grower meetings and the development of resources with a focus on encouraging the adoption of IPM practices.

Introduction

Fall Armyworm (FAW) is a caterpillar pest that feeds in large numbers on more the 350 plants including millet, cotton, sorghum and importantly vegetables. In March 2020 FAW was confirmed at several locations in the Northern Territory and since then, much work has been done to develop pest management systems.

American serpentine leafminer (ASLM) is a leaf-mining fly that lays eggs on plant leaves and the hatched larvae burrow into the leaf, destroying the inner tissue and making it difficult for the affected plant to photosynthesize. In August 2021, ASLM was found in the Katherine region of the Northern Territory before its detection in several other areas including Darwin.

Studies have shown that conventional chemical control can lead to further pest pressures due to increased resistance and the extermination of both pest and beneficial species. An alternative approach is integrated pest management (IPM), which incorporates the combination of chemical, cultural and biological options for controlling insect pests in Australian vegetable crops.

As IPM systems are used in the Northern Territory for a range of caterpillars and leafminers, this presented an opportunity to introduce regionally specific trials on the use of IPM systems to successfully manage FAW and ASLM as well as other common pests.

Trial approach

In 2022, VegNET NT partnered with the Department of Industry Tourism and Trade (DITT) for a second year of trials comparing IPM to conventional pest management on a range of locally grown vegetables at the Coastal Plains Research Farm, Middle Point.

Above. Growers attend a field walk at the IPM trial site in June 2022.

Dr Brian Thistleton discusses biological controls with growers.

The two main aims of the IPM trial in 2022 are:

1. To promote the use of IPM systems to local growers using commonly grown vegetables to increase adoption of IPM practices.
2. To test if IPM techniques are successful in managing common pests with a focus on FAW and ALSM in the Northern Territory Top End.

DITT contributes a range of skills to the trial including entomologists, extension officers and technical officers. This complements the NT Farmers VegNET officer which focuses on sharing the trial findings with growers and industry through field walks, grower meetings and the development of resources.

The IPM trial site was planted in May 2022 with local industry vegetables such as snake bean, bitter melon, hairy melon and Lebanese cucumber, as well as sweet corn, eggplant and banana chillies.

The trial included a nutrition plan developed by a local agronomist which is maintained by both DITT and NT Farmers. Every week the entomologists conduct insect counts and monitor the crops. The IPM techniques and sprays are chosen and implemented while the conventional plot is regularly sprayed with commonly used insecticides.

Students learn a lesson in IPM

The integrated pest management (IPM) trial site in the Northern Territory has allowed school students to gain an understanding of pests and beneficials affecting vegetable crops.

This includes pest management options (both IPM and conventional practices), insect identification and horticulture basics such as fertigation and water supply.

During an excursion to the Northern Territory, students from Hermidale Public School in NSW attended the trial site and shared their learnings in an article, with an excerpt provided below.

"Students were tasked with searching for good bugs and bad bugs in the vegetable trial plots. The team assisted the students to identify the insects in the guides and had great discussions about the effect of disease and insects on cropping and how farmers can manage these efficiently."

Getting the information out to growers

In addition to collecting information, the trial site has been used to share IPM knowledge and key findings to growers in the region.

A field walk in June 2022 provided an opportunity for growers to see progress to date and learn more about the fundamentals of IPM, identifying

insects, releasing predatory insects, and discussing other issues that have arisen such as bacterial wilt.

The second and final field walk in August 2022 focussed on the key findings of the trial and chemical use with a discussion between the attendees and presenters on key issues the growers are facing with their current management techniques be it IPM based or conventional.

While most growers who attended the field walks reported having little to some knowledge of IPM before the event, 80% of surveyed attendees said the events improved their knowledge of IPM. Most growers reported that they would consider making changes to their pest management practices after the field walk.

Key results on the trial's effectiveness in managing key pests using IPM are outlined below.

Aphid management

In mid-July there was a dramatic increase in aphid numbers in both IPM and conventional management. The conventional plot showed a consistent increase of aphids every week with a slight decrease in the final week of the trial whereas the IPM trial peaked at the end of July and then decreased in numbers dramatically. After analysing the results and seeking the entomologist's perspective, this change was predominantly due to an increase in beneficial insect numbers such as predatory beetles and Syphids. It is also likely some beneficials moved from the IPM plot to the conventional plot due to their proximity.

Fall armyworm management

Sweet corn in the conventional and IPM plots were severely impacted by FAW in the early weeks. The cover crop of forage sorghum brought in large amounts of FAW and a cover crop of millet or a combination cover crop of millet and cowpea may be of benefit to use in the future. If the trial would have been done again, the entomologists would have tried releasing beneficial wasps (*Trichogramma spp.*) before flowering to help biologically manage the FAW.

American serpentine leafminer (ASLM)

At the start of the trial, it was assumed that ASLM would be detected as it was largely present in the region more broadly. For most of the trial duration ASLM was not found in either trial plot. In the final week of the trial, the presence of leafminer damage was found on the snake bean in the IPM plot. Due to this finding, monitoring for ASLM in the snake bean rows in the conventional and IPM was continued. So far, the damage by ASLM on the snake bean has been low and not significant enough to affect the development of the plant. The damage has been mainly on the older leaves at the bottom and middle section of the vine. Preliminary findings and information gathered as part of the ASLM program, suggest using an integrated pest management (IPM) approach of biological control and selective insecticides which are relatively less harmful against beneficial insects the most suitable way to control ASLM. The entomology staff have found a number of native parasitic wasps that attack the live larvae to be promising beneficial insects to control ASLM. There is a possibility that if growers use broad-spectrum insecticides, that this may lead to an increase in the population of ASLM and crops to experience a higher level of damage

Next steps

The trial has highlighted IPM's viability as a pest management tool in the Top End for a variety of different crops, however the trial has also highlighted the complexities involved for growers to adopt new management practices. While IPM is a well-known approach to manage pests in most areas of Australia and around the world, it still offers many 'grey areas' for growers to navigate. This can include new pests, spikes in current pest numbers, viruses and bacterial damage.

Choosing a new approach to pest management likely means stepping away from a current management system. It always comes with a level of risk, especially if it may take some time to perfect the new pest management recipe.

It is NT Farmers (VegNET) and DITT's aim that in providing a trial site with field walks and expert knowledge, some of the risk out of the grower's hands.

FIND OUT MORE

Please contact NT Farmers VegNET Officer Mariah Maughan at **ido@ntfarmers.org.au**, or 0417 618 468.

