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Editorial Contacts

Bill Bulmer
AUSVEG CHAIR

Michael Coote
AUSVEG CEO

Shaun Lindhe
COMMUNICATIONS MANAGER

Deborah Hill
WRITER / EDITOR

CONTRIBUTORS

Andrea Lin
Chloe Betts
Lucy Gregg
Shakira Johnson
Rosalie Daniels
RMCG
Currie Communications

EDITORIAL

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

PRINT
Metro Print

GRAPHIC DESIGN
Sam Behr

PHOTOGRAPHY
Cover Deborah Hill

ADVERTISING
Tim Withers
AUSVEG Marketing Account Executive
Phone: 0410 288 545
tim.withers@ausveg.com.au

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The projects National Vegetable Industry Communications Program (VG22000) and Accelerating the adoption of best management practices for the Australian onion industry (VN21000) are strategic levy investments under the Hort Innovation Vegetable and Onion Funds. Communication of research and development projects has been funded by Hort Innovation using the vegetable and onion research and development levies and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture. *Australian Grower* is produced by AUSVEG Ltd and is free for all national vegetable levy payers.

AUSVEG WOULD LIKE TO THANK ITS LEAD STRATEGIC PARTNERS

syngenta

CORTEVA agriscience

Cover. Winner of the best exhibitor, at VicVID 2023 was Boomaroo Nurseries. Read more about the event on Page 26.

AUSVEG Hort Innovation

Australian Grower is the consolidated magazine comprising Potatoes Australia and Vegetables Australia, which was the most widely distributed magazine in Australian horticulture in the most recent reporting period.

ISSN 1834-2493

Audited Media Association of Australia cab

From the Editor

Welcome to *AUSVEG Australian Grower* magazine!

This Winter edition represents a unifying approach to *Vegetables Australia* and *Potatoes Australia* magazines to bring *Australian Grower* a comprehensive publication that is more relevant to our readers.

With a focus on research and development, advocacy, industry news, biosecurity, exports and extension, the AUSVEG team brings the latest updates that are relevant to vegetable, potato and onion growers. The new format will be formally launched at Hort Connections 2023.

In the spirit of our newly combined publication, we have taken a deep dive this issue with a feature on the Murray Bridge region of South Australia, which is a highly productive region for vegetables, potatoes and onions. We speak with some of the leading businesses in the region to see how growers cope with that infamous sandy loam! Nematodes are also under the microscope as too onion basal rot research.

As we move into the cooler months, and different regions kick into their busiest time of year, it is important to remember to be vigilant in looking out for pests and diseases. We encourage you to reach out to our Biosecurity Team and your local VegNET RDO for any advice or guidance about what to look for and how to better protect your business from pests and diseases.

Lastly, this issue gives a preview of Hort Connections 2023 in Adelaide, it is looking to be an incredible event!

I look forward to meeting you all in person and putting a face to a name.

Stay safe
Deborah

Message from the Chair

It has been pleasing to see so many regional and ag events over the last few months where growers have been able to meet up with other growers and industry members face-to-face.

Last month in Victoria we had a six-day horticultural showcase that included the Victorian Vegetable Innovation Days (VicVID) and the International Spinach Conference.

A key takeaway from the VicVID event was that opportunities for field days – big and small – are a unique way for growers to learn what is available in the industry and how seed, chemicals and best practices perform in their local area.

There were over 530 people who walked through the gates over the two days, which is a tremendous effort for the event organisers AUSVEG Vic, Stuart Grigg, primary sponsor Elders, Platinum sponsors Syngenta and Corteva, and to all those sponsors and industry representatives who helped make the two days special.

The International Spinach Conference was led by renowned spinach specialists Dr Jim Correll from the University of Arkansas and Dr Lindsey du Toit from Washington State University. The event in Victoria marked the first time that the event was held in the Southern Hemisphere and resulted in people from around the world coming to Melbourne to learn about the latest research, technologies and innovations in the spinach industry.

On the global stage, AUSVEG represented the Australian vegetable industry at Food and Hotel Asia in Singapore, where more than 50 different countries were on display in the event's pavilions. The show featured 1,500 exhibitors from 70 countries and attracted more than 40,000 visitors.

Singapore is an important trading partner for the Australian vegetable and potato industries, so it is important for the Australian vegetable industry to maintain its market presence. As part of the trade mission, the group attended a retail tour, where it was great to see the strong Australian fresh produce presence in those stores. As a grower, we definitely need to insert more effort in ensuring our international customers to maintain the cold chain integrity.

The Australian industry's premier event Hort Connections 2023, held in Adelaide from 5-7 June, is yet another not-to-be-missed event for growers and the broader supply chain. Networking in formal and more casual settings, particularly in-person, are an important part of our everyday lives so that we can grow personally and professionally and support each other. Events such as the Hort Connections Gala Dinner, AUSVEG grower networking event and industry seminars provide excellent opportunities for delegates to network and share knowledge with peers.

A much-anticipated event during Hort Connections is the Horticulture Awards for Excellence and a highlight for everyone across the industry. Announced during the Gala Dinner, the awards – of which there are 10 categories – are a way for industry to applaud the work that many perform, day in and day out, to improve not only their business, but the industry as a whole.

I look forward to celebrating with industry our outstanding achievers, and please feel free to chat with myself and the Board anytime during Hort Connections in Adelaide.

Bill Bulmer
AUSVEG CHAIR

KUBOTA
IMPLEMENTS

TOP CHOICE

THE START OF A SUCCESSFUL CROP

RM2005 SERIES
3-5 Furrows

RM3005V SERIES
3-6 Furrows

RS7005V SERIES
6-8 Furrows

Kubota's RM3005V 3 Furrow Reversible plough is everything Adam Bremner was looking for. "In our operation, the reversible plough pays us back in time & efficiency. With the Auto-reset system it allows you to start at one end of the paddock and keep going to the end, you don't have to lift the plough out of the ground as you go along– which saves time and money," Mr Bremner said.

Adam Bremner
Wombat Forest Organics, VIC

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Kubota

Message from the CEO

As our industry evolves, so does the way AUSVEG brings to its members information on the latest research, trade, advocacy and other issues faced by growers every day.

This Winter issue of our industry magazine reflects the recognition that as we develop as an industry, the way we communicate to industry needs to evolve and reflect the changing nature of the industry. By bringing together vegetables, onions and potatoes into one consolidated publication, we have an opportunity to bring more relevant information to all of our members and the greater industry, in a more sustainable, comprehensive and cohesive format that aims to reduce the risk of communication fatigue for growers.

As most growers in our industry grow a variety of vegetables including potatoes and onions, this new approach gives an opportunity for visibility of what it is happening in the greater horticulture sector, which may lead to new industry insights, research or contacts that may have been missed with multiple smaller publications.

For the broader industry supply chain, it presents a much more effective method of reaching the entire vegetable sector, with greater distribution through one publication.

As we lead into Hort Connections 2023, it is clear that this year's event will be one of the most successful conferences on record. For those supporters who are sponsoring Hort Connections 2023, I extend a heartfelt thank you. Without your support, events such as this could not go ahead. In particular, thank you to Hort Innovation for again coming onboard as our Principal Convention Partner, and other major partners Syngenta, Corteva Agriscience, Nutrien Ag Solutions, Coles and the Australian Department of Agriculture, Fisheries and Forestry.

With the program now finalised and a record number of exhibitors committed for the Trade Show, we anticipate record breaking delegate numbers coming together in Adelaide, it will be a fantastic event to showcase our industry. Some of the key speakers will discuss important issues such as real-world technology for sustainability and traceability, the future outlook for agtech, supply chain logistics and marketing. With these insights, the theme *Growing Together* is particularly relevant as we endeavour to speak with one voice.

It will be an extraordinary event this year and I encourage everyone to seek out myself and members of the AUSVEG Board during Hort Connections, either at the AUSVEG stand or during the affiliated events.

Michael Coote
CEO, AUSVEG

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industry update

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AUSVEG joins Global Coalition of Fresh Produce

The Global Coalition of Fresh Produce recognises the challenging environment faced by fresh produce growers since the COVID-19 pandemic.

AUSVEG, the peak body representing the vegetables and potato growers in Australia, has joined the Coalition together with USA, Canada, New Zealand, Europe, South America and Africa.

Many of the issues facing Australian vegetable growers are not just pertinent to Australia, they are global problems. The long-term economic sustainability of the fresh produce sector is being challenged, which threatens food security and health, across the nation.

Input costs, supply chain disruptions, imbalance in retailer relationships, workforce challenges, compliance pressures, declining vegetable consumption and rising interest rates are forcing many growers to re-assess their future.

The Coalition is a fresh produce think-tank which is addressing issues that affect the sector globally. AUSVEG has joined GCFP to maximise opportunities for growers through combined lobbying, collaboration, and shared learnings.

Michael Coote, CEO of AUSVEG, said "We often feel that the problems we face in Australia are unique, but the concerns of the Coalition members are the same as ours.

"Growers around the globe are feeling squeezed by retailers, overburdened with compliance, struggling with increasing input costs and battling workforce shortages.

"Chronic disease through poor diet is fast becoming a global phenomenon and yet successive governments here and overseas continue to ignore the issue.

"It is concerning to think that life expectancy in Australia is predicted to decline due to poor dietary habits, particularly when we have the ability to act and reverse the trend.

Through the Coalition we hope to further raise the profile of this issue, and other key industry challenges, on a global scale through advocacy to key organisations such as WHO and FAO."

We're here and we are ready
- JOHN DEERE

In a rapidly evolving operating environment, one where precision management and efficiency is more important than ever, John Deere has one important message to share with Australia's horticulture industry – "We're here and we are ready".

John Deere Australia and New Zealand Production Systems Manager, Stephanie Gereskowski, said the company's commitment to supporting the producers of high value crops had never been more of a priority.

"What we really want industry to know is we have worked extremely hard and invested heavily in making the horticulture industry a priority of the business," Ms Gereskowski said.

An exciting future for industry

"The value of horticulture production is forecast to reach a new record of $18.2 billion in 2023 to 2024, with fruit and nut production expected to drive much of these value gains," Ms Gereskowski said.

"Labour availability remains a challenge and we know there is an ever-growing need for the farm sector to do more with less. John Deere is committed to working with Australian horticulture producers to deliver solutions that will help us meet these challenges and grasp the great opportunities ahead."

5ML on the way

One of the most significant new product releases for the high value crop sector this year will be the John Deere 5ML Series of cab tractors, due to arrive in Australia later in 2023.

Offering two front-axle configurations for working widths as narrow as 180cm (71 inches) and down to 155cm (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.

"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," Ms Gersekowski said.

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. A new Limb Lifter kit can be added to gently move away low hanging branches, reducing the potential for damage to the tree and tractor.

The 5ML will bring a new level of technology to John Deere tractors in the orchard, tree nut and vineyard markets, making available industry-leading precision farming capabilities to grow efficiency and production, including JDLink™ — an industry exclusive in this class — to track machine data remotely.

Spraying smarter

Smart-Apply® Intelligent Spray Control System™ spraying technology provides horticulture producers an add-on kit for tow-behind air-blast sprayers which can reduce the potential for chemical drift and decrease the amount of product applied by adjusting spray volume based on canopy density using liDAR technology.

"Most sprayers today apply a blanket spray, even between trees. Smart Apply adjusts spray volume based on tree canopy density and shuts off completely between trees, providing an enormous chemical saving for producers," Ms Gereskowski said.

John Deere's focus on intelligent, semi-autonomous spraying is also reflected by its joint venture with innovative California-based technology company GUSS.

Using GUSS technology, multiple machines can be remotely controlled by a single operator and use a sophisticated combination of GPS and LiDAR (light detection and ranging) technology, vehicle sensors, and software, to move and navigate through orchards and vineyards.

"Traditionally, using GPS guidance under orchards and vineyards canopies has been challenging, but GUSS has overcome this issue by developing several additional technologies, including vehicle sensors and software to supplement GPS and guide GUSS safely and efficiently through crops," Ms Gersekowski said.

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Planting with precision Qualipac's seeding success

For Brad Qualischefski, farming runs in his blood. Spanning over four generations, his family have been farming since the 1930s to grow the business into the leading agribusiness it is today, Qualipac Agriculture.

With farms across Queensland, Brad and his family operate their farming business in the Lockyer Valley, Inglewood and Allora. The farms mainly grow onions, broccoli, pumpkin, sweet corn, green beans and potatoes in addition to cattle and lucerne. Their family name has become synonymous with produce buyers at major supermarkets and central markets across the country.

It's fair to say that the last decade of unpredictable weather patterns, combined with the labour shortage challenge, have made farmers particularly vulnerable to the already challenging operating conditions of the industry over the past four years of drought and COVID-related challenges.

"2018-2022 was a very challenging four years as we farmed through both extremities of the weather and a pandemic no one could have predicted. It's a credit to our staff and management who have been able to adapt to whatever the conditions were on any given day."

Brad has taken a key interest in introducing new technology into their farming operations – with optimised best practice of both sustainable and economic farming identified as a solution to overcome challenging times.

With the farms producing a wide variety of vegetables on a large scale, Brad needed efficient, dependable machinery, which is why he turned to Kubota.

"We use the Kubota Precision Planter for the pumpkin, green beans and sweet corn and we've got the Kubota Vegetable Planter for the onions. We've also got a Kubota compact disc with a seed hopper on top for cover and fodder crops," Brad said.

Brad purchased his first Kubota in 2020, after seeing GEOSEED used on squash during a trip to New Zealand.

"They were growing organic squash and had been using mechanical weeding. As soon as I got back, I researched what was available in Australia and reached out to our local dealer, Terry from Black Truck & Ag from Gatton, who suggested the Kubota PP1450V Precision Planter," Brad said.

Combined with the Kubota planters e-Drive ISOBUS software, GEOSEED uses RTK GPS technology to precisely place each seed exactly where you want it across the whole field.

"We plant our seeds in the shape of a diamond from north to west in the paddock. The PP1450V allows us to drive 45 degrees in any direction with a cultivator in the ground to pull out the weeds without pulling out the pumpkin plant itself. It means that we get better quality yield, better pumpkins, more efficient use of seed, which helps us survive as a business.

"We are very happy with the GEOSEED and are seeing really great results with inter row cultivating both ways. The next step for us is to automate weeding up the row. The more consistently you can place the seed, the easier it is for automation to become a reality."

Pumpkins traditionally don't have post emerge herbicides available and the pre-emergent herbicides can upset the crop rotation with brassicas, making weed control one of the biggest challenges.

"Although it's at the beginning of the growing process, the Kubota Precision Planter is an extremely important part of harvesting," Brad said.

"Traditionally we were doing a lot of hand weeding which took six people over a couple of days. We're trying to reduce that basically to zero and all mechanical."

By finding these efficiencies, Brad has been able to future-proof the farm, ensuring that the family business remains firm for generations to come.

"There's no other planter in Australia that can do what the Kubota does, and we are very happy with the results. We're after brands that don't change dealers too often so we can build a relationship with our dealer, who knows what parts we need and the people to talk to, and we've found that in Kubota."

For more information visit kubota.com.au

VEGNET VICTORIA

VicVID 2023 a tremendous success

The sun shone on the Victorian Vegetable Innovation Days 2023

In this column, *Australian Grower* provides an overview of the recent Victorian Vegetable Innovation Days. The two-day event was run by AUSVEG Vic and Stuart Grigg Ag-Hort Consulting. Well attended by industry and growers alike, VicVID23 has been hailed as a stunning success with more than 600 visitors through the gate across the two days. The two Victorian VegNET RDOs, Bonnie Dawson (Food & Fibre Gippsland) and Danielle Park (AUSVEG), participated as members of the event organising committee and recount a few of the highlights from the April event.

Top. Seed trial plots and industry marquees.
Above. Senator Linda White, Stuart Grigg and Jack Walker 'cut the bok choy' to officially launch VicVID 2023.

The Victorian Vegetable Innovation Days held 27th and 28th April 2023, received significant support from industry, with Elders coming on board as Major Sponsor.

Hosted by Butler Market Gardens at Catani, Victoria the event was well supported with both Hort Innovation and Agriculture Victoria involved in ensuring that the event was able to be held in 2023. The committee extended its thanks to all sponsors and industry, particularly Platinum sponsors, Corteva and Syngenta.

The event showcased plots of seed trials and chemicals, with many affiliated industry members presenting in a trade expo to present the latest innovations for horticulture.

Launch: Victorian Vegetable Innovation Days 2023

The ceremonial cutting of the bok choy marked the official opening of the Victorian Vegetable Innovation Days. On hand were Jack Walker, a local legend in the vegetable industry and life member of the Vegetable Growers Association of Victoria and the honourable Senator Linda White to perform the official duties on the day.

The event has been the result of generous industry partners and it was great to see all the 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. I'm especially excited to see new products and varieties on trial and view new vegetable growing innovation."

Paul Gazzalo, Director AUSVEG Vic said, "It is a unique event for horticulture as it presents an opportunity for farmers to get off the farm for a day, network with their peers and see what is happening in their industry in once place."

In the past decade, the Victorian vegetable industry has delivered a specialist vegetable demonstration event every three years. The event has evolved over the years and is now the Victorian Vegetable Innovation Days. Stuart Grigg Ag-Hort Consulting, AUSVEG Vic and Victoria's two VegNET projects have come together to ensure that the industry continues to have timely access to innovations and industry-wide networking opportunities.

Major Sponsor: Elders

In addition to their role as a sponsor, Connor Steel, Elders Pakenham Horticultural Agronomist has been able to demonstrate one of their cover cropping blends on site.

Working with local horticulture in Gippsland, Mornington Peninsula and the Yarra Valley, Elders is an integral part of grower community and we are extremely proud to be sponsoring this event. Our people work very closely with the 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."

On the Thursday evening, the Elders Industry Networking Event was held providing everyone with the opportunity to bring many in the industry together to share ideas and celebrate! Attendees were entertained by local musician Emily Mirdica and renowned comedian Dave O'Neil, ensuring that everyone there had a laugh and a great time!

Two awards were presented on the night – best field display went to Lefroy Valley and best exhibitor went to Boomaroo Nurseries.

Vegetable Innovations on Display

A key feature of the innovation days were the ten seed demonstration sites that showcased the latest development in vegetable genetics and phenotypic outcomes. Vegetables lines on display included lettuce and baby leaf, brassicas, and spring onions.

In addition to the seed trials, there were six trials that demonstrated some of the latest fertiliser and crop protection products for the industry.

Corteva's Nick Koch say the event gave growers an opportunity to discover how to better manage pests and diseases and will be showcasing a new fungicide that will be available to the market later this year.

Syngenta teamed up with Fairbank Seeds to showcase the latest in vegetable seeds and chemicals and how it performs under local conditions. According to Syngenta Technical Services manager, Len Ibbotson, events such as vicVID are few and far between for growers, and provide a fantastic opportunity to network. The recently released Simodis will was showcased to combat diamondback moth in brassicas.

Above L-R. The Elders team at VicVID. Connor Steel, third from left, was the consulting agronomist for the seed trials for the event. Comedian Dave O'Neill, pictured with the VicVID committee hosted the Elders Industry Networking event.

Left. Stuart Grigg, Ag-Hort Consulting at VicVID.

Top. Seed trial plots. **Above.** Kelvin Montagu talks through cover crops and termination techniques.

During the event, a Facebook livestream highlighting key points from each demonstration site occurred. To access these recordings see **facebook.com/SoilWealthICPCoP**

Throughout both days, there were a series of short presentations and demonstrations delivered across the site, which were curated by the two Victorian VegNET projects including cover crops and an overview of the Gatton Smart Farm project from Ian Layden, QDAF Director Vegetables, Systems and Supply Chains.

FIND OUT MORE

To find out more about the wide range of industry support for the Victorian Vegetable Innovation Days in 2023, further details can be found on **Facebook at VicVID 23.**

Please contact
VegNET – Victoria (Gippsland) Regional Development Officer Bonnie Dawson on 0407 683 938 or email **bonnie.dawson@foodandfibregippsland.com.au**

VegNET – Victoria (North, West and South-East regions) Regional Development Officer Danielle Park on 0432 324 822 or email **danielle.park@ausveg.com.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

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PROTECTING FARMS

Proposed Reforms to Workplace Relations

Criminalising wage under-payments in the Fair Work Act

As of 20 April 2023, Victoria and Queensland are the only two states where wage underpayment offences are enshrined in legislation. Throughout its election campaign, the Albanese government identified wage under-payments as a matter requiring national attention.

As such, and in accordance with the federal government's election commitment to implement recommendations of the Migrant Worker's Taskforce (released 7 March 2019), there are currently several options being canvassed. These proposed changes have stronger deterrence and penalties at the forefront.

These options include stronger penalties

The intention of wage theft underpayment offences related to a maximum penalty, is to be comparable to maximum penalties contained in similar offences in Commonwealth laws which include the Corporations Act 2001 (Cth) or Competition and Consumer Act 2010 (Cth).

Proposed maximum penalties:

(i) 1500 to 15,000 penalty points per offence which equates to;

(ii) $412,500 - $4,125,000 (for serious crimes).

Above. Neil Salvador Director and Lawyer.

Types of Breaches

Breaches include the following:

- Contravening a National Employment Standard
- Contravening an Award
- Contravening an Enterprise Agreement
- Having workers make payments from their wages
- Recordkeeping and payslip offences
- Providing false information to the Fair Work Ombudsman.

Relevance to Horticulture Industry

In 2021–22, the Fair Work Ombudsman recovered approximately $300,000 in unpaid wages for 194 employees in the agriculture and horticulture industries. With that in mind, the industry continues to remain a focus area for underpayment offences.

What Action Needs To Be Taken?

With this legislation on the horizon, NS8 Lawyers and Advisors recommends the following actions:

- Ensure employment contracts are in place and address key workplace issues
- Labour hire agreements are in place
- Wage rates, penalties and allowances are in line with current pay guides
- Regular audits of wages and pay guides are conducted
- Superannuation and long service leave payments are accrued and paid accordingly
- Timesheets, record keeping and payslips are accurately maintained.

Workplace Health & Safety (WHS) - Psychosocial Hazards

Regardless of which state you conduct business in, there is an obligation to ensure your employees, workers, visitors and contractors are as safe as reasonably practicable.

This includes the management and control of psychosocial hazards – such as unreasonable job demands, bullying, poor support or excessive fatigue. Codes of Practice have been developed to assist employers identify and control psychosocial hazards in the same manner as physical injuries.

NSW and QLD currently have legislation in place to address psychosocial hazards, with Victoria not far behind. Nonetheless, it is imperative that business owners, farm owners and managers are aware of the risk management process to alleviate the risk of psychosocial hazards. In its simplest form, a four-stage process should be adopted;

1. Identify psychosocial hazards by consulting with your workforce
2. Assess the risks to health and safety; consider the duration, frequency and severity of the psychosocial hazard
3. Control the psychosocial hazard; this requires minimising the risk so far as is reasonably practicable
4. Ensure regular reviews of the control measure are undertaken.

Best practice to minimise the risk of a psychosocial hazard requires adopting a prevention plan to deal with this issue. The proposed Victorian legislation seeks to enshrine this requirement into law.

Whilst the proposed reforms may appear overwhelming, NS8 Lawyers and Advisors will assist you to adopt a diligent and a systematic approach to address these matters (or any other workplace-related issue).

NS LAWYERS & ADVISORS GROUP FARM LAW EXPERTS

FOR MORE INFORMATION

Feel free to contact us for a free, no-obligation discussion on: (03) 8742 0516.
ns8group.com.au

FROM THE BUREAU OF METEOROLOGY

Drier weather outlook for April to July

The country's run of wet weather is looking to have a dry spell, as climate drivers indicate that an El Niño event is likely in the latter part of the outlook period.

For April to June, below median rainfall is likely to very likely (60% to greater than 80% chance) for the majority of Australia. The exceptions is for northern Cape York Peninsula, southeast Queensland, coastal NSW and southern Tasmania which may experience which may be slightly above average rainfall.

With the drier outlook period, the median temperatures are likely to be warmer than median for most of Australia.

April to June minimum temperatures likely to very likely to be warmer than average for most of Western Australia excluding the Kimberley, northern parts of the Northern Territory, northern Cape York Peninsula, the eastern Queensland coast, New South Wales east of the Great Dividing Range, Victoria, Tasmania and the far south-east of South Australia. Below median temperatures are likely for areas of central Australia and between the Flinders district in South Australia and western New South Wales.

What is El Niño?

An El Niño occurs when sea surface temperatures in the central and eastern tropical Pacific Ocean become substantially warmer than average, and this causes a shift in atmospheric circulation. Typically, the equatorial trade winds blow from east to west across the Pacific Ocean. El Niño events are associated with a weakening, or even reversal, of the prevailing trade winds.

Warming of ocean temperatures in the central and eastern Pacific causes this area to become more favourable for tropical rainfall and cloud development. As a result, the heavy rainfall that usually occurs to the north of Australia moves to the central and eastern parts of the Pacific basin.

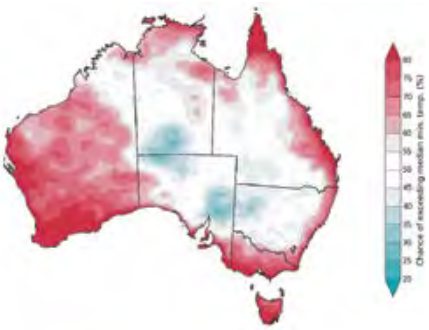
Typical weather patterns with El Niño include:

- Reduced rainfall
- Warmer temperatures
- Shift in temperature extremes
- Increased frost risk
- Reduced tropical cyclone numbers
- Later monsoon onset
- Increased fire danger in southeast Australia
- Decreased alpine snow depths.

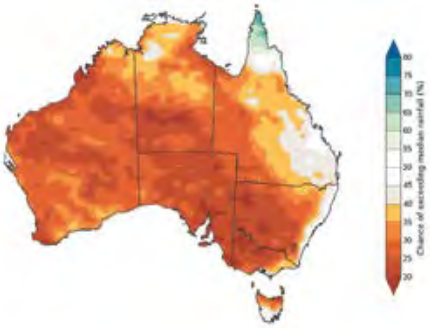
FIND OUT MORE

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

Chance of exceeding the median maximum temperature for April to June 2023



Chance of exceeding the median minimum temperature for April to June 2023



Chance of exceeding the median rainfall for April to June 2023

Source: Bureau of Meteorology

INTERNATIONAL FRESH PRODUCE ASSOCIATION

AUSVEG

HORT CONNECTIONS

5-7 June 2023
Adelaide Convention Centre

Key Events and Highlights

The wait for Hort Connections 2023, the largest horticulture conference in Australasia, is almost over. This year's conference and trade show will take place at the Adelaide Convention Centre from the 5-7 of June. We are eager to welcome growers, supply chain members, government stakeholders and service providers. Networking, education and business development opportunities will again take centre stage for attendees with something on offer for all members of the fresh produce industry.

HORT CONNECTIONS HC ADELAIDE 2023

For a full program go to hortconnections.com.au/program

Annual Vegetable Industry Seminar

Returning in 2023 is the Annual Vegetable Industry Seminar (AVIS) which will yet again provide informative industry R&D content, facilitated by AUSVEG as a strategic levy investment under the Hort Innovation Vegetable Fund. This will be held on 5 June from 12-4pm, prior to the Welcome Reception. Growers are encouraged to attend and learn about emerging products, innovations and the experiences of fellow Vegetable Industry members.

We are proud to host a diverse range of speakers to the AVIS stage including the following.

Guy Davidson
Onside

A customer success expert with a proven history of implementing technology solutions, Guy prepares to discuss 'how growers can leverage tech to drive on-farm efficiency across visitor management, health and safety, productivity and biosecurity.

Jemma O'Hanlon
Heart Foundation

Trusted nutrition expert and Advanced Accredited Practising Dietitian, Jemma will go into 'the role of plants in improving the health of Australians.

Jonathan How
Bureau of Meteorology

As a senior meteorologist, Jonathon brings 10 years of experience to a newly formed Agriculture Decision Support team. He will be talking about 'Agri-Climate outlooks' with tailored solutions and informed decisions.

Program

Hort Connections 2023's program will officially open on Monday 5 June with the Welcome Reception. Attending delegates will be able to enter the Trade Show and interact with all exhibiting companies on Monday afternoon.

Tuesday 6 June will begin with the Perfection Fresh Breakfast, followed by the opening of the Trade Show which will be accompanied by two dedicated presentation areas within the expo halls. In addition to this, the always popular Women in Horticulture Speaker Session will feature an engaging presentation from guest speaker, Milo Wilkinson, followed by the conclusion of the second day with the Trade Show Happy Hour.

Wednesday 7 June features a full complement of content including the final day of Trade Show, high profile Plenary Session and the more technically focussed Concurrent Sessions, Supply Chain and Consumer Stream and the Growing and Farming Stream. As per previous years, Hort Connections will pay tribute to the high achievers in the industry where we get together to celebrate at the Gala Pre-Dinner Drinks and the Hort Connections Gala Dinner and official Gala Dinner After Party.

Trade Show

In 2023, we are proud to bring you the largest Trade Show to date. The Trade Show will occupy both the East (FGH) and West (LMNO) Halls of the Adelaide Convention Centre and is sponsored by Australia's Fresh Produce Markets. With over 200 exhibitors occupying 363 booths, there will be something for everyone!

This year, there will be greater emphasis on speakers in the Trade Show, with two separate speaking areas that boast great line ups respectively. These will take place on Tuesday 6 June between 9:30am and 3:20pm in both the East and West Halls. With a range of informative content planned, everyone is encouraged to take a break and listen between networking and exploring the Trade Show floor.

Nufarm Australia will again be sponsoring the Trade Show Happy Hour, taking place 5-6:10pm at the close of the Trade Show.

Women in Horticulture

Sponsored by Boomaroo Nurseries, the Women in Horticulture Speaker Session will be taking place in Hall A between 1:10-2:30pm on Tuesday 6 June. Hear from Milo Wilkinson, an international award-winning Behavioural Scientist. Milo will look at how human behaviour can be used to deliver and receive information.

Gala Dinner

The Horticulture Awards for Excellence 2023 will be presented at the Hort Connections 2023 Gala Dinner. Taking place on Wednesday 7 June, the Awards are an opportunity to recognise and celebrate the game changing innovations and achievements made by exceptional individuals and companies within the horticulture industry. Sponsored by J-Tech Systems and Naturpac, the Gala Dinner is not an event to miss!

Milo Wilkinson
Behavioural Scientist

Milo-Arne (aka Milo) Wilkinson is an international award winning Behavioural Scientist who specialises in behavioural patterns, crisis leadership and she spends her days analysing human behaviour in order to predict outcomes.

VEGETABLES
ONIONS

Nuffield Scholarships for Onion and Vegetable Funds

A Nuffield Scholarship provides an opportunity for recipients to travel and study a research project that adds value to the industry and their business and builds a network of leaders for life

Each year, Nuffield Australia offers scholarships for the food and fibre sector through industry investment. Recipients undertake 14 weeks of learning across the globe, see leading and innovative businesses and identify new best practices that are related to their chosen research topic.

Hort innovation are offering five horticulture based scholarships under:

- Avocado Fund
- Apple and Pear Fund
- Raspberry and Blackberry Fund
- Onion Fund
- Vegetable Fund.

Under the Onion Strategic Investment Plan the intent is to grow the onion industry through increasing demand, exploring new export opportunities and increasing global competitiveness.

Vegetable industry outcomes are described under the SIP 2022-26 Vegetable Fund and the overarching intent is to drive opportunities in both domestic and international markets for vegetable products while accelerating sustainable production practices, managing risks and building a more resilient and informed industry through people development, communication and extension of research.

Based on the four primary outcomes of the Funds, it is envisaged that a Nuffield scholar under the Onion Fund and Vegetable Funds will advance the industries in alignment with the SIPs.

OUTCOME 1

Demand creation

Contribute to improving consumer knowledge, attitudes and purchase intent to drive volume growth.

OUTCOME 2

Industry supply, productivity and sustainability

Improve industry productivity (inputs/outputs) to maintain domestic and international competitiveness and viability of supply.

OUTCOME 3

Extension and capability

Building capability and innovative culture.

OUTCOME 4

Business Insights

Measure industry supply (production) and demand (consumer behaviour) data and insights to inform decision making.

Above. Catherine Velisha. *Photo LJM Photography.*

Previous Nuffield Scholars have achieved distinction in many fields. Many have gone on to an extraordinary range of positions, proof of the calibre of the recipients and value that the scholarships give. Scholars have become Federal and State politicians, chairs and members of national and regional commodity boards. Many have made a significant impact at a regional and local level, both in community affairs and in farm management. Others have developed careers as advisers and managers both in Australia and overseas.

In every case scholars attribute a proportion of the responsibility for their later career success to the scholarship and continuing friendships and associations that follow. The learning process continues for life.

Applications for the 2024 Nuffield Scholarships close June 5, 2023.

To apply, visit nuffield.com.au

FIND OUT MORE

Visit nuffield.com.au

Hort Innovation Strategic levy investment | VEGETABLE FUND

Hort Innovation Strategic levy investment | ONION FUND

Meet previous Nuffield Scholars in Horticulture

Jan Vydra

Jan Vydra is a current Hort Innovation director, and CEO of Fresh Leaf Farms, a leading herb and leafy green grower and distributor. A recipient in 2016 of a Nuffield Scholarship, Jan has also earned the Young Farmer of the Year Award (2011) and Emerging Agribusiness Leader Award (2016).

Jan's studies investigated innovative ways to boost the yields and sustainability of fresh herbs and salad leaf production, particularly through genetic improvement. When Fresh Leaf Farms first began, yield was typically 150 bunchers per square metre, but with hydroponics it is nearer 600 bunches in the same space.

His project, More Food, Less Earth focused on urban farming as an option to bring agriculture closer to the consumer. As part of his investigation, Jan travelled to the US, Europe, Asia and Israel where he discovered that urban farming can play a vital role in achieving food security.

"Urban farming isn't a cure to our global food security issue, but its methods certainly contribute greatly to the social, economic and environmental fabric of our communities. I hope that my Nuffield research can encourage all Australian farmers to look at innovative ways to feed our growing world, so as to produce nutritious food and look after our precious natural resources for the generations to come."

Emma Germano

A passionate advocate for horticulture, Emma is the Chair of the Victorian Farmers Federation and was a 2014 Nuffield Scholarship recipient for her project 'Growing the Pie', examining Australia's export opportunities.

As a potato and cauliflower grower in Gippsland, Victoria, Emma examined competitor supply chains and product trends, and assessed export opportunities.

The opportunity to travel around the world strengthened Emma's personal growth and professional development, and also provided a clearer insight into the opportunities to improve Australia's vegetable growing expertise beyond farmgate sales and domestic markets.

Emma didn't hesitate when asked if she would recommend that other members of the vegetable industry apply for the Nuffield Scholarship, as it provided an opportunity to meet with like-minded people who could share their experiences from different sectors of agriculture.

"There's a lot of personal growth that comes out of that program because you're by yourself for a long period of time, and you're away from the business which enables you to have a different perspective."

She strongly encouraged growers to have the courage to visit markets and farms wherever possible – even if it's during a holiday – and investigate any potential opportunities for their business.

"When you receive a Nuffield Scholarship, you get addicted to visiting different farms. If you go on your Nuffield, you never stop being on your Nuffield."

Catherine Velisha

Velisha Farms have benefited enormously from managing director, Catherine Velisha *(pictured top left)* receiving the 2020 Nuffield Scholarship.

Her Nuffield Scholarship investigated how horticultural family businesses can build and harness the skills they need to be competitive in the marketplace.

The family farm spans three properties in Victoria, to grow a range of vegetables and herbs for wholesale markets and supermarkets. Catherine is a third generation farmer, who took on the reins of the family business in 2016 and realises that many factors influence the performance of a family-run horticulture business.

Catherine's vision was to create an environment for continuous improvement with growth and expansion, but also to give opportunities for staff to reach their full potential.

Over the course of her scholarship, Catherine travelled to the United Kingdom, the US, Europe and China to explore the structures and strategies that enable family businesses to thrive in these advanced and competitive markets.

Left. Emma Germano. **Above.** Jan Vydra.

Growing the best in the West

It's quality first and daylight second in every aspect of the operations at Bogdanich Farms, one of the state's largest producers of leafy vegetables.

Third-generation vegetable growers, Andrew and Michael Bogdanich, operate three properties in the Neergabby district, 85km north of Perth.

With 220ha under fixed or pivot irrigation, their business produces more than 16 million heads of cos and iceberg lettuce, cauliflower, cabbage, celery and broccoli throughout the year.

From its immaculately presented farms, infrastructure and packing shed to the three gleaming semi-trailers that shuttle backwards and forwards to Perth seven days a week, every aspect of the operation is focussed on quality.

"Quality is everything," Michael Bogdanich says. "Without quality, we haven't got a business. We work very, very hard on getting the best product out there. There are bigger players than us but we would like to think that quality-wise, we're at the top end.

