vegetables australia Spring - 2022

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THE

Contents







Regulars

01 Editoria

Hort Connections 2

- 12 Hort Connections
- 14 Awards for Excelle
 - 18 Taking advantage of maximise farming o

Annual Vegetable In

- 24 *VegNET 3.0* boosts l practice change
- growers after a nev
- 28 Protected cropping Getting the recipe r

Features

- 36 Visas available to A
- 38 Fertiliser choice car on-farm carbon em
- 42 Climate outlook ove Bureau of Meteorol
- 48 Vegetable Inflation as Cost Pressures In

Profiles

- 52 Grow Your Career i Camilla's dynamic F
- 54 Marlon Motlop: Mal accessible for all Au
- 56 Sam Kisvarda: Aussi research for bone n

VegNET Updates

- 66 VegNET 3.0: Year 1
- 70 Lockyer Valley: Ove
- 74 NSW: Greenhouse
- 76 Gippsland: Soil mo
- demo site results

R&D

- 04 Reflecting on the la industry communic
- 06 What is the Vegeta
- 08 Hort Innovation Ve
- 10 Hort Innovation Ve
- Investments Lev
- 44 Ask the Industry brings new light to
- 46 Commodity profile
- 50 Is sea freight a viabl
- perishable Victoria
- 90 Demonstrating inn vegetable producti



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TOL ?

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| | 02 | Message from AUSVEG CEO |
|---|-----|--|
| 022 | | |
| tremendous success | 20 | Challenges and opportunities for the horticulture industry |
| the weather to pportunities | 22 | Hort Connections 2022 - Trade Show highlights |
| | | |
| ndustry Seminar | | |
| ousiness by informing | 29 | Increasing horticulture market access opportunities |
| ent costs – supporting pest or disease detection | 30 | Soil Wealth ICP projects – four leading growers share their results |
| 101: ght | 32 | The Unbreakable Farmer: Breaking down mental health stigma in the bush |
| | | |
| stralian growers | 62 | Mick Keogh: Improving market |
| help to reduce | | transparency through the Horticulture Code |
| erview from the | 64 | Costs of production and produce |
| ogy | | prices – not a short-term problem for growers |
| Hits 15.4% in June Ipact Retail | | |
| | | |
| Horticulture: | 58 | Tim Bond: Innovative technology eases |
| &D career in horticulture | 60 | labour strain for growers |
| stralians | 00 | sustainable solutions to preserve |
| e-grown tomatoes support arrow failure syndromes | | freshness in broccoli |
| | | |
| survey results released | 80 | NT: Meet NT's new RDO – |
| rcoming a challenging 2022 | 82 | Mariah Maughan |
| rower Cheyne Clarke | 0L | collaboration the key to addressing |
| sture monitoring | 84 | TAS: Increasing fertiliser efficiency |
| d Southeast): Native | 86 | WA: RDO Michael Bartholomew |
| | 88 | SA: Meet SA's new RDO – Olivia Pineau |
| | | |
| st three years of ations | 92 | New agtech plant pest surveillance trials for winter production in |
| le Levy? | ~ ~ | North QLD |
| etable Fund Update | 94 | in Australian green peach aphid |
| Projects 2022 | 97 | Minor Use permits |
| lew fungicide | 98 | What is the Emergency Plant Pest Response Deed? |
| Carrots | 100 | What are some of the high priority |
| e option for exporting | 102 | plant pests for the vegetable industry? |
| vegetables? | 102 | an animal issue |
| n | | |

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The project National Vegetable Industry Communications Program (VG18000) is a strategic levy investment under the Hort Innovation Vegetable Fund. Communication of research and development projects has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture. Vegetables Australia and Vegenotes are produced by AUSVEG Ltd and are free for all national vegetable levy payers.

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Cover Marlon Motlop, Director and Farm Manager at Native Co. See Page 54



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Vegetables Australia is the most widely distributed magazine in Australian horticulture.



Editorial

The Spring edition of Vegetables Australia is the final magazine in VG18000 National Vegetable Industry Communications Program, a strategic levy investment under the Hort Innovation Vegetable Fund that facilitates the communication of levy-funded research to growers.

The project has successfully continued to deliver tailored communications activities targeted at growers to help audited as the most widely distributed

Since the start of VG18000, AUSVEG has published 12 editions of Vegetables

Vegetables Australia publication as VegNET program.

publish this magazine, along with many

It is important to not only be aware of the latest research funded by the levy,

levy investment over a five-year period, We encourage you to contact AUSVEG

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We look forward to continuing to

This edition also features the first in a series of profiles from the recent Hort Connections Awards for Excellence winners.

We will be highlighting these industry Muir & Sons Community Stewardship Award, Butler Market Gardens









partnered to provide added value to

to build a more unified profile for the latest in technology and innovation, hear from industry experts, meet leading

I would like to thank the event's major sponsors, including Principal Convention Partner Hort Innovation, as well as the

with severe weather events, labour

industry body that represents the

Message from the CEO

It was pleasing to see so many growers in-person at Hort Connections 2022.

the broader supply chain – has stepped up our advocacy to ensure that growers' throughout the pandemic.

AUSVEG is raising the issue of costs Government, including directly with the new Federal Agriculture Minister Senator Murray Watt at Hort Connections and in several follow-up meetings and

fresh produce planted, harvested and

the voices and concerns of growers

Supply Chain Alliance, which also Meat Industry Council, Seafood

Australia, Restaurant and Catering Industry Association and the Australian Association of Convenience Stores.

in early September. The group has further address workforce challenges

weather, with the Bureau of Meteorology Nina weather system will persist until are difficult and that growers were get fresh food to Australian families.

I am confident that the industry will rebound from these difficult times of the hard work and dedication of

Michael Coote CEO. AUSVEG

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Reflecting on the last three years of industry communications

In September 2019, when bushfires were ravaging the country and before the COVID-19 pandemic changed the way we lived, worked and travelled, AUSVEG began a three-year project to communicate the outcomes of industry-funded research to levy-paying growers and the wider industry. This project included the publication of Vegetables Australia, as well as a number of other communications materials to promote the benefits of the levy investment system. Project Lead Shaun Lindhe provides an overview of the project.

Communicating research outcomes effectively is essential to increase awareness and adoption of research outcomes by levy payers to improve productivity, competitiveness and profitability. As Australian horticulture continues to deal with the COVID-19 pandemic, rising input costs, labour shortages and increasingly frequent adverse weather events, it is important that grower levy payers are given every opportunity to learn about innovations and improvements that can enhance their businesses.

A strategic levy investment under the Hort Innovation Vegetable Fund, National Vegetable Industry Communications Program (VG18000) was undertaken by AUSVEG to increase awareness of the outcomes of research projects.

VG18000 is a comprehensive program that communicates the findings of research outcomes funded by the vegetable research and development (R&D) levy and other relevant industry news to growers. This project increases awareness of project outcomes to encourage their increased adoption by growers on-farm.

The program uses a variety of traditional and online communications to ensure that the industry has a wide range of opportunities to increase their awareness of levy-funded R&D.

By communicating research results to growers and highlighting the practical on-farm benefits that can be gained from adopting the findings of relevant

levy-funded projects, the program aimed to inspire Australian growers to take advantage of the ground-breaking and world-leading research taking place in the industry to gain real-world benefits onfarm and encourage business innovation, with the ultimate aim of improving profitability for the Australian vegetable industry.

How did AUSVEG communicate to growers?

The project has successfully continued to deliver streamlined communications activities that had been developed from previous industry communications projects on behalf of the vegetable industry. These activities include:

- A variety of widely read industry publications including Vegetables Australia and Vegenotes.
- The management, maintenance and promotion of the InfoVeg national R&D database and associated products, such as InfoVeg TV.
- The AUSVEG Weekly Update e-newsletter.
- Media and social media relations to promote industry-funded research to growers and the wider industry.

What R&D was communicated to growers?

As at 1 September 2022, a total of 1,761 industry-funded projects featured in vegetable industry communications across all of its different communications platforms during the life of the project.

- 12 editions of Vegetables Australia published 533.61 pages dedicated to industry research (an average of 44.57 pages per edition).
- 12 editions of Vegenotes, which published 24 case studies that covered 23 separate levy-funded projects.
- 150 Weekly Update editions published over 1,300 vegetable industry-related articles covering 168 R&D projects funded by the vegetable levy and other Hort Innovation-funded sources, as well as a re-design of the newsletter to modernise its look, increase readability and more clearly promote industry research.
- · 35 Final Reports from industryfunded projects were uploaded to the InfoVeg R&D database.
- 1,163 Final Reports collated on the InfoVeg R&D database.
- · Media releases and direct media engagement that resulted in 1,365 media mentions on a total of 38 separate vegetable industry-related research (an average of 38 per month).
- · Social media promotion of 137 levyfunded and industry-related research across Facebook, Twitter, Instagram and LinkedIn.
- Videos and podcasts highlighting 15 levy-funded projects – an additional series of videos and podcasts are currently in production and will be published in due course.

vegetables

6

CASE STUDY Vegetables Australia The Vegetables Australia publication is the flagship communications product produced by AUSVEG. It is independently audited as the most widely distributed magazine in Australian horticulture and reaches growers, researchers, supply chain representatives and government decision-makers across the country.

R&D Pages

Since the start of VG18000, AUSVEG has published 12 editions of Vegetables Australia, with a total of 533.61 R&D pages published.

The chart below demonstrates the proportion of R&D pages in each edition of Vegetables Australia during the project period, as well as the significant increase in the size of the magazine, and corresponding increase in R&D pages, during the project.

In addition to the hard copy magazine that AUSVEG distributes to levy-paying growers, AUSVEG also publishes R&D articles online via its website, and promoted via social media and the Weekly Update e-newsletter, to extend the reach of its R&D communications.

R&D Adoption Profiles

15 growers were featured in dedicated R&D Adoption profiles across 12 editions of the magazine. Each of these grower profiles have been uploaded to the AUSVEG website, along with its other grower profiles that it publishes each edition. To view these profiles, visit ausveg.com.au/news-media/meetour-growers.