VegNET 3.0 is a strategic levy investment under the Hort Innovation Vegetable Fund.

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

Project Number: VG21000

Hort Innovation Strategic levy investment | VEGETABLE FUND

LOCKYER VALLEY

Challenges bring connection and community in the Lockyer Valley

Top. Roslyn Pennings, logistics manager Barden Produce.

Agronomists came together in 2022 to share knowledge and hear current updates on strategies to reduce the pressure of serpentine leafminer.

Granite Belt Growers got together to hear from Focus HR about strategies to manage challenging conversations.

Vietnamese BBQ, growers got together to extend their knowledge of IPM, how to improve water quality and the services Growcom provides.

2022 has been one of challenges and strengthening our community connections for the Southern Queensland region, VegNET regional development officer, Caley Croft reflects on the past 12 months.

This year no doubt has been a very challenging one for growers in our region and many of you, I am sure are looking forward to a well-earned Christmas break. When reflecting on this year, what has stood out to us has been the ability for this industry to grit their teeth and continue to move forward in some of the most challenging of circumstances.

As a region, we are very proud of how growers, industry bodies and community organisations have banded together through this year. Our extension activities have provided a space for connection, learning and most importantly, the ability to network. This has created a real connection amongst our growing community.

We have been working hard to keep growers at the centre of our extension activities and are always reflecting on the relevance and impact of our contributions. This has led to a full calendar of opportunities for growers to engage in. These activities included:

- Four working lunches.
- Five Grower BBQs, with guest speakers addressing topical matters.
- Three printed newsletters
- A farm demonstration evening
- Continuous one-on-one farm visits
- One networking lunch catering for the local on-farm agronomists in the region.

It is not lost on us the strength of these events and the large number of growers attending each event. This indicates to us there is an appetite to continue delivering grass roots engagement opportunities. Some of the topics covered included:

- Improving water quality.
- Ways to reduce the pressure of serpentine leafminer.
- Managing challenging conversations with employees.
- Industry updates from our partners such as Department of Agriculture and Fisheries (DAF) and Growcom.

Additionally, these events ended with our community coming together, sharing their stories and connecting. We welcome feedback on how you would like us to continue to grow our events and we encourage you to come along in the future.

Thank you to everyone who has supported us this year, through providing suggestions, speaking at or attending our events. sharing your knowledge or keeping our growers in the top of your minds in such a difficult year.

We look forward to hosting many more meaningful events in the future. We trust that you all stay well and wish you all the best of luck for the Christmas season.

FIND OUT MORE

Please email VegNET RDO Caley Croft at **ido@lockeryvalleygrowers.com.au**

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Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

Networking and learning at the IFMA Congress in Scandinavia

Two young Tasmanian farmers, Ruby Daly and Caitlin Radford were able to attend the International Farm Management Association Congress in Copenhagen in June 2022. Ossie Lang the VegNET RDO caught up with them both to hear about what they learnt and what could benefit the industry in Tasmania.

Top. A field day in Sweden.
Above. The IFMA Next Gen Group.
Images courtesy of Caitlin Radford, RADCO Agriculture.

Caitlin Radford works for RADCO Agriculture based in Moriarty on the Northwest coast of Tasmania. RADCO Agriculture is a mixed farming enterprise producing a range of crops including potatoes, carrots, beans, peas, broccoli alongside sheep and cattle livestock on 203ha.

Ruby Daly is the marketing manager at Daly potatoes and Hellfire Bluff distillery. They farm 600 hectares near Marion Bay in south eastern Tasmania. They produce around 7,000 tonnes of fresh market potatoes annually with a value-add business, Hellfire Bluff distillery, to utilise second grade potatoes in the production of vodka and other products.

Caitlin and Ruby both attended the International Farm Management Association (IFMA) congress in Copenhagen in June 2022. IFMA exists to further knowledge and understanding of farm business management through networking and information exchange through members in the over 50 countries where they have a presence. Caitlin and Ruby participated in a pre-conference tour which took them through Norway and Sweden ahead of the conference.

The networking opportunities were the main drawcard for both Caitlin and Ruby. The chance to meet and learn from people from around the world was really beneficial . The 'Next-gen' program was also a great chance to meet young people who were in the early stages of their careers in farm business management.

Ruby was surprised with how much the growers in the Scandinavian countries can achieve from such small holdings where the larger farms were 20 hectares - there are 36,000 farmers on 180,000 properties. Caitlin commented that with only 3% of the land area in Norway is utilised for farming so it needs to be used in the most efficient way possible. The farmers that they saw combined traditional techniques (e.g. moving stock to highland pastures for summer)

along with the latest technologies. The diversity is achieved through a range of enterprises on farm and a collaborative approach between the growers and a close connection between farms and consumers. While there are a range of subsidies in place to assist growers there is still a large diversity in the enterprises in their holdings.

While there is a strong connection between farmers and the public the branding utilised isn't as strong as here in Tasmanian and Australia. Both Caitlin and Ruby were surprised that more work hadn't been done to separate the Scandinavian countries in branding from other European production areas.

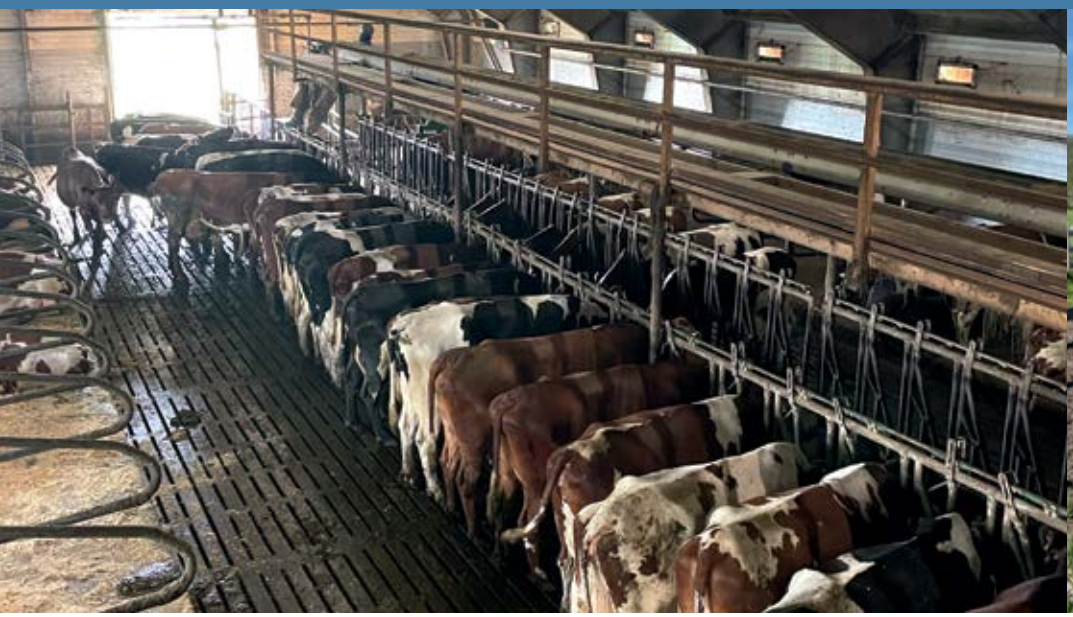
Another element that was impressive in what they saw was the succession planning. Caitlin mentioned that one of the farms they visited, Noraker Gård, where they breed trout that is processed into rakfisk, was in the hands of the 14th generation on that property.