"The biggest risk in this business is supply and demand and the weather. Anything can happen in the 8-10 weeks between planting and harvest.

"In the past two years alone, we've had the pandemic, floods in the eastern states and just recently, the collapse of a major cold storage transport company."

Produce is consigned directly to major supermarket chains or to wholesalers operating from the Perth Markets, which in turn, supply a number of other supermarket and food service chains. It is then regularly on-forwarded to customers in South Australia, Victoria and NSW, meaning shelf-life is critical.

"Over time, you develop relationships with your customers and you adapt your business to meet their specific requirements," Andrew Bogdanich says.

"Each chain has different specifications we have to meet, whether it's size, shape, colour, maturity, weight, eating quality, counts, defects, temperature, packaging and labelling."

Tractor on Bogdanich farm.
Above. Lettuce harvest and cos lettuce seedlings

Right. Jason Brady (Yara Sales Agronomist WA), Andrew Bogdanich and Michael Bogdanich.

Traceability is an increasingly important part of the business.

"We have to be able to document everything we do from the moment the transplants go in the ground right through to the moment our vegetable arrive in our customers' cold storage," Andrew says.

"That covers every input we use, including fertiliser, and that's why we always use products from quality manufacturers. We have to have complete faith that what our suppliers say is in the bag is actually what's in the bag. We can't afford to find out the hard way.

"With Yara, you are buying from a reputable company. They have been around for a long time and you can rely on them for consistent quality, guaranteed analysis and importantly, availability.

"We have used a lot of Yara products over the years and they store well and they mix well. Plus, they back their product.

"If I have a problem, I know that I can call the Yara Sales Agronomist, Jason Brady. With some other fertiliser manufacturers, there isn't a Jason to call."

Michael Bogdanich says nutrition is about balance and timing.

"If you don't get nutrition right, everything is going to fail in terms of quality and profitability," he says. Andrew and I are on the farm six or seven days a week and we monitor the crops every day. We know when they need a bit of a push to keep moving forward. Our approach is to apply small amounts more often.

"You have to make sure the basics – nitrogen, phosphorus and potassium – and trace elements are available at the right time."

Bogdanich Farms utilises a range of premium granular and soluble fertilisers in its nutrition program.

Bulk blends are prepared in a dedicated mixing shed, decanted into 1000-litre shuttles and stored, ready for distribution to the pumps and pivots across the three properties.

The entire program is based around three liquid blends – NPK, calcium and sulphate of ammonia.

"We moved from liquids to water-soluble blends about five years ago because we wanted to do things better," Michael says.

"Preparing our own blends means we know exactly what's in them, as well as giving us the ability to adjust the nitrogen content or other microelements according to the season or particular crop.

"We do have a few modifications to cater for different crops, water quality and soil types, but on the whole, we try to keep it as simple as possible. Having three ready-to-go blends eliminates guess work at the other end."

YaraTera KRISTALON SPECIAL and YaraTera CALCINIT are used as the bases for the NPK and calcium blends, while YaraTera KRISTA MgS is used to boost magnesium and sulphur content in the NPK and SOA blends.

Each blend is concentrated – higher than the 10% maximum recommended by the manufacturer but lower than the known saturation point – to minimise transport.

They also use broadcast application of the granular fertilisers, YaraMila COMPLEX and YaraRega 15-7-13.

"YaraRega has a slightly different analysis compared to YaraMila but it is a lot more soluble," Michael says.

Bogdanich Farms was established as a market garden in the 1930s by Andrew and Michael's grandfather, Ante Bogdanich. His son, Ron, took over the business in the 1950s, which by then had relocated to a 8ha block at the Landsdale operation.

Ron's sons, Andrew and Michael, joined the business in the 1980s and were instrumental in moving the business to Neergabby.

"We knew we had to move – the city was moving north and our block wasn't big enough to support three families." Andrew says.

"It was a bush block when we got here. We put in the irrigation system and a shed and we started planting. 25 years ago, we were growing a million head of lettuce each year. Now we're doing that every seven weeks."

"Growing vegetables is in our blood, I guess," Michael says. "It was all we knew as kids and all we wanted to do when we left school. Now our children are starting to become involved."

FIND OUT MORE
For more information, go to yara.com.au

Pioneer Rien celebrates progress of women in horticulture

"The enthusiastic young women need to keep putting their face forward and make sure that they really are heard, otherwise their voices will be drowned out."

Making time for leadership roles, dreaming big and 'having a go' will be crucial for the next generation of female leaders in agriculture, according to Rien Silverstein.

Rien, who farms at Orrvale near Shepparton in northern Victoria, won the Boomaroo Nurseries Women in Horticulture Award at the National Awards for Excellence, presented at the Hort Connections conference last year.

"Be true to yourself and learn to put your opinion forward," Rien advises.

"Don't be shy. Don't go in there trying to be a man. Wear your red and wear your purples and bright pinks... put your colours on... and don't sit there silently with the men."

Rien's advice comes from many years in leadership roles in the agriculture industry.

While raising five sons, she also volunteered in leadership roles at organisations as diverse as Women on Farms, Fruit Growers Victoria, Goulburn Broken CMA, Australian Women in Agriculture and the Victorian Farmers Federation.

Rien is now chief financial officer at Silver Orchards, the company she runs with husband Maurice and son Bo. They grow apples, pears and plums.

It's a very different role to the one she first trained for.

"I basically lost touch with the midwives I worked with (at the Box Hill hospital) in Melbourne when I said 'look, I've met this gorgeous guy, and he's got three kids and he's an orchardist'," Rien said.

"They all looked at me and said, 'good luck and goodbye', you know."

Rien first went to the orchard after meeting Maurice in 1986.

Since then, they've continually implemented new technologies and have been recognised as leaders in the industry.

"We've changed our growing techniques and our systems completely. We used to have the old fashioned orchard vase shaped pear trees with a six metre circle around them, basically.

"But now they're planted one metre apart, the rows are 3.5 metres wide; they're grown on trellis and some on a pedestrian orchard system.

Maurice pulled out 60 per cent of the old pears back in the early 90s and planted apples, pink ladies."

Over the years the couple has hosted numerous trials on their properties. Rien says taking note of what researchers have to say helps their business succeed.

Rien Silverstein amongst her orchard in Shepparton.
Photo courtesy Annie Brown, ABC.

"There's always trials going on in our orchard so that we keep up with what's happening.

"It's essential to keep up with innovation, especially in irrigation."

Rien sat on the board of the local catchment management authority during drought years. She observed the orchards that had implemented new technologies were more successful and had better soils and growth during the dry times.

Initially, Rien didn't know she had been nominated for the Boomaroo Nurseries Women in Horticulture Award. But she says her involvement with the Fair Work Commission's (FWC) investigation into piece rates likely helped the application.

The FWC's inquiry into an application by the Australian Workers Union to vary the Horticulture Award around piece rates heard evidence from both sides.

Rien was one of the few growers who opened their books for cross-examination by union officials and the Commissioners.

"I thought that was really important work," Rien says when asked why she participated.

"I think there wasn't many people who did that, and I didn't realise that at the time... but not many people were willing to open their books and say 'look, this is what I do and this is what I've done'.

"All the lettuce growers, all the strawberry growers and the sheep farmers... they were all going to be unviable (if piece rates were banned).

"They needed me to speak up on their behalf."

Rien says she was particularly motivated to speak up on this issue, as a lot of people involved came from non-English speaking backgrounds.

"Just like myself, my family were Dutch-Indonesian.

"But (the other farmers affected by changes to the piece rate) weren't able to articulate their cases as well as I am."

She feels speaking up for people is what she can do, and her way to assist.

"I'm disabled. I walk with a frame, I've been on sticks, I had operations... so my bones aren't too crash hot, but sitting down and talking and reading... I can do that!"

Although she feels comfortable advocating for people, Rien says she didn't set out to be a leader.

"I think just sitting back quietly and just giving your opinion is what's important. I'm not one to stand in front and rant and rave. I don't like doing that."

However, Rien is proud to be a leader in the Australian Women in Agriculture (AWiA) group.

"They AWiA go to Canberra and they present the opinions of all sorts of different areas of areas in agriculture – food and fibre.

"It's a wonderful group and I'm really pleased to be a leader in Australian Women in Agriculture and promote what women do."

But her celebration comes with a caveat.

Rien says there's always more to be done to improve the representation of women in agricultural leadership roles.

"I think it's an area where the enthusiastic women need to keep putting their face forward and make sure that they really are heard, otherwise their voices will be drowned out."

Rien says there's always more to be done to improve the representation of women in agricultural leadership roles.

Below L-R. Rien and Maurice Silverstein - Christmas gifting time with live-In Samoans. Pinks at Silver Orchards.

Boomaroo Nurseries at VicVID

The shorter days and cooler nights signal a hive of activity at both our Lara and Southbrook nurseries, as the sowing teams double down in preparation for longer growing times and the approaching Winter.

A new season brings not only the need for new varieties of vegetables, but new growing conditions with potentially more rain and the challenges that brings. On a positive note, the cooler weather means the easing of pest pressure on farm in most areas, so spray programs and chemistries in the nurseries also change to reflect this.

Our team were out and about with Boomaroo exhibiting at both the VicVID field days at Butler Market Gardens Catani, as well as Hort Connections in Adelaide.

The VicVID Field Days offered a chance for seed companies and allied suppliers to showcase the very best in plant breeding, chemistry and innovation. It was great to catch up with colleagues in the industry both in the paddock and at the networking event on the Thursday night in Bunyip.

Boomaroo are pleased to be once again involved with Hort Connections. We have proudly sponsored the Women in Horticulture Award at both state level in the AUSVEG Vic Awards, and national level, for the past seven years. All conference goers are welcome to attend our Tuesday afternoon session at the conference – see conference program for details, time and location. We will also be exhibiting alongside the very best and brightest of the industry at the Boomaroo stand in the main hall.

If you are attending Hort Connections, please come over and say hi to our team and find out how Boomaroo Nurseries can assist with your growing needs.

Don't forget to grab a pink hat!

Top L-R. Boomaroo nurseries.
Right. Boomaroo Nurseries at VicVID.

Keep brassica vegetable pests pinned down.

MOVENTO®

Diamondback moth
(*Plutella xylostella*)

Stop the pests wherever they're hiding in your brassica vegetables, with the two-way systemic action of Movento®:

- Protects the whole plant
- The only registered Group 23 insecticide
- Low impact to most beneficial species, when used as directed

With long-lasting protection, Movento can be effectively used as part of your integrated pest management program.

To learn more and download the Movento brassicas crop guide, visit crop.bayer.com.au/movento or talk to your local Bayer Crop Science representative.

Green peach aphid
(*Myzus persicae*)

Grey cabbage aphid
(*Brevicoryne brassicae*)

Silverleaf whitefly
(*Bemisia tabaci* biotype B)

New SIMODIS® insecticide provides another tool in brassicas

Han Chhen has farmed at Port Gawler in South Australia for the past 25 years. For ten months of the year the 100-hectare family farm grows broccoli and cauliflower. Brassica planting usually starts in November on the Chhen farm, with potatoes grown over spring. Most of their broccoli and cauliflower crop goes to a major supermarket chain.

Like all brassica growers, diamondback moth can be a major pest issue for Mr Chhen, particularly in warmer months when populations can explode. After planting, Mr Chhen and his sons monitor crops weekly for diamondback moth and only spray an insecticide once their economic threshold for diamondback moth has been reached. This is critical to their operations as their cauliflower or broccoli will be rejected if they have any damage from diamondback moth as it cannot be sold to the supermarket.

Mr Chhen said at the start of every year they are on the lookout for alternative chemicals that they can use to mix things up to control pests like diamondback moth to manage insecticide resistance. As it turns out, Mr Chhen bought the very first drum of SIMODIS®, a novel Group 30 mode of action insecticide, sold in Australia.

"Our CRT (Nutrien Ag Solutions) store told us that SIMODIS® was coming in and I said if it's a different chemical group then I want to try it," said Mr Chhen.

"We don't want to keep using the same chemical groups all the time for diamondback moth and start to get resistance. New products are good, but we still use other modes of action as well because we just don't want to build up resistance by using only one thing."

Mr Chhen sprayed SIMODIS® insecticide on his cauliflower crop at 300 mL/ha five weeks after planting. Three weeks later they sprayed an insecticide from a different group and after another three weeks a second application of SIMODIS® insecticide at 300 mL/ha was made. Mr Chhen didn't tank mix SIMODIS® insecticide with any fungicides as he generally doesn't have disease issues.

"After we sprayed SIMODIS® we checked about a week later and diamondback moth larvae seemed to disappear," said Mr Chhen. "It's always good to have something different to use, to mix up our chemical modes of actions."

Mr Chhen said cooler than normal temperatures earlier in the year meant the pest pressure from diamondback moth was low. But he is keen to see how SIMODIS® insecticide goes in a season where there is a higher diamondback moth population.

"It was pretty cool in summer really for the time of year, so diamondback moth didn't have a big explosion," said Mr Chhen. "In a warmer year when it's a bigger problem that will be a good test of SIMODIS®."

"After mid-May we don't really need to spray for diamondback moth as it gets too cold."

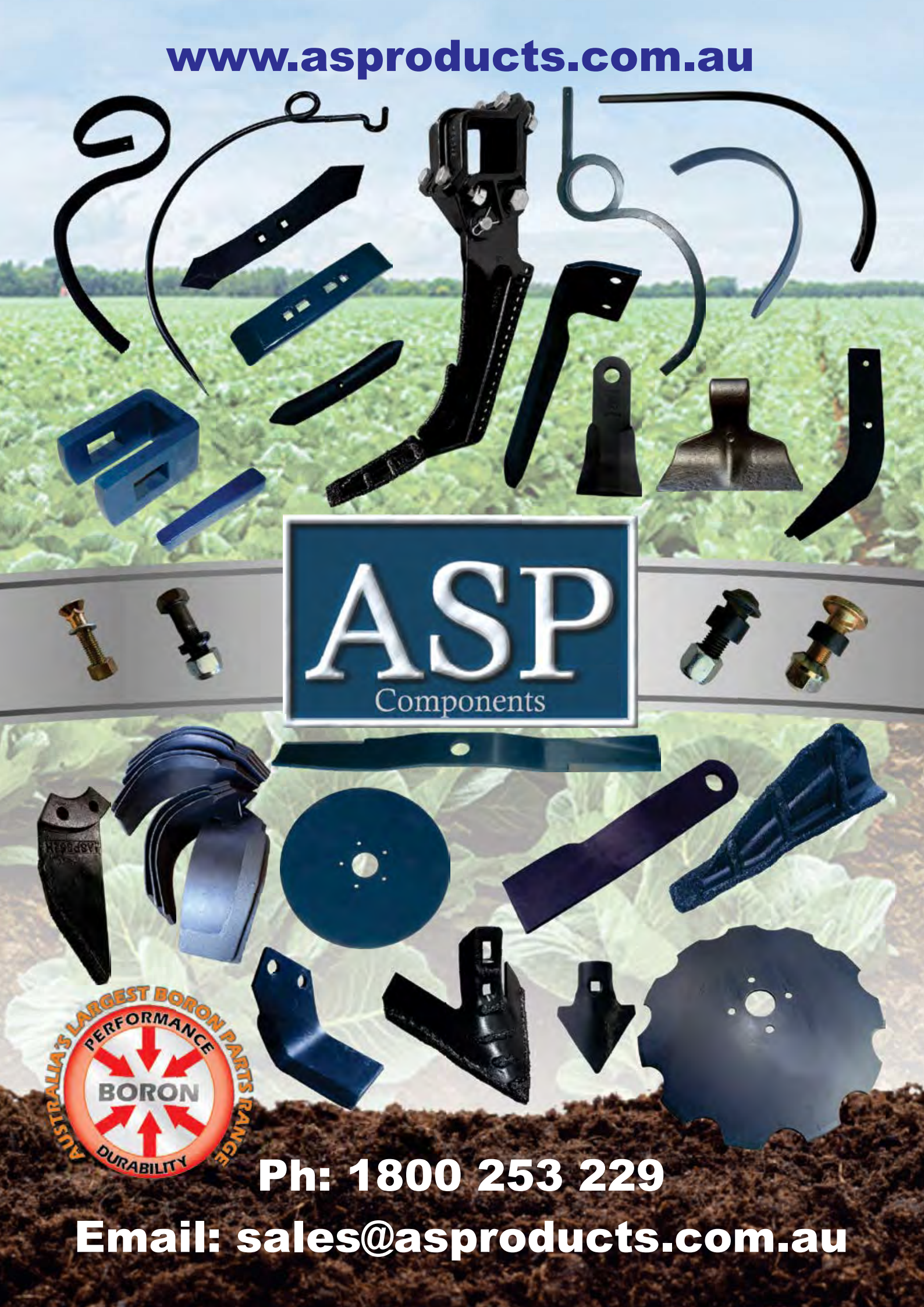
Mr Chhen said SIMODIS® insecticide does cost a little more, but from the few times they have used it he can maybe see a saving in the number of sprays he might have to apply due to the longer residual activity of SIMODIS® insecticide. "The control seemed to last pretty well and the 3-day withholding period is pretty good," said Mr Chhen.

"If something works then it's worth it, because maybe you only have to spray two times instead of three times."

®Registered trademark of a Syngenta Group Company.

Above. Mr Chhen said diamondback moth seemed to disappear after using SIMODIS® insecticide.
Above. Mr Han Chhen in his brassica crop.

FOR MORE INFORMATION
Visit **syngenta.com.au** and **syngenta.com/sustainability/good-growth-plan**.
Follow us on Twitter **twitter.com/SyngentaANZ**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IR focuses on Enterprise Agreements

AUSVEG, in partnership with Ai Group, has been delivering a series of industrial relations webinars in relation to the recent workplace changes to legislation.

The second webinar presented by Brooke West, Senior Associate from Ai Group Workplace Lawyers focused on Enterprise Agreements and included:

- Introduction to Enterprise Agreements
- The advantages and disadvantages of an Enterprise Agreement
- The process of making an Enterprise Agreement
- Enterprise Agreement Content
- Good Faith Bargaining and negotiations.

What is an Enterprise Agreement?

An enterprise agreement sets out terms and conditions of employment, including the rights and obligations of the employees and the employer covered by the agreement.

These agreements are made at the enterprise level and must be approved by the Fair Work Commission (FWC) prior to the enterprise agreement coming into force, lasting for a period of up to four years.

Who can make an enterprise agreement?

An enterprise agreement can be made under the *Fair Work Act 2009* (FW Act) by any corporation covered by the national workplace relations system. The Governments of all states excluding Western Australia have referred industrial relations powers to the Federal Government so that the FW Act applies to all private sector employers, regardless of whether the employer is a corporation.

Enterprise agreements can be made with award free and/or award covered employees under the FW Act.

What are the types of enterprise agreements?

Under the FW Act, there are different types of enterprise agreements which can be made depending on the circumstances of the workplace.

Single-enterprise agreement

This type of enterprise agreement can be made by a single employer, or two or more employers who are single interest employers.

Multi-enterprise agreement

This type of enterprise agreement can be made by two or more employers who are not single interest employers.

Greenfields agreement

This type of enterprise agreement can be made as a single or multi enterprise agreement and is applicable to genuine new enterprises that are yet to engage employees.

Secure Jobs Better Pay Act 2022

Changes under the *Secure Jobs Better Pay Act 2022* amend the FW Act to expand on multi-employer bargaining streams. From 6 June 2023, there will be three streams available.

- Single interest employer stream - which refers to agreements between two or more employers pursuant to a single interest employer authorisation under the FW Act, however, significantly amending the pre-SJBP Act 2022 operation of single interest employer authorisations to remove limitations on multi-enterprise bargaining, including where employers do not wish to bargain.
- Supported bargaining agreement stream which is replacing and somewhat expanding the current low-paid bargaining stream; and
- Cooperative workplace agreements - which replaces the previous multi-enterprise bargaining provisions of the FW Act, which retains the requirement of employer consent to multi-enterprise bargaining, and to which limited changes have been made.

To watch the webinar recording, please see Enterprise Agreements: Webinar **youtube.com/@AUSVEG**

A summary sheet has been produced from Ai Group on the issues that were covered in the webinar. To view the summary, please see **ausveg.com.au/app/uploads/2023/03/Enterprise-Agreement-Making-Summary-Sheet.pdf**

Scan to view PDF

Scan to view webinar

Visa Options for Horticulture

AUSVEG was pleased to partner with the Department of Home Affairs (DHA) and VETASSESS to present a webinar on the current visa programs in the horticultural sector. VETASSESS is the body which certifies the skills for visas to ensure legitimacy and integrity.

The webinar provided information for those interested in knowing more about the visa options available as well as providing updates for those already utilising the visa programs.

Presenting on behalf of DHA, Business Industry and Regional Outreach (BIRO) Assistant Director was Jasmine De Beer. Jasmine covered the various visas available to growers including skilled, unskilled, permanent, and temporary visa classes.

Presenting on behalf of VETASSESS was Team Leader of Science, Health, and Agriculture Luke Trevisan. Two skilled visas which are commonly used in horticulture are the DAMA and the HILA. All the applications of these visas much go through VETASSESS before approval.

Scan to view webinar

BIRO Agenda

1. Business, Industry and Regional Outreach (BIRO)
2. Skills summit and Program Updates
3. Visa processing timeframes
4. Smart Move Australia Campaign
5. Working Holiday Maker and PALM numbers
6. Skilled Migration Overview
7. Labour Agreements (HILA, Company Specific and DAMA)
8. Visa Information and Verification Online (VEVO).

Scan to view BIRO webinar info links

Scan to learn more about BIRO

Scan to view BIROs presentation

VETASSESS Agenda

1. Who is VETASSESS?
2. How they conduct Skills Assessments
3. HILA
4. DAMA
5. Integrity checking.

Scan to view VETASSESS presentation

Please note that all information is current as of March 2023 but subject to change.

Fair Work Legislation Amendment (Secure Jobs Better Pay) Act 2022

Termination of 'Zombie Agreements'

On 2 December 2022, the **Fair Work Legislation Amendment (Secure Jobs, Better Pay) Act 2022** (Cth) (**Amendment Act**) was passed by the Commonwealth Parliament and received Royal Assent on 6 December 2022. The Amendment Act introduces major changes to the Fair Work Act 2009 (**FW Act**) and other laws, particularly in relation to enterprise bargaining.

One change is the automatic termination (or 'sunsetting') of so-called 'zombie agreements', i.e. agreements made before 1 January 2010.

All 'zombie agreements' will automatically cease to operate on 7 December 2023 (unless this period is extended by the FWC for a particular agreement).

Employers must give affected employees notice of the automatic sunsetting by 6 June 2023, including information about the timing and the FWC's role in extending the default period (failure to do so is a breach of a civil penalty provision).

This Summary provides an overview of the termination of zombie agreements.

What is a 'zombie agreement'?

The Amendment Act will sunset all remaining transitional instruments currently preserved by the FW Act and commonly referred to as 'zombie agreements' (i.e. instruments that were made prior to 1 January 2010), namely:

- agreement-based transitional instruments, which encompasses:
  - collective agreement-based transitional instruments, such as collective agreements made under the previous Workplace Relations Act 1996; and
  - individual agreement-based transitional instruments, such as AWAs and ITEAs;
- Division 2B State employment agreements; and
- enterprise agreements made under the FW Act during the 'bridging period' (from 1 July 2009 to 31 December 2009).

When will the termination occur?

All zombie agreements will automatically cease to have effect from 7 December 2023 unless the FWC extends the default date for a particular instrument as explained below.

Applications to extend a zombie agreement

The Amendment Act provides a process for an employer, employee or union covered by the agreement to apply to the FWC to extend the default termination date.

The FWC may to extend the termination for a period of up to 4 years if the FWC is satisfied it is reasonable to do so, and either:

- bargaining is underway for a replacement agreement with the affected employee or employees; or
- it is likely the affected employees would be better off overall than if the modern award applied.

The Amendment Act does not limit on the number of applications that may be made.

Notification requirements

Employers must give affected employees notice of the automatic sunsetting not later than six months before it will occur (i.e. by 6 June 2023). The notice must be in writing and advise employees:

- that the employee is covered by an agreement-based transitional instrument; and
- include information about timing and the FWC's role in extending the default period.

Failure to do so will be a breach of the FW Act's civil penalty provisions.

What happens to an employee's entitlements once a zombie agreement terminates?

Once a zombie agreement passes the sunset date it will cease to cover, and can never cover again, any employees, employers, or other persons. Unless a new enterprise agreement has replaced the zombie agreement, the relevant modern award which covers an employee will begin to apply.

What should Growers do?

Growers that are currently covered by a zombie agreement are encouraged to:

- Urgently consider how the zombie agreement compares to the modern award that would otherwise apply and what arrangements will need to be made to be if your business was to be required to apply such award(s).
- Plan a communication strategy for the notification required no later than 6 June 2023.
- Consider whether it would be beneficial to start bargaining with employees for a new enterprise agreement to replace the zombie agreement. This should include consideration if whether this should commence before the multi-employer bargaining provisions of the Amendment Act commence (which will be 6 June 2023 unless the Minister proclaims an earlier date)
- Consider whether it may be necessary or viable to make an application to the FWC to extend the operation of the zombie agreement.

FOR MORE INFORMATION

Contact the AUSVEG Advocacy team,
Lucy Gregg on **lucy.gregg@ausveg.com.au**

Costa's big win in a unique industry

After winning an award for her work marketing Costa's glasshouse grown tomatoes, Elisa Siliato reflects on the joys and challenges of promoting fresh Australian produce.

Elisa Siliato was "shocked" when she took to the stage at the Hort Connections conference in Brisbane last year.

That's where she won the IFPA-Produce Plus Marketer of the Year Award (MOYA).

Elisa is Costa Group's Vertical Farming Marketing and Innovation Manager. She won the award for her work on Costa's 'Perino Tomato - Hit the Sweet Spot' campaign, beating out entries from Hort Innovation, Driscoll's, Tropical Pines and WA Farm Direct.

Perino is a unique and flavoursome small 'snackable' tomato available exclusively in Coles supermarkets.

Elisa was given the opportunity to market Costa's tomatoes and mushrooms after an internal restructure three years ago. With this came the opportunity to market the Perino line.

"My heritage is one with a strong passion for tomatoes, so this for me was the perfect fit," Elisa said.

Top. Perino tomatoes growing in Costa's Guyra greenhouse. Costa's marketing and innovation manager for vertical farming, Elisa Siliato.

"We have an extensive new product development program in tomatoes made possible by our state of the art nursery which gave us the opportunity to select suitable varieties to take to market. As a result, we have enjoyed year-on-year category growth in Coles with Perino.

"We created strong awareness and conversion to sales through effective ranging, distribution, and a strong marketing plan that included social and traditional media, online and at the point of purchase.

"It's a testament to years of partnership and commitment to support a consistently superior versatile tomato.

"To be nominated as one of the finalists was a first for Costa in our traditionally fast-paced environment and provided us with a moment to reflect and acknowledge our work and that of our team.

"Then to actually get that award... I just couldn't believe it! My whole body was in shock because I just couldn't believe that we have won."

Elisa says the win helped Costa realise the strength not only of its product, but also of how successful marketing campaigns can be.

"We reached millions of people through our campaign last year, which was phenomenal!

"From a cost per unit perspective Perino is premium, but what you get in return is a consistently great-tasting quality product each and every time. The Perino variety is exclusive to Costa and our growers are passionate to deliver the quality that our consumer expects."

Discussing the nuts and bolts of the campaign, Elisa is quick to point out that the journey and evolution of Perino is the result of years of collaborative work.

"We started to look at it a little bit differently," Elisa explains.

"We reviewed past work, data and research to understand our shopper. We took more of a foodie approach to engage our consumer, looking at Perino as a range and focused on taste and consumption occasions in addition to snacking.

Elisa Siliato and Courtney Roulston (Coles ambassador and chef) at the Costa mushroom farm with Perino.

"We were able to drive growth from a sales perspective and have developed strong consumer loyalty.

"By engaging influencers with a revised media plan we were able to reach our audience, and in partnership with Coles we signed up to support the Stephanie Alexander Kitchen Garden Foundation (SAKGF)."

The SAKGF partnership is designed empower kids to form positive food habits.

"(We wanted to) reach children and the next generation to get them eating healthier from a young age, because we all know those habits start in the home when we're kids."

Elisa says the health benefits of fresh produce, as well as the occasional production challenges, make for interesting and rewarding work as a marketing manager.

She worked for a confectionery manufacturer prior to joining the horti-cultural industry, and says it was a welcome change.

"Obviously, being in confectionery you're marketing products that aren't necessarily all that great for you but okay as an occasional treat. You're turning on a machine, so you're able to manufacture as you need to and the product has extended shelf life.

"Coming across to horticulture where the products are healthy and nutritious was a refreshing change. The fact that we're growing fresh produce that's good for people and contributes to their health and wellbeing is extremely rewarding."

However, it can also be complex and challenging.

"Agility is paramount in our industry."

Elisa recalls a time when a marketing campaign had to be postponed.

"It's naturally grown product so the elements can play a part at times."

Elisa says another complexity of the job is the way consumers react to messages around fresh produce.

"It's a given that fresh produce is good for you. Telling consumers how good the produce is for them doesn't really work.

"Consumers are very flavour-centric and so the focus is taste, so that's the lens we tend to take as well."

Elisa's role involves explaining and promoting the Costa business and its products.

"(It's about) making sure that our customers know who we are, and by customers, I mean more our supply partners who we partner with on a day-to-day basis, as well as our consumers.

However, marketing tomatoes and mushrooms require different approaches.

"For mushrooms ... there's a lot of innovation," she explains.

"It's about more creative ways to market the product so that consumers know how to cook with mushrooms and how to prepare them and the benefits of including, the why."

She says that's different to promoting tomatoes, where new varieties need to be tested with consumers "to see what the market is willing to accept".

"We test and grow them in a glass house environment, with a team led by Paul Butterworth (head of technical, research and development).

"My role is to actually work from a consumer perspective, look at data, and look at where there are opportunities to create new products."

However, Elisa says it's a job made easier by the industry's openness and willingness to share.

"Growing challenges and all those sorts of things are discussed, and work as a team because no one wants to see anyone fail.

"That's one of the benefits of this industry, and the personalities and the type of people that we get to deal with on a day-to-day basis is just unbelievable. It's unique actually!"

Unique partnership pushes for behavioural change by increasing nutrition knowledge

The University of Newcastle and Rijk Zwaan Australia's free online Culinary Nutrition course is empowering people to improve their eating patterns by increasing understanding of the science behind healthy eating.

The online course, developed for health, education and horticultural industry professionals, is now available to all and accessible for free.

Led by the University of Newcastle PhD candidate, Accredited Practising Dietitian and qualified chef, Ms Roberta Asher (pictured), the course combines evidence-based nutrition presentations, with practical hands-on culinary activities, supported by experts from vegetable seed breeding company, Rijk Zwaan Australia.

"We wanted to create an educational tool for health, education and industry professionals that could help them overcome some of the barriers to healthy eating and cooking so they could improve their own health and speak with more confidence to their patients, students or clients," Ms Asher said.

The unique partnership between the University of Newcastle, the Hunter Medical Research Institute Food and Nutrition Research Program team, and the vegetable seed breeding company, Rijk Zwaan Australia, was spurred by the common goal of increasing vegetable intake.

Ninety-four percent of Australian adults aren't consuming the recommended amounts of vegetables and fruit, with huge impact on our long-term health. *Australian Bureau of Statistics, 2020/21 National Health Survey.*

Rijk Zwaan Australia Managing Director and founder of the company's food-focused social initiative, *Love My Salad*, Steven Roberts, said, "Our aim is to get more vegetables on the menu for all Australians. We want to help the vegetable industry to understand the culinary and nutritional importance of vegetables, encouraging the whole chain to produce better tasting and healthier vegetables."

The course is open for enrolment for anyone to join. Hosted on the Rijk Zwaan's online platform, **learning.rijkzwaan.com**, participants will spend 1-2 hours per week, completing five self-paced modules.

Participants can expect in-depth information about nutrients, metabolism, and how the diet can mitigate chronic disease risk; alongside recipes, cooking tips, and access to research and resources.

Enrolments are open: bit.ly/uon-rz-cn-online.

The project is funded by the Australian Commonwealth Department of Industry, Innovation and Science Innovation Connections Project Grant with Rijk Zwaan Australia Pty Ltd.

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

Veg and melon growers to benefit as Soil Wealth ICP enters a new phase

The Soil Wealth and Integrated Crop Protection (ICP) project works with growers to put soil management and plant health research into practice. This article explores the project's key achievements in Phase 2 and what vegetable and melon growers can look forward to in this space over the next five years. *Soil Wealth ICP Phase 3* (MT22004) is a strategic levy investment under the Hort Innovation Vegetable and Melon Funds.

Did you know the Soil Wealth ICP project team has provided research and development (R&D) extension services, products and communication on improved soil management and crop health to the Australian vegetable industry since 2014?

This information has helped growers integrate technical R&D information into the production systems of Australian vegetable farms to improve their productivity, profitability and sustainability.

Applied Horticultural Research (AHR) and RM Consulting Group (RMCG) have delivered the Soil Wealth ICP project since its inception on behalf of Hort Innovation. Now that Phase 2 has wrapped up, this column revisits the project's main achievements and explores what's ahead for Phase 3.

How did Aussie growers benefit from Soil Wealth ICP over the past 5 years?

Soil Wealth ICP Phase 2 (VG16078) ran from December 2017 to March 2023 and provided the latest information on soil and crop health to vegetable and potato growers while remaining adaptive to current issues. Information was delivered using different extension and communication methods, ensuring outputs were relevant, practical and easy to use.

The key achievements for Soil Wealth ICP over the past five years included:

- Almost 3,000 growers and industry stakeholders were engaged with the project across Australia – this included advisors, agribusiness service providers, industry associations, researchers, government and supply chain participants – and covered more than 62,700 hectares of vegetable growing areas;
- 83% of vegetable growers and 43% of participating advisors improved their knowledge of soil management and crop protection through the project;
- 75% of participating growers had or were intending to change practices to improve soil health and/or crop protection on their farm, partly because of the project;
- A network of demonstration sites were delivered in every major vegetable growing region and hundreds of informative events, practical resources and communications products were developed for growers and industry.

Watch this video to find out more: soilwealth.com.au/resources/videos-and-apps/soil-wealth-icp-achievements

So, what's next for Soil Wealth ICP?

The project recently kicked off Phase 3 which will be delivered to March 2028. The content and approach for this new phase was informed by a grower-focused co-design workshop held in August 2022, which brought together 22 vegetable industry representatives to collaboratively design the next five years of the project.

The workshop identified four project themes which align closely with the Vegetable Industry Strategic Investment Plan (2022-2026) and VegNET National Vegetable Extension strategy. The four themes and sub-topics are outlined in *Figure 1.*

Importantly, Phase 3 of the Soil Wealth ICP project will continue to focus on **soil health** and **integrated crop protection** for vegetable growers. However, the rising cost of inputs, natural disasters impacting key vegetable growing regions, and increasing pressure to improve environmental performance prompted Phase 3 to include two new themes: information and awareness around **climate and carbon**, and **input use.**

Workshop discussions highlighted additional sub-topics that have not yet been explored by the project including consumer education; crop varieties; waste management (organics and plastics); fuel; and understanding government and market

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An updated guide to Soil Wealth ICP resources

If you're looking for a fact sheet, case study, poster, video, webinar recording or podcast from the Soil Wealth ICP project over the last five years, then check out the updated Summary of Resources for Phase 2.

The guide is divided into 12 focus topic areas to make it easier for growers and industry to navigate.

soilwealth.com.au/resources/fact-sheets/crop-management/summary-of-resources-handy-hints-and-where-to-find-useful-information-phase-2/

initiatives and policies in relation to climate change.

The Australian melon industry will also join the new phase of the program so that melon growers can learn how to improve soil health, crop health and reduce costs, including reducing plastic use and building soil organic matter.

The project will continue its successful elements which have proven to work well for growers including the use of demonstration sites, sharing stories through grower champions, translating technical R&D into clear and concise information, and targeting agronomists and VegNET Regional Development Officers to support growers. It will also bring fresh innovations including stronger international links and a focus on putting in place new farm practices.

The project team includes a balance of experienced staff and talented young team members who will invigorate the project to ensure it continues to deliver valuable services to the Australian vegetable and melon industries.