VegNET contributions

AUSVEG has featured content from each VegNET RDO in each edition of the Vegetables Australia publication as part of our close alignment with the VegNET program. This engagement extends beyond the Vegetables Australia publication, but also includes communicating regular updates from VegNET officers and outcomes of their activities and events in the many communications outputs across traditional, social and online media.

R&D pages vs Other content



CASE STUDY

Media and Social Media Engagement

AUSVEG increased its engagement with the media through a targeted media plan to increase the effectiveness of R&D communications using regional, rural and industry journalists. This has been a successful strategy to increase the media engagement on industry research, and extended the reach of communications beyond AUSVEG's own extensive industry network.

By reducing the number of media releases developed in the project and focusing more on ongoing, direct engagement with journalists and editors, AUSVEG has been able to continue extending the reach of industry-funded R&D using an effective methods while significantly reducing costs.

AUSVEG has generated a total of 1.365 media mentions across print, radio, TV and online media. AUSVEG further boosted its reach through a comprehensive social media strategy using AUSVEG's network of 16.7k users across Twitter, Facebook, Instagram and LinkedIn.

Find out more

For further information on this project, please contact Project Lead Shaun Lindhe at shaun.lindhe@ausveg.com.au or on 03 9882 0277. This project has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. Project Code: VG18000





Vegetable Levy Update

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

What is the vegetable levy?

Levy is payable on vegetables that are produced in Australia and either sold by the producer or used by the producer in the production of other goods. The levy rate on vegetables is 0.51 per cent of the gross sale value of the vegetables at the first point of sale.

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

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

How are levy investment decisions made?

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

What is the vegetable Strategic Investment Plan (SIP)?

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

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

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

For the previous vegetable SIP, a performance report has been developed to demonstrate how investments delivered in the Vegetable Fund from 2016/17 to 2020/21 generated impact for vegetable growers. The report provides an overview of key achievements delivered through each levy investment, and how they relate to the industry's SIP outcomes and strategies. While this performance report provides a five-year review of the vegetable SIP 2017–2021, going forward an annual performance report will be provided for the vegetable SIP 2022–2026.

What is the vegetable Annual Investment Plan?

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

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

The AIP provides detailed information on:

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

Where do investment ideas come from?

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



How are investments prioritised?

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

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

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

The vegetable SIAP consists of industry supply-chain stakeholders, most of whom are levy-paying growers. Panels also include industry representative body representation and, where applicable, a lead agency representative from within the National Horticulture Research Network. The SIAP is in place to discuss investment ideas, in order to provide advice to Hort Innovation on potential levy investments. The advice they give is guided by the industry's SIP.

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

How are investments progressed?

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

How to keep track of investments

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

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

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

Find out more

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

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



Hort Innovation **Vegetable Fund Update**

The vegetable Strategic Investment Plan (SIP) 2022–2026 provides a roadmap to guide Hort Innovation's investment of vegetable industry levies and Australian Government contributions, ensuring investment decisions are aligned with industry priorities.

The SIP's 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.

Currently, the vegetable research and development (R&D) fund has capacity to invest in new projects from FY2022. Careful prioritisation of future investment needs is required over the next five years.

OUTCOME 1

Industry supply, production and sustainability

To accelerate the application of production practices that are proven to optimise returns and reduce risk to growers.

Achieving the outcome will involve:

- 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 environmental 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 solutions.

The four outcome areas of this SIP cover significant themes under which programs and investments will be focused. Industry outcomes

Outcome statements as identified and prioritised by the vegetable industry have been prepared under four key outcome areas:

- · Industry supply, productivity and sustainability.
- Demand creation.
- · Extension and capability.
- · Business insights.

OUTCOME 2

Demand creation

To maintain and strengthen consumer demand as the foundation for sustainable expansion of production and consumption in both domestic and international markets. It means the industry is investing to:

- 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.



Extension and capability

To manage knowledge, relationships, systems and processes required to communicate effectively with internal and external stakeholders.

Achieving the outcome will involve:

- 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 majority of 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 decisionmaking in businesses and for industry on investment, priorities and risk management.

OUTCOME 4

Business insights

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.

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, access to trade data, production statistics, forecasting and independent reviews to enable better decision-making process at industry level and individual businesses.

These investments underpin and are complementary to delivery of the other outcome areas.



Investment expenditure analysis

Investments specific to the Hort Innovation Vegetable Fund are guided by the industry's Strategic Investment Plan (SIP). The SIP features four priority outcome areas that have been identified and agreed upon by the industry, and Hort Innovation works to invest in R&D initiatives that are aligned to these.

\$15,702,050 has been invested by the Vegetable Fund in the Strategic Investment Plan – July 2021–June 2022



Find out more

Please visit horticulture.com.au to read the full Hort Innovation Vegetable 2022-2026 Strategic Investment Plan.

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



Hort Innovation Vegetable Fund Investments – Levy Projects 2022

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

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After 12 months of significant disruptions due to COVID-19, issues throughout the supplychain and increases to input costs the Australian horticulture industry came out in force to attend Hort Connections 2022, which was held at the Brisbane Convention and Exhibition Centre from 6–8 June 2022.

Around 3,100 delegates from all sectors of the horticulture industry descended on the Brisbane Convention and Exhibition Centre for the event, which explored the theme of '*Growing Together*'.

Hort Connections encompasses the vegetable, fruit, nut, cut floral and nursery sectors. This year, more than 72 event sponsors and industry organisations partnered to provide added value to delegates and allow them to access the expertise and services of a range of industry members in-person and online.

The three-day event was the premier opportunity for supply chain members, growers and industry stakeholders in the fresh produce and floral industry to see the latest in technology and innovation, hear from industry experts, meet leading local and global agribusinesses and network at the most highly anticipated social event on the industry's calendar.

Major sponsors of Hort Connections 2022 included Principal Convention Partner Hort Innovation, as well as the Australian Department of Agriculture, Water and the Environment, Syngenta, Coles and the Queensland Department of Agriculture and Fisheries.



The Hort Connections 2022 trade show

Business opportunities Trade show

The Hort Connections 2022 trade show was a major highlight of the conference and presented an unparalleled opportunity for delegates to network with the leading supply chain partners in Australian horticulture.

It featured over 190 exhibiting companies from across every sector of the industry and provided delegates with the chance to look at the latest trends, technologies and services available to them to give their businesses an edge in both productivity and profitability.

The trade show was sponsored by Australia's Fresh Produce Markets. Over the three-day event, many growers and industry members were able to forge new partnerships with a range of leading agribusinesses and reconnected with friends, colleagues and supply chain partners to celebrate the achievements of the horticulture industry through what was the most difficult year for many businesses and communities.

The Hort Connections 2022 trade show also featured a dedicated networking hour, with the trade show Happy Hour sponsored by Nufarm at the close of Tuesday 7 June, which allowed delegates to mingle with exhibitors around the entire trade show.



Industry events

Dedicated industry speaking sessions

There were many informative and engaging speaking sessions at Hort Connections 2022.

Supply-Chain and Production-focused speaker sessions, which covered a number of topics, such as:

- Retail landscape
- Food safety
- · Digital decision-making
- Improving supply-chain performance
- Horticulture advocacy
- Crop protection
- Taking advantage of weather
- Growing innovation and food waste.

Plenary Sessions featuring leading thought-leaders and industry figures:

- Federal Agriculture Minister Murray Watt
- State of the Industry panel
- Commentator Bernard Salt
- Mulgowie Farming Company's Shane Quinn.

AUSVEG also hosted its Annual Vegetable Industry Seminar, which covered important industry topics including:

- Soil health
- Horticulture extension
- Biosecurity
- Protected cropping
- Mental health and resilience.

HORT CONNECTIONS 2022



Networking opportunities

Throughout the conference, networking events were held to connect growers with agribusinesses, researchers, and representatives from all areas of the supply chain, transport and retail sectors. This included the Hort Connections Gala Dinner, multiple off-site and on-site events held by Hort Connections sponsors and a variety of other events that coincided with the conference.

Women in Horticulture

More than 300 delegates from the entire supply chain gathered at the Women in Horticulture event at Hort Connections 2022, proudly sponsored by Boomaroo Nurseries.

The annual Women in Horticulture event recognises the ever-important role that women play in the traditionally maledominated sector and aspired to empower women in the agribusiness and fresh produce and floral communities to become stronger leaders in their industry and develop skills and strategies to build resilience.

The event featured guest speakers Catherine Velisha, Managing Director of Velisha Farms and winner of the 2021 Boomaroo Nurseries Women in Horticulture Award, and Shanna Whan, CEO and Founder of Sober in the Country.

Gala Dinner

The capstone event of Hort Connections 2022 was the Gala Dinner, where industry members from across the supply chain gathered to celebrate the achievements of the best and brightest in the Australian horticulture industry. Queensland avocado growers Annaleise and Lachlan Donovan were announced as Syngenta Grower of the Year, while Costa Group's Elise Siliato won the 2022 IFPA-Produce Plus Marketer of the Year Award, sponsored by Seeka.

Hort Connections 2022 Award Winners





Syngenta Grower of the Year

Annaleise & Lachlan Donovan, QLD

Federal Agriculture Minister Murray Watt, Annaleise and Lachlan Donovan, Managing Director, Australia & New Zealand, Syngenta Australia and New Zealand Paul Luxton.



Corteva Agriscience Young Grower of the Year

Damien Manno, SA

Corteva Agriscience Area Manager Dan Cornally accepting the award on behalf of Damian Manno.



IFPA-Produce Plus Marketer of the Year

Elisa Siliato, Costa Group

L-R: Federal Agriculture Minister Murray Watt, Elisa Siliato, IFPA-ANZ CEO Darren Keating.



UPL Tech Innovation Award

Tim Bond – J-Tech Systems for its Aporo Robotic Fruit Packer

L-R: Tim Bond, Michael Caldwell, UPL Sub Region Manager Australia and New Zealand.



Boomaroo Nurseries Women in Horticulture

Rien Silverstein, VIC

L-R: Lindy Nieuwenhuizen, accepting the award on Rien's behalf, Boomaroo Nurseries Director Nick Jacometti.