While both Ruby and Caitlin disagreed with the current inheritance regulations (they grant the eldest male heir the right to inherit the property) they felt that there were some lessons that we could learn from the Scandinavians in the overall approach to succession planning.

A key area that Caitlin and Ruby saw where Australia was lagging behind Europe was in awareness of carbon farming practices and working towards net zero. This is partially due to the fact that there is strong financial support mechanisms in place in Europe which assist farmers investing in infrastructure and other aspects of their business which allow growers to reduce their climate impacts. There are also more regulations in place in some areas that limit the use of a range of inputs, including fertilisers and some of the chemical pest controls. These limitations mean growers need to be selective in the use and timing of inputs in their season or they run the risk of no longer being able to apply the inputs.

A key area that Caitlin and Ruby saw where Australia was lagging behind Europe was in awareness of carbon farming practices and working towards net zero.

Above. A pit amphitheatre to show trials and root structure at the field day in Sweden.
Below L-R. Laerdal, Norway. Apple Tree farm Haugsfrukt in Laerdal. Hoel Gård



I was interested to learn from Caitlin and Ruby where they thought that Australian farm businesses were ahead of their European counterparts. One area they agreed that Australian businesses were ahead in was business efficiency and profitability. This is due to the absence of the level of government support that exists in Europe compared to Australia. Without that support Australian farm businesses must be more highly efficient to survive.

Extension was an area of interest to me. Caitlin and Ruby mentioned that research projects were closely integrated with farmers. The ratio of researchers to farmers also seemed to be a lot larger so that a considerable number of farmers are engaged with a research project at any given time. The collaborative approach that the farmers there have means that they will often share the learnings from the projects with each other.

There were some key takeaways for both Ruby and Caitlin. Ruby was interested to see how their business can incorporate some more diversity into their growing and reduce their reliance on potatoes. Caitlin was also interested in how she could implement some of the risk management and agritourism approaches in their business. The other key takeaway was the networks that both Ruby and Caitlin have built, both with the 'Next-Gen' group and with more senior conference delegates.

Caitlin and Ruby both loved the experience and have pencilled in their diaries the next IFMA congress in Canada in July 2024. For more details visit: **ifma2024.org.**

FIND OUT MORE

Please contact Ossie Lang on 0430 380 414 or email **ossiel@rmcg.com.au**

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Ruby was interested to see how their business can incorporate some more diversity into their growing and reduce their reliance on potatoes.

Top L-R. A typical Norwegian Dairy. Cows taken up to their summer farm in the hills in Norway for three months.
Below. One of the old vehicles in Hoel Gård, Bergen, Norway. Caitlin at the Väderstad Company.

VegNET Wide Bay Burnett Regional Update

The Wide Bay Burnett wraps up a challenging season with the 2022 Bundaberg Fruit & Vegetable Gala dinner.

After a very challenging season including, abnormal weather events, staff shortages and rising input costs, the growers in the region celebrated their industry at the 2022 Bundaberg Fruit & Vegetable Growers Gala dinner. The event was extremely well attended with more than 500 people enjoying a break from the farm and celebrating the wins for the season. The region receiving around 200mm of rain the evening before, but this did not dampen the event.

The majority of the region's vegetable crops concluded in early November, with only a few crops pushing through into summer, mainly capsicums, zucchini, pumpkins and some protected cropping such as eggplant and cucumbers. The region continues to struggle with intermittent rainfall and overcast periods causing issues with the crop health, fruit set and sizing. Hopefully the projection of the La Niña cycle coming to an end in early February will allow growers to achieve better results in 2023.

Agronomist Breakfast

An annual event on the calendar, this year's Agronomist breakfast saw around 30 agronomists, industry representatives and guest speakers meet to discuss key issues surrounding the challenges that are facing the region's growers especially around invasive species, some of which are a new migration to the area. Fall Armyworm is a major issue that has at times decimated the region's sweet corn production, with some growers opting to plough in crops without harvesting due to the economic viability of the harvestable crop not outweighing the sale price. Speakers from the Department of Agriculture and Fisheries, RapidAIM and AgBitech were given the opportunity to talk to the region's Agronomist about new developments, research and products that will help combat issues like Fall Armyworm and another increasing issue of serpentine leafminer.

Top. 520 guests attend the Bundaberg Fruit & Vegetable Growers 2022 Gala Dinner themed 'Our Legacy, Your Future'. Guests were entertained during the evening with a Fireworks display, Comedian ventriloquist Darren Carr and the band Kicks. *Photo courtesy of Sabrina Lauriston Photography.* **Above. Agronomist Breakfast** John Duff from the Department of Agriculture & Fisheries presents to Agronomist & Industry representatives about Serpentine Leafminer.

Attendees of the VegNet field walk watch on as a local contractor retrieves plastic from a double cropped (capsicum and zucchini) Ag plastic farming system.

Christian Patterson & Pru Powell from ESCAVOX meet with DickBill Farm manger Kevin Grima at Dicky Bills Queensland farm in Wallaville. The ESCAVOX team was also shown through the packing and cooling facilities during their tour.

Department of Agriculture & Fisheries Bee Biosecurity Officer Dave Schilpalius presents at the Bee Informed Event.

Plastic Waste - Field walk

Plastic Waste solutions are on the agenda within the VegNet project, highlighted by a visit of multiple industry representatives investigating the Ag plastic waste produced by our local growers. Our VegNet project officer organised a farm visit to give the attendees a firsthand look at the on-farm retrieval of plastic waste.