Stay updated on the latest events, demo site news and resources from the Soil Wealth ICP project at **soilwealth.com.au**

You can subscribe to the project's monthly Bulletin e-newsletter at **soilwealth.com.au/resources/bulletin-enewsletter/** or register your interest to join the global project Partnership Network at **soilwealth.com.au/contact/**

FIGURE 1: THEMES AND SUB-TOPICS FOR SOIL WEALTH ICP PHASE 3 (2023-2028)

1. Soil health	2. Crop health	3. Climate and carbon	4. Input use
Cover crops, rotations and minimum till	Integrated pest and disease management	Understanding policy, markets and methods of measurement	Nutrient use efficiency
Consumer education	Genetics and new varieties	Resilient production systems (adaptation)	Waste
Biology and microbiome		Mitigation	Fuel
Composting and soil structure			

Top L-R. Members of the Soil Wealth ICP Phase 3 Team. Henry Hyde, Dimi Kyriakou, Gordon Rogers, Jed Clark, Carl Larsen, Camilla Humphries, Anne-Maree Boland, Clinton Muller, Stephanie Tabone and Ryan Hall. Absent: Kelvin Montagu, Paulette Baumgartl, Doris Blaesing. **Left.** Sweet corn crop, under sown with lucerne; and a comparison of soils with no cover crops (left) and soils with sweet corn and lucerne (right) during a Soil Wealth ICP field walk at Katherine, Northern Territory.**Top Right.** Attendees with a strip-till machine on show during a Soil Wealth ICP field walk at Manjimup, Western Australia.

AUSTRALIAN GROWER / Winter 2023 | 40

Cover crop trial on show at VicVID

The Victorian Vegetable Innovation Days (VicVID) attracted hundreds of growers and industry members to Catani, south-east of Melbourne, from 27-28 April.

The event was hosted by AUSVEG VIC, Stuart Grigg Ag-Hort Consulting and the two Victorian VegNET projects at Butler Market Gardens' Catani farm and featured field trials from agrichemical and seed companies as well as presentations from local and international speakers.

The Soil Wealth ICP team exhibited at the event and Dr Kelvin Montagu shared the results of a cover crop trial of forage barley, buckwheat, Japanese (shirohie) millet, mixed legumes (sunn hemp, soybean, cowpea, lablab) and mixed species (annual ryegrass, oats, benetas vetch, crimson clover).

Kelvin discussed why the varieties were chosen, how much nitrogen legumes can supply and when it will be available, termination options to get the most out of your cover crop, the pros and cons of mixed species cover crops, and answered questions from the audience.

For those who couldn't attend in person, visit **soilwealth.com.au** for a wrap-up of the event. The Soil Wealth ICP team also livestreamed the results of the agrichemical and seed company field trials and discussed some of the new developments on show. Join the Soil Wealth ICP Community of Practice Facebook page to watch the videos: **facebook.com/SoilWealthICPCoP**

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**.

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

Hort Innovation

See the Soil Wealth ICP grower panel at AVIS

5 June 2023

Don't miss the Annual Vegetable Industry Seminar (AVIS) on Monday 5 June ahead of Hort Connections 2023 at the Adelaide Convention Centre.

The Soil Wealth ICP panel will showcase how the project has helped Australian vegetable growers to improve their productivity, profitability and sustainability and share the key lessons learnt.

We will also delve further into the new topics that the project will explore over the next five years and potential opportunities and challenges for growers in the future. Stay tuned for more information at **soilwealth.com.au/events/**

If you're at the Trade Show, you can meet the Soil Wealth ICP team at Applied Horticulture Research (Booths 178 and 181) and RMCG (Booth 153).

Commodity profile

Beetroot

In the 52 weeks ending January 2023, **beetroot dollar sales decreased by 8.3%,** with 26% of households buying beetroot. The average spend ($) rose, from $8.88 to $9.20.

SOURCE: HARVEST TO HOME

In terms of sales **60.4% of all beetroot dollar sales were sold through major supermarkets,** the majority as tinned

SOURCE: HARVEST TO HOME

Beetroot production occurs predominantly in Queensland (85%) in the Lockyer Valley and Fassifern Valley, with the Sydney Basin (6%) while Victoria and WA make up the remaining 8%.

SOURCE: HORT STATS

Total production is 14,659t, valued at $13.8m.

SOURCE: HORT STATS

The wholesale value of fresh supply is $13.4m with 83% distributed into retail, and 17% into food service.

SOURCE: HORT STATS

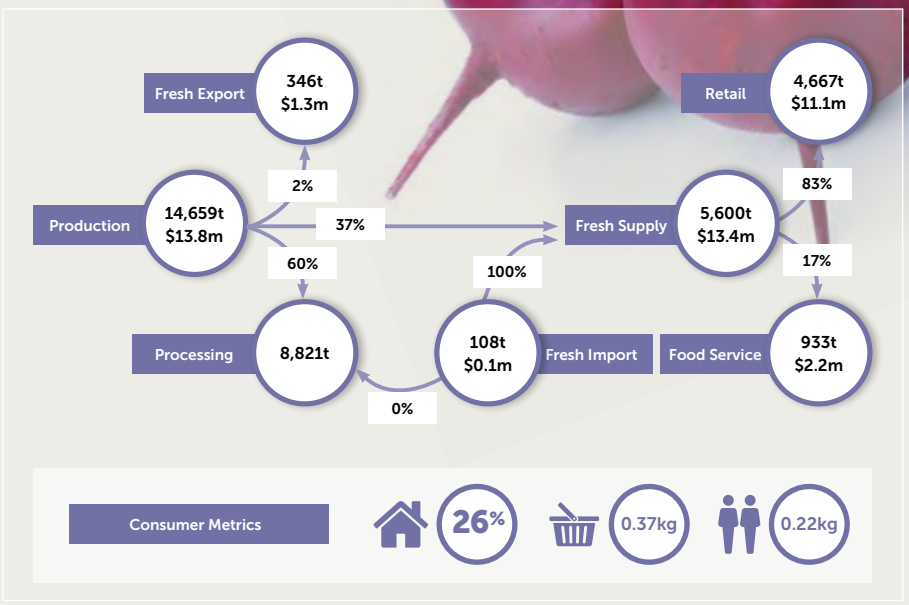
Export of fresh beetroot decline 7% in volume and sales to 346 tonne at $1.3m.

SOURCE: HORT STATS

Imports of fresh beetroot increased up to 108 tonne in 2022 from 8 tonne in 2021.

SOURCE: HORT STATS

Fresh Beetroot Supply Chain Overview
Year ending June 2022

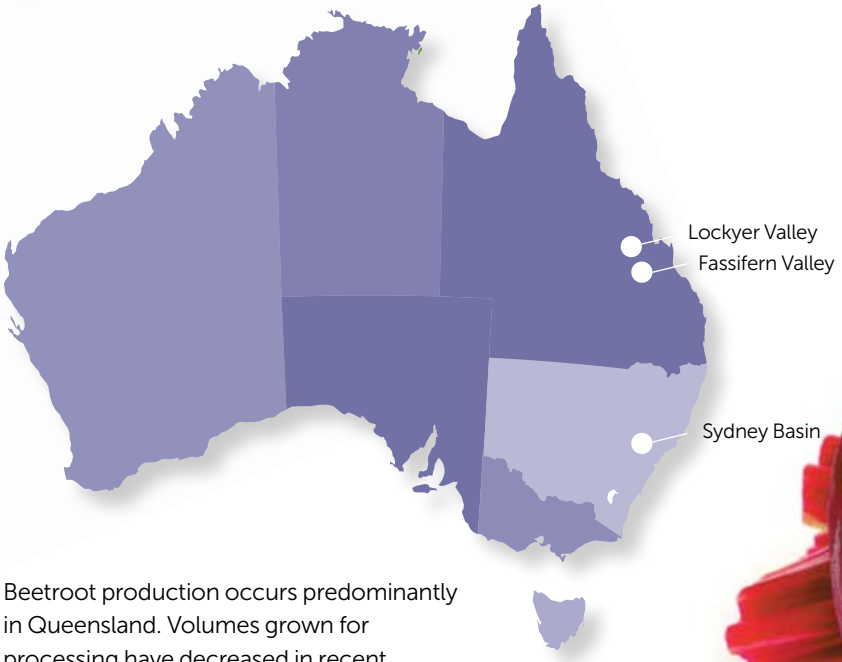


Sources. ABS; AC; CFVIWA; GTA; Onions Australia (OA); MP & DD (Freshlogic Analysis)

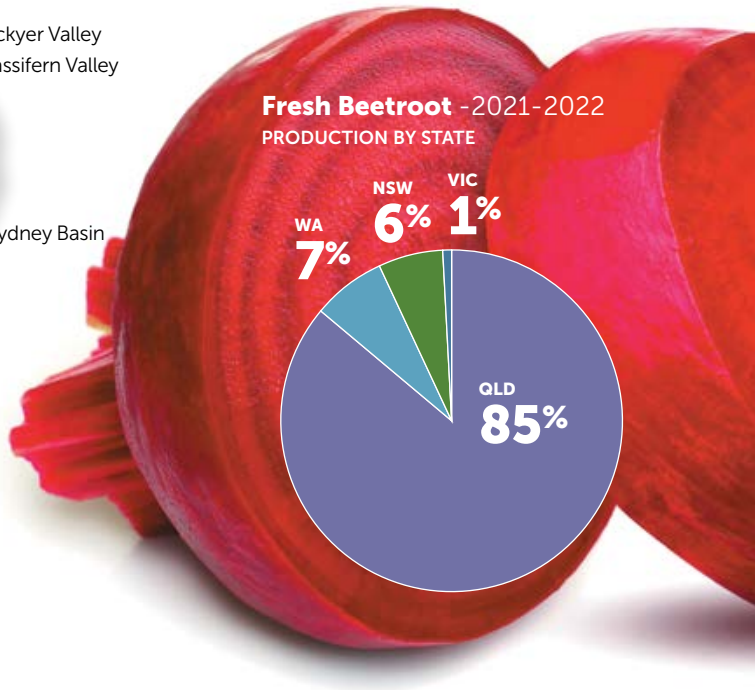
Year Ending June	2020	2021		2022	
	VALUE	VALUE	%YOY	VALUE	%YOY
Production (t)	15,253	14,044	-8%	14,659	+4%
Production ($m)	$12.2	$10.8	-12%	$13.8	+28%
Production area (Ha)	-	-	-	-	-
Fresh Export Volume (t)	375	371	-1%	346	-7%
Fresh Export Value ($m)	$1.3	$1.4	+4%	$1.3	-7%
Fresh Import Volume (t)	8	18	>100%	108	>100%
Fresh Import Value ($m)	< $0.1	< $0.1	-39%	< $0.1	>100%
Fresh Supply (t)	5,707	5,240	-8%	5,600	+7%
Fresh Supply Wholesale Value ($m)	$11.4	$9.9	-13%	$13.4	+34%
Supply per Capita (kg)	0.22	0.20	-8%	0.22	+6%
Retail Supply Wholesale Value ($m)	4,796	4,403	-8%	4,667	+6%
Food Service Supply (t)	$9.6	$8.3	-13%	$11.1	+33%
Fresh Import Volume (t)	911	837	-8%	933	+12%
Fresh Import Value ($m)	$1.8	$1.6	-13%	$2.2	+40%

Sources. AC; AUSVEG; CFVIWA; GTA; MP & DD (Freshlogic Analysis)

Fresh Beetroot -2021-2022
MAJOR PRODUCTION AREAS



Beetroot production occurs predominantly in Queensland. Volumes grown for processing have decreased in recent years, however the majority of processed volume is tinned.



Fresh Beetroot -2021-2022
SEASONALITY BY STATE

State	Volume Tonne	Value ($M)	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	Jun
QLD	12,459	$11.7												
WA	1,071	$1.0												
NSW	918	$0.9												
VIC	212	$0.2												

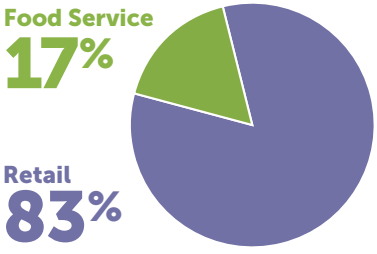
Availability legend: High · Medium · Low · None

Total Production

$13.8M

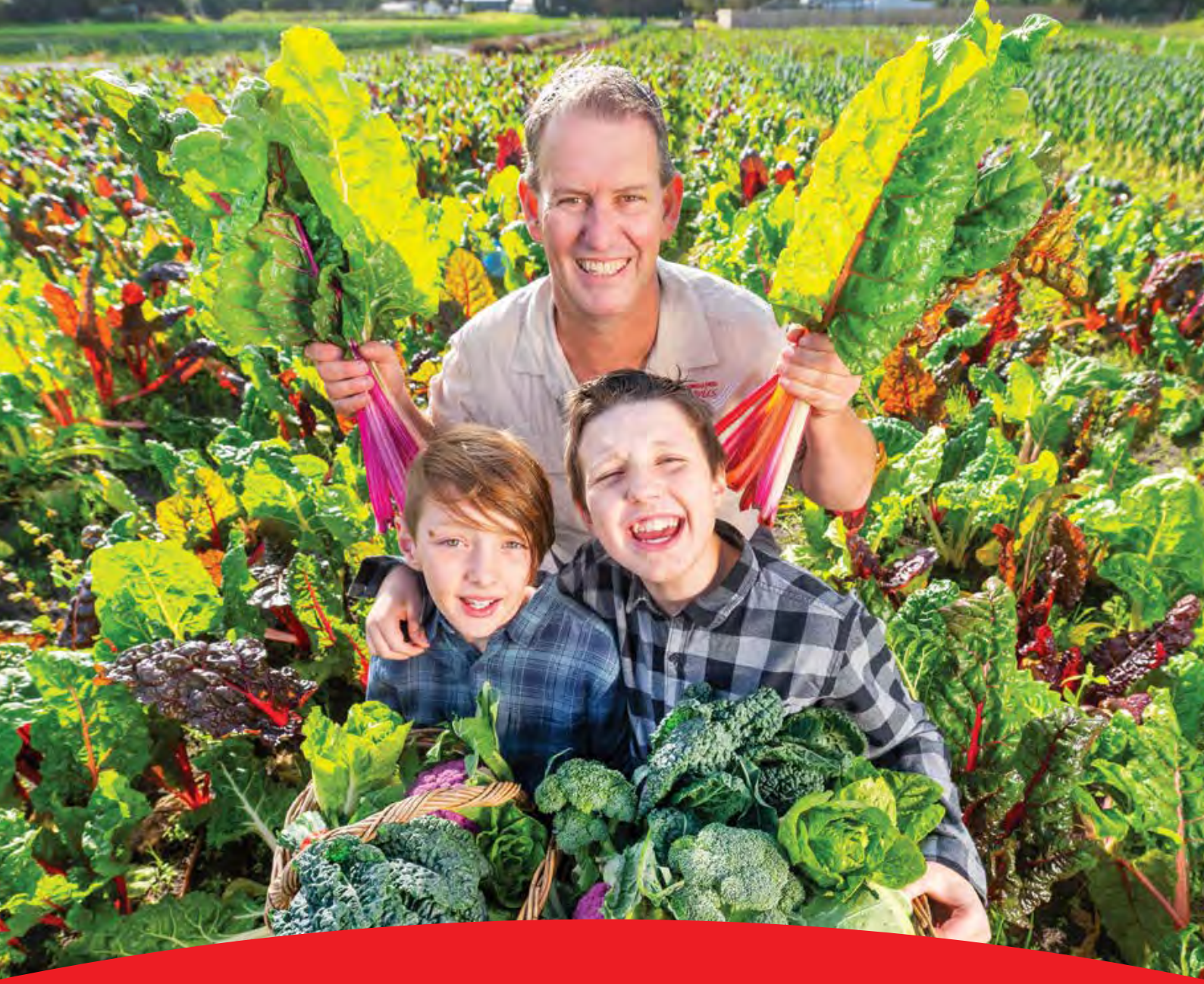
14,659t produced and valued at **$13.8M** with **60%** sent to be processed.

Retail vs Food Service



The wholesale value of the fresh supply was **$13.4M,** with **$11.1M** distributed into retail and **$2.2M** into food service.

Source. AUSVEG



Supporting Aussie producers.

Last year, the Coles Nurture Fund provided grants to three organic producers which are implementing plans to improve sustainability and grow Australia's organic fresh produce industry.

The projects will help meet growing demand for organic produce from Coles' customers and improve shelf life.

Victorian business Peninsula Fresh Organics was awarded a $300,000 grant to transform its irrigation infrastructure to help save 60 million litres of water per year and prevent run off of nutrients into local waterways.

Coles has a wide range of certified organic produce and is proud to support our organic fruit & veg growers. We're always on the lookout for organic fruit & veg growers, big or small, to delight our customers.

For enquiries, please contact our Category Team at **organicfreshproduce@coles.com.au**

Photo: Wayne Shields and his family at Peninsula Fresh Organics.

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Fruit Logistica
a must-see event for industry

One of the biggest international horticulture events, Fruit Logistica held in February, provides insight and opportunity for all players in the horticulture supply chain.

Held annually in Berlin, Germany, Fruit Logistica covers the breadth of the horticultural industry for both fruit and vegetables. The three-day event drew more than 2,600 exhibitors and over 63,000 visitors from around the world. In 27 halls the focus was on the latest trends and innovations in the global fresh fruit trade.

Fresh produce was presented based on its region of origin, while machinery and technology, greenhouse technology and cultivation, and Logistics had their own halls.

Many of the exhibitors have a global reach, Syngenta is one.

Marketing Operations Lead, Rachel Webb, based with Syngenta Vegetable Seeds in Australia, took the opportunity to join with global colleagues on the Syngenta trade stand.

Being a part of a world leader in agricultural innovation, Rachel said it was pleasing to see the sheer scale of the event, and how other innovators across the supply chain are helping bring value to the horticulture industry. "Everyone along the way from seeds, organic fertilisers, bio stimulants, through to packaging and labels, export traders, mechanisation was there," said Rachel.

"For global companies like Syngenta it is important event to attend, so that customers can not only discover what we deliver, but to appreciate how important innovators are across the supply chain.

"For context, Syngenta had two booths – our main product stand and our innovation award booth, which were at opposite ends of the venue. It can take 25 minutes to walk from one to the other. As a visitor you would need to know what you wanted to see – it would be a big task to see all of it."

On display, Syngenta presented innovations in fruit and vegetables – melons, tomatoes with resistance to Tomato Brown Rugose Fruit Virus (ToBRFV) and two new lettuce varieties – SolidRib and Krispice.

Above. Rachel Webb, Marketing Operations Lead, Syngenta at Fruit Logistica, Germany.
Below. Syngenta at Fruit Logistica, Germany.

The diversity of visitors was pleasing. Rachel, in her role with the cucurbits section of the business, rubbing shoulders with delegates were from all over Europe, the Middle East and Asia, and even representatives from Australian companies such as E.E Muir & Sons, and Perfection Fresh.

Innovation in fruit and vegetables

A feature of Fruit Logistica is the Innovation awards.

Each year companies can submit projects for nomination in the awards, which recognise outstanding innovations in the entire fruit and vegetable supply chain from production to the point of sale.

Nominations for 2023 included a new range of vegetable dips, vertical farming systems, optical grading for fruit, lighting systems for greenhouses, packaging systems, snack capsicums and Syngenta's entry, IDEAL Melons.

The winner was Tatayoyo for their tropical flavoured snacking peppers presented in catchy packaging.

Taking out Silver, was Syngenta's IDEAL Melons. These long shelf life melons have been developed to not only change colour as the fruit ripens, to indicate when it is ready for harvest,

but also to retain the taste, texture and aroma consumers are accustomed to from a traditional melon. This helps reduce harvesting costs and achieve a long shelf.

"The Innovation Award is open to anyone across the fruit and vegetable supply chain to submit a project. This year we submitted IDEAL Melons. This is designed to give growers a truer indication of when the cantaloup can be harvested, but also gives retailers and consumers a true indication when to eat.

"It has the taste and aroma that melons had years ago, that have decreased in recent years. The long shelf life is great for growers in that they can pick 2-3 times per season instead of more than 10.

"The skin goes to a pale colour and loses the green tinge with ripeness. It has taken 5-7 years to development. We now have consistency, improved harvest, taste and aroma in a long shelf life melon to give an improved eating experience."

Introducing Toro Tempus® Ag – a new wireless irrigation solution.

No Wires. No Waste. No Effort.

Toro Australia is excited to announce the launch of the Tempus® Ag irrigation control system.

Traditional wired irrigation is expensive, complex and offers very basic control. Toro Tempus® Ag is a new wireless, affordable and battery-operated centralized solution to manage your irrigation needs.

Tempus® Ag allows users to control valves, pumps, sensors and more to give detailed feedback of ground and weather conditions and allows total irrigation automation. Users can then remotely control their system via smartphone, tablet or PC.

Hamish Lloyd, Irrigation Product Manager at Toro Australia explains how Tempus® Ag works: *"This system uses LoRa radio technology to allow gateways to communicate with modules in the field. The gateways are a crucial part of every Tempus® Ag system. They work by creating a LoRa 'bubble', where Tempus® Ag modules such as controllers, master valves and multi sensors can be linked to the gateway, up to 800m away. More gateways can be added to cover an almost limitless areas. The gateways really are the brains of the Tempus Ag family and are available in both Wi-Fi and 4G versions."*

"Using an intuitive App or Desktop platform, users can manage their system remotely. The platform allows you to have instant access to every controller, valve and sensor, so scheduling, monitoring and control is easier than ever. Users are alerted immediately if any issues occur anywhere in the system through push notifications on their device", he adds.

As all modules are battery powered, there is no need for wiring and the system is easy to install. A complete range of sensors are available, so it is easy to monitor weather, soil or system conditions. All field modules are powered by a 9V battery and with an easy to unscrew cap, the single 9V battery can quickly be replaced, making maintenance of your system a simple job.

If you are looking for more information on this new groundbreaking system, visit ***www.toro.com.au***

Secret world of Nematodes

Nematodes are the most numerous animals on Earth. The vast majority are beneficial, but a few create headaches for vegetable growers. Dr Graham Stirling talks us through a battle plan that will keep the bad ones under control and protect the beneficials.

Described as micro-worms, nematodes live in the soil as part of a finely balanced ecosystem. Most do not harm plants, instead they feed on bacteria, fungi, and other soil organisms, and in the process make nutrients available to plants. Some also prey on plant pests. Thus, the free-living nematode community plays an important role in keeping plants healthy.

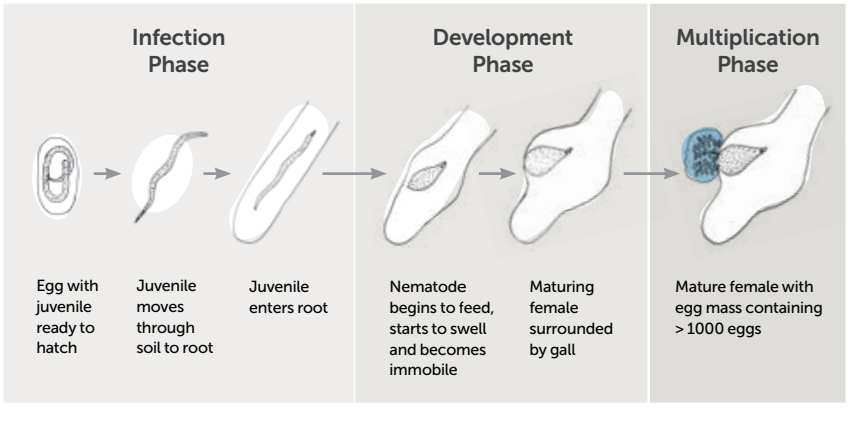
Some nematodes are plant pathogens, but Dr Graham Stirling, who has more than 50 years' experience as a nematologist and soil biologist, says that root-knot nematodes and the cyst nematodes are the most serious pests of vegetable crops.

Root-knot nematode *(Meloidogyne)*

Root-knot nematodes belong to the genus *Meloidogyne*. Even though there are more than 100 species, only a few affect vegetable production. The warm climate species (*M. javanica, M. incognita* and *M. arenaria*) are found in all Australian states, but tend to occur in the subtropics and tropics, coastal NSW, inland irrigation areas of NSW, Victoria and South Australia, and Western Australia. They prefer temperatures between 15-32°C and reproduce at temperatures above 15°C. Cool climate species (*M. hapla* and *M. fallax*) prefer lower temperatures between 15-25 °C and are mainly found in cooler regions such as Tasmania and southern coastal areas of Victoria and South Australia.

Root knot nematodes thrive in sandy and sandy loam soils, but also cause heavy losses in well-structured clay loam soils of volcanic origin.

ROOT-KNOT NEMATODE LIFE CYCLE



The life cycle of root-knot nematode begins when a second-stage juvenile hatches from an egg, moves into the soil, migrates in water films that surround soil particles, and searches for a host plant. Once a suitable root is found, the juvenile invades the root tip, establishes a permanent feeding site, and develops into an adult inside the plant tissue. The plant responds by forming a gall or swollen region in which the juveniles and developing adults are embedded. The females are globose, or round, and each produces 500–1000 eggs which are deposited outside the gall in a gelatinous matrix known as an egg mass.

Cyst nematodes *(Heterodera and Globodera)*

Cyst nematodes differ from root-knot nematodes in that the eggs are retained within the body of the female. The female's body then hardens to become a thick-walled cyst, a protective structure that helps the eggs survive adverse conditions. Thus, if a host plant is not present, the eggs can survive for several years in soil and plant material. Potato cyst nematode (*Globodera rostochiensis*) is the most important species in Australia. It only occurs in Victoria, and strict biosecurity measures introduced about 10 years ago have successfully prevented it spreading to other potato growing areas.

Above. Dr Graham Stirling.

A recent detection: Guava root-knot nematode (GRKN)

More than 100 species of root-knot nematode occur worldwide but the guava root-knot nematode *(M. enterolobii)* is considered one of the most damaging species. It is found in north, south and central America, Africa, and Asia and was given its common name because of the damage it caused to guava fruit trees in South America. GRKN causes severe damage to many crops in tropical and subtropical regions and was recently reported for the first time in Australia. It was found on four properties in the Northern Territory in October 2022, and at two locations in Queensland in February 2023.

Dr Stirling has two major concerns about GRKN. "First, it is far more damaging than other root knot nematodes. Most root-knot species cause yield losses of 20-30% but GRKN sometimes causes outright crop failures. Second, GRKN attacks plants that have been bred for resistance to various species of root-knot nematode. For example, cultivars of sweetpotato, tomato, potato, and capsicum resistant to other types of root knot nematodes are available, but they are not resistant to GRKN. Thus, it is vital that growers establish biosecurity procedures to prevent GRKN being introduced to their farm, and that long-term breeding programs are established to develop vegetable cultivars resistant and tolerant to this species.

Severe galling caused by guava root-knot nematode.

Integrated Nematode Management

For the past 50 years, vegetable growers have largely controlled nematodes with soil fumigants and nematicides. However, many of these chemicals have been removed from the market, and so other tactics are now needed to manage nematodes.

"Most growers will be familiar with integrated pest management (IPM), in which multiple tactics are used to keep above-ground pests under control. Similar approaches must now be used against below-ground pests such as root-knot nematode," says Dr. Stirling.

"Many different tactics are available, but the following are commonly used: nematode-resistant cover crops; cultivars with resistance to a particular *Meloidogyne* species; biofumigation; organic amendments; mulching; removal of susceptible volunteers and weeds; biological stimulants; and improved crop husbandry."

"The first step in developing an integrated nematode management program is to sample your farm and determine which nematodes you have, and where they are distributed," says Dr Stirling. "A visual inspection of root systems after harvest is useful, but soil samples must also be collected and forwarded to a nematology laboratory."

"The next step is to include cover crops or rotation crops in the farming system that will reduce populations of the key nematode pest. Forage sorghum is a particularly useful rotation crop in warm climates, as most cultivars have some resistance to all widely distributed *Meloidogyne* species. It also produces large amounts of biomass and competes well with weeds. Experience over many years has shown that forage sorghum consistently reduces nematode populations to levels that will cause little damage to most vegetable crops (except those that have a very low damage threshold such as carrot, potato, and sweet potato). However, weed hosts and volunteer vegetable plants growing under the forage sorghum must be removed, as they carry over the nematode to the next crop."

Improving soil health and enhancing nematode suppressive services

The main reason plant-parasitic nematodes reach high population densities on vegetable crops is that the soils used for vegetable production have been exploited for many years and are biologically degraded. Excessive tillage, bare fallowing, and soil fumigation have decimated the soil biology, and so the natural enemies that should be keeping nematode pests under control are no longer operating effectively.

Dr Stirling argues that "because carbon is the energy source that sustains the soil biological community, the most appropriate response is to increase carbon inputs, minimise carbon losses, and reduce management impacts on soil organisms. Including nematode-resistant rotation or cover crops in the vegetable production system is a useful first step, as it will increase soil carbon levels. However, growers then need to improve the situation using tactics such as reduced tillage, retention of crop residues on the soil surface, and amending soil with composts and other organic materials."

Top. Golden-coloured cysts of potato cyst nematode *(Globodera rostochiensis)* on the roots of potato.

Soil fumigation and bare fallowing reduce populations of plant-parasitic nematodes but have a devastating effect on the soil biological community.

"What we want to see is the return of the beneficial organisms that have disappeared from our agricultural soils. From a nematode control perspective, this means the fungi that produce trapping devices to capture nematodes, and the predatory nematodes and mites that prey on nematodes."

"From a crop production perspective, we also want to increase the numbers of bacterial and fungal-feeding nematodes in the soil, as they improve soil fertility by mineralising the nutrients required by plants."

Some of the beneficial soil organisms that have been lost from many vegetable-growing soils: nematode-trapping fungi, predatory mites, nematodes that consume other nematodes, and bacterial-feeding nematodes that make nutrients available to plants.

Improving soil health and managing nematodes in a sustainable manner

Growers wishing to take a pathway that will lead to a more sustainable farming enterprise with healthier soils, fewer losses from nematode pests, and fewer detrimental effects on the environment need to recognise that they are embarking on a long journey. It will take years to gradually refine the current farming system but the key steps are listed below.

- Establish biosecurity procedures to prevent incursions of nematode pests that are not present on your farm;
- Commence a nematode monitoring program;
- Introduce nematode-resistant cover and rotation crops into the production system;
- Avoid practices that destroy beneficial soil organisms (e.g. excessive tillage, bare fallowing, and soil fumigation);
- Experiment with tactics that increase soil carbon levels and enhance the soil biological community.

FURTHER INFORMATION

This is a brief coverage of a huge topic. More detailed information can be obtained in Fact sheets on the Australasian Plant Pathology Society website at **appsnet.org/nematodes.** AUSVEG pest and disease preparedness guide **ausveg.com.au/app/uploads/2021/12/Final-pdf-standard-pest-and-disease-preparedness_compressed.pdf.**

PREPAREDNESS

What can you do now to protect your crop?

Implement best practice farm hygiene procedures on your property.

Vehicles and Equipment

- Come clean, go clean.
- Vehicles and equipment often collect soil and plant material in grilles, tyre treads and on wheel rims.

Staff and farm visitors

- Clean footwear, vehicles, equipment and plant material before moving between sites.
- If it can move, it can carry pests and diseases. Monitor who and what comes on to your property.

Waste and weeds

- Clean up and dispose of old crops appropriately as this can be a source of infection.
- Manage weeds. Many weed species are hosts of GRKN and can increase the risk of spread to your crop.

Understanding how your Levy works

It is Hort Innovation's job to work with industry to invest the vegetable, potato and onion R&D levies and Australian Government contributions into initiatives to help growers be as productive and profitable as possible, through the Hort Innovation Levy Funds.

The R&D Levy is payable on potatoes, vegetables and onions that are produced in Australia. 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.

How are levy investment decisions made?

Investments specific to Hort Innovation 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 Strategic Investment Plan?

The SIP is the roadmap that helps guide Hort Innovation's oversight and management of investment programs.

The SIP lays the foundation for decision making in levy investments and represents the balanced interest of the industry. The most important function of the SIP is to make sure that levy investment decisions align with industry priorities. In 2021, SIPs were refreshed to reflect the current needs of the respective industries. The refresh involved close consultation with growers, industry participants and the wider research community in each relevant sector.

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

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

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

Where a previous SIP is available, a performance report has been developed to demonstrate how investments delivered generated impact for growers.

The reports provide 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.**

R&D LEVY RATES

Potatoes

48cents PER TONNE

Unprocessed Potatoes

Vegetables

0.485%

of the gross sale value at the first point of sale

Onions R&D AT

$2.90 PER TONNE

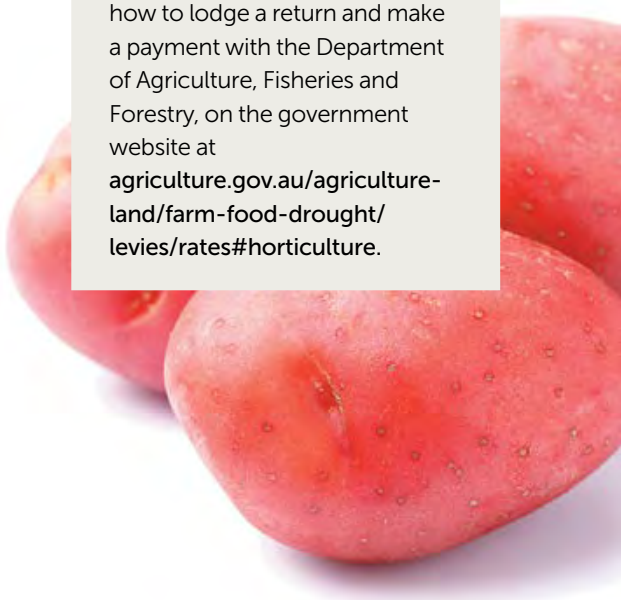
marketing at $1.00 per tonne

Hort Innovation Strategic levy investment | POTATO – FRESH FUND

Hort Innovation Strategic levy investment | VEGETABLE FUND

Hort Innovation Strategic levy investment | ONION FUND

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#horticulture.**



	OUTCOME 1	OUTCOME 2	OUTCOME 3	OUTCOME 4
	Extension and capability	**Industry supply, productivity & sustainability**	**Demand Creation**	**Business Insights**
	To manage knowledge, relationships, systems and processes required to communicate effectively with internal and external stakeholders	To accelerate the application of production practices that optimise returns and reduce risk to growers	To maintain and strengthen consumer demand as the foundation for sustainable expansion of production and consumption in domestic and international markets	To deliver data and insights that is foundational to achieving success in the other three outcome areas of demand creation – supply, productivity and sustainability as well as extension and capability
POTATOES 	A change in knowledge, attitude, skills, aspiration (KASA) and practice for grower/industry profitability and sustainability through use of best practice and innovation. • Growers, value chain, media and governments being well informed on industry initiatives and achievements as a vital part of regional communities and networks. • Increased on-farm use of R&D outputs which will build a more resilient industry in addition to improved networks and cross-industry collaboration. • Proactive strategic and evidence-based decision making in businesses and for industry on investment, priorities and risk management.	Accelerating widespread use of existing and new R&D findings and proven management practices that will help growers to reduce the costs and impacts associated with pests, weeds and diseases. • Advances in productivity and biosecurity through a proactive and prepared industry. • New knowledge and understanding of sustainable production systems for Australian potato growers including precision inputs, management of salinity, enhanced soil health and improved water and nutrient use efficiency. • Proactively monitoring potential crop protection regulatory threats and having access to a broader suite of effective, socially acceptable and environmentally sound crop protection solutions.	Support product positioning with consistent quality, evidence of beneficial product nutrition attributes and responsible industry production practices. • Identify and prioritise export and domestic market niches where there is demand and growth potential for competitive supply of quality Australian fresh potatoes.	Achieving the outcome will involve reliable baseline data and analysis to provide insights and understand current and emerging trends. Key investments will support the provision of consumer knowledge and tracking, trade data and independent reviews to enable better decision-making process at industry level and individual businesses.
VEGETABLES 	A change in knowledge, attitude, skill, aspiration and practice for grower/industry profitability and sustainability through use of best practice and innovation • Maintaining and improving industry cohesiveness, with the majority of businesses and the industry supply chain actively engaged in implementation of this strategy; • Growers, supply chain, media and governments being well-informed on industry initiatives and achievements as a vital part of regional communities and networks; • Increased on-farm use of R&D outcomes that will build a stronger, more resilient industry – in addition to improved networks and cross-industry collaboration; • Proactive strategic and evidence-based decision making in businesses and for industry on investment, priorities and risk management.	New knowledge and understanding of sustainable production systems for Australian vegetable growers including enhanced soil health, improved water and nutrient use efficiency, precision inputs and labour use efficiency; • Responding to environ-mental change and climate variability; • Advances in biosecurity and the management of pests and diseases through a proactive and prepared industry; • Optimising the supply chain to improve quality and traceability, as well as reduce wastage and improve sustainability of vegetable production systems; • Improvements in protected cropping and intensive production technologies; • Proactively monitoring potential crop protection regulatory threats and having access to a broader suite of effective, socially acceptable and environmentally sound crop protection solution.	Grow the value of Australian vegetable exports by supporting industry to market premium products, targeting higher value market segments; • Articulate the value proposition for Australian vegetables and pursue more targeted market and channel growth opportunities; • Develop strong relationships across the supply chain with a shared goal to grow the category; • Enhance opportunities for value-adding and packaging; • Improve stakeholder engagement with the foodservice sector and the education of health benefits to consumers.	Achieving the outcome will involve reliable baseline data and analysis to provide insights and understanding of current and emerging trends. Key investments will support the provision of consumer knowledge and tracking, access to trade data, production statistics, forecasting and independent reviews to enable better decision making process at industry level and individual businesses.