E. E. Muir & Sons Community Stewardship Sam Kisvarda, VIC L-R: Sam Kisvarda, Flavorite Marketing Advisor Rruta Narula.



Butler Market Gardens Environmental & Sustainability

Marlon Motlop, SA

Butler Market Gardens CEO Rick Butler, accepting the Butler Market Gardens Environmental and Sustainability Award on behalf of Marlon Motlop.



Hort Innovation Exporter of the Year

Michael Simonetta, NSW

L-R: Federal Agriculture Minister Murray Watt, Hort Innovation CEO Brett Fifield, Michael Simonetta from Perfection Fresh.



Bayer Researcher of the Year

Peter Leach, QLD

L-R: Peter Leach, Tony May, Head of Customer Marketing, Australia and New Zealand Crop Science division of Bayer.



VISY Industry Impact

Goulburn Murray Valley Fruit Fly Area Wide Management (FFAWM) program, VIC

Goulburn Murray Valley Fruit Fly Area Wide Management program accepting the Industry Impact Award from VISY's Kym Ziersch.



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Jane Bunn in her session

Taking advantage of the weather to maximise farming opportunities

Understanding more about the weather can assist with making good farming decisions. In her session at Hort Connections, meteorologist and Melbourne Channel 7 weather presenter Jane Bunn explained how growers can use weather forecasting to maximise farming opportunities. **SOPHIA AULD REPORTS**

With regards to rain, meteorologist and popular weather presenter Jane Bunn said two factors must work together – tropical moisture and instability. "On weather maps, we see instability as low pressure," Jane said, addressing the crowd at Hort Connections 2022.

Tropical moisture comes off tropical oceans, while in comparison, air coming from the south holds minimal moisture.

Illustrating sea surface temperature

Jane used charts through her presentation (much like her weather forecasts), drawing the audience's attention to the latest sea surface temperature anomaly. "If it's blue, it's cooler than average. Orange and red are warmer than average," Jane explained.

Blue water in the Pacific Ocean box means moisture is being sent towards Australia. "That is known as La Nina." Blue colours in the Indian Ocean box mean moisture is being sent towards Australia from the Indian Ocean.

Next, she showed a chart of the Indian Ocean Dipole (IOD) – a measure of the difference in sea surface temperature between two areas (or poles) in the Indian Ocean, which affects Australia's climate. Jane noted every model was predicting a move towards a negative dipole in spring 2022, indicating tropical moisture will be pushed towards Australia from the Indian Ocean until the end of the year. Similar patterns occurred in 2020 and 2021. In the five to ten years prior, the IOD was mainly positive, Jane said. Therefore, "no matter how many lowpressure systems you got, they just didn't contain much moisture, so we didn't get the great rains."

Turning to the Pacific Ocean, Jane said indicators were "hovering just on the side of La Nina", making it the third in a row if it occurs. "This would mean the Pacific Ocean would continue to push tropical moisture towards Australia and whenever low pressure comes in, that is going to turn to rain."

Low pressure

The other factor necessary for rain is low pressure. However, when looking at the weather map, Jane suggested first looking at where high pressure is. She explained that when high pressure sits over New Zealand, "the winds travelling in this direction pick up warm moist air from the Pacific Ocean and push it straight into the eastern parts of Australia."

Next, look where low-pressure cells are. When moist air driven by a high over New Zealand encounters a cold front coming up from the Southern Ocean and low pressure off or near the coast, it leads to heavy rain. This pattern was responsible for the widespread flooding experienced in Queensland, New South Wales and parts of Victoria earlier this year, Jane said. A measure called the southern annular mode (SAM) indicates what is happening with lows and highs.

"When it's positive, it encourages highs to sit over the southeast and troughs and lows to form in Queensland and New South Wales," Jane said.

"When it's negative, that encourages cold fronts to come up from the Southern Ocean. Through summer and autumn, it was positive most of the time.

"We had trough after low parked over Queensland and New South Wales bringing tropical moisture and lots of wet weather."

Jane's predictions

Next, Jane made predictions for the following months. For June and July, indicators suggested a higher-thanaverage chance of above average rainfall for southwestern parts of the country and chilly temperatures. For August to October, a range of global models suggested it looks like being "quite a wet year" with temperatures set to stay "on the chilly side".

FOR MORE INFORMATION

Growers can visit **janesweather.com** for a range of weather information, with an alerts service to help you capitalise on opportunities and minimise risk. The team can also curate personalised weather details to help with decisions such as when it's best to spray.



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Challenges and opportunities for the horticulture industry



Staying current with industry trends helps horticulture businesses prepare for risks and capitalise on opportunities. In the State of the Industry session at Hort Connections – sponsored by Hort Innovation and led by the International Fresh Produce Association of Australia and New Zealand CEO Darren Keating – a panel discussed some of the findings from EY's latest industry report. SOPHIA AULD REPORTS



nternational Fresh Produce Association of Australia and New Zealand CEO Darren Keating.

Affordability and value

A key theme from EY's latest industry report is consumer focus on price, noted Alastair Mcarthur a Director at FY

However, according to Coles Fresh Produce General Manager Craig Taylor, the real issue is value.

"Cost is what you pay. Value is what you take home," Craig said.

"Where fresh produce is concerned, there's a rich tapestry of stories we can be telling our customers, whether that's around quality, freshness or how and where it's grown.

"It's not just about what they're buying it's around their experience when they take that product home."

Organic produce, for example, "attracts premium prices, but to that customer it represents value."

Marie Piccone, Managing Director at Manbullo, added convenience is key to delivering value

"My son loves jackfruit, but he won't eat it unless I put a container of ready-to-eat portions in front of him," Marie said.

"We have to grab this opportunity to make fruit fresh fruit and vegetables a great experience for people. We're seeing a rapid movement in the way consumers are thinking and behaving. If we're not cognisant of that, we'll be dinosaurs."

ESG issues

Marie sees climate change and sustainability being major challenges over the next 10 years, she said. She noted a balance must be struck between consumer affordability and grower profitability, necessitating greater efficiency.

"We need to do things quicker, smarter and better, like using energy more efficiently," she said.

ESG is on the radar of investors and regulators, said Alastair.

"It's becoming increasingly important in planning and decision making. We're seeing banks make financing decisions based on people's actions and activities," he said.

For horticulture, Alastair says the top risk lies in modern slavery, while the top opportunity lies in biodiversity.

Sustainability is also driving consumer sentiment, with the report showing 30% of consumers say they consider sustainability all the time when purchasing fruit and vegetables, Darren said.

Craig added that in three years' time, one in four people will cite sustainability as the number one criterion when purchasing. Furthermore, Coles gets significant customer feedback about food waste and packaging, with reductions in plastic and unnecessary packaging viewed favourably.

Shift to online shopping

In another trend, online shopping has increased by 40 per cent, said Chanel Day – Executive Manager Fresh and Packaged Food at Quantium.

"We've seen new shopper groups, such as retirees, purchasing online. Some of those will return to their pre-COVID behaviours and start shopping in stores again, but a cohort are continuing to shop online," Chanel told the Hort Connections crowd

She added online shoppers were more likely to purchase the same brands and products and less likely to try new ones, "so in-store is definitely the place to attract shoppers when you're launching a new product."

Ag tech opportunities

Darren noted ag tech is predicted to become a \$100 billion industry, with drones and robotics increasingly used.

Chanel added that businesses can benefit from technologies that collect and track data throughout the supply chain.

"We could get real-time forecasting across an entire crop and understand how much product is flowing down the supply chain at any time. We could match that with demand-side factors, so at retail you can move levers with things like promotional activities," she said.

Marie agreed tech will continue to positively influence the industry.

"It's going to add more efficiency and bring more talent into horticulture. It's opening up great opportunities for growers and exporters," she said.

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Hort Connections 2022 Trade Show Highlights



































HORT CONNECTIONS 2022









VegNET 3.0 boosts business by informing practice change



AUSVEG National Manger – Engagement and Extension Zarmeen Hassan

VegNET 3.0, the vegetable industry's extension program, is a \$14.1 million investment putting industry levies and government funding to work, explained Zarmeen Hassan, who leads the project delivered by AUSVEG and funded by Hort Innovation.

The program translates research and development into information that growers can use to improve their productivity, profitability, preparedness and competitiveness.

"That can only be done through collaboration across the entire chain, from researchers to growers to consultants and other stakeholders," said Zarmeen.

Delivered through Hort Innovation, the program is divided in 10 regions, each of which has a regional development officer (RDO) who acts as a knowledge broker.

Regional extension advisory groups (REAGs) also engage with growers, checking whether programs are meeting their needs and feeding back information to inform plans, which are "revisited annually to ensure they stay up to date," Zarmeen said. "We have the right people on the ground at the right places to provide insights into regional investment priorities."

A national extension advisory group (NEAG), comprising growers, economists and extension experts, helps steer the program towards delivering practise change.

Across the teams, there is "enough expertise to build up the knowledge we can extend to growers for every priority we come across."

Drawing on research and development expertise can help vegetable growers take advantage of opportunities and deal with challenges, especially when that expertise is local. At the Annual Vegetable Industry Seminar, five speakers - including AUSVEG National Manger – Engagement and Extension Zarmeen Hassan – discussed what this looks like in practice. **SOPHIA AULD REPORTS**

Facilitating change for Sydney farmers

An example of VegNET 3.0 in action comes from Western Sydney. Many farmers here have been using the same practices for over 20 years, including using black plastic, says Kim Ngov from Going Fresh in Wedderburn, who has assisted with several VegNET activities.

Kim worked on a soil improvement project with New South Wales VegNET RDO Sylvia Jelinek.

"We did some soil samples and she introduced us to a new compost. The compost worked, but the farmers didn't want to rip up the plastic every year. It was just more labour," said Kim.

"Sylvia also introduced cover cropping, but that also interfered with the plastic. A main goal now is to get rid of that black plastic. It's an ongoing discussion."

As the local knowledge broker, Kim answers many questions from his community. "If I don't have a solution, my main contact is Sylvia. With her around, we can work out a way to fix those problems," said Kim.

Sylvia agreed a proactive, long-term approach is needed to create change. Drawing on consultations with the REAG as well as everyday conversations with growers helps to determine where to focus next.