A local Bundaberg capsicum and zucchini grower, welcomed members from BFVG, Growcom, Bundaberg Regional Council, Utilitas and Smart Capital onto their farm to watch a local Ag plastic contractor and their staff working to remove Ag plastic and drip tape. The group was then taken to the East Bundaberg site of Utilitas's proposed Pyrolysis 'Waste to Energy' facility where general manager James Hurran explained that the company will be able to take agriculture plastic, both film and drip take at a reduced dumping cost compared to current landfill facility charges, potentially delivering considerable savings to the growers. This facility would safely burn the ag plastics through a pyrolysis method and convert the heat to drive a steam powered generator to push power back into the grid.

The facility will also have the ability to produce a carbon based by-product that could then be supplied by to growers to use as a soil ameliorant. Construction of the facility is planned for later in 2022 and with the aim to accept its first consignment of ag plastic by mid to late 2023.

ESCAVOX Grower visits

VegNet's Postharvest loss trial concluded at the end of October with a great response from the regions growers, with nine of the regions growers taking part in a joint VegNet and Central University trial which saw a further five growers from other sectors taking part in more than 200 live tracking shipments including more than a dozen different products.

The team from Escavox made their way up to the region to meet the participating growers and talk with interested growers about the technology. Data derived from the trial showed that many growers would benefit from integrating the technology on a more permanent basis. Several growers have since taken on this technology with their business while others are in discussions with Escavox to continue with the product.

The past 18 months have seen an increase in logistical issues with delayed deliveries and lost or damaged produce leading to many growers with increased freight insurance claims being lodged. Growers have seen the advantage of live tracking and temperature monitoring to keep an eye on their produce to ensure prompt delivery, but also assisting in lodging claims with each track having a generated report for the grower.

Bee informed Shed Meeting

VegNET regional development officer, Andrew Halpin ran a VegNet Varroa mite and Biosecurity Shed meeting 'Bee Informed' in conjunction with Angela Williams and Australian Macadamia Association to help the region's growers gain up to date information on the Varroa mite outbreak that has been detected in New South Wales. The meeting was well attended with nearly 50 participants including growers and bee and honey representatives. Guest speakers included Daniel Jones from Pollibee Apiaries, Brad Jensen representing Queensland BeeKeepers Association, Richard Simms retired local Apiarist, and Department of Agriculture and Fisheries Bee Biosecurity Officer David Schlipalius.

FIND OUT MORE

Contact your Regional Development Officer: If you would like to take part in one of the Wide Bay Burnett VegNet trials, or have an issue you would like to discuss with your VegNet RDO, please contact Andrew Halpin on 0407 366 797 or email **vegnet@bfvg.com.au**

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VegNET WA Update

The grower-led innovation combatting rising input costs

Results from fertiliser benchmarking studies in Carnarvon indicated large differences in fertiliser input for the same product output parameters. Growers using the lowest amounts of fertiliser have one thing in common: using the Biomineral production system. VegNET WA Regional Development Officer Michael Bartholomew explains the benefits that growers using the system are observing.

Since the release of the fertiliser benchmarking studies, participants in Carnarvon have been working with local agronomist, Scott Brain from Field Capacity to increase the water and nutrient use efficiency of fruit and vegetable crops grown in the region through the application of the Biomineral production system. The practices involved have been adapted from the findings of published research conducted in broadacre agriculture in Western Australia and applied to horticulture with great success.

Biomineral benefits

Put simply, the Biomineral system is the use of slow-release fertiliser formats in conjunction with specific biological agents. Growers have discovered that they could decrease nitrogen inputs by up to 60% while producing greater yield and higher quality fruit and vegetables for less than half the fertiliser cost. The implementation of these systems has also resulted in a reduction in the use of pesticides and fungicides because of increased plant resilience. These results have been particularly evident in tomato crops.

The results being achieved by growers were demonstrated in an independent trial with sweetcorn. This saw the Biomineral treatment achieve 28% more premium grade cobs and a greater overall yield than the historically recommended grower practice, despite applying 60% less nitrogen. It was also 12% more profitable when the total marketable yield was considered and produced almost 30% less wastage through rejected cobs, which are often the result of insect damage.

Above. Biomineral brassica crop in Carnarvon.
Image courtesy of Scott Brain – Field Capacity

Success in Carnarvon

vegetablesWA committee President and Carnarvon vegetable producer, Dan Kuzmicich says he has been using the biomineral system with great success for several seasons now.

"For me, since using the Biomineral system I have noticed significantly improved water use efficiency, improved plant health and vigour, with the biggest thing being a consistent crop of premium product throughout the plant's entire lifecycle.

"If you want to improve your growing practise, become more efficient and obtain a greater return, you need to look at the Biomineral system."

The progress made in the vegetable industry has also resulted in practice change in the banana industry where the Sweeter Banana Co-operative is achieving similar results through their Regenerative Agriculture project which involves applying the same principles. This demonstrates that this system is adaptable and scalable and that grower-led innovation has the potential to deliver positive impacts not only for the individuals involved but also the entire horticulture industry.

Above L-R. Biomineral fertiliser prill. Biomineral corn crop in Carnarvon. *Image courtesy of Scott Brain – Field Capacity.* Carnarvon clay loam soil.

What makes the Biomineral system tick?

It's relatively simple. Instead of blanket applications of inefficient, short-term fertiliser, this system relies upon a few small applications of a tailored microbe blend in conjunction with controlled release mineral fertilisers and supplementary liquid formats if required. Some of the microbes act to extend the root system, providing access to nutrients and water that otherwise the plant would be unable to reach. Some microbes also act as the biological machinery that work to convert unavailable nutrients into plant-available forms. The controlled release mineral fertiliser component feeds both the soil biology and the plant.

Simple and flexible

Importantly, the Biomineral system is compatible with existing production systems, only requiring small changes in management practices to achieve success. Growers implementing this system are still able to use conventional crop protection practices and supplementary fertilisers if required, however more importance is placed on the timing, rate and mode of action under this system to obtain the greatest results.

Traditionally, application rates have been derived on the basis of crop removal for a particular target yield using inputs that are relatively inefficient. By providing the plant with an increased water and nutrient depletion zone and through the solubilisation of non-water-soluble plant nutrients, the Biomineral system increases plant nutrient availability and water use efficiency. This can have significant implications on the bottom line, given the current cost-price squeeze.