	OUTCOME 1	OUTCOME 2	OUTCOME 3	OUTCOME 4
	Extension and capability	**Industry supply, productivity & sustainability**	**Demand Creation**	**Business Insights**
ONIONS 	Increasing knowledge, attitude, skills, aspiration (KASA) and practice for grower and industry profitability and sustainability through use of best practices and innovation • Maintaining and improving industry cohesiveness, with most businesses and the industry supply chain actively engaged • Growers, value chain, media and governments being well informed on industry initiatives and achievements as a vital part of regional communities and networks • Increased on-farm use of R&D outcomes which will build a stronger, more resilient industry, in addition to improved networks and cross-industry collaboration • Proactive strategic and evidence-based decision-making in businesses and for industry on investment, priorities and risk management.	Developing fit-for-purpose sustainable pest and disease management strategies • Biosecurity awareness and preparedness • Continuous improvement in soil health • Improved input management that reduces costs while maintaining yield and quality • Proactively monitoring potential crop protection regulatory threats and having access to a broader suite of effective, socially acceptable and environmentally sound crop protection solutions.	Broaden consumer awareness so that onions are more top of mind and purchased more frequently • Develop strong relationships across the supply chain with a shared goal to grow the category • Identify and prioritise domestic and international market niches (market segmentation) where there is demand and growth potential for competitive supply of quality Australian onions.	Achieving the outcome will involve reliable baseline data and analysis to provide insights and understand current and emerging trends. Key investments will support the provision of consumer knowledge and tracking, trade data, production statistics, and forecasting, benchmarking and independent reviews to enable better decision-making process at industry level and individual businesses.

LEVY-FUNDED COMMUNICATIONS PROGRAMS

Australian potato industry communication and extension project (PT20000); *PotatoLink*

National vegetable industry communications program (VG22000)

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

What is the Annual Investment Plan?

While a SIP provides an oversight of investment over the next five years, the 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 industry is investing against their SIP outcomes
- Details on current investments across R&D.

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 industry Strategic Investment Advisory Panel (SIAP).

VEGETABLES
POTATOES
ONIONS

Hort Innovation develops draft investment recommendations based on investment ideas that are aligned to the 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 SIAP consists of supply-chain stakeholders from the relevant industries, 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 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 and at the end of each investment, a final report is produced that is made available to industry on what the project has achieved.

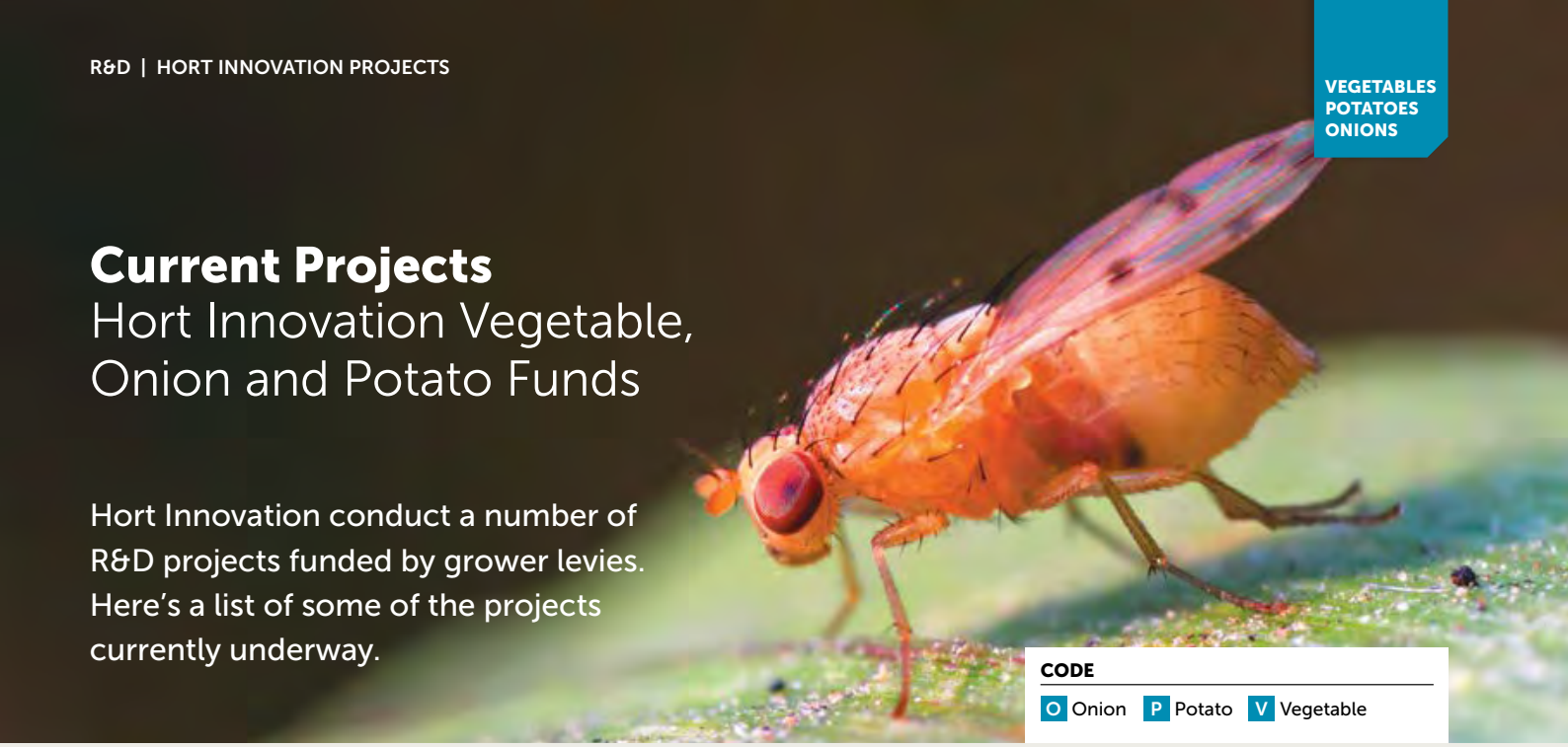
How to keep track of investments

Investments in the Hort Innovation Fresh Potato; Onion Fund and Vegetable Fund are detailed in the Your Investments page 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 programs, also provides regular information on levy-funded activity.

VEGETABLES
POTATOES
ONIONS

Current Projects
Hort Innovation Vegetable, Onion and Potato Funds



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

CODE
O Onion P Potato V Vegetable

O 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 is a highly destructive fungal disease of commercial onion crops. This 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
- 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 later on in the project to demonstrate the integrated onion white rot management program developed.

O 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, however 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.

OPV Industry minor use program
Onions: VN16000, Potatoes: PT16005; Vegetables VG16020

KEY RESEARCH PROVIDER: HORT INNOVATION

What's it all about?

Through this project, levy funds and Australian Government contributions are used to submit renewals and applications for minor use permits for the onion industry as required. These submissions are prepared and submitted to the Australian Pesticides and Veterinary Medicines Authority (APVMA).

For more information on onion minor use permits, and to see a list of all permits for the onion industry, view at **horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more.** . The permit list is updated on a quarterly basis.

For more information on minor use permits, and to see a list of all permits for the fresh and processing potato industries at **horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more.** The permit list is updated on a quarterly basis.

To download the list of current minor use permits for the vegetable industry (current as of 23 September 2022), view at **horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/minor-use-permits-for-the-vegetable-industry/.**

OPV Management strategy for serpentine leafminer, Liriomyza huidobrensis MT20005

KEY RESEARCH PROVIDER: 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.

OV 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 honeybees. The program activities include upgrading sentinel hive arrays, strengthening relationships with surveillance operators and more. 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.

OV 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. This cross-industry collaboration is a first for the horticulture sector and will leverage the progress made under the ***Vegetable industry export program*** (VG16061).

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

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.

Current Projects
Hort Innovation Vegetable, Onion and Potato Funds

CODE
O Onion P Potato V Vegetable

P Mechanisms and manipulation of resistance to powdery scab in potato roots PT17003

KEY RESEARCH PROVIDER:
UNIVERSITY OF TASMANIA

What's it all about?

While the potato tuber blemishes that are caused by powdery scab are a concern for the potato industry, the pathogen's effect on plant roots can't be underestimated, either. Root infection with powdery scab disrupts root function – meaning more irrigation, fertiliser and fungicides are needed to compensate for poor root development – and leads to diminishing yields.

In this project, researchers are investigating root resistance to powdery scab infection. This involves looking at how the pathogen infects roots and causes disease, what allows for resistance in some potato varieties, and whether resistance mechanisms may be boosted or transferred.

While caused by the same pathogen, the powdery scab root and tuber infection processes are separate, and different plant resistance processes operate against each. This means that varieties that show resistance to tuber disease don't necessarily show resistance to root infection. However, when root infection is decreased, disease across the whole plant is slowed, meaning tuber disease is reduced as well.

V Stingless bees as effective managed pollinators for Australian horticulture PH16000

KEY RESEARCH PROVIDER:
UNIVERSITY OF WESTERN SYDNEY

What's it all about?

This is a project in the Hort Frontiers Pollination Fund. It is examining Australia's native stingless bees for their suitability as alternative pollinators to honey bees in horticulture crops.

While honey bees are excellent pollinators in many situations, their availability as both managed and wild pollinators faces various threats. This includes Varroa mite, which could lead to the collapse of wild honey bee populations if it establishes in Australia. The industry therefore needs to consider alternative pollinators, investigate their performance in different crops, and find better ways to propagate and deploy them.

The leading alternative pollinator candidates are stingless bees, which live in large colonies like honey bees, pollinate a wide variety of plants, and can be kept in managed hives. There are indeed a growing number of stingless beekeepers, and stingless bees are already used in macadamia farms. Managed stingless bees may therefore have wide but underdeveloped potential for crop pollination. Stingless bees (particularly *Tetragonula* species) are also used in crop pollination in several Asian countries, including in India and Thailand, so there is good scope to exchange knowledge and expertise on bee biology, husbandry and deployment in horticulture.

In looking at stingless bees, this investment is conducting studies across range of fruit and vegetable crops – testing first if the bees visit the flowers and transport the crop pollen. Where they do, the effectiveness of stingless bee pollination and its impact on crop set, yield and quality is set to be examined. For the most promising crop/bee combinations, the project team will then conduct studies of the potential of stingless bees to be effective managed pollinators in glasshouse conditions.

Trial hives for the project are established in the National Vegetable Protected Cropping Centre at Western Sydney University, which is run under this **Hort Innovation Vegetable Fund project.**

Specific crops involved in field work include:

- Almond
- Avocado
- Lychee
- Macadamia
- Mango
- Vegetable crops in both field and glasshouse conditions.

Above. *Tetragonula* Stingless bee.

V Area wide management of vegetable diseases: viruses and bacteria VG16086

KEY RESEARCH PROVIDER: THE QUEENSLAND DEPARTMENT OF AGRICULTURE AND FISHERIES

What's it all about?

Beginning in 2018, this investment is responsible for developing an 'area wide management' (AWM) strategy to address high-priority viral and bacterial diseases affecting vegetable crops.

This strategy will include viral diseases transmitted by thrips, aphid and white-fly pests, and phytoplasmas transmitted by leafhoppers, and will involve pest management approaches.

The project will also be keeping track of surveillance of tomato potato psyllid (TPP), through linkages with other industry TPP work.

The second major focus of the project is on managing foliar bacterial diseases.

Work will also involve developing rapid diagnostic test for key bacterial and viral pathogens.

V Internal fruit rot of capsicum VG17012

KEY RESEARCH PROVIDER: APPLIED HORTICULTURAL RESEARCH

What's it all about?

Beginning in late 2019, this investment is investigating the causes behind internal fruit rot in capsicums and developing management techniques for growers to both prevent infection and minimise the risk of sending damaged fruit to market. Ultimately, this project aims to deliver capsicum growers with an integrated disease management strategy to control internal rot, as well as developing a predictive model that will help growers identify crops at risk and diagnose infection early.

Internal fruit rot can be a significant issue for capsicum growers, as although infection occurs during flowering, the disease can remain latent in the fruit until it starts to ripen. Once capsicums are harvested, development can accelerate, with fungal growth spreading into the seed and the edible flesh. As the disease cannot be detected externally, infected fruit can be sent to market resulting in waste and loss of consumer confidence. Several different fungi can cause the disease, including species of *Fusarium* and *Alternaria*, however it is unclear which are the primary organisms that are responsible for this disease in Australia.

V Co-developing and extending integrated Spodoptera frugiperda (fall armyworm) management systems for the Australian vegetable industry VG20003

KEY RESEARCH PROVIDER: QUEENSLAND DEPARTMENT OF AGRICULTURE AND FISHERIES

What's it all about?

This project will support the rapid co-development of an integrated fall armyworm management strategy that will deliver better outcomes for those regions currently affected by fall armyworm as well as for those regions that may experience an incursion in the future.

This investment seeks to provide the support needed by the Bowen, Bundaberg, Burdekin, Gumlu and Lockyer Valley vegetable industries, their advisory networks, support industries and researchers to capture, develop and use their experience of managing FAW on-farm in 20/21 and 21/22 seasons.

Through this investment, the vegetable industry will work closely with researchers to identify management gaps and trial a range of strategies on-farm. Outcomes from these trials will be shared with the Australian vegetable industry and will inform future fall armyworm research investments. This investment will work closely with project **Identifying potential parasitoids of the fall armyworm, Spodoptera frugiperda, and the risk to Australian horticulture** (MT19015).

Above L-R. Aphids. Fall armyworm.

Current Projects
Hort Innovation Vegetable, Onion and Potato Funds

OV VegNET 3.0 VG21000

KEY RESEARCH PROVIDER: AUSVEG

What's it all about?

This investment is tasked with keeping Australian vegetable growers informed about current R&D activities, results and resources – supporting the adoption of industry best practice and bolstering vegetable productivity and profitability in key growing areas across the country.

The program is nationally coordinated by AUSVEG and delivered 'on-the ground' by regional development officers (RDOs) in key vegetable-growing regions who are responsible for developing and executing regional extension plans. This includes identifying each region's key priority issues and key regional resources and links - a critical step in ensuring growers receive assistance and information that meets their needs and will help them grow better crops and operate more efficient and profitable businesses.

V Vegetable industry communications program VG22000

KEY RESEARCH PROVIDER: AUSVEG

What's it all about?

This investment is responsible for effectively communicating the findings of levy-funded R&D and other relevant industry news, issues and data to vegetable growers and other industry stakeholders. The goal is to increase awareness of project outcomes and inspire on-farm adoption of new learnings and technologies.

Several regular communication channels continue to be produced and maintained by this project, including but not limited to:

- Weekly e-newsletter Weekly Update, sign up at **ausveg.com.au/news-media/weekly-update**
- Quarterly *Vegetables Australia* magazine, with current and back issues available at **ausveg.com.au/news-media/publications**
- Social media updates in AUSVEG channels
- Media relations for R&D-related news
- Videos and podcasts
- New online hub as a 'one-stop-shop' for vegetable growers to access information on research outcomes, industry news and events, and VegNET-related activities
- Quarterly R&D case study packages that will be used in articles, videos, podcasts, social media, and media releases

This investment will also translate key R&D articles into languages other than English, including Vietnamese, Khmer, Mandarin, and Arabic, to engage a diverse range of vegetable-growing communities.

Premium Herb brand
Butler Gourmet Pantry going from strength to strength

In 2018, a Victorian growing operation launched its own herb brand that now consists of 20 different varieties. Based in Heatherton in Melbourne's south-east, Butler Market Gardens is experiencing high demand for its gourmet herbs. General Manager – Sales and Marketing Andrew Smith reports on the factors driving this demand.

After launching 'Butler Gourmet Pantry', Butler Market Gardens (Aust) Pty Ltd® is reporting continued growth and expansion of its sales and customer base, despite challenging conditions and outside factors over the last few years.

The growing operation attributes the success to a number of key focus points.

1. Product quality and sustainability focus

In 2019, Butler Market Gardens invested into a three-hectare heated protected cropping facility. The facility is located in Lyndhurst, less than 50 kilometres from Melbourne's CBD.

Over 3 million units of herbs are grown annually from this facility. Production is all-year round, ensuring consistency of supply using a combination of hydroponics and drip irrigated pots.

The growing techniques and environment ensure the best quality is achieved, and freshness is ensured through the product being picked, packed, and distributed to customers within 24 hours of orders being placed.

In keeping with the business' sustainability focus, the facility features a 2.95-megawatt biomass boiler. It operates by burning renewable organic materials such as wood chips, shavings and off-cuts to produce heat – materials that would otherwise go to waste. The heat is transferred into the protected cropping environment to assist

plant growth when the outside temperature falls below optimum growing conditions. The result is the replacement of natural gas with a more environmentally friendly alternative, and a reduced heating cost of up to 60%.

The business is now exploring the benefits of maximising it's yields via different growing climates and locations which will ensure a wider supply capability.

2. Consolidation and investment into Melbourne market operation

The main distribution point for the range is the Butler Market Gardens grower stands, located in the Melbourne Market, Epping. The team is led by the business' Market Manager, Frank Attana who is an experienced herb and leafy vegetable wholesaler. The business continues to invest into the team and its operation.

3. Expansion interstate

The range can now be found in premium independent retailers in NSW. This is likely to increase as production capability expands.

4. An increase in marketing and social media activity

Butler Market Gardens has recognised driving the success of the herb category involves not only marketing to its customers, but also to the consumer. It has increased recipe/serving suggestions via various social media outlets and there are further plans being made in this space.

The range consists of 20 different herb varieties that are packaged and barcoded in either smaller serve punnets or larger sleeves. Specially made trays can be provided to retailers to display punnets neatly. Varieties include basil, chives, coriander, dill, mint, oregano, continental parsley, rosemary, sage, thyme, curry leaves, lime leaves, lemon grass, Thai basil, Vietnamese mint, lemon thyme, tarragon, marjoram, curly parsley and watercress.

Butler Market Gardens will continue to explore local sales avenues before considering export as the company pursues further production expansion.

FIND OUT MORE

Please visit **butlergourmetpantry.com.au**

Follow Butler Gourmet Pantry via Instagram: **@freshest_herbs** or on Facebook by searching 'Butler Gourmet Pantry.

Sales inquiries can be made to Market Manager (Melbourne) Frank Attana on 0402 562 052 or at **market@butlermarketgardens.com.au** or Sales Manager Andrew Walters 0448 646 750 or at **awalters@butlermarketgardens.com.au**

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

Unpacking the Vegetable Industry

The AUSVEG Unpacking the Vegetable Industry video series looks to celebrate what the industry is really like and to tell our story and answer some of the questions the public has for the industry.

Everyday households head out to supermarkets, independent grocers, and farmers markets to buy their vegetables.

Whilst vegetables are fundamental to our lives, what happens beyond the supermarket shelves remains a mystery. Very few understand or are exposed to the vegetable supply chain, or the effort and processes required to deliver produce to thousands of Australian homes.

Too often consumers and stakeholders are only presented through the news media with negative pictures of the industry, giving the public only one small picture of horticulture.

AUSVEG, in collaboration with The Agriculture Collective, has launched a new video series titled *Unpacking the Vegetable Industry*. AUSVEG has travelled around Australia and interviewed people working in the vegetable industry to understand their experiences and perspectives

The series features interviews with businesses, employers, and employees on horticulture farms around Australia to give potential workers and the broader public more information around what working on a vegetable farm is really like, and to break down some of the misconceptions on the career opportunities in horticulture.

These videos, which follow from its *Grow Your Career in Horticulture* series portray a new image of horticulture by highlighting the progressive, inclusive, and rewarding industry it truly is.

VIDEO 1

How important is the horticulture industry?

In a frank discussion with managing director of Velisha Farms, Catherine Velisha talks about the importance of the vegetable industry for the Australian Community.

"Fruit and vegetables are a primal part of our lives, and part of a sustainable future," says Catherine. "As growers we are the future of food and need to be the stewards and talk to people and start the conversation."

VIDEO 2

Understanding the vegetable supply chain

Moving fruit and vegetables from the farm to the consumer needs a lot of planning according to Trevor Crook, Mulgowie Farming Company, from production to ensure year round supply. Different farms, different seasons, different soils are overseen by agronomists. Once the vegetables are in production it must pass quality control, before it is taken to market. The health and safety of that produce is looked after all the way through the supply chain.

VIDEO 3

What are the biggest challenges?

This episode chats with previous AUSVEG Deputy Chair and Managing Director of Costal Hydroponics Belinda Frentz to unpack the major challenges currently facing the vegetable industry. Since Covid, pricing is one of the biggest challenges, along with labour and skills giving a significant impact on farm.

VIDEO 4

Food safety and compliance

"Food safety is what Australia is known for," says Pennie Patane, "quality assurance is huge." The skills needed to provide food safety and compliance are transferrable between many industries and is a huge part of horticulture and provides huge opportunities in the sector. This episode chats with AUSVEG Board Member Pennie Patane at her farm, Patane Produce, in WA about food safety and compliance.

VIDEO 5

What is a vertically integrated supply chain?

A vertically integrated supply chain takes in the whole range of operations to grow vegetables – from planting through to market. Patane Produce produces more than 27,000 tonnes a year of potatoes, onions, carrots and broccoli. Being vertically integrated gives the company full oversight of logistics, quality, marketing and sales of their branded products.

VIDEO 6

What impact has the pandemic had on cost of production?

Research and Development Manager, Peter Dobra at Loose Leaf Lettuce Company in WA, discusses the impacts of the pandemic on the cost of production. The cost of production refers to all the inputs that go into producing a product, including packaging, fertilisers, labour, chemicals, fuel, electricity. "We try to produce the best product we can for the consumer, at the best possible price."

Watch *Unpacking the Vegetable Industry* AUSVEG videos and learn more at
ausveg.com.au/unpacking-the-vegetable-industry

Chemical use on farm, but not the neighbour

The use of chemicals to control pests and weeds has increased with the move to lower tillage farming practices, but incorrect application can be a costly error for your farm, the environment and potentially neighbouring farms and land.

From a purely economic point of view, the incorrect use of chemicals on farm, whether it is not enough or too much can result in weeds in the crop, or damaging the very crop you are seeking to protect; or extended withholding periods for crops and livestock.

For the environment, chemical residue in the soil can cause longer term issues for future crops, leaching into waterways, and adverse results for aquatic and invertebrates, some of which may have been part of the onfarm integrated pest management plan.

How it is applied and when can play a significant role in chemical efficacy. With most chemicals applied using a spray technique – either by hand or with spraying equipment such as boom sprayers or tow-behind, chemicals have the potential to reach neighbouring properties as airborne particles.

Spray drift is defined as the 'movement of chemical dust or droplets through the air at the time of application or soon after, to a site other than the target area'.

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is responsible for ensuring that off-target pesticide spray drift does not harm human health, the environment or Australia's international trade.

Guidelines were developed by the APVMA in 2013 for application of chemicals using sprays, including labelling, which were updated in 2019 for implementation in late 2020 to cover improved applicator technology and greater scientific knowledge of how chemicals behave in solution. In January 2023, the APVMA released *Guidelines for applications to update spray drift instructions, update the spray drift risk assessment and recognise new drift reduction technology*, which is aimed at suppliers wishing to update or re-calculate buffer zones on product labels.

What to consider when spraying

Calibration

Knowing what volume, ground speed and range the spray system can achieve will assist with determining the quantity of chemical required per litre for a specified area. Using clean water, the number of hectares sprayed per hectare from a known volume tank will determine how much chemical is required based on the manufacturer's usage rate.

Weather

Herbicide performance can be affected by humidity, wind, temperature inversion, soil moisture, growth stage and density of the weeds, and droplet size. If the wind is too light or the spraying speed too high, the width of the spray will decrease. Conversely, strong winds or gusty conditions will increase the width, reducing the efficacy and potentially increase the risk of damage from spray drift.

Buffer Zones

A buffer zone is an area around a crop to protect sensitive areas in the event of spray drift. It can be a strip of unsprayed paddock, or a vegetation barrier such as a tree line. The extent of the barrier will be dependent on the chemical used, for example some Category 1 herbicides have a buffer zone of several kilometres. Sensitive areas are not confined to native vegetation or riparian, but also for neighbouring crops that may be quite susceptible to that category herbicide. The manufacturer's label will give the appropriate buffer zone recommendations.

Consider your neighbours

Checking with your neighbour for susceptible crops and sensitive areas will reduce the potential for conflict and damage from spray drift. A common courtesy to work with your neighbours, but in some instances it is required by law. Check with your state regulations on notifications of spraying.

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What is a temperature inversion?

A temperature inversion occurs when the air temperature increases with altitude – normally it gets colder. The height above the ground where the temperature stops increasing and starts to decrease is the top of the inversion layer.

During spraying, chemical droplet movement can be unpredictable with the landscape, surface breezes and where the inversion occurs.

Inversions are most likely to occur between sunset and two hours after sunrise, with mist and fog, heavy clouds through the day that dissipate at night, low wind speed or large temperature differences between day and night.

Pesticides and Bees

As a pollinator for many crops, bees play an integral role. However, bees in particular are susceptible to poisoning from spray drift.

There are several ways that bee poisoning can occur such as:

- when a chemical has been used on crops that are flowering, and foraging bees are subsequently exposed to contaminated foliage, nectar and/or pollen;
- when a chemical has been used on a crop that is not flowering, but other plants in the target area are flowering e.g., weeds in flower in a lucerne crop; weeds on the orchard floor;
- when a chemical is directly applied to bees that are present in or flying over the target area;
- when bees access water that contains pesticide residues, or
- when spray drift occurs and the chemical drifts onto the bees, hives or flowering plants.

FOR MORE INFORMATION
Visit spray drift by APVMA
apvma.gov.au/node/10796

Bees can also take contaminated pollen and/or nectar back to the hive and in turn cause the contamination and death of the honey bee colony.

- Check with your neighbours to see if they have hives;
- Look for foraging bees in the area you wish to spray;
- Spray to avoid drift;
- Use buffer zones;
- Choose a chemical that has less risk of bee poisoning.

Tips to minimise off-target spray drift

According to Agriculture Victoria, a combination of factors can contribute to spray drift – these tips will help to minimise the off-target spray drift:

- Always read and follow the product label directions, including any restrictions. Many labels now detail weather conditions, droplet size, equipment and spray drift restraints and mandatory buffer zones to help users manage drift.
- Before you start, check that the weather conditions are suitable for spraying (wind speeds between 3 to 15km per hour blowing away from sensitive crops and areas, Delta T between 2 and 8, no inversion layer present). If the weather is unstable or unpredictable, don't spray. Continue to monitor weather conditions while spraying and stop spraying if it turns unfavourable.
- Choose a chemical formulation that is less likely to drift off-target (use amine formulations of 2,4-D instead of high volatile ester formulations).
- Check for susceptible plants, animals and areas (streams, bee hives) close to the target area and put strategies in place to protect them from drift. Use a buffer zone or leave an unsprayed buffer next to a susceptible crop.
- Discuss your spray plans with neighbouring properties, particularly if you plan to spray near a sensitive crop or area. This provides them with the opportunity to implement protective measures on their property if needed and can help avoid complaints later.
- Ensure your equipment is set up and calibrated correctly.
- Use a nozzle or sprayer setting that produces the largest possible droplet size (coarsest spray quality) without compromising the efficacy of the chemical. Larger droplets are less likely to drift.

While the APVMA oversees the regulations for spray drift, state and territory governments are responsible for addressing incidents of off-target spray drift.

STATE CONTACTS

ACT	EPA	13 2281
NSW	Environment NSW	131 555
NT	NT WorkSafe	1800 064 567
QLD	Business Queensland - Reporting chemical spray drift	13 25 23
SA	PIRSA - Reporting chemical misuse	1300 799 684
TAS	Department of Natural Resources and Environment Spray drift and reporting incidents	03 6777 2133
VIC	Agriculture Victoria	136 186
WA	Department of Health - Safe use of pesticides	08 9222 4222

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Basal rot symptoms in onions.
Below. Michael Rettke,of SARDI in the field.

UPDATE

Understanding and managing fusarium basal rot in onions

The project, *Epidemiology and management of fusarium basal rot in onions* (VN20006) is well underway with researchers undertaking field trials and testing to understand the role of fusarium in basal rot and develop management strategies for this major disease for the onion industry in Australia.

The aim of the three year project is to develop an integrated pest and disease management strategy to reduce the impact of fusarium basal rot in onions. Infection can cause seedling losses in the field, but is more problematic late in the crop and during storage.

Fusarium is a soilborne fungus with many species, primarily existing as spores that can remain in the soil for a number of years. To date, the role of *Fusarium* species and their relationships in the Australian onion industry are not well understood.

Overseas, fusarium basal rot has been a problem for many years including in the USA and Netherlands, and also in shallot onions grown in Asia. It is now becoming more apparent in South Australia, and to a lesser extent in other hot climate production areas of Australia. In cooler climate production areas such as Tasmania, fusarium basal rot is less of a problem.

Project lead, Michael Rettke, of SARDI says that most researchers believe the pathogen to be a specific strain of *Fusarium oxysporum*, but there have been reports of other Fusarium species/strains causing basal rot of onions. Part of the project initial aims was to determine which Fusarium species is the primary cause of basal rot in Australia.

"We have undertaken a great deal of sampling of onions with basal rot symptoms and used DNA testing of infected tissue, as well as isolation of the pathogens and sequencing to determine which *Fusarium* species is the cause. *Fusarium oxysporum* f. sp. *cepae* has been confirmed as the main species associated with basal rot of onions in Australia. Through the testing capability developed we can now routinely test for and monitor levels of the main species causing fusarium basal rot in Australia," said Michael.

Infection can occur at any time during growth. The tests and trials conducted show that the basal plate normally becomes infected before the bulb scales. It then may take months for the bulb scales to become affected, bulb rot often revealing itself during storage. The infection of the basal plate at harvest is usually visibly obvious, however the tests that the SARDI researchers have developed can be used to detect the presence of the pathogen.

"The preliminary results also showed that it is slightly more complicated than we anticipated. High levels of another closely related strain of *Fusarium oxysporum* are sometimes present in the roots and basal plate of onions and may impact crop health and increase likelihood of basal rot caused by *Fusarium oxysporum* f. sp. *cepae* occurring. However, this other strain by itself does not usually seem capable of entering the onion bulb beyond the basal plate."

Impact on disease and productivity by this other strain is being further investigated.

"Our field trials have been conducted in the Murray Mallee and SE of South Australia" Michael said, adding that he

prefers to have trials done in the field, to better understand what happens with natural variations in environmental conditions, and crop management in commercial production systems.

"We conduct assessments soon after planting, during the growth phases, and at harvest. We have also put onions in storage for three months to monitor for basal rot occurrence. In addition, we use moisture probes in the soil, conduct nutritional analysis and assess agronomic inputs to see what is going on. This will give us a better understanding of the drivers of the disease, how it progresses and where, and why some paddocks and regions have a greater problem than others."

Michael suspects that moisture conditions and drainage are part of the reason for the pathogen's prevalence in certain areas.

It is also known that some onion varieties are less susceptible to fusarium basal rot. In some cases, pink root has also been found together with basal rot; this is under further investigation to see if the two diseases are interacting. That said, high levels of fusarium basal rot have been observed in paddocks with low pink root pressure.

The next phase of research

"As we progress through and understand the pathogen better, we have gained greater clarity on what strategies can be used to combat the fungus.

"Beside investigating the effect of irrigation practices, crop rotation and host crops, we will be looking at testing the effectiveness of biological control and chemical treatments. There are no registered chemical products for fusarium basal rot control in onions currently available."

With grower input and irrigation practices varying considerably, field trials will be used to assess how varying inputs such as irrigation can affect risk and progression of disease. It is also known from other crops that higher N levels encourages fusarium to flourish – there have been reports of both ammonia and nitrate forms of N increasing disease incidence.

Crop rotations will be important as the fungus can survive for around four years in the soil, but host plants are yet to be properly investigated. Research from South Africa has shown that the weed oxalis, is an alternative host.

FIND OUT MORE

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

Hort Innovation Strategic levy investment | ONION FUND

"Now that we have an understanding of the research that has been done to date overseas, and identified the major cause of the disease here in South Australia, we can conduct field trials, with a focus on crop rotations, and adding the use of biologicals, bio-stimulants and chemicals where we can to develop management strategies that may help the grower."

Right. Basal rot in onions.

Lean principles drive efficiencies in agriculture

Creating a more efficient and productive business for agriculture has become increasingly urgent with rising input costs and labour shortages. Understanding where improvements can be made, and finding the source of the problem using Lean principles will strengthen a grower's business outlook.

Inefficiencies such as using too much fertiliser at the wrong time, is a relatively obvious point of waste that can cost a grower both in expenditure for the fertiliser, and also affect yield and product quality.

How often though is one machine turned off to clean out a blocked shute? How much productive time is lost when perhaps a re-think of how an onion enters that shute might prevent this regular occurrence?

The principles behind Lean management can give strategies on how to understand where the bottlenecks in a business occur and provide a means of rectifying a problem at its source. With appropriate training and communication, issues such as the blocked shute can be highlighted much earlier and a solution found.

Developed in Japan by Toyota Motor Corporation, Lean is a business management tool designed to utilise resources more efficiently – including materials and workforce – and reduce wasteful practices. While originally used in manufacturing, the principles can be applied to many aspects of agriculture, both in the field and in the packing shed.

The key elements of Lean are to:

1. **Eliminate Waste:** does it add value to your business or your customer? By removing elements that not adding value, can reduce input costs and reduce wasted resources;
2. **Quality:** ensuring that the businesses are producing products to a consistent standard reduces off-spec product, and improving systems to ensure consistency;
3. **Training:** ensuring that all staff understand how a system or process works and providing the necessary training documents that give a consistent outcome, regardless of who is operating the machine or operation;
4. **Continuous improvement:** improving your business is a constant process to fine tune systems and processes;
5. **Business culture:** by engaging all staff in the Lean principles means that everyone feels a part of the goals and works together to achieve that outcome.

Above. Charlton Farm Produce Managing Director, Mark Addison

"So fixing that problem, may not actually make any difference – Lean makes you look beyond the problem and find a solution that gives a better longer term outcome."

Bringing Lean into the onion packing shed

A chance opportunity to see a presentation by Greg Lane, who was a key person with Toyota in North America for Lean principles, gave Charlton Farm Produce Managing Director, Mark Addison the light bulb moment to improve the family business.

Further reading, a training course online and a chance to undertake a Simulated Work Environment in Burnie to understand how Lean principles worked, enabled Mark to see how Lean could be implemented at least in the onion packing shed.

For Mark, key drivers for implementing Lean are to improve efficiency in the business, from how staff move around the packing shed, to improving how grading is achieved to minimise waste.

"One of the biggest things I have learned is that too many times, I looked at a problem to fix, without understanding the root cause of the problem," said Mark.

"So fixing that problem, may not actually make any difference – Lean makes you look beyond the problem and find a solution that gives a better longer term outcome."

The Lean principles may have originated in a manufacturing environment, but it is clear that even in the field, it can be applied.

"When we look at a crop, understanding the conditions that influenced its growth – weather, irrigation strategies, changes in fertiliser application – all that information can help us fine tune what we do next time.

"With that in mind, we can upgrade our training and documentation, so that staff know what to do and understand what the end goal is. While every season can vary, it means we have a better idea of what needs to be done so we are not wasting as much time and effort later on."

Three years into Lean, Charlton Farm Produce is now seeing the benefits in the packing shed with productivity increasing, and less wastage in produce.

One aim was to reduce the number of shifts operating. By looking at the processes through a Lean lens, bottlenecks were identified within the packing shed and improvements to workflow gave higher productivity through the equipment, doubling production. In addition, less damage is occurring to the onions giving more saleable grades and less waste. Training staff on the changes made to the packing shed has also been a benefit.

"I try do every job in the business at least once a year, so I can see what it is like to be in someone else's shoes. What that gives me is a perspective of what can be improved, how the equipment is performing and what training needs to occur to help the operator and the process perform better.

"For example if a machine is not performing optimally, and the operator is not aware that it could be better, it doesn't get reported. Get the machine fixed, re-train and encourage staff to raise any issues they see. Knowing what it should be doing means that all elements of the packing shed are assessed and improved.

"One of the biggest realisations I had was how training documentation was presented. A lot of what I had written was very wordy – changing it to a more visual representation and attached to the equipment made it a lot easier for operators to understand what to do, and it is readily accessible."