Partnerships for success

Rob Arvier, founder of Tasmania's West Pine Ag, was frustrated with trying to find information about frameworks for

environmental compliance when he was put in contact with Tasmania's VegNET RDO Ossie Lang.

"Ossie was able to outline the programs available to us," Rob said.

"The key ones were EnviroVeg and AUSVEG's biosecurity frameworks. That was a really good starting point and they helped us through that process."

Ossie said he had been building partnerships around biosecurity best practise through AUSVEG and Tasmanian government agencies, which came together in his projects with Rob and other growers.

Rob said Ossie took a keen interest in their Future Farms Project (which is exploring production of bioenergy from waste crop residue) and got them invited to an innovation day.

"That was really good exposure for us. Ossie put us in contact with people who become valuable stakeholders in the project. It's been really useful to have those local connections," said Rob.

Find out more

The AVIS videos are available on the AUSVEG YouTube channel.

The Annual Vegetable Industry Seminar 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 Code: VG21003



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Owner reimbursement costs – supporting growers after a new pest or disease detection



L-R: Part of the expert panel Dr Susanna Driesser John McDonald and Zarmeen Hassan.

In 2010, chestnut grower Brian Casey lost his livelihood overnight

"It was a traumatic experience when news came through that chestnut blight was confirmed and eradication would be undertaken," said Brian, the Chestnuts Australia Inc President, who now grows citrus.

"Our entire business was about to be taken away."

At the time, Brian went through a drawnout process to recover costs associated with the incursion.

Fast forward to 2022 and the systems for managing such a situation are more robust. If a grower is directed to act under the Emergency Plant Pest Response Deed, they may be eligible to receive owner reimbursement costs (ORCs), explains Dr Susanna Driessen, General Manager - Emergency Response at Plant Health Australia (PHA).

She notes ORCs fall under a defined scope, "so it's not all costs and losses. An independent person does the valuation in accordance with the Deed and the ORC evidence framework," she said.

Preparedness key to accessing ORCs

Sound frameworks for different production systems are essential for helping growers access ORCs, said John McDonald, National Biosecurity Manager at Greenlife Industry Australia (GIA) the peak industry body (PIB) for areenlife businesses.

Detection of a new pest or disease on your property could have devastating consequences, such as a directive to destroy crops or implement movement restrictions. Should this happen, you may be eligible for owner reimbursement costs. At the Annual Vegetable Industry Seminar, an expert panel discussed how growers can prepare for and respond to an incursion and what support is available.

Developing frameworks is one emergency plant pest incursion preparedness activity John's team undertakes with AUSVEG and PHA. John notes growers may be impacted in two ways: either directly, or indirectly via incursion on a neighbouring property.

"This could mean removal, destruction or trade restrictions. How you are impacted will determine what you can recover in ORCs," said John.

Another important aspect of preparedness is record keeping, because good data demonstrates how an incursion has impacted your business.

"You can't just say 'I get \$1,000,000 a year for my potato crop'. If you've got no records to validate that, you're not going to get your \$1,000,000," said John.

His team also encourages growers to adopt rigorous plant protection programs. "If you've got a plant protection system that's robust, replicated, the data is captured and you can retrieve that data, you automatically have a very good biosecurity plan," said John.

Brian said that while chestnut growers hadn't signed the Deed when his property was affected, they had done a levy-funded exotic pest incursion risk analysis, which "helped us greatly".

Responding to an incursion

Should an incursion occur, two stakeholders become involved, Susanna said.

The first is the agricultural or biosecurity agency within your state or territory. "They will be your key contact because they need to come onto your property and implement a response," she said.

"I also encourage you to think about them as a source of support and information. You should have a case manager you can speak to when needed.

The other is your PIB, "who will be indispensable for providing support, information and guidance."

John says GIA works with growers throughout an incursion response, explaining what is likely to happen and what they need to do, particularly around compiling evidence.

Brian recommends being actively involved with your PIB to support development of ORC frameworks to the highest level possible. Advocacy is another vital part of the PIB's work, John said.

"Working on behalf of individual growers that are affected, but also looking at the broader industry in everything from immediate impacts through to trade," he said.

Find out more

The AVIS videos are available on the AUSVEG YouTube channel

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Protected cropping 101: Getting the recipe right

Rising production costs and a changing climate mean more and more growers are considering protected cropping. However, the wide array of options can make this a daunting prospect. To help interested growers better understand where to start, two experts in this space shared their insights at the Annual Vegetable Industry Seminar. sophia AULD REPORTS

The protected cropping session for the Annual Vegetable Industry Seminar was opened by Nicky Mann, a past Chair of Protected Cropping Australia who works at Family Fresh Farms, where they grow various crops under high-tech glasshouses. She said a key advantage of protected cropping is greater control over production.

"You might be able to produce earlier or later than your competitors and capitalise on gaps in the market to get a good return on investment," Nicky said.

Additionally, it can assist with produce quality and consistency while enabling better use of your labour force.

"We work 365 days of the year regardless of the weather outside and keep our place on the market shelves," Nicky said.

For anyone contemplating protected cropping, her top piece of advice was to begin with the end in mind. "You need to know what you want to achieve by this type of investment," she said, adding that there are pros and cons to every system.

At one end of the spectrum are structures like netting and tunnels, which are relatively low-cost and can provide protection from things like birds and hail. At the other end are greenhouses with cutting edge technology for controlling everything from airflow to irrigation.

"The more you spend, you should expect more results," Nicky said, "but sometimes it's not always the case."

Weigh up your options

Nicky explained that you need to weigh up the advantages and disadvantages of different solutions.

For example, netting may keep harmful pests off your crop, but also lead to a

reduction in pollinators. She shared images of a farm in Spain where a protective plastic structure led to increased heat, which had to be offset with black shading.

She also advised starting small.

"Don't think of the 500 hectares of capsicum you're growing outdoors. Think about just doing one or two hectares. Start with a small footprint, learn what you're doing and go from there," said Nicky.

Microclimate considerations

Importantly, covering your crops means you're creating a microclimate, Nicky said.

"You're going to have different effects on your plants, your growth and your yield."

The session's second speaker was Tony Bundock, a qualified trainer and horticulturist who operates Genesis Horticultural Solutions.

Tony noted computerised solutions allow you to manipulate factors including temperature, humidity, light, CO₂ levels, air flow, irrigation and nutrients. Sensors detect relevant information and feed it back to a controller, which compares this against set values.

The system then acts to drive measures back to predetermined values. For example, the system might open vents to increase airflow and drop the temperature.

Strategy drives solutions

But computerised solutions don't simply know what to do; you need a strategy.

"There's no pre-set," Tony said. "If you're growing capsicum, you don't have a dropdown box for capsicums. You've got



to work it out. That's one of the challenges when you first start getting into this. You need to look at your crop as much as your computer to see what's going on."

One important factor you can control is irrigation. Open systems allow water to drain away. Closed systems recycle it, which can lead to savings on water and fertiliser and help growers comply with EPA nutrient-rich water requirements.

However, it can also mean recirculating diseases. He advises anyone considering a high-tech software-based strategy talk to the consultant.

"You can do it yourself but at the initial stages I'd be getting them to give you a hand to get the recipe right," said Tony.

Find out more

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Hort VEGETABLE

Increasing horticulture market access opportunities

To establish profitable and sustainable businesses, growers need reliable access to product markets. In this session at the Annual Vegetable Industry Seminar, a panel of speakers discussed strategies for increasing domestic and international market access and some of the practical implications for growers. sophia AULD REPORTS



According to Nick Macleod, Director of Tropical Fruit and Market Access at the Queensland Department of Agriculture and Fisheries, research is key to increasing market access.

"Market research is primarily about generating data to give confidence that the product we send overseas isn't going to send a pest there too," Nick said.

Research also supports preparedness for a potential new pest incursion and helps ensure business and industry continuity. It is often conducted collaboratively between universities, governments and industry bodies.

Some of the protocols developed as a result include vapour heat treatment, which opened access into Japan, Korea and China.

During the presentation, Nick noted that a fumigation protocol has allowed over \$15 million worth of stone fruit into China. Irradiation has come to the fore since Food Standards Australia New Zealand (FSANZ) approved it as a phytosanitary treatment for fruit and vegetables in 2021. This year, close to 9,000 tonnes of irradiated product has gone to market.

Despite its benefits, research is not widely publicised due to confidentiality constraints. However, it is vital for supporting Federal Government negotiations with trade partners, Nick said.

A first for irradiation

Peter Leach, Principal Entomologist and Market Access Team Leader at Queensland Department of Agriculture and Fisheries, explained this technology has existed since the 1920s and is used to treat everything from wine bladders to Egyptian mummies.

He said food treatments use between 150 and 1,000Gy, which is an ultra-low dose, with some applications using up to 50,000Gy. The FSANZ generic approval, which Peter said resulted from a project partly funded by Hort Innovation, was the end result of 35 years' research, collaboration and advocacy efforts.

Work continues to promote harmonised legislation throughout Asia and establish generic dose protocols to facilitate faster international access.

The food standard approval made irradiation Australia's only "truly generic treatment", added Ben Reilly, Fresh Produce Manager at Steritech.

"It can treat any product in any packaging at any temperature and for almost any insect, so it's a significant tool for the Australian industry," Ben said.

Having this solution enabled trade to continue during the leafminer incursion on Australia's east coast.

"It was about 600 pallets worth of trade, so not a significant volume but significant to the growers affected," he said.

Consumer sentiment towards irradiated product is positive. "In the last six months, three and a half million consumer servings have been sold throughout the domestic market, driven by the demand that comes from having things available on the shelf for a good price," he said.

Find out more

The AVIS videos are available on the AUSVEG YouTube channel.

The Annual Vegetable Industry Seminar 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 Code: VG21003





Soil Wealth ICP projects -Four leading growers share their results

Maintaining healthy soil and protecting crops is essential for increasing grower productivity and profitability. Soil Wealth and Integrated Crop Protection (ICP) projects provide extension services and resources to assist this end. In this session - moderated by Dr Gordon Rogers (CEO, Applied Horticultural Research) and Carl Larsen (Associate and Consultant Scientist, RM Consulting Group) – four growers discuss insights from participating in ICP projects.