Western Australia *VegNET 3.0* Regional Development Officer, Michael Bartholomew will be working with growers to adopt the system for themselves in an effort to reduce the costs associated with fertiliser, chemical and food wastage. If this is something that interests you or you would like to learn about the system more technically, get in touch using the details below.

FIND OUT MORE

Please contact Michael Bartholomew on 0427 373 037 or email **michael.bartholomew@vegetableswa.com.au**

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NEW SOUTH WALES

Northwest discovers National Vegetable Protected Cropping Centre

The Sydney Northwest Regional Tour was held in October by Protected Cropping Australia, with Greater Sydney Local Land Services and VegNET NSW as the main sponsor. The day, with 53 in attendance, was filled with workshops and presentations, tour of the Western Sydney University's National Protected Cropping Centre and farm visit to the new hydroponic strawberry greenhouses in Bilpin.

Top. Andy Ryland presenting the IPM 'Walk n' Talks' session. **Above.** Michelle Mak presenting to the attendees.

It was a packed agenda on the day, starting out with presentations. Dr Zhonghua Chen gave an overview of the National Vegetable Protected Cropping Centre. Dr Michelle Mak presented on Hort Innovation's Emerging Leaders in Protected Cropping project, Sachin Chavan gave an update on the Smart Glass/Luminescent Light Emitting Agricultural Film (LLEAF) Project and Sylvia Jelinek, NSW VegNET Regional Development Officer gave a talk on what VegNET has to offer growers and discussed the focus areas for the coming year.

Following all the presentations attendees moved over to the National Vegetable Protected Cropping Centre for a series of 'Walk n' Talks' on research and development projects. Goran Lopaticki, the facility's coordinator, guided delegates into the facility. Alternating talks were given on buzz pollination using robotic pollination by James Cook and the basics principles of integrated pest management (IPM) by Andy Ryland from IPMC, Sylvia Jelinek and Michelle Mak. The IPM schedule/plan for the research house was discussed with the assistance of Wei Liang, the head grower on how and when beneficials are introduced or topped up to manage pests.

Everyone headed up the Kurrajong Hills to the Bilpin Fruit Bowl to see Margaret and Simon Tadrosse's new hydroponic strawberry greenhouses. Bilpin Fruit Bowl is well known for its pick-your-own apple and stone fruit orchards but the relatively short harvest season for these crops has limited the agritourism opportunities for the district. Now pick-your-own greenhouse strawberries, with their longer harvest season, will boost the agritourism trade to nearly all year round in this popular weekend destination.

Below L-R. VegNET NSW / Local Land Services stand. The attendees at the Fruit Bowl in Bilpin tour location. Owner, Margaret Tadrosse speaking on her new hydroponic strawberry greenhouses during the tour.

So why protected cropping?

There has been an increased interest in protected cropping in NSW driven largely from the impacts of recent floods and other extreme weather events affecting field growers. Hydroponic protected cropping is not dependent on good agricultural soils so this allows areas with marginal soils to be used productively.

Many growers have suggested setting up a national greenhouse vegetable interest group to better inform growers and other industry stakeholders of best practice greenhouse production. Such a group would make a valuable contribution in determining the research and development priorities for this growing sector of the Australian vegetable industry.

VegNET is focussing on the needs of growers and providing extension linkages. Growers have input into the research by determining the priorities and leveraging combined networks. The coming year will see the roll-out of skills-based training and extending previously funded Hort Innovation projects, such as 'Keep it clean', to growers.

FIND OUT MORE

Please contact Sylvia Jelinek on 0427 086 724 or email **sylvia.jelinek@lls.nsw.gov.au**

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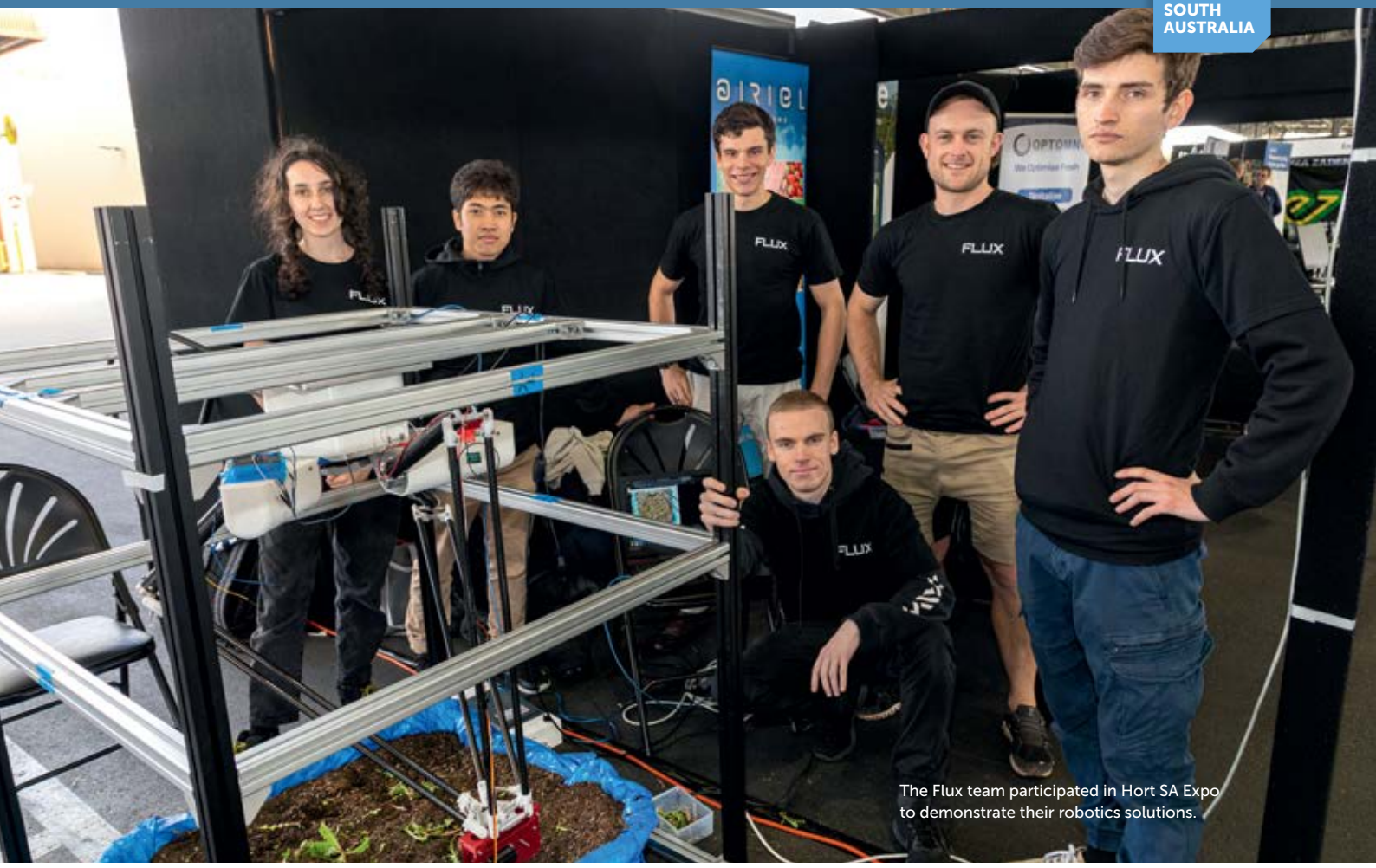