For any horticulture business, labour is one of the largest cost components, which means it has the potential for the biggest gains under Lean. Simple changes to workflow in the packing shed so that a supervisor is not walking from one side to the other to push a button when it could be done automatically are an example of how Lean can improve productivity.

"One of the reasons we went down this path, was based on concerns around costs and our markets and trying to get ahead. Lean gave an opportunity to smarten up the business and we now have a vision of long term financial viability, which had not been there before.

"Lean has taken our business from uncertainty to a confident future."

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.**

FIND OUT MORE

Visit horticulture.com.au

Hort Innovation Strategic levy investment | ONION FUND

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.

Hort Innovation sends alerts about project updates to its members.

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.

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.

potato update

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Message from the Chair

Welcome to *AUSVEG Australian Grower* magazine – the first to incorporate both *Potatoes Australia* and *Vegetables Australia* in a more efficient and sustainable format for growers.

Potato growers are the backbone of this significant industry and the lifeblood of many regional and rural communities. This is why AUSVEG – as the only national industry body whose purpose is to represent the interests of potato and vegetable growers – is committed to working on behalf of our members in areas of advocacy, research, communications and extension on issues of importance for growers.

The core mission of AUSVEG is to represent and support the Australian potato and vegetable industry by promoting the interests of growers. To ensure we are working towards our purpose. AUSVEG's Board of Directors – comprised primarily of growers – provides strategic direction and advice to the AUSVEG management team.

AUSVEG currently has four potato growers on its Board:

- Renee Pye from South Australia (Deputy Chair)
- Geoff Moar from New South Wales
- Pennie Patane from Western Australia
- Mark Kable from Tasmania.

These growers ensure that potato industry issues and topics are addressed by AUSVEG and comprise a prominent position in our national advocacy agenda.

In this edition of the refreshed magazine, you will find critical information around issues including workforce, biosecurity, trade, research and technology, as well as a detailed look at some of the Murray Bridge region's potato growers and the challenges that they face growing potatoes and other vegetables.

You will also find information about Hort Connections 2023, being held from 5-7 June 2023 in Adelaide. During the three-day conference be sure to register for the event and take the opportunity to attend the activities and events specific to potato growers – the Potato R&D forum, and demonstration trial site visit on Monday 5 June hosted by the team at *PotatoLink*, as well as the grower networking event open to all growers on Tuesday 6 June.

A much-anticipated event during Hort Connections is the Horticulture Awards for Excellence and a highlight for everyone across the industry. Announced during the Gala Dinner, the awards – of which there are 10 categories – are a way for industry to applaud the work that many perform, day in and day out, to improve not only their business, but the industry as a whole.

Good luck to all potato growers and industry members who are nominated for an award!

I look forward to celebrating with industry all growers and our outstanding achievers during Hort Connections and encourage anyone to chat with myself and the members of the AUSVEG Board anytime during the three days in Adelaide.

I encourage potato growers attending Hort Connections to come and chat with the Board at the AUSVEG stand.

Bill Bulmer
AUSVEG CHAIR

Decades of breaking new ground.

We're always innovating, delivering world leading products and providing unrivalled support to our partners in the Australian potato industry. Through years of research and development, technology and testing, our comprehensive potato portfolio provides sustainable protection from storage, to planting, right through to harvest and beyond. We will continue to innovate, to evolve, to deliver. It's what we do.

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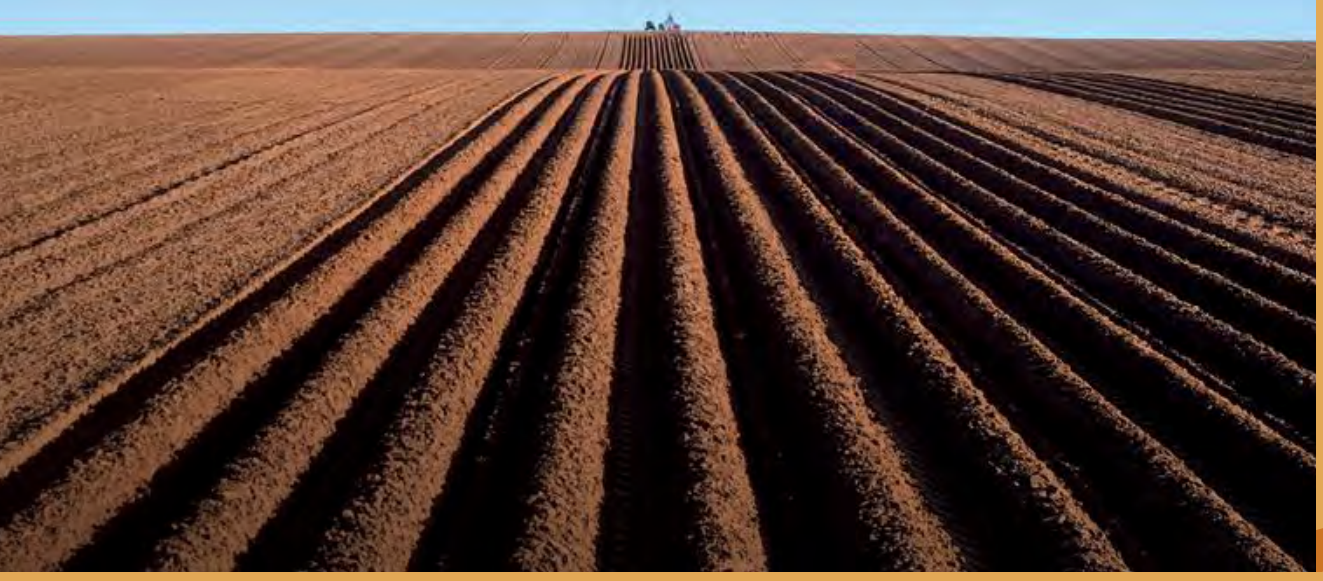

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Message from the CEO

The horticulture sector has experienced strong growth over the last ten years, with the latest data from the *Horticulture Statistics Handbook* (Hort Stats) indicating a growth in value of $6.15 billion since 2012/13 to $15.62 billion 2022/23.

Potato growers have been a strong driver for this growth, with potatoes ($830 million) comprising the largest component of the vegetable sector, which is now the largest in value in Australian horticulture at over $5.5 billion of the $15.62 billion total, which includes fruit, nuts and greenlife.

While the long-term growth in the industry has been impressive, the industry continues to struggle with weather events, higher production costs and labour shortages, all which have impacted production volumes of many vegetables, including potatoes.

High production costs and challenges in sourcing labour have also significantly impacted growers' bottom lines. While the overall production value of many lines is higher than previous years, the profitability of many growers is lower as these increases have not been enough to meet increases in costs.

A feature of this first issue of *AUSVEG Australian Grower* magazine, incorporating *Potatoes Australia* and *Vegetables Australia*, is a deep dive into potato growers for seed and fresh in the Murray Bridge region of South Australia.

While many of the issues touched on by the potato growers of the region will resonant with many growers around the country, it is interesting to learn about more localised issues and how growers have overcome them.

Looking further abroad, input costs, supply chain disruptions, imbalance in retailer relationships, workforce challenges, compliance pressures, declining vegetable consumption and rising interest rates are all impacting growers in Australia.

Many of these issues are global problems. The long-term economic sustainability of the fresh produce sector is being challenged, which threatens food security and health, across the nation.

To address this, AUSVEG has joined the Global Coalition of Fresh Produce, together with the USA, Canada, New Zealand, Europe, South America and Africa, to maximise opportunities for growers through combined lobbying, collaboration, and shared learnings.

We often feel that the problems we face in Australia are unique, but the concerns of the Coalition members are the same as ours. Growers around the globe are feeling squeezed by retailers, overburdened with compliance, struggling with increasing input costs and battling workforce shortages.

Chronic disease through poor diet is fast becoming a global phenomenon and yet successive governments here and overseas continue to ignore the issue. It is concerning to think that life expectancy in Australia is predicted to decline due to poor dietary habits, particularly when we can act and reverse the trend.

Through the Coalition we hope to further raise the profile of this issue, and other key industry challenges, on a global scale through advocacy to key organisations such as WHO and FAO.

Michael Coote
CEO, AUSVEG

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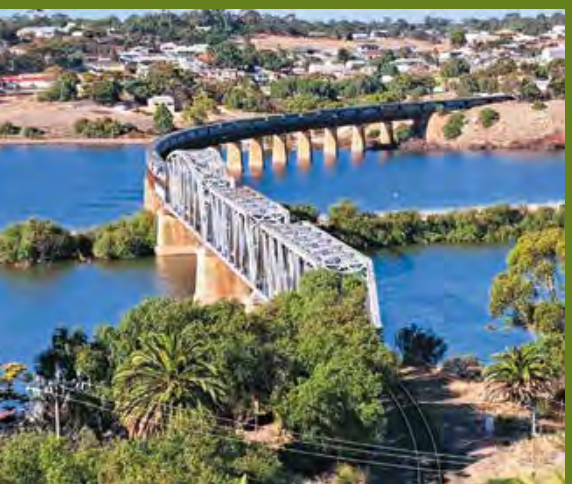
POTATOES
ONIONS

An abundance in the **Murray Bridge Region**



The region around Murray Bridge, east and south of Adelaide, South Australia is rich in vegetables – particularly potatoes and onions.

Taking advantage of the River Murray for irrigation and the sandy loam soils, growers up and down the river grow many vegetable crops including potatoes, onions, brassicas, carrots and pumpkin, as well as more delicate vegetables in polyhouses.

Potatoes, onions and carrots are the predominant crops across the districts of Murray Bridge, Karoonda East Murray, Mannum, Keith and Parilla.

At a state level, South Australia produces more than 305,000 tonnes of potatoes, and 114,840 tonnes of onions annually, with a lot more land for specialist seed potato growers.

Producers

Region	Potato production (t)	Onion production (t)
South Australia	305,652	114,840
Murray Bridge	4539	17,625
Karoonda and Bowhill	34,107	19,054
Mannum to Morgan	9,536	7,816
Keith to Bordertown	46,565	19,683
Parilla to Pinaroo	34,518	19,253

Source: Australian Bureau of Statistics, 2020-21

Soils

The soils of the Murray Mallee region are predominantly sandy and alkaline, with poor organic matter content and high drainage. Of the main types of soils identified in South Australia, Calcerous and sands form the predominant profiles.

Murray Mallee Region

Calcerous soils - 25.4% of area

- Calcareous throughout; presence of variable amounts of fine carbonate in profile
- Surface is alkaline; subsoils alkaline to very alkaline
- Often contain hard carbonate segregations; rubbly subsoil layers common
- Fine carbonate and associated alkalinity restrict availability of certain plant nutrients
- Very common in < 400 mm annual average rainfall areas
- Mostly used broadacre crop / pasture rotations
- Some used for irrigated crops.

Shallow Soils on calcrete or Limestone - 23% of area

- Restricted waterholding capacity caused by hard carbonate layer at 50cm or less
- Very shallow and very rubbly profiles common
- Generally slightly acidic to alkaline, occasionally subsoils are strongly alkaline
- Many calcareous throughout
- Some dominantly composed of fine carbonate
- Used for broadacre cropping, pastures, irrigated horticulture and viticulture.

Deep Sands - 21.4% of area

- Sandy throughout
- Low nutrient retention capacity
- Prone to water repellence
- Often high to extreme potential for wind erosion
- Non-calcareous types prone to acidification
- Calcareous types affected by carbonate-induced deficiencies
- Often difficult dryland cropping soils; can have high potential for irrigated use.

Sand over Clay - 8% of area

- Abrupt boundary between topsoil and subsoil; predominantly texture-contrast
- Topsoils sandy; subsoils mostly clay loamy or clayey
- Sandy topsoils have low to very low nutrient retention capacity; prone to water repellence, wind erosion and acidification
- Topsoils mostly neutral to strongly acidic; pH often increases with depth
- Clay rich subsoils may boost fertility levels
- Subsoils often poorly structured causing restrictions to root growth and seasonal waterlogging
- Can be productive for rain-fed cropping in low to moderate rainfall areas, especially where topsoils thick and subsoils clayey or clay loamy
- Widely used for broadacre cropping, high-rainfall pasture and irrigated horticulture.

Source: *The Soils of Southern South Australia* Department for Environment and Water, SA

Weather

A Mediterranean climate, the summers tend to be hot with cool winters. Rainfall in the northern end of the River Murray is in the order of 300mm per year, while further south near Keith it can be nearer to 400mm.

For the Murray Bridge region, the summer months average maximum temperatures in the high 20's to low 30 degrees with overnight lows in the low teens. Maximum temperatures dip to 14-16 degrees in winter, with overnight lows typically 4-6 degrees.

Source: Bureau of Meteorology

POTATOES
ONIONS

Family, food and farming

MITOLO FAMILY FARMS

John Tselekidis, Sales and Marketing at Mitolo.

Built on the premise that food is best shared, Mitolo Family Farms have built a farming operation that looks after its family and provides the consumers' family with the best tasting potatoes and onions.

Founded in 1972 by Italian migrant, Bruno Mitolo as a packing business for onions, the business has grown to encompass growing fresh onions and potatoes across a number of farm sites in the Mallee, Virginia, SA Riverland and NSW Riverina regions. Growing more than 120 varieties of potatoes plus 30 varieties of brown and red onions, the land holding is in the order of 40,000 hectares with 20,000 hectares as productive land, producing 200,000 tonnes per year of potatoes and onions.

Mitolo Family Farms have established fresh potato and onion brands to suit different cooking styles, that supply the major retailers across Australia. The idea that appreciating good food with family has driven the production and marketing of potatoes and onions to give consumers the 'best tasting, highest quality produce every day'.

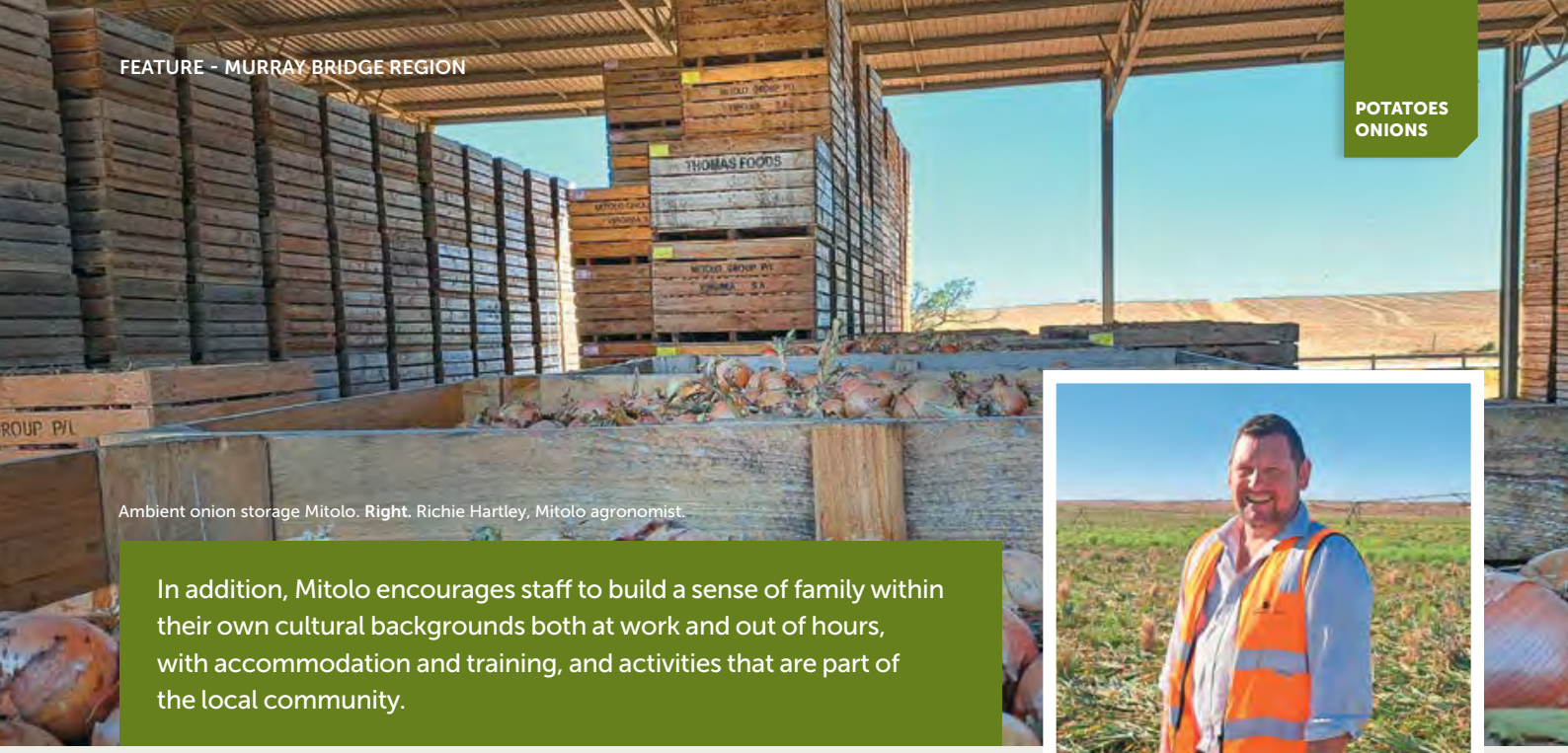
Family extends to employees

The sense of family of Mitolo Family Farms is the recognition that employees are a critical role in the business and as a result, the business strives to support staff with training and community, as well as instilling an inclusive culture.

"We put our people first," says John Tselekidis, Head of sales and marketing, Mitolo Family Farms. "The business has gone through significant change in the past five years; we have a very diverse workforce with many cultures and backgrounds that we need to be mindful of to ensure every staff member feels a valued part of the team.

"Safety is our primary aim – everyone has a right to push the button that stops production if there is a problem.

"To ensure that message is understood we have a number of team leaders across the different cultures and languages who work with each group. Our workforce would be 50%-60% of whom English is not a first language, so it is important that our message is translated appropriately.



Ambient onion storage Mitolo. **Right.** Richie Hartley, Mitolo agronomist.

In addition, Mitolo encourages staff to build a sense of family within their own cultural backgrounds both at work and out of hours, with accommodation and training, and activities that are part of the local community.

Mitolo Family Farms currently has 50 staff members employed under the PALM scheme, and short term labour is also sourced from WH Maker schemes. Staff are given full on the job training, upcoming leaders are given the opportunity to undertake a diploma of management.

Producing the best potato fit for purpose

Producing the perfect potato for mash, roasting and chipping, that keeps well in the pantry is only part of the story.

Behind the scenes, development of varieties that meet those criteria, plus giving the grower good yields, disease resistance, efficient use of inputs and storage is an ongoing process.

Breeding potato varieties can be a 10 year process. To establish characteristics that meet market demand and agronomy specifications can take several years with a further five years of field trials.

"We are always thinking several years ahead of what the consumer may want," says Mitolo agronomist Richie Hartley.

"The varieties we have today compared to what was available in the past are phenomenal. What we see in another five years on the plate could well be another leap in the development of the potato.

"Here in the Riverlands, potato and onion varieties need to be able to tolerate soil that is close to beach sand, 40 degree heat in the summer, wind and salty water, and still deliver a great taste to the consumer.

"We aim to have varieties that extend our growing season. By operating on a 'just in time' production system, where we harvest everyday, we need to have potatoes that are ready very early in the season, to very late. Potatoes are ground stored – one of the few potato growing regions where this is possible due to the lower rainfall and milder temperatures during the winter months."

Above. Georgina Brunch Potatoes from Mitolo Family Farms *Food Is For Sharing* campaign.
Left. Grading onions Mitolo.

"We are vigilant with weeding in the early stages – fleabane with the colder spring has become a big issue. Thrip if it gets into the sleeve of the plant, makes it hard to control and any damage will make it out of spec."

Mitolo produces around 40% of their own seed potatoes, with the remainder sourced externally from suppliers such as Burdett Harvest and further afield including the Otways in Victoria, Kangaroo Island and Victoria. Onion seed is imported from international suppliers.

The onion challenge

Basal rot in onions is a common problem in the region, and for Mitolo Family Farms, crop rotation forms a major part of the strategy to combat the condition.

The business operates on a five year rotation for potatoes, three years for onions – mostly as there is the land capacity to do so. Onions have a much longer growing season and as such are exposed to greater risk and pressures.

"Onions are twice the husbandry of potatoes, with the longer growing season, and early in the season they can be quite fickle – it doesn't take much to set them back, if we miss something it can be disastrous," said Richie.

The leafy tops are left on the onions near harvest time to protect the bulb from the sun, and trimmed immediately prior to harvest, leaving a 5cm stem for easier handling during grading.

Rotation crops includes cereal and legumes such as lupins, where the aim is principally to reduce erosion and mulch it in. It is marginal country, so dryland crops are preferred. Organic matter at best sits at 0.2, but with the addition of the mulch it is slowly increasing.

Marketing potatoes and onions

Potatoes and onions play a large role in everyday cooking for many cultures, but until recently, the notion that there is a better variety for roasting compared to mash, has not been promoted.

Working with the concept that sharing food with family should be an enjoyable experience, Mitolo Family Farms are working toward increasing awareness of fit for purpose potatoes and onions.

As part of the campaign, Callum Hann a former contestant of MasterChef, and Themis Chryssidis from Sprout Cooking school, as ambassadors for the Mitolo brands of potatoes, showcasing the best way to use different varieties of potatoes and how they are grown.

"Part of the Mitolo Family Farms marketing strategy is recognition that consumers want to know the story behind what they eat. We want to educate consumers and help them fall in love with potatoes and onions," said John.

"Potatoes and onions are in 90% of households, and we want them to be the best tasting, that gives them a good experience to keep them buying and using more.

"Our challenge is to find a variety that ticks all the boxes for the grower and keep advancing in that space that continues to give the consumer the best possible experiences."

It all begins with a quality seed potato

Jason Daniell, owner of Burdett Harvest.
Above. Acres of trial varieties.

Breeding the perfect potato for roasting, mash or fried in combination with high yield, disease resistance, seasonality and storage time takes years of trials to perfect. Once perfected, it is up to the seed potato grower to realise the potential for full commercial production.

Burdett Harvest, north of Murray Bridge, has been growing seed potatoes for more than 20 years, supplying potato growers such as Mitolo.

Each year, Burdett Harvest plans the seed potato requirements for industry 12 months ahead of planting. Planting will begin in October/November for harvest in May to June which will then be held in a coolroom in the following spring.

Currently, Burdett Harvest provides seed potatoes for 10 different varieties, to give potatoes suited to early or later seasons, differing agronomic environments and consumer market demand.

In addition, a further 20 varieties are under trial to test suitability for commercial production, and another further acreage is set aside to build further generations and volumes of newer varieties.

"With seed potatoes, ideally the fifth generation is as old as you would go for commercial operations. If there is a defect, it will start to multiply significantly after the fifth generation. For certification, Gen 5 is considered the optimum," said Jason Daniell, owner of Burdett Harvest.

"From Generation 0 tubers that we plant now, we will multiply the numbers over three years to build up our own seed stores. We might have 5 Ha of Gen 4 seed in the ground, another hectare of Gen 2 – which we will keep for ourselves for replanting the following year. For the mini tubers, we might plant 5,000 tubers."

Potato growers in the Murray Bridge region prefer to use whole seed potatoes rather than cutting. The risk with cut seed potatoes is increased disease at the cut site. Burdett Harvest grows to two specific sizes that are ideal for planting machinery: 35-45mm, and 45-55mm, with ideally 12-20 tubers per seed potato. Yields of seed potato are typically 25-30 tonne per hectare.

In order to produce seed potatoes in a specific size range, harvest generally does not go beyond 80 days, depending on the variety.

Seed certification

To be a recognised seed potato grower, requires certification from organisations such as AuSPICA. Certification tests for diseases such as potato cyst nematode (PCN), and viruses as well as skin diseases, rot and mechanical damage.

Prior to planting, a PCN test is conducted in the soil. PCN has been a major concern for many potato growing regions for a number of years and can lead to devastating yield losses. Once the plants are established, a visual inspection is conducted to check for any diseases.

Before spraying off toward the end of the growing cycle, virus testing is undertaken, particularly for PVY. Once harvested, 1 in 5 bins will be checked for skin diseases and rot. For Burdett Harvest one of the bigger concerns is powdery scab which is managed with fungicide in furrow.

In order to gain certification, at harvest any evidence of rot or mechanical damage cannot exceed 2% of the total harvest.

"As a seed potato grower, pests and disease are a major concern, in that it can wipe out a whole crop and put us back in our generational development," said Jason.

"With newer varieties we are looking for improvements in disease resistance in the field, but also in storage. For example, one variety we are trialling is having issues with dry rot in storage, that we think is due to a softer skin making it more prone to nicks and scratches that become an infection point. On farm biosecurity is therefore top of mind for us."

Rotation for soil improvement and reduced disease risk

Murray Bridge is noted for its sandy loam, with a relatively neutral pH, warm dry summers and low rainfall.

Burdett Harvest purchased the current property in 2005, which had previously been a broadacre property. The country alternated between dune sand and rock. Over a number of years, the dunes have been levelled, and the sand placed over the rock base to form the potato acreage. Water allocations from the River Murray travel some 11kms from five pumps into GPS guided linear irrigators.

Jason undertakes a five-year crop rotation plan, with alternate years planted as annual ryegrass, which is subsequently mulched in. The ryegrass provides a two-fold purpose – lower wind erosion, and to build organic matter which is poor in the region.

By using ryegrass, a broadleaf herbicide can be used to knock down the grass, which also takes out any volunteer potatoes from previous crops. After three years, Jason has begun to see some improvements in the soil, and erosion has certainly decreased.

"As a seed potato grower, it is certainly not without its challenges and risks, but given that most of our production is contract-based, we know what our business will look like in 12-18 months time, and we are less likely to be subjected to market changes.

"Being a part of the next generation of potato varieties to come onto the market is an exciting place to be."

Top. Next seasons seed potatoes underway.
Left. Checking the size of seed potatoes.

Pye Group investment
for business and community growth

The Pye Group decision to upgrade facilities for potato processing at Parilla has been a win not just for business logistics but also the local community.

For many businesses, expansion and economic growth do not always give an opportunity to design operations with efficiencies as top of mind, and often with business acquisition, comes legacy systems.

As the Pye Group has evolved, with Parilla Premium Potatoes and Zerella Fresh, production of potatoes and carrots were grown in Parilla, while packing facilities were conducted in Virginia, some three hours away by road.

The Virginia facility was used to wash, grade and pack an increasing volume of produce, and backing onto the Gawler River, expansion was not possible.
To keep up with supply into the facility, operations were running six days a week across two to three shifts. Produce was also trucked using B-Doubles from Parilla to Virginia on a daily basis, then to reach customers, trucked back past the farm.

"The need to invest in a dedicated potato line on farm at Parilla, was becoming more and more urgent," said Renee Pye, General Manager, Pye Group.

"Transport costs were becoming substantial; it was difficult to schedule regular maintenance on the equipment which meant we risked a breakdown at the worst possible moment; and labour costs operating at six days a week with several shifts across those days was not ideal."

Top (L-R). The Pye family, Lachy, Mark and Renee.

The Pye Group were fortunate to receive state government funding for a dedicated processing facility built on farm at Parilla. According to Renee, the benefits of having the facility on farm not only met the transport, maintenance and labour issues, but also provided greater coherence for the business.

"We have a number of properties across the region – with a central point at Parilla it means that farm managers could get together more frequently to address issues that may arise in a more timely manner.

"The reduced amount of transport, not only saved in transport costs, but we also saw an increase in saleable produce with less damage occurring during transit, and as a result, less wastage.

"The building has also been designed to improve worker conditions – better insulated for those hot summer days, plus new office spaces and amenities to accommodate the 80 staff members that work within that shed and office."

Currently, the throughput of potatoes, onions and carrots is 95,000 tonnes, 40,000 tonnes and 50,000 tonnes respectively, with carrots processed in the Virginia premises, and onions in its' own facility at Parilla. The business operates on a 'just in time' harvest system, with harvest occurring year round.

The new facility for potatoes included a Wyma wash line and Elisam with Elips technology for optical grading and Multi and Newtec weigh heads. The packaging lines utilise Formfill for bagging, Case Packing Systems for crate filling, and Berg palletisers. The flow of the different function lines was designed with a Lean perspective to give the greatest efficiencies for staff and workflow. Operating under one roof, the $45m facility, over 15,000sqm has seen productivity improve from 22 tonne per hour to 45 tonne per hours.

"We engaged contractors to design and install all the equipment, however, that was in the middle of the pandemic. It was a very challenging time to work around lockdowns and quarantine restrictions for the contractors to come from overseas to supervise and commission the equipment. The whole process took around 18 months, and we officially opened in late 2022."

Accommodation in the Parilla area is limited, so to attract workers from the Virginia site and further afield, the Pye Group built 27 homes in the district.

"While the new facility is certainly an improvement for the business, it has been a win for the Southern Mallee community with new families moving into the area adding to the economy and becoming a part of the local schools and organisations."

Above. Pye Group grading. **Left.** Parilla packing shed. **Below.** Pye group optical grading.

Knowledge grows

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Eldridge Fresh Organics for tastier produce

The desire to grow organically has been the driving force of Eldridge Fresh Organics for more than twenty five years.

The range of produce grown at Murray Bridge is extensive – potatoes, onions, cabbage, capsicum, tomatoes, cucumbers, cauliflower, celery, chilli, snow peas and zucchini. The more delicate vegetables are grown in shade houses or polyhouses, while the remainder is grown in the field. The diverse range of product allows the farm to react to changing seasons or markets with greater ease. Produce is sold throughout Australia, with a small percentage as exports to Singapore.

Under a certified organic production system, Eldridge Fresh Organic regularly test SAP and soil testing to help balance the soil. Trace elements can be applied as per conventional farming systems. The use of worm castings is used as a base fertiliser, while in the paddock regular weeding regimes are necessary. Water is pumped from the River Murray and held in a holding dam, while vegetable waste is sent to a composting company, Peat Soils. Energy is sourced from solar panels.

Top. Shane Eldridge, Executive Director, Eldridge Fresh Organics. **Below.** Tomatoes in the polyhouse. Acres of organic cauliflower in the field.

Integrated pest management with the assistance of Biological Services, forms a significant part of the operation, as does crop rotation for pest and disease control. The business has been using biologicals for more than 18 years. However, IPM is not without its issues in that some pests will thrive in one season, but its predator will be slow to gain sufficient numbers to slow the impact in the same season.

Like many in the southern states, the cool and wet spring of 2022 posed a challenge for planting – not just for the crops in the field, but also allocation of seedlings into the shade and polyhouses. The shade house provides the shoulder crops between winter and summer planting.

"The cold before Christmas was tough, we had to make the decision of whether to risk planting tomatoes in the polyhouses, and pray the heat would come, or hedge our bets and plant cucumbers instead," said Shane Eldridge executive director, Eldridge Fresh Organics.

"In October it was freezing cold, so we made the choice to do the tomatoes in the polyhouse, which meant that other crop volumes were reduced later in the season.

"Crops under shadecloth means the veggies are protected from the weather, where the polyhouse gives that little bit of extra warmth for ripening. The plants are twisted up onto guide strings, which gives us better access for weeding and more room for the plant to grow. It also lowers the potential for pest and disease. We can have a higher planting density, and it is easier for the staff to pick."

We prefer to think organic is healthier, and we would always choose organic for our own table. We are still a commercial level operation, focusing on organic processes. We are farmers who care about what goes in our bodies. SHANE ELDRIDGE, ELDRIDGE FRESH ORGANICS

Shane is always on the lookout to improve business efficiencies given the diverse range of produce. Streamlining grading, washing and processing lines all come under scrutiny, particularly with the industry wide lack of staffing resources. Having a production system that is easier for staff to grade, pack and store is in a state of continuous improvement while maintaining the high quality standards that consumers expect from certified organic produce.

"We have been farming for four generations, and to give customers food that tastes like it used to, we believe organic is the way to go. That certified organic label is something they can trust."

What is organic certification?

It is a whole systems approach to growing food, without the use of synthetic chemicals, fertilisers, or GMOs. For the consumer, the organic certification provides assurance of production systems that meet the standards needed to bear the certification label.

Organic production systems are guided by the following principles and outcomes:

- Production of naturally safe, high quality, nutritionally vital foods;
- Optimal production output, with rational and minimised use of inputs;
- Use of recycling and biological cycles within the farming system;
- Biodiversity protection and enhancement within the farm and surrounding areas;
- Regeneration of lands and soils and best environmental practice of farming activities.

Regular audits of the property are undertaken to ensure that compliance is adhered to for certification.

For more information
aco.net.au/Pages/Certification/Horticulture.aspx

Water savings drive drip irrigation move at Yalca

Three years into transitioning from overhead sprinklers to drip irrigation at VBA Farming's Yalca broccolini and asparagus properties in northern Victoria, Farm Manager Ivan Bunting says he is still on a learning curve with the new system, but he is convinced "it is the way to go''.

One-third savings in water was the catalyst for the move to drip irrigation, especially when water costs were becoming prohibitive for production.

"The cost got up to $800 a meg (megalitre) for water through the sprinklers – and broccolini uses a lot of water," Ivan said.

"At $800 a meg it is not worth it and we have shut down in the past. If we could have cut the amount of water down by a third, we could have kept going. With the way water is in this country, it is the way to go and if I was setting up an operation now, it would be all drip.''

VBA Farming, which is one of the largest growers of broccolini, uses water from Murray-Goulburn channels and its own dams holding 140 megalitres and it worked closely with Rob Love at Cobram Irrigation to make the switch to drip irrigation.

The installation comprised Netafim's portable, lightweight and leak-free submain pipe, FlexNet, which came with integral welded outlets spaced to specific requirements and specially-designed branching connectors, coupled with the manufacturer's Streamline X durable, thin-wall dripline.

FlexNet's unique weaving contributes to its lightness and strength, and it is compact and collapsible for easy storage and transport, while the non-pressure compensated, single-season Streamline X dripline incorporates a self-cleaning labyrinth to flush debris throughout operations and its ribbed surface and reinforcement ribs add to its durability and easy installation.

Ivan said the drip irrigation system had been deployed over about 70 hectares at VBA Farming's main property, plus another 65ha at a new farm.

The previous sprinkler system used a 12-inch main through the centre, with 10in mains running off it that were cut down to 8in and with the last 150 sprinklers run off 6in pipe. The FlexNet is 12in running

Top L-R. The Streamline X dripline is fitted to specially-designed branching connectors at welded outlets on the FlexNet pipe spaced according to crop row requirements. Ivan Bunting, Farm Manager at VBA Farming's Yalca properties, says the system rolls out in no time at all.

Installation of the Netafim FlexNet submain pipe and Streamline X dripline during planting at the VBA Farming properties at Yalca in northern Victoria.

through the centre, then to 8in with 6in either side and 4in pipe either side of hydrants.

"The system rolls out in no time at all and you give Netafim your row spacing figures to order the welded outlets – they are brilliant," Ivan said.

"The dripline also worked very well with no clogging and we got two seasons out of it, but we will probably throw it away after each season in future rather than roll it up and store it, or Netafim can pick it up for recycling."

He said the system was a great success in the first year and produced an excellent crop, while the wet conditions last season brought a halt to fertigating. Precision granular fertiliser applications along the driplines will continue on one of the properties this year at planting and the on two further occasions afterwards.

"As well as using a third less water, the tractors go into the crop less and when they do it is dry. Without the overhead irrigation, there's also not as much leaf damage and mildew."

"Labour is our biggest problem and that's another major advantage and we don't have all the costs of repairing sprinklers.

"With overheads, we are running around watering all the time. With drip, we can water a lot larger area and because it is running at 15-pound pressure, we can water more in an hour – each plant gets 7 litres.

"The drip is every second day and it would be 30 per cent less labour and we don't have a tractor running up and down using fuel.

"When fertilising, a guy on a tractor would take one hour to do 1.5ha. With the fertigation, it takes me 15 minutes to do 9ha. If we water for an hour, the whole 9ha is watered and fertigated.

"I can finish fertigating and also send a tractor in to spray because the crop is not wet," he said.

The Streamline X durable thin-wall dripline located alongside broccolini seedlings.