Ed Fagan

Director, Mulyan Farms

When Ed stumbled upon strip tillage, he had no idea it would become part of the soil rebuilding approach on his family farm.

In his mind, low-till strategies they were using for broadacre farming didn't suit horticulture. His "lightbulb moment" came when they were flood-irrigating a corn crop, but plants were wilting and the bed felt like concrete.

"The yield on that paddock was slowly declining. We had to do something. We had soil improving on one part of the farm and the other part was getting smashed," said Ed.

They started composting and cover cropping, using control areas for comparison.

Of one trial with cucumbers, Ed says: "When it came time for harvest, the results were so stark I was worried people wouldn't believe it."

They have since experimented with different cover cropping programs and reduced composting somewhat, which wouldn't have been possible without the strip-till machine.

As with all approaches, they still face challenges, including setting back their work during beetroot harvest.

Andrew Johanson

Director, Mulgowie Farming Company

Andrew noted three basic principles can improve soil health: leaving roots in, maximising cover, and minimising disturbance.

For Mulgowie, which has properties throughout Australia, the challenge lay in applying these at sites with diverse soils and climates.

"It was a task to get each site onboard," he said. One manager was converted while visiting a demonstration site using cover crops. "It was cheese and chalk - the water infiltration, the holding capacity."

He explained they now widely use low-till strategies.

"We used to rip twice, especially in heavy black soils to bring water up, let it dry out, and then smash it down," he said.

"You're doing nothing but burning diesel and tractor hours with this system. The less we till, the more the microbiology and carbon builds up.

"We're using less fertiliser. Our fuel use in the tractors is down 43 per cent. That's quite a few dollars."

Mark Kable

Director, Harvest Moon

Harvest Moon has farms in Tasmania. Victoria and Queensland. Mark said strip-tilling works well on the undulating land of Tasmania's northwest coast, but controlled traffic farming is difficult.

"It's all about the gear. When you're pulling six metres of dirt and trying to work around it, it becomes very challenging. We're still working on that," he said.

In contrast, controlled traffic farming on their river flats is "working a treat".

Mark added erosion is a big issue, so "we use cover crops to stop soil ending up in the rivers and creeks".

They have been growing these consistently for over ten years and have noticed significant increases in organic matter. This has enabled them to reduce fertiliser inputs, thereby saving money.

Adam Schreurs

Director, Schreurs and Sons

Adam's family has been farming their property for about 70 years and "with market pressures and turning over cash crops, the soil was degrading," he said.

"Basically, there was no organic matter in the soil. That's where I got interested in how cover cropping could improve our soils."

An opportunity to host a demonstration site was Adam's chance to "see what we could do and measure some differences."

They started experimenting with cover crops on one property and discovered benefits for disease management as well as soil health. This progressed across the farm, until "[Carl Larsen, RMCG] came back and asked, 'where's the control gone?' I told him things were going so well and the yield was improving, so the control went out the window."

Adam noted their system isn't perfect, with snails an issue. However, they have reduced pesticide usage.

Winter crops are typically unsprayed and summer ones receive two or three sprays for specific insects.

Find out more

The AVIS videos are available on the AUSVEG YouTube channel.

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The Unbreakable Farmer Breaking down mental health stigma in the bush

The day Warren Davies lay on his dairy floor wondering if the world was better off without him was a turning point in his mental health and personal journey. At the Annual Vegetable Industry Seminar, Warren described his mission to raise awareness and inspire conversations about mental health – particularly in regional and rural communities. **SOPHIA AULD REPORTS**

Warren's tipping point came after a series of stressful farmrelated events, but the seeds were sown earlier. His family moved a lot, making it hard to establish childhood friendships. The transition to high school was particularly tough

"I was the only kid from my primary school who ended up there. The verbal bullying started the first day. It became physical by the end. That had a major impact on my mental health but also my education. I went from a straight A student in year seven to failing in year nine," Warren said.

A move to the country proved positive, with Warren soon finding work on a dairy farm.

"Luckily it was with one of the best farmers in the district. He said, 'if you stick with me, I'll teach you everything you need to know'. I learned to be a plumber, welder, to grow grass, and fix cows and tractors."

Another great thing was finding his girlfriend, now his wife. Getting engaged when Warren was 22, they purchased 200 acres next to his parents' property and joined them together in a family business.

Farming challenges set in

However, they soon encountered troubles. First came a flood "My farm turned into a swimming pool. We were underwater for about four weeks." Warren said this taught him about overcoming adversity, but also triggered his adverse childhood experiences.

Next came a "family bust-up", which led to Warren and his wife buying out his parents' property. Despite a robust 10-year plan, their business dream began unraveling when prolonged drought struck.

By the third year, the situation was dire. "I was in a really dark place, spiralling out of control. When cows I was supposed to look after we're starting to die, I felt a lot of guilt and shame."

After coward punching his best mate on the AFL field, "I knew I was in a bad spot," Warren said. "I started to isolate myself."

Following this came the "dark afternoon" lving on the dairy floor. "I call that my 'two feet of perspective' because at that moment, where I thought ending my life was the best option, my whole life flashed before my eyes. Life gave me two choices: I could continue to spiral out of control, or I could choose to become better," he said.

"I chose to become better that afternoon."

Ongoing drought meant they walked off their farm. Warren's quest to find identity and purpose outside farming led to his speaking career as The Unbreakable Farmer.

Prioritise your mental health

Warren noted farmers are great at protecting their soil and crops, and should do the same for their most important business asset themselves. He described three 'As' for doing this.

First is awareness. He recommends reviewing your social, physical, emotional, vocational, and financial wellbeing regularly, and knowing your values.

Second is acknowledge: your support networks (particularly finding five people you love and trust), your triggers, and the non-negotiable things you need to do for yourself.

Thirdly, act on what you can control, including practicing gratitude and mindfulness.

Helping others

Warren also offered tips for helping someone dealing with mental health challenges, including listening attentively, not judging, and being empathetic. He emphasised the importance of seeking help if you or someone you know needs it. Organisations like Lifeline and Rural Aid have the training and resources to assist.

MENTAL HEALTH RESOURCES

There are organisations available for people who are looking for more information about mental health and they can give advice on how to deal with personal mental health issues or those that arise in your workplace, communities, friends or families.

beyondblue

Beyond Blue has been providing supports and services to people in Australia for 20 years.

Beyond Blue works with the community to improve mental health and prevent suicide, so that all people in Australia can achieve their best possible mental health.

Through its Beyond 2020 Strategy, it's working across three strategic priorities:

- 1. Promoting mental health and wellbeing so people have greater knowledge, feel safe to talk openly about their issues and are supported to ask for help when they need to.
- 2. Being a trusted source of information, advice and support so we can all better understand how to maintain our mental health and take steps to recover from mental health conditions.
- 3. Working together to prevent suicide by playing a lead role in the national effort to prevent suicide through research, information, advice and support, and advocacy.

For further information on anxiety, depression or suicide visit beyondblue.org.au or call 1300 22 4636 (24 hours/7 days a week). To chat to a trained mental health professional, please visit beyondblue.org.au/ get-support/get-immediate-support.

Black Dog Institute

Black Dog Institute is a proudly independent not-for-profit medical research institute affiliated with The University of New South Wales.

Its focus today has expanded to address new challenges and opportunities in mental health - suicide prevention, digital innovation, lived experience, youth and workplace mental

Find out more

The AVIS videos are available on the AUSVEG YouTube channel

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someone at risk of suicide, and much more. lifeline.org.au/resources/toolkit-downloads/

health. Its work in mood disorders continues through investigation of new and better ways to treat and prevent conditions like anxiety and depression through digital tools and novel treatments. For more information visit

blackdoginstitute.org.au

Lifeline

Lifeline is a national charity providing all Australians experiencing emotional distress with access to 24-hour crisis support and suicide prevention services. It is committed to empowering Australians to be suicide-safe through connection, compassion and hope.

For 24/7 crisis support and suicide prevention services, call Lifeline on 13 11 14. The online Crisis Support Chat service is also available every night at lifeline.org.au/crisischat.

MensLine Australia

MensLine Australia is the national telephone and online support, information and referral service for men with family and relationship concerns. The service is available from anywhere in Australia and is staffed by professional counsellors, experienced in men's issues

For more information, visit mensline.org.au or call 1300 78 99 78.

MindSpot

MindSpot is a free service for Australian adults who are experiencing difficulties with anxiety, stress, depression and low mood. It provides find local services that can help.

The MindSpot team comprises experienced and Australian Health Practitioner Regulation Agency-registered mental health professionals please contact 000.

including psychologists, clinical psychologists and psychiatrists who are passionate about providing a free and effective service to people all over Australia. It has a dedicated IT team to ensure that this happens as securely and efficiently as possible.

For more information, please call 1800 61 44 34 or visit mindspot.org.au.

SANE Australia

SANE Australia is a national mental health charity making a real difference in the lives of people affected by complex mental health issues through support, research and advocacy.

Counsellors are available via phone, web chat or email from 10am to 10pm Monday to Friday AEST/AEDT.

For more information, please call the SANE Helpline on 1800 18 SANE (7263) or visit sane.org.

Suicide Call Back Service

Suicide Call Back Service offers free professional 24/7 telephone counselling support to people at risk of suicide, concerned about someone at risk, bereaved by suicide and people experiencing emotional or mental health issues.

It also offers free professional 24/7 online counselling support. Call 1300 659 467 or visit suicidecallbackservice.org.au.

Further resources

These are just some examples of the mental assessment and treatment courses or can help health services available in Australia. More can be found at ausveg.com.au/mental-healthindustry/resources-2/

If you require emergency assistance,

Someone is threatening self-harm. What can I do? Lifeline has developed a range of free toolkits to provide information and assistance during challenging times. These include a self-help resource to help people cope with natural disasters; a self-harm factsheet; a toolkit for helping

Browse and download Lifeline's range of toolkits and factsheets here:

Still unsure about what to do or need a debrief? Those who are worried about a loved one or community member who is threatening self-harm can contact Lifeline on 13 11 14 for 24/7 crisis support and further advice.