The Flux team participated in Hort SA Expo to demonstrate their robotics solutions.

VegNET SA Update
AgTech Tour

In November, with the support of AgriFutures Australia, were pleased to welcome Walt DuFlock, VP Innovation at Western Growers in Salinas, California to the state. Walt made the trip out to SA to connect with our growers and explore the shared learnings and opportunities in the AgTech field for horticulture and specialty cropping.

Walt made the most of his time in the state, visiting with growers across the Northern Adelaide Plains, the Adelaide Hills, McLaren Vale and more. Starting with a trip to P'Petual to discuss greenhouse specific solutions, to field trials in the plains, and a tour of the Zerella Fresh packhouse with Minister for Primary Industries and Regions the Hon Clare Scriven.

These opportunities allowed for a great deal of discussion on investment into AgTech and how to utilise the existing global networks. Walt then headed to the Adelaide Hills, Langhorne Creek and McLaren Vale to discuss commodity specific concerns (and sample some premium SA wines). To round out his visit, Walt was able to meet with representatives from SARDI, the University of Adelaide, AWRI and PIRSA in order to understand the landscape of research and development in the industry.

Above. As part of his visit, Walt DuFlock visited several horticulture sites including P'Petual. **Top right.** The AUSVEG team at Hort SA Expo from L-R Tim Withers, Shakira Johnson and Cherry Emerick. Guest speaker Walt DuFlock vice president of Western Growers, California made the most of his visit to connect with SA growers and industry

We were able to facilitate this fantastic tour with Walt and provide the opportunity for our growers to focus on their technical needs heading into the future. AgTech is a significant area of growth in Australian horticulture, and will allow for the ongoing growth and sustainability of our industry going forward.

Hort SA Expo

In November, AUSVEG SA welcomed industry partners to the SA Produce Markets for the annual Hort SA Expo. This event featured 30 exhibitors across the horticultural supply chain, over 200 growers, sponsors, and government officials. This year our expo focused on horticultural R&D, AgTech and overall growing concerns across the region.

Dr. Doris Bleasing of the SoilWealth ICP led a discussion on crop nutrition and how growers can better utilise their inputs as costs continue to increase all over the country.

Our keynote speaker, Walt DuFlock spoke with Adelaide AgTech MeetUp founder Oli Madgett on AgTech innovation and adoption both in Adelaide and in the Salinas Valley, California. They discussed how new technology can target specific issues for growers, such as weeding, spraying and other labour-intensive activities on farm.

Multiple AgTech start-ups from SA were exhibiting their innovative solutions, such as Flux Robotics, showcasing their ability to target specific grower needs in the state. Other exhibitors included national and state-based researchers, agronomy and crop advisory representatives and supply chain. We look forward to growing this event in the future and continuing to showcase the work being done by growers and industry.

These opportunities allowed for a great deal of discussion on investment into AgTech and how to utilise the existing global networks.

FIND OUT MORE

Please email VegNET RDO Olivia Pineau at **olivia.pineau@ausveg.com.au**

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GIPPSLAND

VegNET Gippsland Update

AvaGrow Farms
Matt and Katie Zagami

After being wiped out by the Black Summer bushfires and two years of minimal production, Matt and Katie Zagami are excited to be building up to full production on their beautiful Wairewa, East Gippsland property – AvaGrow Farms.

Previously primarily snow pea producers, this year they are focussing on production of baby broccoli and baby cos to supply wholesale markets.

They are both happy and excited to be in a position to once again be producing members of the vegetable industry. Not that Matt was inactive over the past two years. He has been an active and valuable member of the VegNET Gippsland Regional Extension Advisory Group (REAG), sharing his knowledge and perspectives as a smaller owner-operator producer of the Gippsland region. This has also been an opportunity for him to remain engaged in the industry while he wasn't growing. He sees VegNET as a valuable program for the industry, to bring growers together to collaborate on industry challenges together and deliver opportunities of common interest.

Ironically, despite losing almost all infrastructure including a newly renovated family home, Matt and Katie reflect that the fires have opened some exciting opportunities for them. Three years of drought leading into the fires caused a significant reduction in production.

Although most of the irrigation water came from reliable underground aquafers the farming system still relied on reasonable rainfall to be successful. A fixed irrigation system with off stream water storage will enable a more resilient production. Rather than rebuilding their house – their family of six is now living across two temporary modular homes – they have instead prioritised investment in re-establishing their business.

To enable the diversity into baby broccoli and baby cos, Matt and Katie are developing the irrigation infrastructure suited to sandy hill country. This sandy country is therefore critical to provide an alternative to the rich soils on the banks of Hospital Creek which have been inundated in recent months.

Matt often comments on how in an average year their rainfall in the Wairewa Valley is an ideal 850mm for growing the

Networking

AvaGrow Farms will be one of several farms hosting a group of growers and industry members from Oregon, USA in February touring through Gippsland and Shepparton. VegNET Gippsland will be hosting a couple of networking opportunities for other Gippsland growers to join - in Inverloch on 14 February and Bairnsdale on 16 February.

range of vegetable crops that can be grown in the area, but with the addition of on farm water storage the dry years would also become as productive.

"Growing produce highly sensitive to weather in an area where weather changes a lot is a challenge, but when it's good it's really good."

AvaGrow is currently one of four Gippsland operations hosting soil moisture sensors, a project which is being delivered by VegNET Gippsland and has been funded by the Commonwealth Government's Future Drought Fund through a Hub-Hub collaboration with WA and NT Drought Resilience Hubs. It is hoped that this technology will provide them with data to better describe their water use and support conversations to advocate for better infrastructure.