FOR MORE INFORMATION
netafim.com.au

POTATOES

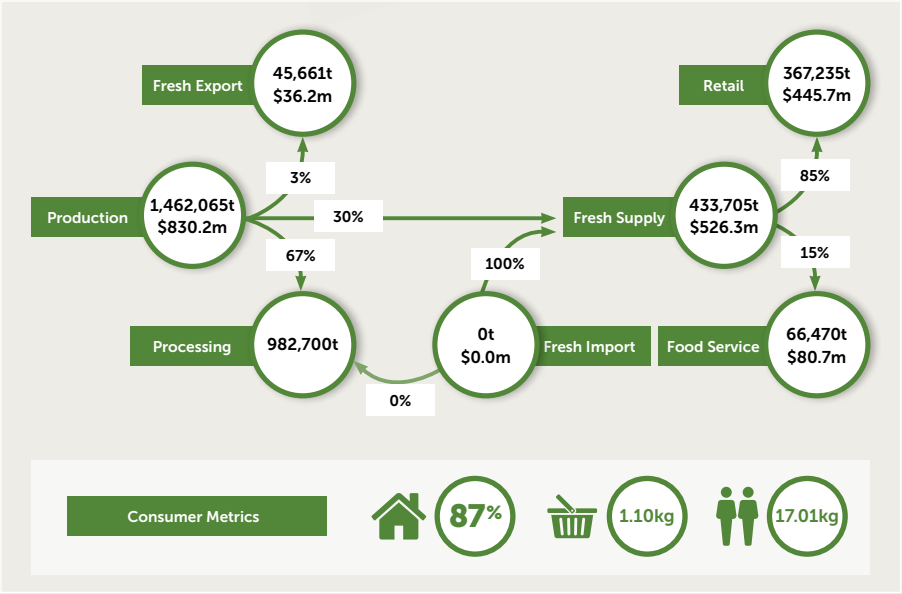
NOW AVAILABLE

Latest Potato industry statistics

The most recent *Hort Innovation Industry Statistics Handbook* shows: **1,462,065t were produced** and valued at **$830.2M with 67% sent to be processed.**

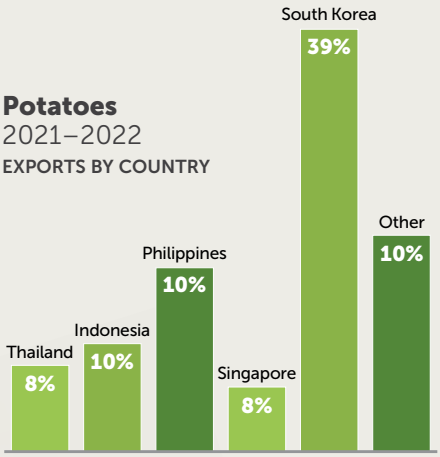
Potatoes - Year ending June 2022

SUPPLY CHAIN OVERVIEW



Sources. ABS; AC; AUSVEG; Potato Processing Association of Australia (PPAA); CFVIWA; GTA; MP & DD (Freshlogic Analysis)

Potatoes
2021–2022
EXPORTS BY COUNTRY

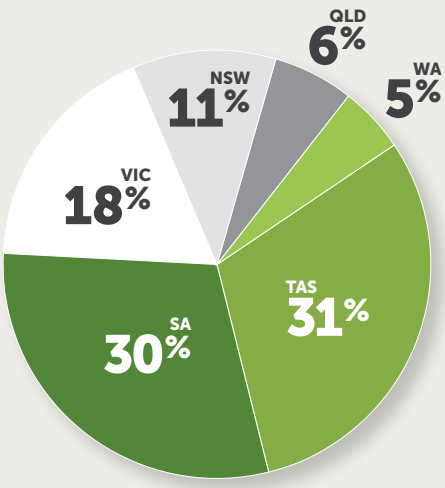


Source. GTA

Year Ending June	2020	2021		2022	
	VALUE	VALUE	%YOY	VALUE	%YOY
Production (t)	1,388,870	1,458,991	+5%	1,462,065	<1%
Production ($m)	$716.4	$807.3	+13%	$830.2	+3%
Fresh Export Volume (t)	40,253	37,274	-7%	45,661	+23%
Fresh Export Value ($m)	$33.6	$31.1	-8%	$36.2	+17%
Fresh Supply (t)	443,674	446,717	<1%	433,705	-3%
Fresh Supply Wholesale Value ($m)	$496.6	$522.8	+5%	$526.3	<1%

Total Production

PRODUCTION WINDOW
Year-round



Potatoes - 2021–2022
MAJOR PRODUCTION AREAS

Potatoes are grown across Australia, with the majority of production occurring in **South Australia and Tasmania.**

Sources. ABS; AUSVEG; PPAA;

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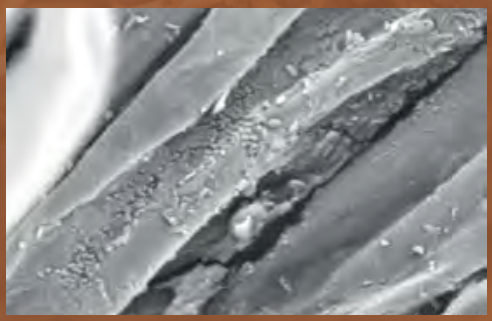
  Contains a high concentration of fast-acting spores
- **Greater nutrient uptake**
  Creates a win-win relationship with the plant at the soil interface
- **Ease of application**
  The refined liquid formulation provides good flowability and compatibility

Fast acting spores rapidly colonise.



Early colonisation on banana roots.

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Elders and B-Hive Innovations bringing greater efficiency and yields to Australian root crop growers

A new generation of AgTech has landed in Australia thanks to Elders and UK technology business B-hive, offering potato growers access to the unique and innovative HarvestEye™ system.

Elders is the only reseller of HarvestEye™ in Australia, and this exciting addition to the already extensive list of AgTech available from Elders provides a level of data that has not been possible to achieve before.

Growers can now collect precise and detailed information about their produce in real time. Using a camera and machine learning algorithms, the system measures and counts a crop as it is being harvested. This produces a breakdown of size, count and yield differentiation through a field - a huge advantage in modern farming.

Unlike conventional sampling, HarvestEye™ has the capability to show the performance of the whole field, providing a much more accurate representation of a crop.

The data is captured and collated by a computer, which can even provide historic GPS tracking of a field over the years, allowing growers to make more informed decisions moving forward to improve efficiency, crop yield and uniformity.

With a more comprehensive understanding of the size and count for each field, the technology supports complex decision making for sustainable business growth.

Crop variability can also be mapped across specific field locations, providing targeted agronomic performance data. It assists growers to work towards specific customer requirements for each variety and, ultimately, increase profits.

Elders' Seed Potato Sales Manager, Abe Montano says, "HarvestEye™ has demonstrated exceptional promise through extensive trials both in Australia and overseas.

Top L-R. Abe Montano, Elders National Potato Sales Manager and Sharon Elphinstone, Product Manager Elders Potatoes. **Above.** The HarvestEye™.

FOR MORE INFORMATION

HarvestEye™ is available from Elders nationally and will also be showcased at this year's Hort Connections, held at the Adelaide Convention Centre from 5-7 June. **For more details, contact Elders Ballarat on (03) 5336 9500.**

"Using upcoming and latest agricultural technology to improve crop outcomes is commonplace in broadacre cropping, but it is not yet something that has been widely done in horticultural sectors.

"The technology is a game changer for growers who want to maximise efficiency and quality, and reduce waste."

HarvestEye™ can be fitted to any existing harvesting equipment, is simple to use and doesn't interfere with the harvester. The data is then gathered and displayed on a tablet, making it easy to view, analyse and cross-reference detailed data sets.

With applications designed for packers, processors and seed growers, this technology is set to change the way growers manage their entire operation. Not just for potatoes, HarvestEye™ can also be used for other root vegetable crops, including onions.

Elders recognises the integral role technology plays in the agricultural industry and is pleased to be the only Australian reseller of HarvestEye™.

Distribution of HarvestEye™ will complement Elders' existing potato seed business, which currently holds IP for and produces over 21 varieties of potato seed and is supported by an extensive network of horticultural agronomists across Australia's key growing regions.

Potatoes get a Great Wrap

Top. Julia and Jordy Kay, cofounders of Great Wrap. *Courtesy Chris Hawks.* **Above.** Great Wrap product. *Courtesy Shelley Horan.*

FOR MORE INFORMATION
greatwrap.com.au

New startup Great Wrap has taken potato waste to a new level with the development of cling wrap for consumers and business. AUSVEG Grower had a chat with the founders to find out more.

What is Great Wrap the company and the product?

Great Wrap is a materials science company on a mission to end human reliance on petroleum-based plastics. Currently, we manufacture and supply home compostable cling wrap and pallet wrap, made with food waste, from our factory based in Tullamarine, Victoria.

Our co-founders are husband and wife duo Julia and Jordy Kay. Prior to Great Wrap Julia worked in architecture and Jordy worked as a winemaker. They sadly both saw huge amounts of waste in their industries.

What was the driving force for Julia and Jordy to come up with the product?

Having used plastic cling wrap at home and pallet wrap at work and realising that there was no sustainable alternative, Julia and Jordy decided they wanted to do something about it.

Using food scraps to create plastic that breaks down completely and leaves no trace behind means we help solve two problems: food waste and plastic pollution. And by creating more compostable solutions, we are closing the loop on our systems so that fossil fuels are no longer a part of the international production landscape.

Why potatoes?

Thermoplastic starch, or TPS, is a biopolymer that is one of the ingredients in our current formula. It acts like petroleum plastic but can be returned to nature through composting. TPS can be made from any starch, but ours is with potato waste.

Potato waste exists in abundance due to our love of potato chips. There are a lot of skins and potatoes that don't make the cut for chips that end up in landfill. We are using these waste materials to produce a biopolymer that goes into Great Wrap.

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Top. Great Wrap is made from potato waste. *Courtesy Chris Hawks.* **Above.** Great Wrap in production. *Courtesy Shelley Horan.*

At this stage, more government support must be needed for companies that innovate compostable alternatives to plastic like ours. There needs to be more funding for research and development and access to industrial composters so that it is easy for customers to ensure full circularity is achieved.

Which potatoes are used?

It doesn't matter what type of potato we use or where the potato skins and sludge come from — they all have starch to use that can be converted into a bioplastic.

What other 'ingredients' are used to manufacture the cling wrap?

Great Wrap is made with food waste and a mix of compostable biopolymers. As well as potato waste, we use a mix of plant-based oils, tapioca and PBAT. In the future, we plan to make our wrap with PHA in our own biorefinery, allowing us to process local food waste.

Can you tell us how it is made?

The potato waste we use to create Great Wrap is processed into resin pallets. The resin is combined with our formula, then it goes through the extrusion process. This basically means our recipe is heated up, then stretched out into a thin film that gets rolled onto a cardboard roll (it kind of looks like honey before it's stretched out). Once our rolls come off our machine, our factory team manages quality control and packs all our orders.

From a usage perspective – how does it stack up against a petroleum plastic wrap?

Our Compostable Pallet Wrap looks and feels a lot like petroleum-based plastic. There are slight differences, though, due to the different ingredients used to create it. Great Wrap is stronger and a little less sticky than traditional pallet wrap.

We manufacture both hand and machine pallet wrap, so it is suitable for any size business, and we're working on our pricing to make it easy for companies to transition.

Can it be re-used?

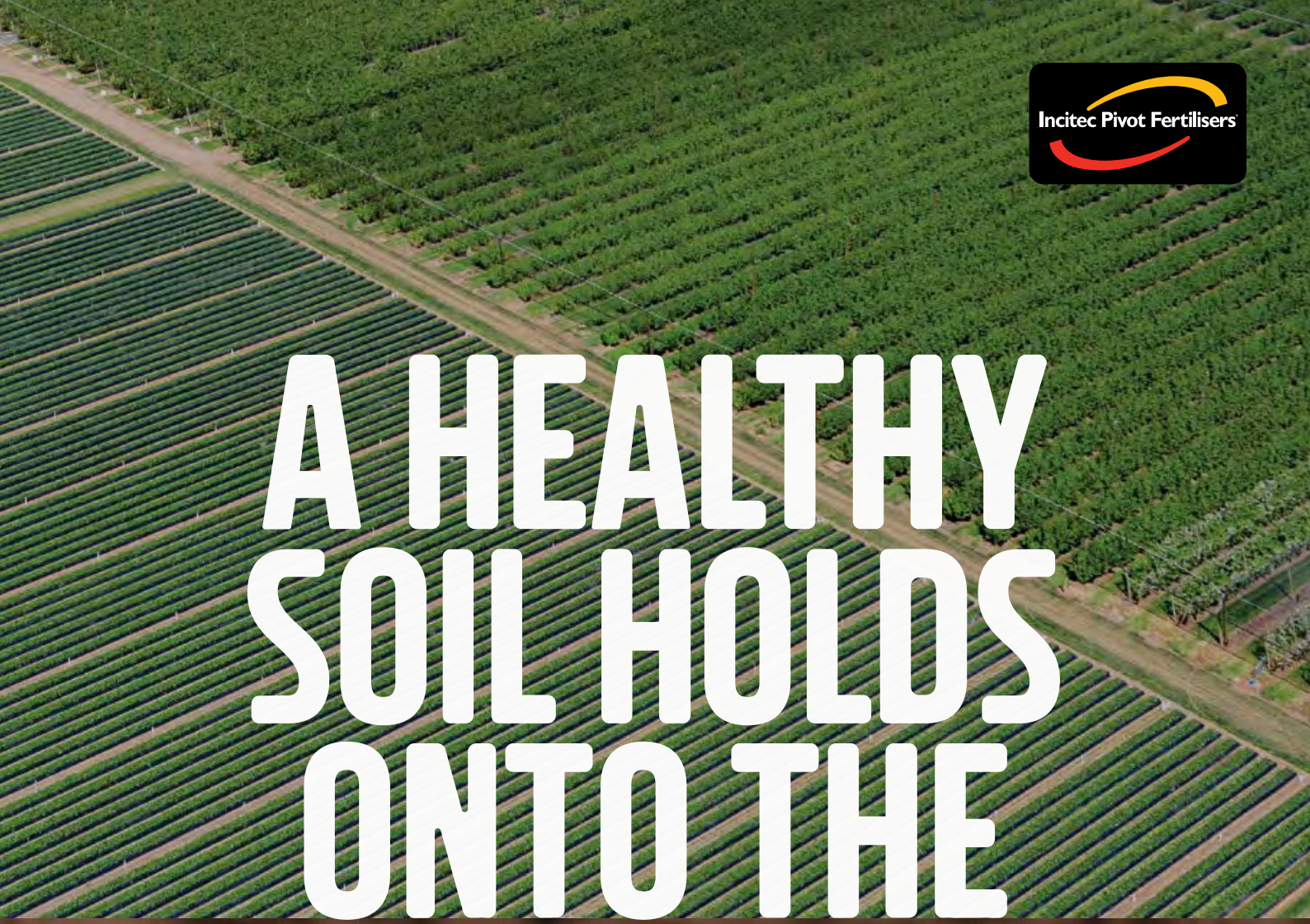
Great Wrap is intended to be used once, then to be put into a compost facility to be converted into nutrients for the soil. However, if it has been used and is not dirty or damaged, it can certainly be repurposed at the user's discretion.

What do you see as the future of compostable wraps, and research coming out of Great Lab?

We believe that composting is the future, as it has the potential to have a profound and positive impact on climate change and plastic pollution if adopted by homes and industries as a part of their systems.

At Great Lab, our innovation and technology department, we research, analyse, and constantly conceptualise new solutions and ways to improve our products for consumers, businesses and the environment.

As mentioned, a huge goal we have for the future is the set up of our local biorefinery, where we will be able to convert local food waste into a biopolymer ourselves and manage the whole development process.



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export + trade update

MT21009
Market Intelligence and Trade Expansion Stream

AUSVEG Portal
supported by Export Connect

AUSVEG, through the Hort Innovation funded *Multi-Industry Export Program (MT21009),* has partnered with Export Connect to develop a centralised market intelligence platform for vegetable, onion, and melon levy-paying growers.

The AUSVEG portal supported by Export Connect is an innovative online platform that provide up-to-date market specific insights, competitor analysis information and trade statistics for 15 crops, 15 international markets, for up to 6 retailers per market and up to 5 sub-categories per crop.

The purpose of the market intelligence portal is to assist growers to become customer-centric, understand market demands and consumer preferences, collect up-to-date market information and insights, analyse trade statistics as well as understand product movements. The portal will publish and update the competitor analysis fortnightly with summary reports on latest consumer trend being published monthly.

The AUSVEG portal consists of three major features, including *Monthly Trends, Trade Data* and *Competitor Data.* These features host and publish information that provide growers with data and market insights which will aid in making informed decisions and to stay ahead of the competition.

Monthly Trends

With access to the latest monthly trends across a range of crops and markets, growers will be able to determine the most appropriate markets for their products and identify the latest trends in product movements.

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 Events	Date 2023	Location
Reverse Trade Mission (inbound)	June 2023	**Various states within Australia**
AUSVEG Fresh Produce Showcase	5 June 2023	**Adelaide**
Asia Fruit Logistica	6 – 8 September 2023	**Asia World Expo** Hong Kong

Trade Data

Develop your knowledge and understanding of the competitive landscape of international markets with the Trade Data feature. This feature identifies the top export destinations for your products, assisting with export planning and opportunity scanning.

Competitor Data

Stay ahead of the competition by analysing the competitive landscape with the Competitor Data feature. Review competitor brands, product claims, pricing, country of origin, product packaging, and product images to identify your own Unique Selling Proposition (USP) to international buyers.

Interested in signing up?

For registration and further information, please contact the AUSVEG Export Department on 03 9882 0277 or **export@ausveg.com.au**. Please provide a recent copy of your Levy Remittance Advice document upon registration.

This portal is strictly accessible to vegetable, onion, and melon levy-paying businesses only.

CASE STUDY

WICKHAM FARMS
Killarney, Queensland

International Business Innovation Mentoring Program

The International Business Innovation Mentoring Program (IBIMP) is a newly designed program included in the *Multi-Industry Export Program (MT21009)*.

It supports 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.

A limited number of funded positions are available each year for this strategically focussed program. Growers can gain access to 12 months of service and assistance through support activities to achieve strategic milestones for the business once registered.

The primary objectives of the program are focused on:

- Assistance with innovation and value adding opportunities post-harvest;
- Receiving strategic advice and support on international marketing, sales and branding strategies;
- Identifying potential export opportunities that significantly expand your business that improves your bottom line while improving risk management;
- Upskilling your business to export directly;
- Uplifting business, market and customer engagement skills;
- Leveraging data with commercial support that turns ideas into actionable business plans;
- Provide assistance for cross leveraging opportunities that promotes reciprocal trade strengths;
- Entrepreneurship guidance to personal mindset development and growth
- Overcoming the challenges of COVID-19 and getting back to business.

Above. Kerri-Ann Lamb, Managing Director of Wickham Farms.

One grower who has received the support from IBMP in the first year is Wickham Farms in Killarney, Queensland.

Kerri-Ann Lamb is the managing director for Wickham Farms, a vertically integrated grower and processing business that delivers value added and fresh cut potato, onion, pumpkin, sweetpotato and more to manufacturers and food service clients nationally.

Kerri-Ann decided to participate in the IBIMP program to help fast track the vision for the business and overcome the roadblocks.

"The IBIMP Program has helped us immensely during the past nine months," she said.

"Having someone in your corner that is experienced in all facets of business has provided us with the confidence to expand our business and innovate.

"As a grower and processor, we are extremely busy. Having this resource has helped us prioritise what is important and guide us how to get to the next stage. Having someone hold me accountable with one-on-one support and guiding us through strategic planning and positioning, product design, process design and commercialisation is amazing.

"Without this support, some of our business ideas and opportunities would still be an idea, rather than having a proper plan and actioning it".

Wickham Farms has recently commercialised a range of "ready to serve" products for B2B channels. Prior to participating in the IBIMP program, the business identified a new technology that could add more convenience to its customers and help increase the value proposition.

"The step changes that occurred started with our mindset. Once we had the right mentor that could show us the path to market, it became simple. We identified a gap in the market for this range and set out to establish how it could be done.

"Through support from our mentor, we were guided from development of the idea, through proof of concept and then commercialisation. Marketing, branding, packaging design, profit viability, food safety and validation were all components of the step changes we made with help from the program," said Kerri-Ann.

The products are focused on the needs of today's customers which centre on sustainability, convenience and Australia grown. Wickham Farms plans to expand the product range overseas once further confidence is built in the Australian market over the next 12 months.

"I highly recommend growers consider this program. It has helped take our business to the next level and I don't think I would have got this far without the direct support. We look forward to going further with the support of this program".

There are currently another four growers undertaking the IBIMP program with similar success. Growers often have incredible ideas on how they can innovative in their businesses, particularly towards value adding but not sure how to get to market. Realising these opportunities by having such a support program allows the grower to fully investigate the opportunity with expertise provided by the program.

FIND OUT MORE

For registration and further information on this program, please contact Trent De Paoli at **trent.depaoli@ausveg.com.au.**

Hort Innovation Strategic levy investment | VEGETABLE FUND

Hort Innovation Strategic levy investment | ONION FUND

Hort Innovation Strategic levy investment | MELON FUND

biosecurity + minor use update

Minor use Permits

The below minor use permits were recently issued by the Australian Pesticides and Veterinary Medicines Authority (APVMA). This information is circulated as part of Hort Innovation's *Growing Innovation e-newsletter,* as well as *AUSVEG's Weekly Update e-newsletter.*

Permit Number	Description Chemical / Crop / Pest or use	Original Date Issued	Expiry Date	Permit Holder
PER82460 Version 3	Paramite selective miticide / Cucurbits, Asian cucurbits / Two spotted mites and red spider mite	26 July 2017	31 May 2028	Hort Innovation
PER14050 Version 3	Flint 500 WG Fungicide / Cucumbers and capsicums (protected) / Powdery mildew	1 June 2013	31 March 2028	Hort Innovation
PER11127 Version 4	Boscalid / Peppers and celery / Sclerotinia rot	30 June 2015	31 March 2028	Hort Innovation
PER13119 Version 6	Diazinon/Onions/Onion thrips (TAS only)	06 Mar 2012	28 Feb 2025	Hort Innovation
PER88640 Version 2	Spirotetramat/Snow peas, sugar snap peas, lettuce, parsley, green beans, celery, rhubarb, eggplant, capsicums, chilies and tomatoes/Liriomyza leafminers	18 May 2020	28 Feb 2026	Hort Innovation
PER14473 Version 3	Dimethomorph and mancozeb/Leeks, spring onions and shallots/Downy mildew, purple blotch and botrytis rots	18 Dec 2013	29 Feb 2028	Hort Innovation
PER88430 Version 2	Versys Insecticide/Carrots/Aphids including Green peach aphid and carrot aphid	3 July 2020	30 April 2025	Hort Innovation

Publication date: 28 February 2022

Disclaimer: All efforts have been made to provide the most current, complete and accurate information on these permits. However, we recommend that you confirm the details of these permits by checking the **APVMA website.**

iMapPESTS wraps up after six years of cross-industry research, development and extension

From 2018 -2023, Australia's plant industries joined forces to explore how a national, cross-industry plant pest surveillance program harmonised across many stakeholders, agencies, and programs might operate. Six project teams investigated state-of-the art technologies for components of surveillance, diagnostics and adoption of the data generated.

SHAKIRA JOHNSON REPORTS ON THE OUTCOMES OF IMAPPESTS: SENTINEL SURVEILLANCE FOR AGRICULTURE.

In a unique collaboration using the latest technologies, Australia's agriculture and horticulture industries worked together to develop a national surveillance system capable of rapidly monitoring and reporting the presence of airborne pests and diseases for multiple agricultural sectors, including viticulture, grains, cotton, sugar, forestry and horticulture. The iMapPESTS: Sentinel Surveillance for Agriculture project has delivered a suite of new surveillance and diagnostics tools driven by industry needs following extensive research and development into a flexible, cost-effective system.

Originally, the program aimed to deliver a mobile, cross-industry surveillance network to monitor the presence of pests that threaten major agricultural sectors across Australia, with the aim of covering surveillance diagnostics and forecasting with producers, industry and government. Data would include timely and accurate information about pests in their region to assist with management decisions, reduce pest resistance and demonstrate pest-free status to export markets.

Above. Sentinel 4 at Thorndon Park Produce.

As the project progressed, it became evident that to meet the needs of Australian producers and plant surveillance knowledge/practice gaps, the work needed to pivot slightly. The project therefore pivoted to focus on the design, testing and validation of:

- Advanced surveillance technologies, such as automated trapping and sampling for detecting and monitoring a wide range of established and exotic pests and diseases;
- Fast, reliable and cost-effective means to detect and report pests and diseases, such as advanced molecular diagnostics.

The collaborative efforts of the six project teams in the iMapPESTS project was a proof-of-concept sentinel surveillance system for Australian agriculture that aimed to lay the foundations for a national, cross-industry surveillance system that can deliver actionable information to primary producers, industries, and governments on established, trade-sensitive and exotic pests and diseases.

This information should be used by stakeholders to guide the direction and intensity of scouting efforts and pest control actions. The system should also facilitate a rapid, co-ordinated response during incursions, including use in delimiting systems and proof-of-freedom claims.

At the heart of this system are the mobile surveillance units, known as sentinels (*Pictured - Sentinel 4 at Thorndon Park Produce*). Each sentinel contains a weather station (monitoring temperature, rainfall, and humidity) and suction traps to collect airborne insects and fungal spores. What makes the sentinels different from existing suction traps used for pest monitoring are the automatic carousels, which change the sample pots daily. The sentinels can be monitored remotely and need fewer man hours to operate than many monitoring systems. Samples are collected once per week, and program a new sampling regime.

FIGURE 2. SENTINEL DEPLOYMENT LOCATIONS

From September 2019 to August 2022 this component of the iMapPESTS project developed twelve sentinels and implemented 44 field deployments across South Australia, Queensland, New South Wales, and Victoria (See *Figure 2*). These surveillance activities came to a total of 3,902 sampling days capturing airborne pests and pathogens at these locations.

While the sentinels sampled airborne pests and pathogens, researchers trialled new and emerging diagnostic tools that aim to speed up the delivery of accurate information on what exactly is captured. iMapPESTS included the development of diagnostic tests using next-generation sequencing by AgVic, Sugar Research Australia and University of Queensland. In addition to speeding up accurate reporting of target pests, the iMapPESTS diagnostics collaboration is exploring high throughput sequencing (HTS) to investigate ways of reporting on a wider range of insects captured, including targets of biosecurity concern. This is because the HTS approach takes a sample of insects or fungi captured by the trap and sucks out all the genetic code, resulting in a 'DNA soup' that can be scanned using a reference tool, or database, of known DNA codes for hundreds of thousands of different insects or fungal species. If a particular species was trapped, its DNA code will be present in the soup and flagged by the reference database, indicating its presence in the trap. These techniques have the potential to detect many targets in one test and identify biosecurity threats early, allowing for a more effective response to an incursion.

To further investigate the impact of this new diagnostics method and how it might work in the iMapPESTS surveillance system, a selection of insect samples from the sentinels were processed at Agriculture Victoria Research's AgriBio using their HTS diagnostic method.

The research found that metabarcoding is a semi-quantitative means of high-throughput sample analysis, with the resolution of insect biodiversity increased through a greater number of traps per site. The combination of sentinel traps and subsequent processing by metabarcoding provided a high resolution (compared to other methodologies of sample collection and analysis) of insect species diversity across time and space. Further, the combination of sampling and analytical methods recorded insect groups that would otherwise go undetected and not be targeted, therefore presenting an opportunity to enhance integrated pest management approaches.

The team also found that combining traditional ground and wind sampling methods with the sentinel sampling unit yielded superior results than any alone, but the sentinel units collected a greater diversity of samples than either traditional sampling technique (*Figure 3 is an example of the diversity of samples collected at a sample site*).

The prospect of at least some of these collaborations continuing is high - a case for an iMapPESTS 2.0 (ie, a second project to continue the work of this project) is already underway. The project delivered such positive outcomes, and proof of concept for the potential for modernised surveillance technology and methodologies that iMapPESTs 2.0 is seen as a logical and necessary action.

AUSVEG established an extension network to raise awareness, build support and promote adoption of the program's outputs and outcomes across each industry. Key stakeholders were encouraged, engaged, and supported to use the information through a range of communication and engagement activities, such as workshops and events.

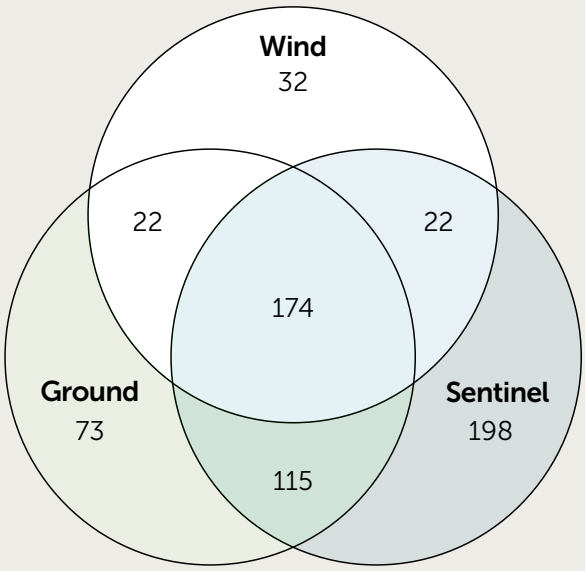


FIGURE 3. VENN DIAGRAM DEMONSTRATING THE DIFFERENT NUMBERS OF SPECIES SAMPLED BY EACH TRAP TYPE.

FURTHER INFORMATION

Contact iMapPESTS Project Coordinator Shakira Johnson on 0433 937 564 or **shakira.johnson@ausveg.com.au**

Further details can be found at the iMapPESTS website imappests.com.au.

The program (2017-2023) was supported by Horticulture Innovation Australia Limited, through funding from the Australia Government Department of Agriculture, Water the Environment as part of its Rural R&D for Profit Program and Grains Research & Development Corporation, Sugar Research Australia, Cotton Research & Development Corporation, Wine Australia, AgriFutures Australia, and Forest and Wood Products Australia.

Project Number: **ST16010**

Scan to view iMapPESTS website

Above. Sentinel 7 at Tapanappa Wines.

These activities extended the research and development to practical applications. The team coordinated with key industry contacts to collaborate on the publication of 63 project progress articles, ranging from extensive results-based articles in industry publications to short online news communications and newsletters. In addition, the team delivered or facilitated the delivery of 44 information sessions at R&D forums, field days, conferences, and workshops. All communication outputs were heavily dependent on project partners supplying correct and up-to-date information on the surveillance initiative progress to AUSVEG.

There are clear opportunities to build on the achievements accomplished through the RD&E program of iMapPESTS, particularly in building regional capacity and continued cross-industry collaborations.

The need for a diverse communications and extension network driven by cross-industry regional industry engagement personnel is essential to drive the adoption of the surveillance network and encourage contributions from primary producers.

Central coordination of activities linking research and development to extension drives efficiencies and supports the identification of capacities and opportunities across all stakeholders of a plant pest surveillance network. Integrating end-user perspectives throughout all stages of program development. From proposal to co-design to evaluation and adaptive management processes, will lead to a successful, sustainable system that will strengthen Australia's plant industries into the future.

From an industry perspective, a data management system and user interfaces that enable two-way information flow should be developed to improve access to surveillance results in a way that is relevant and easy to understand for end-users.

The benefits from the collaboration have included:

A legacy of collaboration

iMapPESTS represented a collaboration between different agricultural industries which was unique in this domain and beneficial in solving problems in different sectors. It encouraged researchers to 'think outside the box,' in developing suitable traps - for example, highlighting that forestry requires insect trapping to reach the canopy.

Improved cross-industry communication and information flows

The program helped in getting the message to different industries such as cotton, grains, sugar, and wine.

Good exposure for the sugar industry in terms of surveillance and transferable information from other industries. Many sugar farmers are mixed cropping enterprises.

Direct benefits to State Governments

To date, funding for iMapPESTS has come from federal funds and a consortium of RDCs. In addition, traps have been provided to State Departments at no cost, during the program.

Prioritisation

The program prioritised species that would have the most impact across multiple industries (e.g. green peach aphid).

Developing interest

The collaboration and engagement have fostered an interest in ongoing collaboration and support for further development.

Hitchhikers Guide to invasive pests

The threat of pest incursions from overseas is ever present, and the federal government initiative 'hitchhiker pests' aims to raise awareness of the risks associated with imported goods to bring in unwanted pests.

In simple terms, hitchhiker pests are those that 'hitch a ride' to Australia on imported goods or in shipping containers.

For example, khapra beetle can survive for several years in the cracks and crevices of shipping containers by becoming dormant until food becomes available.

Some invasive pests can severely damage agricultural crops, such as the brown marmorated stink bug), while others are a risk to human health.

It is estimated that an incursion of khapra beetle could cost Australia $15.5B over 20 years, while exotic bees is estimated at $0.7b.

Also on the list of hitchhikers are giant African snails and spongy moths. Giant snails with a massive appetite are capable of decimating a crop, but also a risk to human health by carrying bacteria and parasites. While not a direct threat to horticulture, spongy moths will easily defoliate trees, becoming a problem for biodiversity.

The brown marmorated stink bug (BMSB) will quite happily feed on more than 300 host plants including fruit trees and wood ornamentals. If it establishes in Australia, it will be difficult to manage, as it is not easily controlled with pesticides. Vegetable crops at risk include beans, corn and tomatoes.

The Hitchhiker Pest Program will aim to target sea containers that pose a high risk. The program is being delivered over four years (2021-2025).

Seasonal measures for stink bugs will apply to targeted goods manufactured in or shipped from target risk countries that shipped between September and April. For more information on the approach for BMSB visit **agriculture.gov.au/biosecurity-trade/import/before/brown-marmorated-stink-bugs#bmsb-resource-hub**

Where to look

Australia is full of native beetles, snails and ants. It is more likely to find hitchhiker pests in or around items that have recently arrived in Australia from overseas.

This includes:

- shipping containers
- timber pallets used to transport goods
- cardboard boxes
- packaging such as loose fill packaging, plastic stretch film or sticky tape
- recently imported break bulk cargo and large machinery such as tractors
- warehouses or retail stores containing imported goods
- homes containing recently purchased goods.

Many shipping containers and imported goods are opened for the first time at ports, depots, warehouses, importer's premises, retail stores and even personal households. It's important to be particularly vigilant of hitchhiker pests in these settings.

Spotted lanternfly nymph.

FOR MORE INFORMATION

Visit agriculture.gov.au/campaigns/hitchhiker-pests

Australian Government

Stop exotic pests getting into Australia

We need your help to stop invasive pests like bugs, beetles, bees, mosquitos, ants and snails getting into Australia from overseas.

These pests, which can hitch a ride in or on imported cargo, containers or packaging, may look harmless. But if they get loose they can cause enormous damage to our agriculture industry, environment and way of life.

Look out for these offenders:

Brown marmorated stink bug

Khapra beetle

Exotic honey bees

Asian tiger mosquito

Red imported fire ant

Giant African snail

Spotted lanternfly

Exotic subterranean termites

Asian black-spined toad

If you spot any of these pests, report it immediately!

Call the **See. Secure. Report. Hotline** on **1800 798 636**
or use the online form at **awe.gov.au/report**

Biosecurity — it's everybody's business

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

Sharing our Dashboard Delivery

VegNET Regional Development Officers (RDOs) have hit the ground running this year, continuing the work to support vegetable growers in their business. With six months of hard work behind them, the RDOs have been instrumental in maintaining the momentum of the industry towards a brighter future.

VegNET Regional Development Officers have been engaging with growers and stakeholders to identify specific key challenges and opportunities, facilitating workshops, field days, field walks at demonstration sites enabling them to equip growers with the knowledge and tools needed to overcome challenges. Through their efforts, the VegNET RDOs are making a real difference in every region. Helping growers to thrive in an increasingly challenging environment.

Above. Cherry Emerick.

A total of 338 events took place between September 2022 and March 2023, with 280 farm visits. This reflects the growth of relationships and the increasing interest in new ones being built.

Workshops and farm demonstration sites have provided a foundation for the initial adoption of soil health/composition practices among CaLD growers in the NSW region. As Soil Health is a gradual process, having a local Vietnamese grower as a champion is helping to support the process within the farming community.

Regional Development Officers in different regions have organised Agtech workshops and field days that showcase on-site demonstrations, attracting numerous growers and stakeholders. The chance to witness local demonstrations of new autonomous equipment has sparked considerable interest.

Growers experiencing workforce issues are seeking alternative options and the opportunity to see how this equipment works and engage with stakeholders is allowing the growers to assess if this technology is the right option for their business.