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Visas available to Australian growers

For Australian vegetable growers there are three common visas that can be used to recruit workers, including the Working Holiday Maker (WHM), Pacific Australian Labour Mobility (PALM) Scheme and the Horticulture Industry Labour Agreement (HILA).

Each of these visas cover different skill levels, occupations, time frames, participating countries and cost. See below for a breakdown of each visa and its requirements. Each of these Visas require employers to ether be accredited employers or an approved sponsor. More information on accreditation and sponsorship requirements can be found on each of the visa factsheets.

Working Holiday Maker (WHM) Program

The Working Holiday Maker Program allows young adults to have a 12 month holiday in Australia whilst undertaking shortterm work and/or study.

There are two subclasses in the WHM Program:

- Work and Holiday Visa (subclass 462)
- Working Holiday Visa (subclass 417).

There are a few key differences between these visas, including:

- Different partnering countries.
- The 462 visa has an education requirement, but the 417 visa does not.
- The 462 visa also requires letters of support from governments from certain countries and requires a functional level of English.

Workers on their first year WHM visa can undertake work in any industry and location in Australia. To be eligible for a secondor third-year visa, they must complete either three or six months of 'specified work'. Details on specified work options can be found here: Specified work for Working Holiday visa (subclass 417) - homeaffairs.gov.au.

Specific work roles in horticulture can include the following:

- Harvesting and/or packing of fruit and vegetable crops.
- · General maintenance crop work.
- Cultivating or propagating plants, fungi or their products or parts.
- Immediate processing of plant products.

Worker requirements:

- Must have a passport from an eligible country.
- Must not be accompanied by dependent children.
- Allows visa holders to study for up to 4 months.
- Allows visa holders to travel to and from Australia as many times as they want.

From January 2022, WHMs working in any sector anywhere in Australia may continue to work for the same employer or organisation for longer than six months without requesting permission. This arrangement will be in place until 31 December 2022 when it will be reviewed by the Government.

Work and Holiday Visa (subclass 462)

| Cost to employee | Skill Level | Time | Age | |
|-------------------------------|------------------|-----------|-----------------------------|--|
| \$495 (Currently waivered) | All skill levels | 12 months | Must be 18 to 30 years old. | |

Partnering Countries

Argentina, Austria, Chile, China, Czech Republic, Ecuador, Greece, Hungary, Indonesia, Israel, Luxembourg, Malaysia, Peru, Poland, Portugal, San Marino, Singapore, Slovak Republic, Slovenia, Spain, Switzerland, Thailand, Turkey, Uruguay, USA, Vietnam.

Working Holiday Visa (subclass 417)

| Cost to employee | Skill Level | Time | Age |
|----------------------------------|------------------|-----------|--|
| \$495 (Currently waivered) | All skill levels | 12 months | Must be 18 to 30 years old, except for Canadian, French, and Irish citizons up to 35 |

Partnering Countries

Belgium, Canada, Republic of Cyprus, Denmark, Estonia, Finland, France, Germany, Hong Kong, Special Administrative Region of the Peoples Republic of China, Republic of Ireland, Italy, Japan, Republic of Korea, Malta, Netherlands, Norway, Sweden, Taiwan, United Kingdom.

Pacific Australia Labour Mobility Scheme (PALM)

The PALM Scheme allows employers to hire workers from nine Pacific Islands and Timor-Leste when there are not enough domestic workers available.

On 4 April 2022, the Temporary Work (Internal Relations) visa (subclass 403) Pacific Australia Labour Mobility (PALM) stream was introduced. The new PALM scheme visa consolidated and replaced the Seasonal Worker Program (SWP) and Pacific Labour Scheme (PLS) into a single visa scheme.

The scheme offers a long-term (up to four years) and seasonal (up to nine months) option.

Worker requirements:

- Hold or obtain a valid passport.
- Be physically fit and healthy for the work specified.
- Have no criminal record.
- Be of good character.
- Have the right qualifications and/or work experience.
- Have an intention to return to their participating country.
- Have a reasonable standard of English (for longer-term workers only).

Under the PALM scheme workers can only undertake specified work within specific industries such as Agriculture. To sponsor a Pacific worker, you must demonstrate that you:

- Are an eligible business registered and operating in Australia.
- Are not an individual, sole trader or unincorporated company,
- Are an approved employer under the PALM scheme,
- Hold a DHA Temporary Activities Sponsorship (TAS).

Seasonal Stream

| Cost to employee | Cost to employer | Skill Level | Time | Age | |
|---------------------|------------------|---------------------------|----------------------|-----|--|
| \$315 | \$420 | Unskilled and low-skilled | Up to nine months | 21+ | |

Partnering Countries

Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, Vanuatu.

Long-term Stream

| Cost to employee | Cost to employer | Skill Level | Time | Age | |
|------------------|------------------|-------------------------------------|----------------------|-----|--|
| \$315 | \$420 | Low-skilled and semi- skilled | Up to nine months | 21+ | |

Partnering Countries

Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Timor-Leste, Tonga, Tuvalu, Vanuatu.

Horticulture Industry Labour Agreement (HILA)

The HILA increases access to skilled and semi-skilled migrant workers for the horticulture industry when qualified Australians are unavailable. The HILA has an age cap of 50 years old and provides pathways for permanent residency.





Under the HILA an employer can sponsor workers under the Temporary Skill Shortage (TSS) (subclass 482) visa for a total of 31 approved occupations.

The HILA covers 31 critical occupations in the horticulture industry including:

- Irrigation Designer/ Manager
- Agronomist
- Horticulture Grower
- Protected Cropping Grower
- Horticulture Research & Development Officer
- Mechanical Engineer
- Horticulture Farm Manger
- Quality Assurance Manager
- Biosecurity Officer
- Facility Plant Manager
- Facility Supervisor
- Maintenance Electrician
- Fitter and Welder
- Machinery Supervisor
- Agricultural Technician

- Mechanic
- Senior Nurseryperson
- Nurseryperson
- Nursery Supervisor
- Truck Driver
- Mobile Plant Operator
- Forklift Driver
- Irrigationist
- Irrigationist Assistant
- Horticulture Section
- Manager
- Section Supervisor
- Production Horticulture Supervisor
- Machinery Manager
- Cold Storage Manager

To use the HILA, growers must be a Standard business sponsor which assesses businesses to ensure they are fit to sponsor an applicant.

See more information on becoming a Standard business sponsor here: Become a sponsor Standard business sponsor homeaffairs.gov.au.

Horticulture Industry Labour Agreement (HILA)

| Cost to employee | Cost to employer | Skill Level | Time | Age | |
|------------------|------------------|--------------------------|---------------------|-------------------|--|
| Nil | \$420 | Skilled and semi-skilled | Up to four years | Up to 50 years | |

Partnering Countries All

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Fertiliser choice can help to reduce on-farm carbon emissions

Australian farmers can help to reduce their greenhouse gas emissions simply by electing to use quality nitrate fertilisers that have a known carbon footprint.

Globally, it is estimated that agriculture accounts for 10.2 percent of emissions, while changing land-use patterns account for another 9.2 per cent.

The use of mineral fertilisers accounts for 1.3 per cent of global emissions, while fertiliser production accounts for 1.1 per cent of global emissions.

Yara Crop Nutrition Country Manager Australia, Tim Erbacher, says there is mounting pressure on all industries, including agriculture, to reduce emissions to stem climate warming.

"As one of the world's leading nitrogen fertiliser manufacturers, Yara takes its obligations seriously," Tim says.

"We have reduced our CO₂ emissions by 45 per cent since 2005 and we intend to reduce this by another 30 per cent by 2030 and become carbon neutral by 2050.'

Initiatives to reduce emissions

Yara has implemented numerous initiatives to reduce emissions associated with ammonia and nitric acid production and energy consumption throughout its manufacturing and distribution processes.

They include the development and adoption of abatement catalyst technology, which has reduced NO₂ emissions from its fertiliser production plants by more than 90 per cent.

Yara has since shared this technology with other manufacturers.

Future reductions will stem from 'green ammonia' produced from renewable energy sources, such as solar, wind or hydro, and carbon capture and storage processes.

Yara is constructing one of the world's first industrial-scale green ammonia plants in the Pilbara region of WA.

The plant is expected to be commissioned next year.

Documenting carbon footprint

Yara is actively engaged with some of the world's largest food companies to help document the carbon footprint of their food products.

"Today's consumers are demanding greater transparency and traceability about where their food comes from and are willing to pay a premium for food that is sustainably produced," Tim says.

"We are helping major food companies to meet their sustainability targets by documenting the contribution of our fertilisers to their carbon footprint and how we are taking steps to further reduce them."

Yara was a founding partner of Cool Farm Alliance (CFA), a global organisation that empowers farmers to make more informed decisions about reducing their environmental impact.

"CFA has developed the Cool Farm Tool, a free calculator that determines the carbon footprint of crop and livestock products," Tim says.

"Our sales agronomists frequently use this tool when they're explaining the benefits of our fertilisers and crop nutrition programs to customers and their advisors."

Reducing emissions on-farm

Farmers also have an important role in helping to reduce the carbon emissions of the food chain by optimising nitrogen use efficiency.

"Agreeably, on-farm emissions associated with fertilisers is small but it is a significant part of agriculture's contribution and needs to be addressed," Tim says.

"This can be as easy as selecting a guality nitrate fertiliser that has a known carbon footprint and then applying it in accordance with best practice.

"We call it the four Rs: applying the right amount of the right product at the right time and the right place.

"Nitrate fertilisers are more efficient that urea due because of their lower volatisation and improved plant availability.

"The adoption of whole-of-crop nutrition solutions, objective decisionsupport tools and carbon-smart farming practices can further help to reduce emissions associated with fertiliser use.

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Ultrasol[®]ine K Plus provides the optimal amount of iodine to the crop

Most agricultural top soils and irrigation water contain very low concentrations of iodine, and it is often not available for plant uptake. From March to July 2022, SQM collected water samples in SA, VIC, NSW and QLD and analyzed iodine content: 27 out of 29 samples collected in these states contained less than 1 micromole iodine per liter (µmol/L) of water (<0.13 ppm), with no correlation between content and location.