Matt and Katie have also explored options for protected cropping. To their knowledge, they would be the first growers to commercially produce snow peas in greenhouses. They have access to a small greenhouse in Orbost through the local indigenous cooperative to trial the system, and hope to continue to use this into the future as a nursery for their seedlings once they have a more sophisticated set-up on farm for commercial production.

This set up and the addition of on farm water storage will provide further resilience to climatic conditions and stability for their workforce, enabling year-round production and employment in the region.

Above. Members of VegNET Gippsland's REAG at a climate projection workshop led by the University of Melbourne and Deakin University.
Right. AvaGrow Farms sandy hill country and their first crop of baby cos. Matt and Katie Zagami at Wairewa.

FIND OUT MORE

Gippsland growers who are interested in participating in the project are invited to contact Bonnie Dawson. Phone: 0407 683 938 or email: **bonnie.dawson@foodandfibregippsland.com.au**

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VegNET Victoria Update

NORTH, WEST AND SOUTH-EAST REGIONS

In this column, *Vegetables Australia* provides an overview of VegNET – Victoria (North, West and South-East regions) project activities throughout 2022, as well as highlighting activities planned for Victorian growers in 2023.

Top. Serpentine Leafminer leaf damage.
Above. Adult American serpentine leafminer. *Source: Central Science Laboratory, Harpenden, British Crown, Bugwood.org.*
Serpentine Leafminer larvae.

In 2022, the first year of *VegNET 3.0*, the VegNET – Victoria (North, West and South-East) project has tackled pest and disease issues and opportunities and begun to investigate soil moisture monitoring challenges. Planning is also well underway for the 2023 Victorian Vegetable Innovation Days, to be held in the South-east region of VegNET Victoria.

Pest and Disease

A focus for on farm practice change VegNET – Victoria (North, West and South-East) in 2022 has been project activities addressing pest and disease management.

Serpentine Leafminer

Confirmation of Serpentine Leafminer *(Liriomyza huidobrensis)* in a Victorian vegetable crop occurred in June 2022.

The pest was first detected in Australia in 2020, with agronomists, nurseries and vegetable growers in Victoria able to learn from the resources developed and experience of the vegetable industry in both Queensland and New South Wales.

What is Serpentine Leafminer?

Serpentine Leafminer is a pest that is capable of flight and eggs, larvae and pupae can be spread through the movement of plant material and soil.

It has an egg, larval, pupal and adult stage. Many generations can be produced in one year.

Serpentine Leafminer poses a significant economic threat to Victoria's horticulture and nursery production plant industries. It has a wide host range of plant species which includes broccoli, beet, spinach, peas, beans, potatoes and cut flowers. It also has a number of weed hosts

What damage does it cause?

Serpentine leafminer damage is primarily caused by larvae feeding under the surface of leaves. Typically, this feeding causes long, narrow spiralling leafmines.

High levels of infestations affect the plant's ability to photosynthesise, reducing plant growth and crop yields.

Serpentine leafminer can be very difficult to distinguish from the native leafminer species and usually requires specialist diagnostics to confirm.

Above L-R. Karen Thomas, Melbourne Water, Danielle Park, VegNET Victoria, the NRM Planting Crew, Wadawurrung Traditional Owners Aboriginal Corporation at Fresh Select, Werribee South.

Two new native vegetation insectaries successfully planted

A selection of native flowering species were planted at both Boratto Farms and Fresh Select in September 2022, aiming to provide a source of nectar to attract beneficial insects. Both new plantings in 2022 included a change to the original weed management approach, including a jute weed matting to reduce weed incursion as the native plants become established.

The laying of the jute matting, and the planting of the native seedlings were completed by the Wadawurrung Traditional Owners Aboriginal Corporation.

The NRM crew planting these native vegetation insectaries are building skills in land management, including weed control and re-vegetation.

FIND OUT MORE

For more information on VegNET in Victoria (North, West and Southeast), please contact Danielle Park on 0432 324 822 or email **danielle.park@ausveg.com.au**

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For more information for management of leafminer flies in vegetable and nursery crops can be found **ausveg.com.au/app/uploads/2020/07/1303CR2_Management-guide**.

More information on native vegetation insectaries can be found via **ausvegvic.com.au/wp-content/uploads /2019/10/Native-Veg-Insectary-Fact-Sheet**.

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SAVE THE DATE
27-29 APRIL 2023

The Victorian Vegetable Innovation Days to launch

Previously held in East Gippsland, the vegetable industry field days are relocating to the VegNET Victoria – Southeast region. The 2023 Victorian Vegetable Innovation Days (VicVID23) will be hosted at Butler Market Gardens, Catani, approximately 80km southeast of the Melbourne CBD. It will be delivered by Stuart Grigg Ag-Hort Consulting, AUSVEG VIC and the VegNET Victoria programs (delivered by Food & Fibre Gippsland and AUSVEG), who have come together to ensure that the industry continues to have timely access to innovations and industry-wide networking opportunities.

The event will be relying on generous industry partners to see these efforts come to fruition.

CEO of Butler Market Gardens, Rick Butler, says he is proud to be hosting VicVID23. "After COVID, it will be a great opportunity to network again with industry stakeholders and to meet new people," said Rick."I'm especially excited to see new products and varieties on trial and view new vegetable growing innovation."

Above L-R. VicVID organising committee Danielle Park, Connor Steel, Rick Butler, Joy Pedersen, Dale Creed and in front Bonnie Dawson and Stuart Grigg

Victorian Innovation Days building upon EGVID legacy

Building on the winning formula of the East Gippsland Vegetable Innovation Days, VicVID23 includes the knowledge and experience of Stuart Grigg and Bonnie Dawson, who have both joined the VicVID23 Organising Committee. Representatives are included from all delivery partners – Rick Butler (Butler Market Gardens and AUSVEG VIC), Joy Pedersen (AUSVEG VIC EO), Danielle Park (VegNET Victoria, AUSVEG), and Dale Creed (Butler Market Gardens).

The event will feature plots of seed trials, with seed companies showcasing the latest development in vegetable genetics and phenotypic outcomes. In addition to the seed trials, demonstration plots have been allocated for agchem companies to highlight the latest fertiliser and crop protectorant products. A marquee area will also be set up for affiliated industries to display product and services.

Industry Networking Event Thursday Evening

As well as coming together to learn and trade, VicVID23 will include plenty of opportunity for industry to catch up and celebrate together. The Elders Industry Networking Event on the Thursday night will provide attendees with a night of country hospitality and the opportunity to let down their hair.