Local Regional Development Officer Contacts

NEW SOUTH WALES
Sylvia Jelinek
Local Land Services
M. 0427 086 724
sylvia.jelinek@lls.nsw.gov.au

WESTERN AUSTRALIA
Katrina Hill
vegetablesWA
M. 0427 373 037
katrina.hill@vegetableswa.com.au

NORTHERN TERRITORY
Mariah Maughan
NT Farmers
M. 0410 067 422
ido@ntfarmers.org.au

QUEENSLAND – North and Far North
David Shorten
Bowen Gumlu Growers Association
M. 0419 429 808
rdo@bowengumlugrowers.com.au

QUEENSLAND – Southeast
Darren Brown
Lockyer Valley Growers Inc
M. 0456 956 340
ido@lockyervalleygrowers.com.au

QUEENSLAND – Wide Bay Burnett
Bundaberg Fruit & Vegetable Growers
TBC
vegnet@bfvg.com.au

SOUTH AUSTRALIA
Peta Coughlin
AUSVEG SA
M. 0409 029 745
peta.coughlin@ausveg.com.au

TASMANIA
Ossie Lang
RM Consulting Group
M. 0430 380 414
ossiel@rmcg.com.au

VICTORIA – Gippsland Region
Bonnie Dawson
Food and Fibre Gippsland
M. 0407 683 938
bonnie.dawson@
foodandfibregippsland.com.au

VICTORIA – Northern, Southern and Western
Danielle Park
AUSVEG
M. 0432 324 822
danielle.park@ausveg.com.au

NATIONAL
Cherry Emerick
AUSVEG
M. 0418 389 680
Cherry.emerick@ausveg.com.au

Below is a Dashboard that shows the VegNET Regional Development Officers' progress in delivering/sharing the knowledge and skills to support vegetable growers. It demonstrates that they are on track and working to achieve the priorities and goals regionally and nationally.

Milestone 104 / **March 2023** — **CUMULATIVE 6 MONTH REPORTING DATA DASHBOARD**

3,991
Vegetable Growing Farms In Australia

20%
of Australian Vegetable Growers engaged*

127,624 ha
Area of Vegetable Growing in Australia

28%
Reach of program across growing area in Australia*

* Data from first 18 months of program.

Awareness, Knowledge & Skills (KASA)

Change in stakeholders KASA and knowledge sharing*

Target: 60% participating growers and service providers have **increased** Knowledge, Attitudes, Skills and Aspirations (KASA) in best practice management.

National Priority Area Coverage

Progress of priority area focus projects at a national level (AS AT MARCH 2023)

Priority Area	Region	On Track	Paused	Problem but being managed	Remedial action required
Ag Tech	QLD - Nth, QLD - WBB, VIC – Gipps	100%			
Biosecurity	NSW, NT, TAS, VIC – Gipps, WA	100%			
Business Capacity, Costs & Labour Costs	QLD Sth, QLD - WBB, SA, VIC – Gipps, VIC – N,W,SE, WA	100%			
Industry Capacity	QLD Sth, TAS, VIC – Gipps, WA	100%			
Markets	SA	100%			
Pests & Diseases	NT, QLD Sth, QLD - WBB, TAS, VIC - Gipps, VIC – N,W,SE, N,W,SE	100%			
Precision Ag	NSW, TAS, WA	67%	33%		
Production Systems	NT	100%			
Soil & Nutrient Management	NSW, NT, TAS, VIC – N,W,SE	75%	25%		
Waste Management	WBB	50%	50%		
Water Management	NSW, NT, Nth QLD, SA, VIC - Gipps	100%			
Multiple	QLD Nth	100%			
Across all Priority Areas	National	93%	7%		

Industry Adoption

Proportion of stakeholders that show intent to change or have adopted best practice*

Intent to change

72%
Year 1 – 473 people

Target: 40% participating growers and service providers **intend to change** to best practice management.

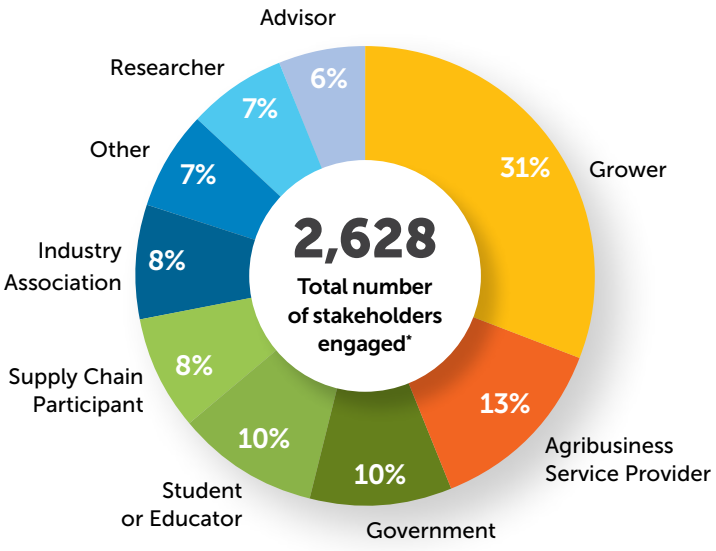
Adopted best practice

50%
Year 1 – 127 people

Target: 20% participating growers and service providers have **adopted** best practice management

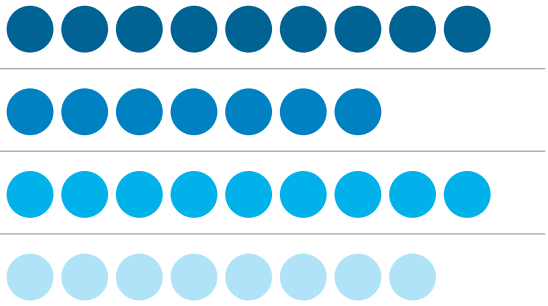
Industry Adoption

Proportion of stakeholders that show intent to change or have adopted best practice*



Collaboration

A measure of progress by growers, advisors and researchers along the collaboration continuum*



* Data from first 18 months of program.

FIND OUT MORE

Please contact Cherry Emerick on M: 0418 389 680

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

Navigating irrigation technology adoption in Gippsland's vegetable industry

Case Study Septemeber 2022

National Vegetable Extension Network
VICTORIA - GIPPSLAND

Introduction

Using soil moisture monitoring on a vegetable farm is likely to result in more efficient use of water, building a farm's drought resilience and reducing the risk of nutrient and sediment runoff into waterways from over or under watering.

However, soil moisture monitoring sensors have not seen a significant uptake in short-cycle vegetable crops, particularly in the Gippsland region.

During the 2021–22 summer growing season, a demonstration site was developed to test the performance of new soil moisture monitoring technology in an intensive vegetable production system in Gippsland and communicate the findings to the wider industry.

The project was funded by the Future Drought Fund as part of the Natural Resource Management (NRM) Drought Resilience Program, and was delivered by VegNET Gippsland.

Titled "Growing Gippsland's drought resilience with technology and better soil", the project was integrated into VegNET Gippsland's 2021–22 annual plan and aligned with both the "Smarter Growing" and "Protecting Gippsland Waterways" focus areas of the project's Regional Extension Strategy.

The following objectives were defined:

1. To increase the water use efficiency of the host grower over the peak vegetable growing season, between September 2021 and March 2022
2. To increase the adoption of soil moisture monitoring technology by Gippsland's intensive vegetable growing industry by the end of the project (August 2022).

The demonstration site also provided a platform to increase collaboration between Gippsland's intensive vegetable growing industry, Agriculture Victoria and the West Gippsland Catchment Management Authority (WGCMA) and co-develop an extension approach to support the adoption of soil moisture monitoring.

Installation of the soil moisture monitoring technology.

Key messages

- **New soil moisture monitoring technology was trialled over the 2021-22 summer growing season in Gippsland to encourage adoption of agricultural technology (agtech) and demonstrate environmental stewardship in the region.**
- **While the demonstration site faced a series of challenges including increased rainfall and restrictions on in-person events due to the COVID-19 pandemic, it provided important learnings and insights to both the host grower and wider industry and increased collaboration of Gippsland industry stakeholders.**
- **A field day held at the conclusion of the trial increased grower knowledge of soil moisture monitoring technology and their ability to interpret results. Importantly, the project highlighted the challenges and complexities of integrating soil moisture monitoring technology into an intensive vegetable growing system.**

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

AUSVEG Future Drought Fund Food & Fibre Gippsland

Navigating irrigation technology adoption in Gippsland's vegetable industry

Testing the waters

The project trialled a soil moisture monitoring technology new to the Australian market, leveraging a connection between industry body AUSVEG and the supplier. It was expected that the technology would provide reliable real-time data and irrigation recommendations, with the potential to integrate the grower's existing weather station data.

Twenty sensors were installed across two separate blocks with the intention of analysing the impact of common cross-winds on the block, which often affect irrigation uniformity.

A project inception meeting was held in August 2021, prior to the beginning of the peak growing season. The Project Reference Group (PRG) comprised of members from supporting agencies – Agriculture Victoria's irrigation extension team, WGCMA and AUSVEG. Technical advice was provided by local horticultural agronomists from Elders.

Attendees at field day in May 2022.

Much of the project plan focused on delivering regular updates and communications to industry from the site, reflecting on the technology adoption process and usefulness of the sensors and their data to the host grower. However, the project faced multiple challenges that restricted the confidence of the grower and the PRG to integrate the data into their growing practices in any substantial way, as outlined below.

1. The east coast of Australia experienced a La Niña summer and increased rainfall during the trial. This made it impossible to demonstrate an increase in water use efficiency as the grower was not required to rely on irrigation and the wet conditions led to crop losses due to disease.
2. There was limited confidence in the selected technology partially due to the wet conditions but also as the technology was less compatible with the production system than hoped.
3. The COVID-19 pandemic impacted the project's ability to share findings through in-person events, particularly at the start of the project. Instead, a series of presentations were recorded and a field day was held in May 2022 which was well-attended and received positive feedback. The keynote presentation articulated many of the learnings from the site.

Improving grower productivity, profitability and preparedness

The project successfully increased the host grower's knowledge of soil moisture monitoring. While the technology wasn't fully adopted at the end of the first growing season, they were glad to have had the opportunity to trial the technology.

"Like with everything in farming, I learnt more from when things went wrong," the host grower said.

Furthermore, the grower has committed to continuing with an ongoing trial of soil moisture monitoring for the next season.

The field day also increased attendees' knowledge of soil moisture monitoring in intensive vegetable growing and the process of adopting the technology. There was a 23% increase in attendees' knowledge of soil moisture monitoring generally, and a 30% increase in the skills required to interpret soil moisture monitoring data. Growers in attendance ranged from those who did not have any sensors on-farm to those who have an extensive suite.

Around 38% of attendees stated that they will change their practices following the field day, with the remainder considering doing so. This included several growers who already use the technology, who indicated that the knowledge gained on the day will support them to make better use of the data. Other growers who hadn't yet tried the technology are now planning to reach out to contacts gained during the field day to support them with the implementation of a soil moisture monitoring program.

The field day also increased attendees' awareness of other relevant extension services available through Agriculture Victoria and WGCMA's Sustainable Irrigation Program. Around 78% of attendees indicated that they can now make more informed decisions about Agriculture

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

AUSVEG | Future Drought Fund | Food & Fibre Gippsland

Navigating irrigation technology adoption in Gippsland's vegetable industry

Victoria and WGCMA's Sustainable Irrigation Program because of the field day.

The host grower benefited from Agriculture Victoria's direct involvement in the PRG as it provided further knowledge and skill development through their irrigation extension team who offer services such as an irrigation assessment using catch cans. As the host grower is new to the region, the project has supported them to develop more connections in the industry.

Agriculture Victoria catch can assessment.

Combined knowledge for maximum impact

The project benefited from the knowledge of a broad range of stakeholders, bringing together perspectives from local irrigation specialists, regional natural resource management groups and industry advisors.

The opportunity to work cooperatively on this project increased the shared knowledge and skills of Agriculture Victoria, WGCMA and VegNET (Gippsland and Victoria) of how to implement soil moisture monitoring technology into intensive vegetable settings and the benefits of doing so, building each agency's capacity and preparedness for further extension of this technology in the industry.

"We have learnt some valuable lessons on what to look for when planning a soil moisture monitoring system for the vegetable industry," a PRG member said.

Through regular updates and problem-solving discussions, the PRG co-developed knowledge which was shared with the technology developer. The benefit of this collaboration is evidenced in the ongoing changes made to the soil moisture monitoring telemetry to ensure it was more relevant to the intensive vegetable industry throughout the project.

The first phase of this demonstration site has also provided those involved in the PRG with an opportunity to increase their extension capability to further support the industry.

It's a bumpy road to agtech adoption

A key learning from the demonstration is that adoption of soil moisture monitoring isn't a straightforward process, and it may take longer than a year to confidently integrate this technology into an intensive vegetable production system.

Findings from this project and the content delivered at the field day demonstrated that the benefits of using soil moisture monitoring technology can be broader than simply increasing irrigation efficiencies. The project highlighted that grower adoption of this technology is not about replacing current methods of irrigation scheduling, such as physically checking the paddock as the data can add to a grower's understanding of the interaction between plant, water and soil.

Policy makers and extension practitioners who are encouraging the adoption of agtech to improve on-farm efficiencies must be clear about the benefits and desired outcomes of soil moisture monitoring technology to ensure growers have realistic expectations.

Next steps

VegNET Gippsland and Agriculture Victoria's irrigation team continue to work together to support the industry's adoption of advanced irrigation technologies. The host grower will continue trialling this technology, alongside some alternatives over summer 2022/23.

As a result of the project, the Victorian Drought Resilience Hub has now confirmed funding for four additional trial sites which will be situated in different catchments across the region and supported by VegNET Gippsland over the coming year.

Further information and resources

Contact VegNET Gippsland Regional Development Officer Bonnie Dawson at bonnie.dawson@foodandfibregippsland.com.au or 0407 683 938.

▶ **Advanced irrigation technology project | Food and Fibre Gippsland**

Focus on agtech yields results for South Australian vegetable industry

Case Study September 2022

National Vegetable Extension Network
SOUTH AUSTRALIA

Introduction

As the cost of production continues to rise and labour availability becomes an increasing issue for vegetable growers across the country, agricultural technologies (agtech) could play a key role in helping growers to increase on-farm efficiencies to make their business more profitable and competitive.

In late 2021, VegNET SA led an innovative program to engage with agtech start-up companies in South Australia and improve knowledge sharing between growers and agtech companies in the state. These activities were a key priority under the "Efficiency Management" pillar of VegNET SA's 5 Year Regional Extension Strategy and aimed to expose growers to new technologies which can save time and resources in their businesses.

VegNET SA developed and delivered a comprehensive program of events in the agtech space and attracted additional funding from AgriFutures Australia for a range of activities for vegetable growers.

Facilitating agtech trials

Events held to date include an introductory agtech breakfast and tour of vegetable growing regions which provided critical introductions between agtech companies and growers interested in pursuing these opportunities on their farms. More than 35 growers and agtech companies attended the event, providing a catalyst for future trials and interactions between the companies and growers.

As a result of the event, some growers are investigating new sales management applications, water management technologies, field robotic spraying and other technologies.

Following the initial breakfast, VegNET SA conducted significant follow-up work to assist agtech companies and growers to develop distributed trials. Regular catch ups were also organised with leaders of AgriTech Meetup South Australia, which brings together developers, farmers and other stakeholders in agriculture to look at how technology can make the industry more profitable, productive and sustainable.

With support from AgriFutures Australia, VegNET SA is working with local field robotics company, Flux Robotics, to conduct a trial on the use of robotic spray technology on the Northern Adelaide Plains with local grower Chris Musolino of T. Musolino and Co. The trial is being conducted with students from the University of Adelaide and will investigate the use of robotic spraying on-farm and measure reductions in crop protectant use and resistance management benefits.

This technology has the potential to reduce chemical use in field crops by up to 90% in some applications, so it is very exciting for the vegetable industry. VegNET SA is supporting growers to link with Flux Robotics and has successfully facilitated successful trials of the technology across field and pivot crops in the state.

Key messages

- **Agricultural technologies (agtech) have strong potential to help vegetable growers improve their productivity, profitability and sustainability and overcome ongoing challenges around the cost of production and labour availability.**
- **VegNET SA developed and delivered a comprehensive program of agtech events including workshops and field trials to improve knowledge sharing between vegetable growers, agtech companies and experts in the state.**
- **The program has provided a strong base of knowledge and connections to support South Australian vegetable growers to adopt new technologies in their farming operations.**

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

AUSVEG AUSVEG SA

Focus on agtech yields results for South Australian vegetable industry

Maximising local expertise

In addition to field trials, VegNET SA partnered with AgriFutures Australia to deliver a dedicated workshop to vegetable growers in June 2022 which provided support and information on how to implement agtech on their properties and develop a specialised adoption plan.

The workshops were presented by AgriTech Meetup South Australia and agronomist Brooke Sauer from Rural Edge Consulting who has skills and expertise in agtech adoption.

The workshops were very well received by industry and provided important information to growers to help them decide which emerging technologies to investigate and access support for trials within their business to maximise success.

"With input costs on the rise, using advanced technology and robotics means we can cut down on costs and be more competitive in the market. Having trials and events that bring tech onto farm is extremely valuable in getting it right," grower Chris Musolino said.

Improving grower productivity, profitability and preparedness

VegNET SA developed a comprehensive and strategic program of activities around agtech adoption in South Australia as a key part of its regional focus on improving efficiency and technology adoption in the vegetable industry.

As part of the process, VegNET SA delivered a series of complementary initiatives for growers, with a focus on connecting with agtech companies, facilitating trials, showcasing local technologies and providing learning opportunities with agtech experts. Rather than a one-off workshop, this program of events has provided stronger support for the industry to continue its agtech journey.

The approach has resulted in increased knowledge of agtech opportunities for vegetable growers and how they can be applied on-farm, and progress towards adoption and practice change with growers participating in trials and investigating specific technologies they could apply on-farm.

Next steps

Future activities in the agtech space for VegNET SA include hosting Walt Duflock – an international grower and agtech research, development and extension (RD&E) expert from Western Growers in California – who will present at the AUSVEG SA Horticulture Conference in November 2022.

Walt's visit is funded by AgriFutures Australia and will offer the opportunity for South Australian vegetable growers and research institutions to learn how agtech adoption is being approached in the Salinas Valley.

In addition, VegNET SA will support the state's agtech companies to conduct an exhibition of emerging technologies as part of the conference.

In future, VegNET's focus on efficiency management activities may expand to other areas (energy efficiency, waste efficiency etc.); however, the agtech program has provided a strong base of knowledge and connections to support South Australia's vegetable growers to adopt these technologies in their farming operations.

Flux Robotics spray technology was trialled in field and pivot vegetable crops in South Australia.

Further information

Contact VegNET SA Regional Development Peta Coughlin at peta.coughlin@ausveg.com.au or 0409 029 745.

VEGNET - SE QLD LOCKYER VALLEY
Regional Update

Introducing your new VegNET Southern Queensland RDO

VegNET is pleased to announce that Darren Brown will be the regional development officer for the southeast of Queensland and Lockyer Valley

A deep-seated passion for the agricultural industry and a commitment to sharing his knowledge and skills, Darren Brown has taken on the role of Regional Development Officer working for Lockyer Valley Growers Inc.

Hailing from the Fassifern Valley, Darren grew up on a mixed farm (lucerne and cattle) where he developed an understanding of agriculture. He later studied agriculture at the University of Queensland, graduating with a Bachelor of Agricultural Science and a Masters of Agricultural Economic Studies.

With more than 27 years of experience in agricultural education, Darren has a solid track record of teaching agricultural science in high schools across southeast Queensland. His knowledge and experience has equipped him with the necessary tools to help growers achieve productive, profitable businesses.

In his personal life Darren has lived in Gatton since 2003 and owns a hobby farm on Laidley Creek at Glenore Grove where he runs Boran cattle. With a varied background and dedication to the industry, Darren is poised to continue the excellent work done by Caley Croft, and to partner with growers in the Lockyer Valley to deliver extension programs and drive innovation in the horticultural sector.

Above L-R. Darren Brown, VegNET RDO southeast Queensland – Lockyer Valley. Shaun Hood, Syngenta gave the latest on insecticides.

A few observations from someone new to the RDO role

To date I have met a few stakeholders from the various groups; farmers, agronomists, DAF staff, QFF staff and representatives of agricultural supply companies. We are in a fortunate position with such a rich and diverse group of people involved with horticulture in southern Queensland.

I was lucky to be able to attend my first growers BBQ on the 29th of March (a week before I started as the RDO). It was great to see the strength of the grower's network with over 70 people attending. Several topics were covered including cyber security, new insecticides, carbon compost, and a water update.

The data that was collected from a quick survey indicated that the information generally hit the mark with the audience.

Question 1. How would you rate the Information provided tonight? Scale 1-5. Rating 1 (Not Useful at all) to 5 (Extremely Useful). ***Average scores ranged from 4.7- 4.2.***

Question 2. Are you likely to implement changes in your workplace from what you have learnt? ***91 – 45 % yes.***

In the two weeks that I have been in this role I have attended a webinar on 'Building your Facilitation Skills', and I have read a journal article on Extension. Interestingly if you look at extension theory relating to the delivery of information and the results from the growers BBQ there are no surprises in the ratings and Yes scores. The speakers who spent too much time on their methodology rated poorly and those that spent the most time on what this means to you (the Growers) rated well.

Our role is to foster innovation, where innovation is any change that adds value to a farm.

In Wielinga's document outlining cross visits, he says that, "The task of innovation support services is to create pathways for developing sustainable practices together".

In the case of a grower's BBQ one of the most important aspects of our facilitation roles is to encourage growers to mix with their peers so that they can share information.

He continues with, "Networks are interesting being formed by farmers, advisors, suppliers, and other actors. Here the classical advisor – client relationship does not apply anymore".

Hence our key project initiatives - Building Regional Capacity, in this case is to build and foster relationships. Given that "High potentials are often young farmers with ambitions" another of our key project initiatives is New Entrants. We need to encourage young farmers to be an active part of the networks. I have had the opportunity to interview two young farmers working on their family farm and one of the statements was, "I would like to go to the BBQs and lunches, but I struggle to find the time".

I see my most important priority is to continue to foster relationships and network building along with finding ways to include young farmers in the conversations.

Reference: *Recommendations after the cross visits*, E. Wielinga 2017, Agrispin, European Union's Horizon 2020 research and innovation program.

FIND OUT MORE

Please contact Darren Brown, Lockyer Valley Growers on 0456 956 340 or email **ido@lockyervalleygrowers.com.au**

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Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

VEGNET WESTERN AUSTRALIA

Economic Update

How economic trends are set to impact horticulture in 2023

A regional economic update was delivered in Guilderton in February, the first of a series of workshops planned for regional WA to raise visibility and awareness of economic trends and forecasted pressures for vegetable growers in regional horticultural production communities.

The VegNET WA Business Development sub-project aims to support businesses in increasing financial literacy to further help growers in making informed decisions in business management, planning and professional development for prosperity and increased market access opportunities. The team assesses individual skills or expertise required for their specific business development and provides supportive resources to enhance the growers operational efficiencies in Business and Financial management.

In February a collective of Industry partners provided an Economic update to north metropolitan and Gin Gin growers in Guilderton attracting 25 attendees, from both North Metro Grower groups and industry.

Presentations included:

- VegetablesWA Bryn Edwards Building Horticulture Business Capacity Project shared findings from the annual WA vegetable industry benchmarks published for the financial year 2021-22, with six years of vegetable industry data demonstrating consistent concerning trends.
- Rural Bank's Garry Harvey presenting the economic outlook for horticultural production in 2023.
- Planfarm's Bronson Gledhill providing benchmark data for the metro north growing regions and how the forecast economic pressures are set to impact horticultural businesses. Support in business management.
- RSM's Reagan Mann presented end of lease opportunities, succession planning and support resources.

Key findings

Between these general findings and what is already known about economic conditions in the current financial year, now more than ever there is a need for all vegetable business owners to be clear and up to date on the details of the cost structure, cost of production and required margins of their vegetable business in order to remain profitable and resilient.

Cost cutting is less of an option given the input rise environment that faces the industry. As mentioned above, all spend needs to have a 'clear line of sight' of contribution to saleable yield and therefore income for the business.

Similar to the previous year, other key areas that separate the Top 25% from the rest and can be easily adopted are:

- Market access and relationships with buyers/customers – assessing markets and determining which best suits your product, location, and timing of sales. Producers who have good relationships with their customers or buyers often have greater scope for negotiating pricing, which is vital in the current environment of rising costs
- Focus on a limited range of products – less is often more. Results showed that keeping the business simple and consistent correlates with higher profitability.
- Business focus – persistent inclination to look more deeply into their business, rather than being in the business, and challenge everything.

Following the workshop, the presenters highlighted different support avenues for small businesses and growers that can be provided access for free or through a VegNET sponsored position in a financial literacy training or mentoring best suited to individual business needs and goals.

The workshop series will be rolled out across WA growing regions during 2023 with an opportunity for growers to discuss findings, network, co-create regional strategies and positively identify specific and individual business needs for extension resources that the VegNET Extension project can meaningfully support into the future.

Above. Workshop 1. Guilderton February 2023. Opened by Stephen Brown, CEO vegetablesWA.

FIND OUT MORE

Please contact Katrina Hill at vegetablesWA on 0427 373 037 or email **katrina.hill@vegetableswa.com.au**

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Hort Innovation Strategic levy investment | VEGETABLE FUND

VEGNET NORTHERN TERRITORY

A busy year ahead for *VegNET3.0*

There is always a quiet period from December to January in the Northern Territory (NT) where one should remind themselves to not even dare to be bored and savor the time to read up on new vegetable developments, organise your files and tick off those tasks you have put off for the previous 11 months. As predicted, come February, the NT VegNET3.0 project and the vegetable industry are in full swing for the season ahead and those two peaceful quiet months are long gone.

Every year VegNET3.0 aims to hold or speak at local grower meetings where they can share key information about what the project is doing that year and industry updates/ information as well as the dispersal of the latest extension material.

The most recent meeting was in the Marrakai region where we saw growers and industry providers come together to discuss several topics, with the main focus on water efficiency. Attendees were taken through a grower's perspective on why improving water efficiency is vital for their business and then shown on farm how water technology such as a soil moisture probe can assist in key watering decisions.

AUSVEG Biosecurity Coordinators Shakira Johnson and Rose Daniel attended the meeting and provided simple, yet effective biosecurity measures growers can implement to protect themselves from new pests and diseases. Overall, the event was a success and VegNET NT will continue to provide on farm, grower focused meetings and information sessions to growers throughout the NT.

Although not the only focus for VegNET3.0 NT in 2023, industry tours are a plenty this year for our growers. In April 10 growers and industry providers attended an industry tour of tropical vegetable and fruit in Thailand. An article on the key learnings and experiences from this tour will feature in the next edition.

Following this we have an industry tour to the 2023 Protected Cropping Australia Conference in Brisbane in July. Protected cropping is a key area that the NT growers have indicated they would like the VegNET3.0 NT project to focus on and this tour allows growers and industry to gain invaluable knowledge on protected cropping systems in a region where protected cropping is well established.

The last industry tour for the year is a value-add commodity development tour where growers and industry will attend a three-day workshop at the FNQ Food Incubator in Cairns where they will explore the opportunities available to produce value add products from their produce that does not meet market specifications. Participants will be taken to a farm where they see what produce is now used instead of considered waste. From here they will explore the food-tech and production process before focusing on the marketing, design, and business aspects of value-add commodities. This industry tour acts as a real through provoker for growers, industry providers and government to consider the viability and opportunity that value-add commodities may have in the NT.

FIND OUT MORE

Please contact Mariah Maughan, Vegetable Industry Development Officer, NT Farmers Association. on 0417 618 468 or email **ido@ntfarmers.org.au**

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Hort Innovation Strategic levy investment | VEGETABLE FUND

VEGNET WIDE BAY BURNETT Regional Update

AMBIT Robotics – Site trial 2

The second site of the AMBIT Robotics crop yield monitoring trial is underway in the Wide Bay Burnett, is the United Wholesale Growers continental cucumber crop grown under a 4ha Cravo protected cropping system in the North Gregory region.

The Cravo system enjoys the conventional "in ground" growing conditions. The aim was to test the robot's robustness with additional environmental challenges not experienced before in the company's operations in Australia, while still maintaining the crop protection aspects including an extended cropping lifespan for longer data recovery periods. This is also the first time AMBIT have worked with continental cucumbers, with the VegNET program assisting in the product modelling development to help expand the companies reach into other markets.

The VegNET WBB first stage trial sites at Carter & Spencer's "Spencer Ranch', was also a first in modelling for eggplant yield forecasting, with the site now in full swing delivering great data for the grower and AMBIT. Data from both trials throughout the 2023 season will be used to develop a case study about the benefits of more accurate and timely crop yield monitoring.

Bundaberg Agtech Showcase

Wide Bay Burnetts VegNET program was centre stage at the Bundaberg Agtech Showcase with the program being selected to promote the uptake of Agtech in the region. The region's VegNET program has had several successful Agtech programs over the past 18 months and was able to bring these products back to the region for the event, as well as several other products.

The event was held at United Wholesale Growers North Gregory property, a 250ha mixed conventional farming and protected cropping system including a 4ha protected cropping Cravo structure. The Agtech Showcase saw around 80 attendees take part in a 2 day Ag Conference and field day. The VegNET field day introduced the participants to Agtech companies Agleader Precision Ag, AMBIT Robotics, Escavox, IMAP Sentinel, Oztech Drones and RapidAIM.

The participants enjoyed a great variety of speakers during the morning sessions of the event, with the MC Queensland's Chief Entrepreneur Julia Spicer, Prof. Phil Brown of CQ University, Fiona Turner of Bitwise Agronomy, Dean Jones from Luxfield Communications, Rowan Wilson - John Deere, Ashley Rootsey - Food Agility CRC, Paul Higgins - Emergent Futures and a raft of panelists including local growers, QDAF and updates from EvokeAg.

Top. Around 60 attendees from the Agtech Showcase were taken to United Wholesale Growers farm where they were delivered a 'boots on ground' demonstration of Agtech that the Wide Bay Burnetts VegNET program has been trialling over the past 18 months. **Left.** Attendees were treated to Oztech Drones XAG ATV Sprayer applying a (clean water) spray demonstration to UWG's continental cucumber crop under their 4ha Cravo greenhouse.

RapidAIM Queensland Fruit Fly Live Network

VegNET RDO has been fortunate enough to have RapidAIM launch the world's first Queensland Fruit Fly (QFF) Live monitoring network available to Growers in the Greater Bundaberg region free of charge.

RapidAIM's product is automated and live, with updates of QFF activity occurring every 15 mins. Bundaberg was chosen by RapidAIM for its diverse catalogue of crops grown in the region with the program hoping to increase growers awareness through increased data to enable them to make better decisions on Fruit Fly management plans including chemical applications to potentially reduce cropping inputs and gain better efficiencies with their applications. This program is being made available to growers to monitor the regions QFF trappings live on their app or website. RDO Andrew Halpin has travelled around the region recently to visit the traps to change their lures to ensure the networks traps continue to give reliable data for the region's growers. You can view this world-first QFF live network by visiting RapidAIM's website **pest-forecast.rapidaim.io/bundaberg.**

ICA-38 Training Course

RDO Andrew Halpin ran a successful ICA-38 training course with around 20 attendees participating in a course run by QDAF facilitator Paul Garland. This course enabled local producers to nominate employees to undertake this free course to give them qualifications as authorised inspection officers of Melon thrips. This is the second ICA-38 training course the VegNET program has run in the past 18 months, certifying more than 30 Authorised Inspection Officers.

Hort Connections
5-7 June, 2023

Bundaberg Fruit & Vegetable CEO, Bree Watson, Wide Bay Burnett RDO, and QWAN Project Officer Kylie Jackson will be in attendance to represent the producers in their region. The 3 day event will be a great opportunity to network with industry and government to discuss, learn and educate attendees about the Wide Bay Burnetts needs and issues facing the region. The region's RDO will undertake the annual VegNET RDO planning as well as delivering a summary of the past 12 months achievements of the project in the Wide Bay Burnett to the NEAG.

Above L-R. Nat Clark from RapidAIM gives a presentation to one of the groups of attendees about their Queensland Fruit Fly Agtech product, currently being used on UWG's property.

A RapidAIM Queensland Fruit Fly trap observed prior to exchanging the lure after the first 4 months of the Bundaberg Network Forecasting service.

Oztech Drones were a popular stall with the groups of attendees with their aerial and ground based drones.

FIND OUT MORE

Please contact Wide Bay Burnetts RDO on 0407 366 797 or email **vegnet@bfvg.com.au**

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Right. Dean Halpin from Halpin Precision Ag and Andrew Piper from AgLeader gave an insight of a Variable Rate Spray trial they ran with UWG and the region's VegNET program, highlighting potential savings on cropping inputs and more accurate application of chemicals to crops.

VEGNET
NEW SOUTH WALES
Regional Update

University of New England's Applied Agricultural Remote Sensing Centre joins the fight in eradicating *Varroa destructor* in NSW

The University of New England's (UNE) Applied Agricultural Remote Sensing Centre (AARSC) is leading a project on the National Map of Protected Cropping Structures and follows on from previous work to develop the Australian Tree Crop Map. One outcome from the project is a rapid response map that incorporates the Varroa Mite Surveillance Zones in NSW.

Mapping tools

The UNE AARSC, Protected Cropping Australia, Greater Sydney and North Coast Local Land Services and Future Food Systems CRC have joined forces in a Hort Innovation co-funded project to develop a national map of protected cropping structures which includes all commercial nets, polytunnels, shadehouses and glasshouses with an area greater than 0.2ha. These live mapping tools are invaluable to growers and industry in determining locations of horticultural growth or decline, farm size, commodity type (in the case of tree crops), planning and much more. While the vegetable industry has yet to embrace this technology, it has already shown its worth in the current exotic bee pest incursion of Varroa mite (*Varroa destructor*).

Varroa mite

Varroa mite was first detected by NSW Department of Primary Industries (NSW DPI) in surveillance hives at the Port of Newcastle on 22 June 2022. Varroa mite has already been identified as a major threat to Australian agriculture under the Emergency Plant Pest Response Deed which the Australian and State/Territory Governments and plant industries including the vegetable industry are party to.

Varroa mite biosecurity zones have been established and the National Varroa mite Emergency Response Plan put in place. With agreement of all governments and industry parties, NSW DPI is working to protect the Australian honeybee industry by ensuring the parasite is eradicated.

Top. Bee with Varroa mite. *Image courtesy of NSW DPI.*

Two zones have been established centred on the point from where Varroa mite has been detected in hives. The red zones represent the 10km eradication zone radius from the point of detection where honeybee hives will be euthanised. The purple zone shows the 25km surveillance zones from the point of detection and outside the 10km eradication zone. In this zone, designated departmental officers are monitoring and inspecting managed and feral honeybees. The blue zone is the rest of NSW and known as the General Emergency Zone.

By over laying the 10 and 25km radius zones with production areas, we can easily identify farms which will be potentially affected by the loss of honeybee pollinators. *(See Figure 1. Varroa Mite Rapid Response Map)*

European honeybees (*Apis mellifera*) are prolific pollinators and play a large role in fruit, nut and vegetable pollination in Australia, whether it be through wild populations or commercial hive services. It is imperative that Varroa mite is eradicated and enables critical business continuity and pollination services for commercial beekeepers and broader agricultural industries as part of NSW's $20.9 billion primary industries economy. We should be fortunate that Varroa mite only infests European honeybees and not native bees.