Ultraso/ine

K Plus





Average concentration of iodine in irrigation water, µmol/

- , Cranbourne, Richmond 2, Windsor 1, Campbellfield, Bowen, Riverina 2, Lara, Windsor 2, Sunraysia, Cedar Grove 1, Riverina 1, Warragul, Goulburn Valley, Riverland 1, Cedar Grove 2
- Somersby 2, Virginia 2, Naracoorte 2, Virginia 1, Naracoorte 1, Adelaide plain, Riverland 2

Somersby 1, Riverina 3

For optimal crop production, iodine should be supplied to crops at the right dosage. Ultrasol®ine K Plus contains two macronutrients essential for plants, potassium and nitric nitrogen, and in addition, iodine.



Ultrasol®ine K Plus also guarantees the administration of an adequate dose of iodine in all crop stages



Most agricultural top soils and irrigation water contain very low concentrations of iodine

A deficiency of iodine in plants is predicted to cause yield losses, similar to deficiency of any other plant nutrient. These are conclusions based on recent scientific research (Kiferle et al., 2021) supported by SQM, a company with a long history in providing the world with iodine and fertilizers from the Atacama desert in Chile. This research enabled the International Fertilizer Association (IFA) to add iodine in the list of beneficial plant nutrients in 2021.



Please scan for further details

Ultrasol®ine K Plus contains

Average concentration of iodine in irrigation water

Carisbrook, Richmond 1, Richmond 3, Somersby 3, Windson

Since potassium and nitric nitrogen are applied in well-defined proportions, Ultrasol®ine K Plus also guarantees the administration of an adequate dose of iodine in all crop stages. This makes it easy for the farmers to ensure the right amount of iodine in the nutrient solution, and to prevent excess uptake of iodine in leaves or fruits.

Plants need iodine

- 48 genes in shoots and 531 genes in roots are uniquely regulated by iodine in the nutrient solution
- At least 82 proteins in leaves and roots contain



lodine is needed for

- Timely flowering and fruit production
- Photosynthesis and sugar production = increased biomass
- Root growth, defense from stress and calcium sianalina
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Source: Source: Evidences for a nutritional role of iodine in plants. C. Kiferle, M. Martinelli, S. Gonzali, S. Beltrami, P.A. Salvadori, K. Hora, H.T. Holwerda, A. Salzano, A. Scaloni, P. Perata. January 2021, Frontiers in Plant Science, DOI: 10.3389/fpls.2021.616868

Climate outlook overview from the Bureau of Meteorology

SUMMARY

- October to December rainfall is likely to be above median for the eastern half of Australia, but below median for parts of Western Australia and part of western Tasmania.
- October to December maximum temperatures are likely to be above median across Tasmania, the north of Western Australia, and most of the northern and western coasts of the mainland; cooler than median days are likely across much of New South Wales and the southern half of Queensland.
- Minimum temperatures generally likely to be warmer than median for October to December over much of Australia, although there is a roughly equal likelihood of warmer or cooler nights in north-eastern New South Wales, south-eastern Queensland, and south-eastern Western Australia.
- La Niña, a negative Indian Ocean Dipole event, a positive phase of the Southern Annular Mode and warmer waters around Australia are all contributing to wetter outlooks over large parts of Australia.

La Niña declared, along with increased chance of above average rain for eastern Australia.



Rainfall

Wetter than average October to December likely for eastern Australia.

There is a moderate to high chance (greater than 70%) of above median October to December rainfall for much of the eastern half of Australia; below median rainfall is moderately likely (60% to 70% chance) for parts of Western Australia and central west coast to south-west Tasmania.

Large parts of the Top End and around the Gulf of Carpentaria, much of the eastern mainland states, and eastern Tasmania have more than twice the average chance of unusually high October to December rainfall (in the wettest 20% of all such periods over 1981-2018).

Temperature

Warmer days likely for the north-west, north and west coast, and Tasmania during October to December, but cooler for parts of the east.

October to December maximum temperatures are moderately likely to be above median (greater than 65% chance) across the north of Western Australia, and most of the northern and western coasts of the mainland, and highly likely to be warmer than median for most of Tasmania (greater than 80% chance); cooler than median days are likely across much of New South Wales and the southern half of Queensland.

Minimum temperatures generally likely to be warmer than median for October to December over much of Australia (greater than 70% chance), although there is roughly equal likelihood of warmer or cooler nights from the New South Wales central coast to Bundaberg in Queensland, extending inland to around Lightning Ridge, and also across southeastern Western Australia to far southwestern South Australia.

For October to December, there is more than double the average chance of unusually high maximum temperatures (in the warmest 20% of all October to December periods over 1981–2018) across much of northern Western Australia and much of Tasmania away from the north-east; however, unusually cool maximum temperatures are at least two times more likely than average across much of the eastern half of New South Wales and adjacent areas of Queensland, extending to the Capricornia District.

There is at least three times the average chance of unusually high minimum temperatures (in the warmest 20% of all October to December periods over 1981–2018) for the northern tropics and much of south-eastern Australia, and two times the average chance for the west of Western Australia.

The Bureau of Meteorology has declared a La Niña event is underway in the Pacific Ocean and communities in eastern

Australia should be prepared for more rain than average over spring and early summer

The Bureau's three-month climate outlook shows a high chance of above average rainfall for most of the eastern half of the Australian mainland and eastern Tasmania. The flood risk remains, particularly in

eastern Australia. The wet outlook is for areas where rain has already fallen and catchments are wet.

What does this mean?

While La Niña criteria have been met, most models forecast this event to be weak to moderate in strength, likely to peak during spring and ease during summer.

To our west a significant negative Indian Ocean Dipole (IOD) event is underway. It is expected that the IOD influence will reduce in late spring or early summer.

The wet outlook is also influenced by warmer waters around Australia, favouring more evaporation and cloud coverage in our region.

Southern Annular Mode is in a positive phase, and likely to remain positive into summer. Positive SAM during summer pushes weather systems south, which



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Wales, far eastern Victoria and southern parts of Queensland. All these climate influences push Australia's climate towards a wetter phase,

- More than 80 per cent chance of above average rainfall for most of the eastern half of Australia.
- Increased chance of a wetter spring for inland areas of New South Wales and Queensland.
- Drier than usual in parts of Western Australia and in western Tasmania.
- The first rains of the northern Australia wet season are likely to be earlier than average for much of Queensland and the Northern Territory.

- increases the chance of rain in New South
- and together have shaped our outlook for the coming months that shows:

- An increased risk of tropical cyclones forming in the Australian region.
- Warmer days across our tropical north and far south.
- Cooler days for large parts of mainland Australia.

More information

Bureau's website bom.gov.au/climate/outlooks/ Climate Outlooks

bom.gov.au/climate/ahead

La Niña criteria bom.gov.au/climate/enso/outlook

Climate Driver Update bom.gov.au/climate/enso

Flood warnings bom.gov.au/australia/flood



New fungicide brings new light to vegetable growers

Growers will this year welcome a new fungicide offering outstanding protection against key diseases in root and fruiting vegetables, cucurbits, celery and peanuts.

Syngenta has worked closely with the APVMA, to compile data from comprehensive trials for the anticipated registration of MIRAVIS® Duo* fungicide.

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

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

MIRAVIS[®] Duo fungicide combines pydiflumetofen (group 7) and difenoconazole (group 3) in a formulation that will provide best-in-class disease control, while mitigating the risk of fungicide resistance. "Pydiflumetofen protects the plant from fungal pathogens by targeting fungi at four different stages of the lifecycle, and with proven activity of difenoconazole, MIRAVIS[®] Duo fungicide provides an optimised formulation for best-in-class protection," said Dr Rawnsley.

"Upon application, MIRAVIS® Duo fungicide is locked in the leaves, building up a reservoir to stop fungal pathogens entering the plant. Preventative use prior to infection achieves optimal protection of your crop, especially when wet, humid conditions prevail."

In fruiting vegetables, such as tomatoes, MIRAVIS® Duo fungicide targets powdery mildew, target spot and Cercospora leaf spot. Registration is expected in both open field and protected cropping situations.

"Trials have been outstanding, with no to very little disease observed on treated plants," said Dr Rawnsley.



A recent trial held in conjunction with Kagome, Australia's largest processor of tomatoes, highlighted two applications of MIRAVIS® Duo fungicide provided exceptional preventative disease control in the season (*Figure 1*). Additionally, the crop was more vigorous and showed improved greenness (*Figure 2*). With an anticipated 1-day withholding period upon registration, Dr Rawnsley said MIRAVIS® Duo fungicide would offer excellent protection of fruit and peace of mind at harvest.

For cucurbit growers, Dr Rawnsley said MIRAVIS® Duo fungicide would become the gold standard in fungicide programs, when used preventatively. At the Syngenta GrowMore demonstration site held in Bowen, Qld in 2021, MIRAVIS® Duo fungicide was used in rotation with ORONDIS® Flexi fungicide (downy mildew, powdery mildew and gummy stem blight protection in cucurbits) as part of a program that was subjected to very high disease pressure.

EE Muirs Sales Agronomist Tom Andison works across the Burdekin in North Queensland and took a keen interest in the Syngenta GrowMore Bowen site. Mr Andison noted the treated crop area showed no sign of disease even though it was adjoined an untreated area that had high disease pressure.

FIGURE 1. Incidence and severity of Alternaria and powdery mildew in processing tomatoes assessed 28/2/2022, 21 days after the last application of MIRAVIS® Duo applied at 1 L/ha and AMISTAR® Top at 500 mL/ha at 14-day intervals, water volume 325 L/ ha, NSW (2022).

Incidence Severity



EE Muirs Bowen Sales Agronomist Tom Andison said the GrowMore site had demonstrated the effectiveness of MIRAVIS® Duo fungicide against key cucurbit diseases.

"Considering the way the site was set up, and how the prevailing wind was blowing from the untreated to the treated, the difference MIRAVIS[®] Duo made to how clean the crop was... it's huge," he said.

Mr Andison said the site had demonstrated the fungicide's preventative activity on powdery mildew and other key cucurbit diseases.

"I was pretty impressed with the way that [MIRAVIS[®] Duo] kept the powdery out of the rockmelons," he said.

"It's got the dual actives and it attacks the powdery on multiple levels. So it gives you confidence that when you put it on before the pressure arrives, it's going to do its job."