Following the disruptions caused by COVID-19 over the past couple of years, the Committee is excited to be bringing as many industry members as possible together to learn, trade and celebrate!

Elders named the Major Sponsor

A rapid response following the launch of VicVID23 has also been an indication of the industry's support, with Elders Limited coming on board as the major sponsor.

"Elders, and more specifically the local horticultural branches in the surrounding local growing regions, are extremely proud to be sponsoring this event," said Connor Steel, Elders Pakenham Horticultural Agronomist.

"Our people work very closely with growers every day and are very proud to not only be sponsoring this event but to be part of the process. We are extremely excited to see all the innovative products and practices coming to the market to support the farmers."

Behind the scenes preparation for a field day

For visitors to a field day such as the Innovation Days in Gippsland, it is an opportunity to meet with peers to network, speak with suppliers and enjoy a day of local food and relaxation away from the farm.

To be the host for such an event requires a lot of preparation and planning to ensure that the day runs smoothly and meets visitor and sponsor expectations.

AUSVEG spoke with the event organisers to learn what is involved to prepare for such an event during the induction session in December.

Connor Steel, Elders Pakenham agronomist

"The ground preparation ahead of planting needs to be done. The soil has a heavy clay content, so gypsum and base fertiliser will be applied – a soil test will let us know what else may be required.

"The seed companies are looking to plant a number of plants – leafy vegetables, brassicas, Asian vegetables, spinach, onions and bunching vegetables like radish. As a hedge we will have a plot with corn, another as a cover crop.

"For this location, the weather is the challenge, at the moment it goes from cold and wet, to 32 degrees, so downy mildew is a real issue. The change in weather means the plants get stressed and get confused – some bolt and go to seed. We may look to do a preventative fungicide if needed.

"There is plenty of water available – there are two dams with a combined 280megalitres, plus rights to the creek which has not been used this year. Hopefully by April next year, all the plots will be green and lush with vegetable plants and showing no signs of disease or plant stress.

"As an agronomist, this is exciting. In this region, I look at a lot of spring onion, Asian veg, celery, some herbs and bunching lines. This kind of field day, it is very rare to see them all side by side. Ten companies' seed catalogues all in one place, and next to each other is pretty exciting. A great opportunity to compare apples with apples."

Above. Seed trial bays are being prepared for planting for seed companies to show case the latest genetics and phenotypes for VicVID in April 2023

Rick Butler, CEO Butler Market Garden

"Up until now, it is pre-preparation and planning. We have had a workable timeframe to get it all done to prepare bays and the farm itself.

"Beds 3 and 4 have been prepped to show the seed companies what to expect when it is time to plant. It is important that we provide plots that are consistent across the whole area to maximise the results for our seed companies. There is a real hunger from industry to have an event like this.

"From our perspective, we need to spend the next four weeks getting the site ready for visitors. The marquee area needs to be levelled, and a top gravel put on, planning of where each one will go, where the facilities need to be, the biosecurity point as you enter the property and the food vans all need to be considered.

"I put our hand up to host the event because I felt this location would suit nicely. When Stuart (Grigg) approached AUSVEG VIC to be involved (of which Rick is the vice president), we could see that it was a valuable event that can be successful for our organisation, and for the horticulture industry.

"We will also have our awards night the weekend after the Innovation Days.

"Elders is our principal sponsor and will be the agronomist for the site. We have Syngenta and Corteva coming in as platinum sponsors. I am pleased with the enthusiasm by the seed growers that have jumped on board so early to make this happen."

Stuart Grigg Ag-Hort Consulting

"The seed companies will be showing genetics and breed development technologies that are coming through, whether it is disease resistance, phenotypic attributes, how it looks. In 2014 kale was the new product on the market.

"In 2020, we introduced the agchem trial sites, which give those companies a chance to show how a stimulant impacts a crop such as root growth, crop development and so on. It could be crop protectants, fertilisers or pathogen controls. Syngenta and Corteva will be showing their latest offerings in that space.

"To have the agchem trial sites adds to the engagement for growers coming to the event; it makes it a true horticultural field day, rather than a seed trial.

"The affiliated marquee stall holders will include the mechanics behind planting crops, the chemical and fertiliser companies, seed companies. The benefits to industry is everywhere from grower to processor to reseller. We will aim to support and give back to the local community as much as possible. It is about industry coming together to support each other."

FIND OUT MORE AND GET INVOLVED

For industry members interested in supporting the event, please get in touch with our Organising Committee to discuss how you would like to be involved with the event through our event email: **VicVID@ausvegvic.com.au.**

Looking to stay in touch with event progress, please follow us on social media via. Facebook Victorian Vegetable Innovation Days 2023 Facebook and Twitter @VicVID23

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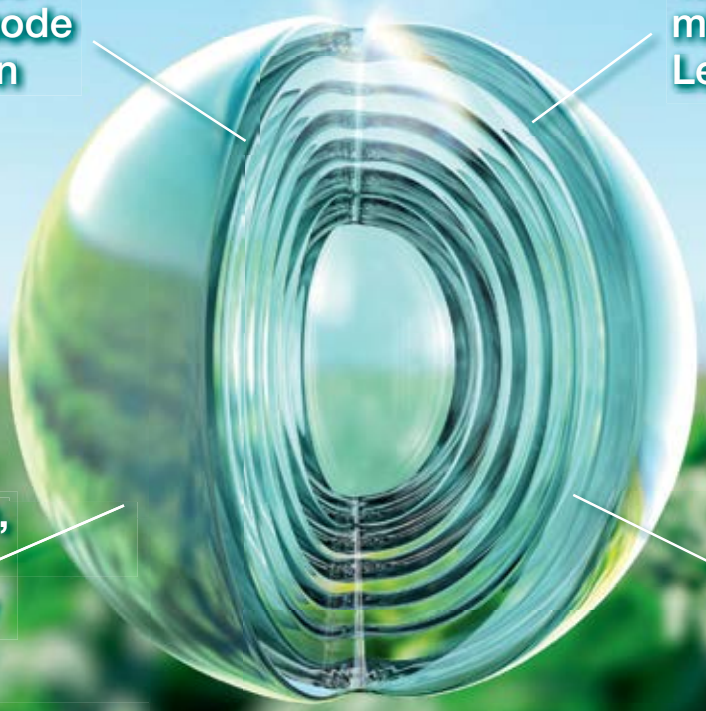

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