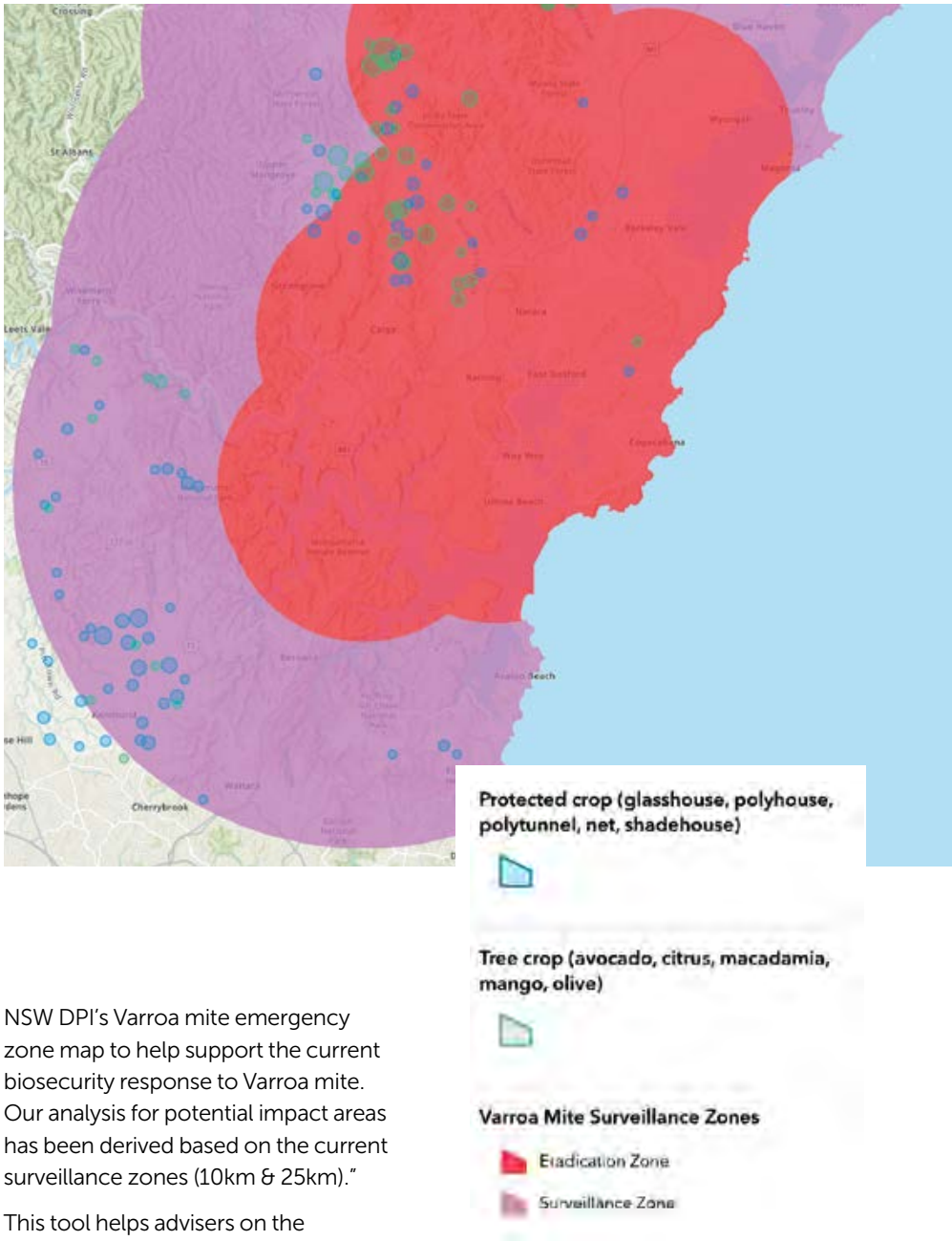
If you find Varroa mite in a hive that you are responsible for, notify NSW DPI by calling the Exotic Plant Pest Hotline, 1800 084 881. For the latest updates on Varroa mite detections, check out NSW DPI maps and further information at dpi.nsw.gov.au/varroa.

Teaming up to identify areas of concern

Senior Researcher, Craig Shephard, from UNE's AARSC said, "We took the initiative of building a new web map leveraging NSW DPI's Varroa mite emergency zone map to help support the current biosecurity response to Varroa mite. Our analysis for potential impact areas has been derived based on the current surveillance zones (10km & 25km)."

This tool helps advisers on the ground like VegNET NSW's Regional Development Officer, Sylvia Jelinek, to reach out to affected growers and regions to support in planning alternative crops that do not require pollination, advise on alternative pollinators and gather intelligence for emergency response teams and the Varroa Mite Consultative Committee on Emergency Plant Pests.

FIGURE 1. VARROA MITE RAPID RESPONSE MAP WITH AARSC'S OVERLAY



FIND OUT MORE

Please contact Sylvia Jelinek on 0427 086 724 or email **sylvia.jelinek@lls.nsw.gov.au**

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Project Number: **VG21000 and AS20003**

Hort Innovation Strategic levy investment | VEGETABLE FUND

VEGNET SOUTH AUSTRALIA

Regional Update

Introducing the new VegNet RDO for SA

Joining the AUSVEG SA and VegNET 3.0 team is Peta Coughlin as the new RDO for South Australia. Peta brings to the role over 20 years experience working with businesses to support them to improve practices, increase capability and build capacity. A born and bred local to South Australia, Peta is passionate about supporting the local business community to thrive and grow and is looking forward to building relationships with SA vegetable growers and developing a strong stakeholder network that creates opportunity.

As the South Australian RDO, Peta will be responsible for working with industry to increase awareness of and engagement with best practices in high priority areas, and will help growers adopt practice changes to improve the productivity, profitability, preparedness and competitiveness of their businesses.

The increased cost of production across the industry is a major concern for growers and Peta will be implementing the strategic plans AUSVEG SA has developed to address identified needs and concerns through innovation, market access and technology.

The focus will be on developing relationships with growers and listening to what they need so that we can develop programs, projects, stakeholder networks and connections that will best support them and industry to improve outcomes.

To this end Peta has been out meeting the growers in her first month and will be building a visit schedule to make sure that all the growers get an opportunity have a regular and in person visit from their VegNet RDO.

Above. Maria Colangelo, Manager, Rainbow Fresh (Left) with Peta Coughlin VegNet RDO.

AUSVEG SA working with Growers on Biosecurity Solutions

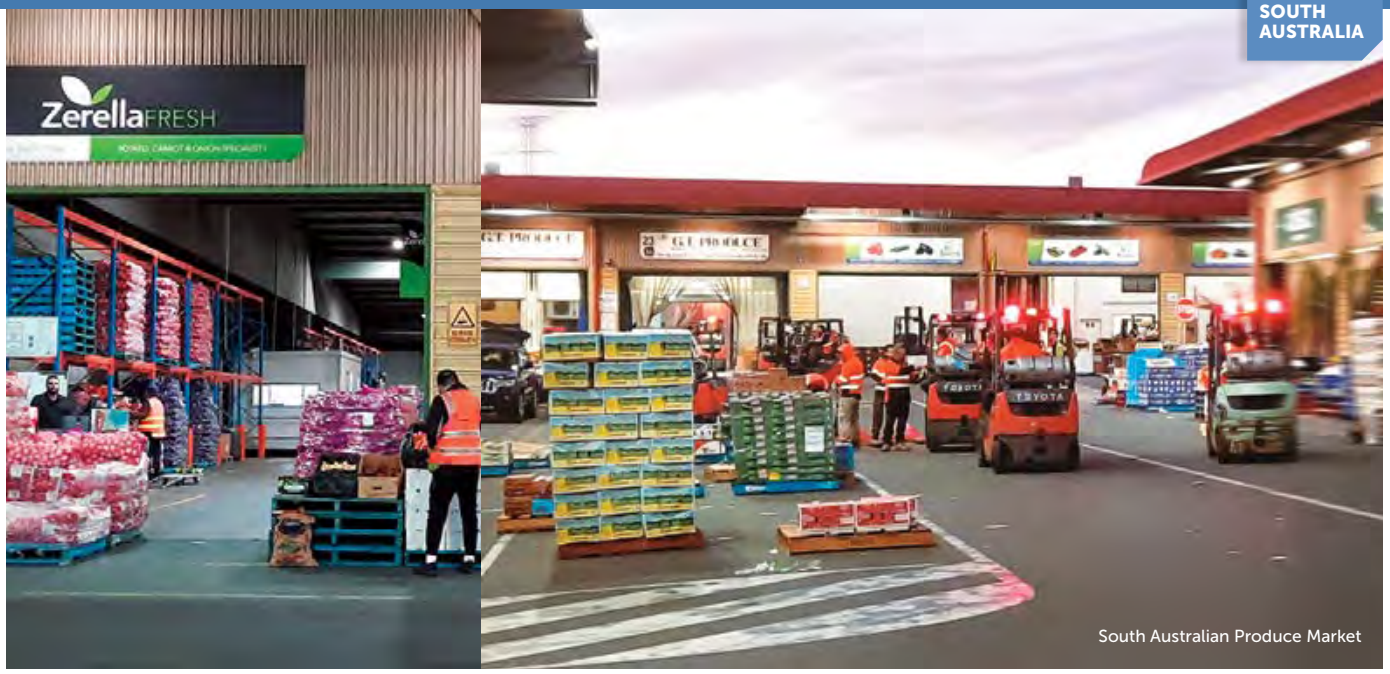
Leafminer

AUSVEG SA and VegNET SA have recently worked with local growers to respond to a change to WA Serpentine Leafminer biosecurity requirements which would have seen a loss of market to growers from SA trading with WA.

The change was set to be introduced in early April, but was reversed following industry work with growers, local agronomists and the state biosecurity department to support a state area freedom claim.

VegNET SA played a vital role in linking growers to national funded levy payer resources and support in biosecurity to assist local industry to provide an assessment of the pest, key areas of risk and other factors which were used to support industry to address the issue which would have caused potentially tens of millions of dollars in lost markets across the state.

VegNET SA and AUSVEG SA will work to implement a testing regime to support future claims utilising existing agronomist records and potential implementation of testing moving forward.



South Australian Produce Market

Beet Cyst Nematode Project

Beet cyst nematode (*Heterodera schachtii*) is a major nematode pest of brassica crops worldwide. Substantial productivity loss in brassica crops associated with cyst nematodes has been recorded on the Northern Adelaide Plains in previous years with an estimated $2.5 million in crop damage to date (past seasons) and estimated further $5.5 million in damages estimated by regional agronomists over the next two years. It is a regional issue which poses significant challenges in the Northern Adelaide Plains production region and will potentially have flow on effects of supply of key crops like broccoli leading to price spikes and cost of living pressures for these key commodities if not effectively managed.

Local Agronomists and key growers have approached AUSVEG SA to assess the problem and it has been recommended by local industry to develop a Predicta PT DNA test for this issue. This test is available through the South Australian Research and Development Institute (SARDI) but comes at a commercial cost and investment is needed to help growers manage this issue effectively and sustainably.

If successful, the proposed project will fund the initial development and extension costs to build a program around Beet Cyst Nematode diagnosis and management. The development of the Predicta PT DNA test is a vital first investment to ensuring industry can manage this significant problem. The field validation of the test will be undertaken by the affected growers to test and identify the baseline nematode numbers.

Tara and Richard Cobbledick in their field of leeks up at Uraidla.

Emerging Leaders Program

AUSVEG SA is establishing an Emerging Leaders program to support young and new people in our vegetable sector. This will bring together and support 15 key leaders from the younger generation of growers in South Australia with the goals of improving leadership, peer communication, sharing knowledge and cross industry networking. The aim of the program is to build and grow a cohesive cohort of young leaders who support one another and direct the program of events as required.

We are kicking off the project with an Emerging Leaders Growers tour in October and the VegNet RDO will work with the Emerging Leaders group to establish their own activities and goals in response to the needs and requirements they identify. The project will foster our next generation of leaders and build business capability by enhancing the overall succession of the industry and ensuring a sustainable future for the sector in the state.

FIND OUT MORE

Please contact Peta Coughlin at VegNet SA RDO | Industry Programs Manager on 0409 029 745 or email **peta.coughlin@ausveg.com.au**

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Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

VEGNET GIPPSLAND

Regional Update

Spinach Industry Expertise Attends VicVID

One highlight from the event was the opportunity to hear from spinach industry experts, ahead of the 10th International Spinach Conference which was delivered 1 May 2023. Stuart Grigg and event MC Carolyn Blackman convened the session which provided a taster of some of the content presented at the conference. The Panel included Distinguished Professor Jim Correll of the University of Arkansas, and Professor Lindsey du Toit of Washington State University, who have both long been involved in delivering the Conference to the world's spinach industry and are highly acclaimed plant pathologists for horticulture.

Prof Correll provided an overview of the history of the conference and Prof du Toit provided an overview of global spinach production, where it is grown and why.

The panel also featured global Spinach Coordinator for Rijk Zwaan, Wim in 't Groen who had travelled from the Netherlands to attend both events. Rounding out the panel were local growers, Andrew Bulmer, and Adam Schreurs, who were able to ground the discussion with real-life perspectives, both from the angle of best practice and business management.

"The conference has a long history of delivering information to the spinach community on everything from disease problems, breeding, food safety issues and all aspects that impact the spinach market," said Professor Correll.

"This will be the first time in the southern hemisphere for the conference, and Australia is a large grower and consumer of spinach, so there is a lot attracts a lot of researchers and seed producers. A field day like VicVID gives growers in the field a ground truth is extremely important to give a real world perspective, so they are a critical part of the industry."

Above. Stuart Grigg discusses spinach with Professor Jim Correll, Professor Lindsey du Toit and Kayla Spawton.

Building networks for sustainable fall armyworm management

A team from Department of Agriculture and Fisheries (DAF) Queensland, Dr Melina Miles, Dr Heidi Parkes and Dr Ramesh Puri, visited industry representatives and growers in East Gippsland in March to exchange experience on managing fall armyworm (FAW). The main aim was to share knowledge and identify industry priorities for FAW management in the area.

At the meeting, Melina shared results of FAW research with a dozen vegetable and broadacre agronomists and growers.

The participants were keen to develop skills on identifying the fall armyworm and how to monitor crops effectively for FAW.

Growers also showed interest in the potential for biological approaches,like using pathogens, parasitoids, and predators to help manage FAW. The team visited Sale and observed FAW infesting maize crops.

The visit was hosted by the Gippsland VegNET Regional Development Officer, Bonnie Dawson and AgVic Horticulture Program Coordinator, Scott Botten.

Below. Dr Melina Miles (DAF Crop and Food Science), Bonnie Dawson (VegNET), and Dr Ramesh Puri (DAF Horticulture and Forestry Science) inspecting fall armyworm and *Helicoverpa armigera* (previously *Heliothis*) in maize in East Gippsland, Victoria).

FIND OUT MORE

Please contact Bonnie Dawson at VegNET VIC (Gippsland) RDO on 0407 683 938 or email **bonnie.dawson@foodandfibregippsland.com.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

VEGNET GIPPSLAND

Soil Moisture Monitoring

VicVID was also an opportunity for Elders and Butler Market Gardens to trial soil moisture monitoring, as part of VegNET Gippsland and funded by the Future Drought Fund. The project has a number of demonstration sites established in different vegetable and potato production systems across Gippsland. Two Sentek systems were installed at the VicVID site, in a lettuce trial site and AHR's cover crop.

On the Friday morning, the project presented to a small group of growers who expressed interest in also adopting the technology. Bonnie introduced the project and provided a brief overview of learnings gained over the initial eighteen months of the program. Medi Zaboli, from Sentek, then explained the technology and its capacity to improve irrigation decisions, the understanding of soil structure and ultimately increase water and nutrition use efficiency. He also suggested that this soil moisture monitoring technology is an entry point for what will ultimately become more automated irrigation systems in the future.

VEGNET VICTORIA NORTHERN, SOUTHERN & WESTERN

Regional Update

The Victorian Vegetable Innovation Days has been strongly supported by industry and supporting organisations. One of the sponsors for the event was Melbourne Water. Attending the two-day event on behalf of Melbourne Water, was Karen Thomas Regional Agriculture Landcare Facilitator.

VegNET Regional Development Officer North, West & Southeast – Danielle Park, spoke with Karen Thomas about her experience of the event.

"The two days of the Victorian Vegetable Innovation Days have been a great event. I've met with lots of people and a couple of project ideas have been kicked around," said Karen.

"A number of growers have visited the Melbourne Water stand and we've been discussing native insectaries. Growers have shared photos of plantings they've already made or are planning to do."

Karen has worked with vegetable producers to understand the beneficial role that native vegetation insectaries may play in their systems when combatting pest insects and in addressing areas with weed management challenges.

"It has been really great to see that they (native insectaries) have started to take off. There are a lot of plantings occurring. It has been great that growers have visited the Melbourne Water stand to show me what they're doing."

Above. Karen Thomas, Regional Agriculture Landcare Facilitator with her natives at VicVID.

FIND OUT MORE

Please contact Danielle Park at VegNET VIC (North, West and South-East regions) RDO on 0432 324 822 or email **danielle.park@ausveg.com.au**

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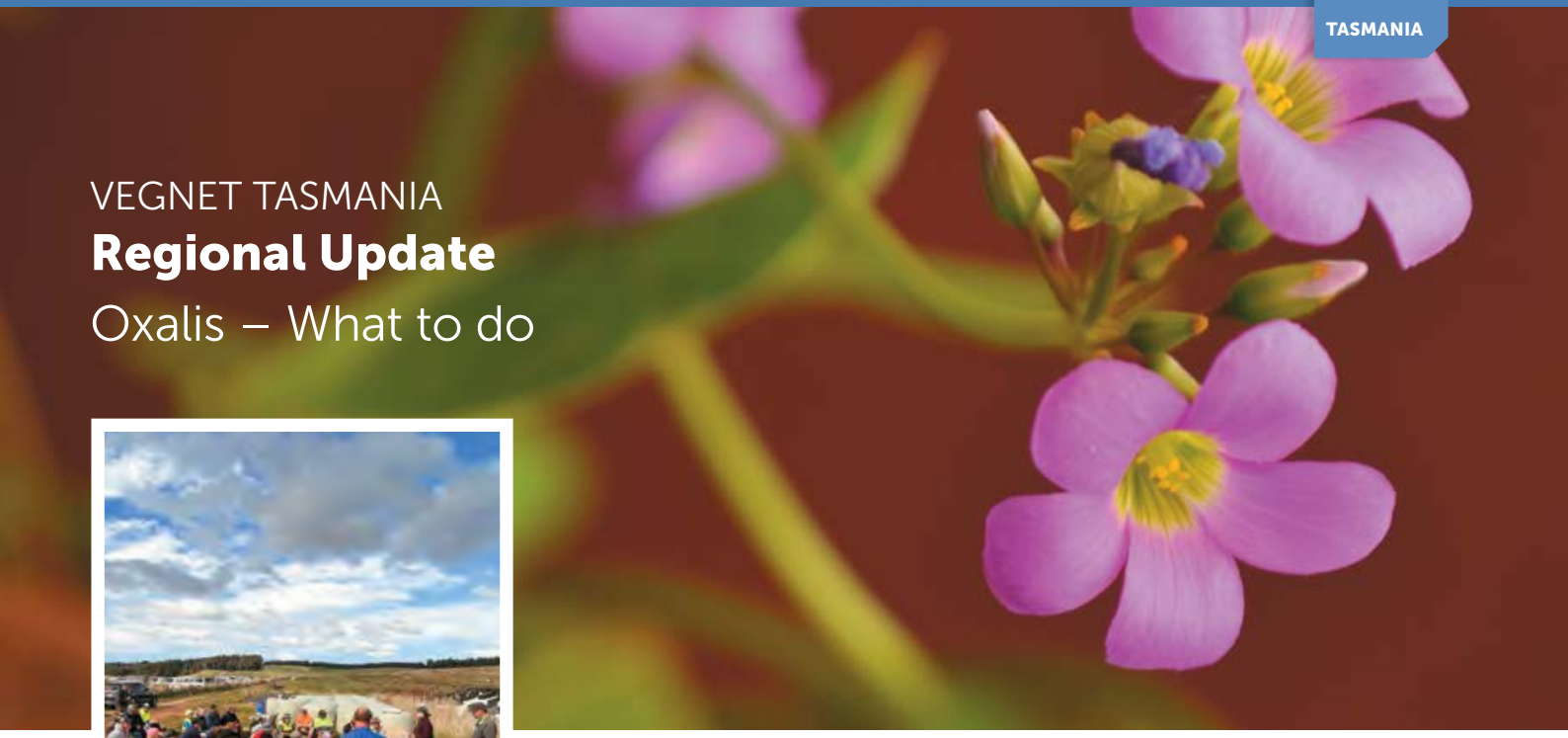


VEGNET TASMANIA

Regional Update

Oxalis – What to do

In late March, VegNET Tasmania joined with *PotatoLink* and ran a paddock walk focussed on oxalis control. As potatoes are often grown in rotation with vegetable crops, we tackled this issue from a systems perspective.

The main culprit here is *oxalis latifolia* (also known as fish-tail sorrel, pink sorrel), a perennial plant that behaves like an annual weed. This is a particularly persistent weed problem as oxalis reproduces using bulbs which can store significant mass of energy ready for the right conditions to sprout. Each plant develops a multitude of bulbs. The bulbs are very hardy; some bulbs that had been left in a jacket pocket for several months still sprouted!

The bulbs are easily spread in paddocks (and between paddocks) by anything that soil will stick to, including agricultural machinery, boots, and vehicles. Cultivation is the main cause of weed spread within a paddock, and creating new infestations in other paddocks.

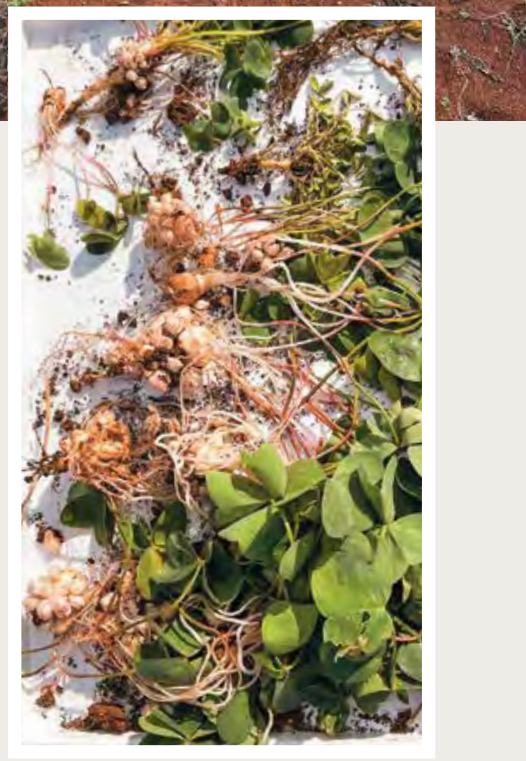
As with other farm hygiene and biosecurity issues: "An ounce of prevention is worth a pound of cure."

Control Measures

With above factors of persistence and spread in mind, prevention is the first step to control with oxalis. Good farm biosecurity will reduce the risk of having oxalis arrive on your property. If oxalis has already established on your property the next step is to isolate the patch from production. This will reduce the likelihood of it further spreading throughout your paddock and other farms, reducing the cost of control by reducing the area you need to control.

There are a number of chemical options that are registered for use to control oxalis. As with any herbicide you need to check their suitability for the current crop and for any potential plant-back issues that could impact crops in the rotation. In Tasmania, a lot of herbicide chemistry can be unsuitable for use, if poppies are grown in the

Above. The oxalis walk was well attended which shows how much of a problem oxalis is becoming.



Oxalis Latifolia can produce a mass of bulbs from each mother bulb.

cropping rotation. As with any chemical control ensure you follow the label and consult with your agronomist to ensure the suitability for the product you are using.

If you are looking at chemical controls, the timing of spraying is critical. Oxalis should be consistently targeted just before planting with knockdowns and pre-emergent herbicides, and also with post-emergent herbicides, particularly at the critical phases. The most important time for control is at the 4-5 leaf stage, just before new bulbs begin to form. At this point, the parent bulb reserves are exhausted and it can be further weakened by defoliation, minimising bulb set.

Persistence pays

Control of oxalis requires persistent defoliation to minimise the number of bulbs that can set each season. The reason is that oxalis bulbs do not sprout evenly, and continue to propagate throughout the summer. Therefore, multiple applications of suitable herbicides should be planned. If you have an infested paddock, a good way to manage the weed could be to build a rotation around chemistry that has activity against oxalis, and ensure that you don't miss key timings. This could mean focusing on winter crop production (when the weed is dormant) and focusing on fallow control in the spring and summer. While fallowing is not a good general practice. It may be the only way to control oxalis in heavily infested paddocks.

As always consult with your agronomist and follow the label instructions to ensure you are not jeopardising a crop. This need for multiple treatments is a key reason to lock up areas of infestation to keep the area needing control as small as possible. With continuous, diligent management, there may not be a need to take areas out of production. With oxalis, the most important aspect of control is follow up!

Ultimately there is no silver bullet to remove oxalis. Like a number of other weeds it requires continuous effort to reduce its impact potentially remove it from your farm.

Thanks to the team at *PotatoLink* for delivering this paddock walk with us. We look forward to working together in the future to deliver outcomes for vegetable and potato growers in Tasmania.

Top L-R. An important part of the day was to get into the paddock and identify the oxalis and look at how prolific the bulbs can become. **Right.** Oxalis bulbs can remain dormant in the soil at depth and germinate when the conditions are right.
Images courtesy of Ossie Lang and Tim Walker.

FIND OUT MORE

Please contact Ossie Lang on 0430 380 414 or email **ossiel@rmcg.com.au**

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VEGNET BOWEN GUMLU

Regional Update

Fall Armyworm Masterclass

Fall Armyworm continues to be an issue for the Bowen Gumlu region

In April, the Bowen Gumlu Growers Association hosted a horticulture focussed Fall Armyworm masterclass at the Department of Agriculture and Fisheries research facility in Bowen. A large number of agronomists, growers, and industry representatives online and in person to hear the Fall Armyworm team from CSIRO discuss their findings.

The small team from CSIRO and Department of Agriculture and Fisheries (DAFF) started the day with a visit to Mulgowie Farming in Bowen to view sweetcorn crops. Regular monitoring of the crop and a good management program have been critical to the success of sweetcorn crops under heavy Fall Armyworm pressure. The team then viewed the work being undertaken by entomologists at DAFF in Bowen North Queensland. The afternoon focussed on a series of presentations on the impact of Fall Armyworm globally and in Australia.

The presentations catered for those wanting to learn more about the impact Fall Armyworm is having on the horticulture, sugarcane and grains industries. The masterclass focussed on understanding the genetics of this insidious pest and the research currently being undertaken to find novel biopesticides and better understand chemical resistance.

Dr Wee Tek Tay, Principal Research Scientist, CSIRO, Fellow, Macquarie University, and member of the Food & Agriculture Organisation United Nations panel on Fall Armyworm along with Beatrice Apirajkamol (PhD candidate) and Dr Rahul Rane Senior research consultant at CSIRO Health & Biosecurity division presented on important Fall armyworm topics.

Tek's research focussed on the genome of Fall Armyworm as it travelled across the globe to better understand if its rapid movement was because of human influences or natural migration. Based on the genetic research it appears that it is a combination of both has accelerated the rapid movement of Fall Armyworm. Genetic signatures from other parts of Africa and Asia show a high level of variability potentially indicating that Fall Armyworm had been in those countries for a long period of time without being described by scientists.

The presentation from Beatrice focussed on novel biopesticides and bacterial toxins for Fall Armyworm management. The research has shown promise on a range of fungi from the *Beauveria* and *Metarhizium* families while bacteria from the Bacillus family is also showing promising results. Biological controls of pest species play a very import role in suppression and include natural predators, parasitoids, and pathogens. Robust integrated pest management programs require a combination of biological and chemical controls.

The final presentation focussed on the movement of Fall Armyworm in Australia during the past three years. Tek discussed research from Rahul on the multiple incursions occurring since the initial introduction based on the differences in genomes. This information is important as Fall Armyworm populations have developed resistances to several groups of chemicals. For agronomists and growers to identify the best combination of biological and chemical sprays they need to know what chemistry Fall Armyworm is resistant too.

The presentations were very well received by the audience with a wide range of thought provoking questions asked. There is still a long way to go in the suppression of Fall Armyworm from economically important horticulture crops, however, there is some promising research being conducted. Fast tracking of this research is now required to ensure farmers can tackle the threat posed by Fall Armyworm.

Above. Dr Wee Tek Tay, Principal Research Scientist, CSIRO, Fellow, Macquarie University presents on Fall Armyworm.

FIND OUT MORE

Please contact David Shorten, Regional Development Officer, Bowen Gumlu Growers Association. M: 0419 429 808, E: **rdo@bowengumlugrowers.com.au**

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AUSVEG state update

AUSVEG State News

AUSVEG VIC
Celebrates

A milestone year in the history of AUSVEG VIC, support continues for Victorian growers to produce quality food and celebrate their achievements.

Established in 1923 as the Vegetable Growers Association of Victoria (VGA), this year AUSVEG VIC celebrates 100 years of serving and providing a voice for Victorian vegetable and potato growers. Each year, the AUSVEG Vic Awards for Excellence, shines the spotlight on some of Victoria's highest achieving growers. The 2023 event, sponsored by EE Muir & Sons, was held on 29 April, 2023 with more than 300 guests attending the event.

Categories for Awards

Grower of the Year / Sponsored by EE Muir & Sons

A vegetable or potato grower that is outstanding across all aspects of vegetable production, including growing, environmental management, staff management and product quality. Innovation, meeting challenges and implementing new methodologies are well regarded as well as contributing to the broader industry.

Young Grower of the Year / Sponsored by Visy

A vegetable or potato grower who shows excellent business acumen and innovation and has applied it on-farm and in the wider farming community when practicable. A grower that demonstrates a high level of commitment to the industry, industry groups and community.

Community Stewardship Award / Sponsored by Elders

An individual or business that is proactive in developing and/or implementing a system or program of safe storage and use of on-farm materials above and beyond industry standards. Engagement in local or national community events and initiatives to engage the wider industry for improvement that demonstrates the responsible planning and management of resources, leading to beneficial environmental impacts is also well regarded.

Environmental and Sustainability Award
Sponsored by Butlers Market Gardens

An individual who has demonstrated a commitment to implement sustainable farming practices on-farm. Individuals who have developed an innovative solution to meet an environmental challenge on-farm or shown leadership in promoting environmental issues in the local and wider community.

Women in Horticulture Award
Sponsored by Boomaroo Nurseries

A female industry member that has demonstrated outstanding ability and success in their chosen field, whether it is growing, research and development, farm management, or otherwise. An individual that is pro-active and has shown commitment to achieving success in the industry. An individual that has a reputation for mentoring women in horticulture.

R&D Adoption and Industry Impact Award
Sponsored by vegNET Victoria

A vegetable grower who has demonstrated a commitment to industry funded research and development (R&D) projects. This may include hosting field trials, demonstration sites or events or contributed to a Project Reference Group for the benefit of the broader vegetable industry. A grower who has changed practice or adopted new technology on-farm through involvement in a levy funded R&D project. Where a system of technology or business practice is implemented outside the norm, showing significant contribution to best farm practice or in cost savings through the value chain is well regarded. A grower who is perceived by the industry and their peers as a leader and influencer to improve the productivity, profitability and sustainability of the vegetable industry beyond their individual business.


Above L-R. Grower of the Year Adam & Christopher Schreurs, Community Stewardship Michael Tran, Young Grower of the Year Joe & Dominic Boratto.

AUSVEG VIC

CONTINUED

2023 Award Winners

Category	Winner	Business
Grower of the Year	Adam and Christopher Schreurs	Schreurs & Sons
Young Grower of the Year	Joe and Dominic Boratto	Boratto Farms
Community Stewardship Award	Michael Tran	E.E. Muir & Sons
Environmental & Sustainability Award	Kane Busch	Busch Organics
Women in Horticulture Award	Angela Ruffo	Tripod Farms
R&D Adoption and Industry Impact Award	Bruce Scott	Campbells Fertiliser

For more information contact Joy Pedersen.

Joy Pedersen
AUSVEG VIC Executive Officer
Phone. 0413 760 776

QUEENSLAND

Live and learn

When we self-proclaimed this year as 'The Year of Horticulture' we hoped we would be able to effectively celebrate the work our growers do, educate consumers, and advocate to decision makers through our new advocacy and membership arm – Horticulture Queensland. We also hoped we could bring some fun and positivity into our industry, an industry which needs to shake off an image problem.

At the time of writing, we were just over two months into our jam-packed year. The first learning has been that we will need more than a year to celebrate horticulture having only celebrated a handful of our 104 Queensland commodities thus far.

We have spoken to thousands of consumers and learnt a lot about guerilla, pop up style, overnight activations. Of course, they're a lot of work but it's also a lot of fun to engage with consumers and showcase our amazing produce differently. However, more importantly, we have furthered our understanding of the knowledge and understanding gaps between growers and those we grow for.

Three of our learnings from the last few months have been:

1. **Learning: We need to focus on educating our consumers as once they understand, they are our staunchest advocates.** Consumers genuinely want to know more about food production and find what growers may consider to be mundane, run of the mill information, quite fascinating. At our carrot activation we had a fact sign that read, "You can fit 2000 carrot seeds in a teaspoon." This one fact alone sparked conversation about how carrots are sown, how long they take to grow and what the impact of water and fertiliser is on taste.
2. **Learning: We need to speak more about each link in the fresh produce supply chain and market our impact on employment.** Consumers have very little knowledge of the supply chain of fresh food, however, are interested in it. COVID has given us all a unique understanding of the impact of even one broken link. When we explain the variety of jobs in the horticultural supply chain we can see consumers start to comprehend the industry's economic and social impact.
3. **Learning: The feedback from retailers about what a consumer 'wants in fresh produce 'specs' should be up for debate.** The mini pineapples from our first activation consumers thought were fabulous for 'purse size breakfast food.' They also commented they were a 'no waste' size and that they didn't like putting a half-cut pineapple back in the fridge. Are retail specs really what the consumer wants?

We can't wait to see what else we unearth this year.

Rachel Chambers
QFVG CEO
Phone. 07 3620 3844

QFVG QUEENSLAND FRUIT & VEGETABLE GROWERS

NORTHERN TERRITORY

NT Farmers are preparing for the bi-annual Northern Australia Food Futures Conference. The conference with be held in Darwin from 22-25 May and is Australia's leading conference on agricultural development in the North.

In the leadup to the conference the podcast Northern Australia Food Futures has been launched. In this podcast series NT Farmers officer Steph Coombes sits down with a range of guests to explore the 2023 conference theme, "Northern Myths, opportunities and Realities" and provide a preview of the discussions that will take place at the event which attracts over 600 national and international delegates. Search the Northern Australia Food Futures podcast on Spotify or Apple Podcasts.

A key feature of the event is the Ian Baker Award for Outstanding Contribution to Agriculture presented to one noteworthy recipient every two years at the North Australia Food Futures Conference.

The award honours individuals who have played a significant role in fostering the development of the northern Australian agricultural industry. A panel of industry representatives will search for one winner who reflects the values of the award. Preference will be given to individuals who have worked across and supported a wide range of commodity groups within the agricultural sector. The award is open to individuals of all ages.

AUSVEG State News

NORTHERN TERRITORY

CONTINUED

The panel will closely consider individuals who have demonstrated the following experience and qualities:

- Provides leadership to the agricultural sector
- Encourages and supports the next generation of leaders
- Facilitates research and innovation in the sector
- Delivers effective extension to industry
- Actively supports the growth of the industry
- Demonstrates commitment to northern Australia

The award is named in honour of the immense impact Mr Ian Baker has had on the agricultural industry in the north, specifically the Northern Territory.

Mr Baker has spent over three decades actively building and supporting the Territory's agriculture industry. In his role within the NT Government Department of Primary Industries and in his capacity in industry associations, he was instrumental in growing the industry into what it is today.

Mariah Maughan
Vegetable Industry Development Officer
Phone. 08 8983 3233

TASMANIA

With potato harvest starting to wind up in Tasmania, we're wrapping up yet another challenging year for vegetable production in the State. Record rainfalls throughout October and November significantly disrupted the planting season for some of our major vegetable commodities including peas, potatoes and beans. Peas were hit incredibly hard, with some crops wiped out early in the season due to flooding and potato planting was pushed back considerably.

If there was ever a year to capitalise on the strong demand for Tasmanian-grown vegetables it would have been this one but nevertheless, we've still seen some excellent crops in some areas. We may not have been able to meet production targets, but the end result is a testament to the collaboration between growers and processors supporting each other and being able to change and adapt to best manage the conditions thrown at us.

Softening fertiliser prices are providing some relief for growers however the majority of other production costs remain high, including electricity, fuel, water, insurance and labour costs which are concerning. Coupled with these extreme weather events we've been seeing, the risk that growers are exposed to continues to increase and this is becoming one of our greatest barriers to the growth of the industry. As usual, these challenges will be explored thoroughly over the coming months throughout contract negotiations between Tasmanian growers and our major vegetable processors.

I'd like to take this opportunity to acknowledge the recent passing of Tasmanian potato industry legend Ted Forsyth. Ted was a true industry leader and was instrumental in shaping the potato industry into what it is today. He was a passionate farmer and family man admired by many, who will be sadly missed.

Nathan Richardson
Chair - TFGA Vegetable Council
Phone. 03 6332 1800

KUBOTA IMPLEMENTS

DIAMONDS IN THE ROUGH

PRECISION PLANTING

Diamond pattern seeding with GEOSEED

"There's no other planter in Australia that can do what the Kubota does, and we are very happy with the results."

Brad Qualischefski, Qualipac

With his farms producing a wide variety of vegetables on a large scale, Brad Qualischefski of Qualipac Produce wanted to introduce new technology into his farming operations – with optimised best practice of both sustainable and economic farming.

Which is why he chose Kubota.

"We use the Kubota Precision Planter for the pumpkin, green beans and sweet corn and we've got the Kubota Vegetable Planter for the onions. We've also got a Kubota compact disc with a seed hopper on top for cover and fodder crops

"We plant our seeds in the shape of a diamond from north to west in the paddock. The PP1450V allows us to drive 45 degrees in any direction with a cultivator in the ground to pull out the weeds without pulling out the pumpkin plant itself.

POWER HARROWS
2.5m - 6.0m Working Widths

PLOUGHS
3-8 Furrow Auto-Reset

PRECISION PLANTERS
3.0m - 6.0m Working Widths

VEGETABLE PLANTERS
2.5m - 6.5m Working Widths

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