While strong on powdery mildew, Dr Rawnsley said MIRAVIS® Duo fungicide had a broad label for disease protection that regularly worry growers. "MIRAVIS® Duo fungicide is a great option for cucurbit crops as it not only protects against powdery mildew, but also gummy stem blight, Alternaria and Cercospora leaf spot," she said.

"I gave agronomists a task to find disease symptoms in the treated crop at Bowen, but they were amazed to find no disease when it was so severe in the untreated area."

Likewise, use of MIRAVIS[®] Duo fungicide in a watermelon crop in South Australia inhibited powdery mildew and Alternaria infection, resulting in a healthy crop with large fruit, Dr Rawnsley said.

"The one-day withholding period means growers can use it with confidence without affecting decisions of best harvest time," she added.

MIRAVIS[®] Duo fungicide is a suspension concentrate (SC), and has been tested to be highly compatible with a range of other crop protection products, such as insecticides and foliar nutrients. It also has a built-in adjuvant, so an additional wetter does not need to be added to the tank.

With excellent crop safety and efficacy in fruiting vegetables and cucurbits in both open field and protected cropping, MIRAVIS[®] Duo fungicide offers the flexibility to be used by a wide range of growers in northern and southern horticultural regions.

In root vegetables (e.g. carrots, beetroot), MIRAVIS[®] Duo fungicide provides protection of early blight (*Alternaria* spp.) and powdery mildew. Both foliar diseases can cause weak, dry leaves resulting in un-harvestable crops.

"Applications of MIRAVIS® Duo fungicide have been shown to enhance green leaf area and vigour, meaning good growth for tuber and root development. Applications should be implemented just prior to row closure to protect the canopy, then again at root bulking meaning the 7-day withholding period is favourable," Dr Rawnsley said.

With limited fungicide options available in celery, it will also be a welcome registration by growers to control Septoria and Cercospora leaf spots. Both diseases can devastate the quality of celery, especially when wet conditions prevail.



FIGURE 2. MIRAVIS® Duo fungicide treated processing tomato crop (right) compared to the untreated (left).

"MIRAVIS[®] Duo fungicide, where used preventatively before a rain event, gives lasting protection when it matters most," Dr Rawnsley said.

"In peanuts, MIRAVIS[®] Duo fungicide will provide up to 28 days protection against early leaf spot, late leaf spot, net blotch and suppression of rust. The long spray re-application interval of 21-28 days will be a game-changer for peanut producers, with efficiencies of time, labour, resources, and crop health."

Dr Rawnsley said peanut trials showed areas sprayed with MIRAVIS® Duo fungicide at the proposed label rate of 600 mL/ha were greener and more vigorous, resulting in greater biomass compared to the surrounding crop.

"The strip sprayed with MIRAVIS® Duo fungicide stood out in the paddock", said Neil Bauer, Syngenta Senior Sales Executive, Qld. "It really gave us confidence that we didn't need to spray for 28 days and the 14 days withholding period saw it through to desiccation".

MIRAVIS[®] Duo fungicide will be restricted to two applications per crop per year to minimise development of resistance to fungicides and provide long-lasting solutions for future generations.

[®]Registered trademark of a Syngenta Group Company.

FIND OUT MORE

*MIRAVIS® Duo is not registered. An application has been submitted to the APVMA. To learn more visitsyngenta.com.au and goodgrowthplan.com.

Commodity profile Carrots

In the latest 52 weeks ending 30 January 2022, carrot dollar sales growth fell by 1.9% and 4.7% in volume, with the percentage of buying households remaining steady at 93%. SOURCE: HARVEST TO HOME

Among its competitive set including potatoes, carrots, pumpkin, broccoli, cauliflower and sweet potato potatoes led in terms of dollar share (37.5%), with carrots making up 15.1%

Potatoes also led in terms of volume share 45.7%, with carrots comprising 22.1%. SOURCE: HARVEST TO HOME

In 2020/21 carrots represented the most dominant vegetable commodity exported from Australia, with over

110,000t exported

at a value of \$97M. SOURCE: HORT STATS 2020/21

The leading state producers of carrots in 2020/21: Western Australia **39%**

Victoria 18%, Tasmania 16% and South Australia 16%. SOURCE: HORT STATS 2020/21

According to Project Harvest Wave 41 findings, carrots are expected to remain fresh for approximately 13 days, with these expectations increasingly being met all of the time. source: project HARVEST

The Better Health Channel revealed that eating raw carrots only releases about 3% of the beta-carotene, while pulping, cooking and adding oil (as when cooking) increases this to nearly 40%.

Around two thirds of consumers are unable to recall a type of carrot. Colour remains the main trigger for unprompted carrot variety awareness. source: project harvest wave 37.

When shoppers are asked to rate carrots based on pricing and quality, carrots are praised for being good value for money

and having the right portion size/pack size as well as for their bright and vibrant colour SOURCE: HARVEST TO HOME

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Grey cabbage aphid (Brevicoryne brassicae)

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Silverleaf whitefly (Bemisia tabaci biotype B)



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Vegetable Inflation Hits 15.4% in June as Cost Pressures Impact Retail

In the June guarter, concerns over price inflation became a national talking point. From fuel to flooding, Freshlogic examines how these drivers affected price inflation for vegetables across retail markets.

In a quarter where a local pizza restaurant has been displaying 'no cash or lettuce or kept on premises' on their window, concerns regarding inflation have been elevated. The iceberg ascendancy as a national discussion topic aside, fresh fruit and vegetable inflation has been driven by several key factors.

With global supply chain disruptions, many input costs have sharply increased, contributing to overall inflation pressure. Principally among these, energy and fertilizer prices have been significant drivers of supply chain costs since the beginning of the Ukraine conflict. Additionally, the current labour availability constraints have also taken their toll. These impacts will likely exert their effects on the cost of production in the medium term as these issues iron out.

Supply as the primary driver

However, while producers are having to contend with input cost pressures, the status of supply is the primary driver of vegetable market price inflation.

To this end, supply has been severely compromised by one of the wettest growing years in recent memory. Headlined by multiple flooding events across the country, vegetable crop losses were experienced from Bairnsdale to Bowen for the first quarter of 2022. Extended cold, wet conditions following this then prevented re-planting efforts in affected regions.



Through the June quarter, critical shortages were also experienced following flooding events in Queensland and New South Wales, creating downstream supply issues for retailers. These resulted in the all-too-common sight of bare displays, as major retailers struggled to keep stock on the shelves.

As a result of these, vegetable volumes were down 5.3% across retail checkouts for the guarter nationally.

Vegetable inflation in the June guarter

Unsurprisingly, the confluence of these events saw vegetable retail prices increase by 15.38% during the June quarter.

As pictured in the graphic, greater than 25% retail price increases were observed for the top ten products affected according to Freshlogic analysis. The highest among these included Brussel Sprouts (64.8%), Capsicums (44.4%), Beans (38.8%), Head Lettuce (37.8%) and Large Tomatoes (37%), as all vegetables but Ginger, Sweet Potatoes and Garlic saw some price increases.

The ABS has credited vegetables with only 7% of total food inflation. Despite this, with current extremes of price movement across products, vegetables could contribute up to 20% to the price inflation of consumer retail shopping baskets overall.

So where to for fruit and vegetables?

While critical supply shocks have abated though the September quarter thus far, prices have been somewhat slow to recover with continued cool conditions.

With rotation to Spring/Summer supply from Southern regions for most major vegetable crops, supply is expected to revert to normal levels to end 2022. As a result, price inflation is expected to decline from current levels as regular volumes resume.

About Freshlogic

Freshlogic is a market research business specialising in Australian Horticulture. From production, through distribution channels to consumption, Freshlogic provides best in class fresh produce market insights for decision makers that are accessible, accurate and concise.

FIND OUT MORE

For more information on our market pricing services, please visit freshlogic.com.au or contact Freshlogic on (03) 9818 1588.

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Is sea freight a viable option for exporting perishable Victorian vegetables?

The primary fresh vegetable exports from Victoria include asparagus, broccoli, cauliflower, leafy salad vegetables, celery and carrots. Japan, Singapore, Korea, and other South-East Asian countries are currently the largest export markets. John Lopresti, Glenn Hale, Janine Jaeger, Christine Frisina and Kristen Pitt from Agribio, Agriculture Victoria Research report.

Despite COVID-19 trade disruptions, 10,076t of Victorian fresh vegetables, worth over \$50 million were exported in 2020. Air freight is the preferred choice for perishable vegetables that have a limited storage life after harvest.

However, sea freight is increasingly becoming an important commercial option for vegetable growers and exporters to remain competitive in target markets, particularly due to economies of scale and the much larger produce volumes that can be exported in a single shipment.

Sea freight now appears to be a commercially viable and less costly option than air freight due to reduced access to air freight and its higher cost due to the pandemic.

The major impediment to successful sea freight of fresh vegetables is the inherently longer shipping times from Australia of two to four weeks. Despite longer shipping time, temperature management is likely to be closer to the optimum required for vegetables (i.e., less than 4 °C) when compared to air freight. After harvest, storage life of most vegetable crops is currently limited to less than two weeks when stored at optimum temperatures, but this will vary depending on the crop, postharvest handling conditions and packaging type.

With air freight and supply chain issues expected to continue over the short-tomedium term, alternative packaging and storage options that can be used with sea freight are required to ensure continuing viable export pathways for all Victorian vegetable producers.

The 'Maximizing vegetable storage potential and quality during sea freight export' project funded by the Victoria Government's 'Food to Market Program' aims to maximize the storage potential and quality of exported Victorian-grown asparagus, lettuce, brassicas and celery by:

- Determining which vegetable cultivars are most suitable for export.
- Testing of commercial modified atmosphere packaging (MAP).
- Comparing the performance of different crop cultivars under simulated sea freight and marketing conditions.
- Optimising current harvesting, cooling and postharvest handling practices.

Such an approach will enable the development of new sea freight export protocols and recommendations so that Victorian vegetable export volumes are maintained, whilst potentially enabling the vegetable industry to diversify into new export markets.

Asparagus sea freight trial

A recent example of postharvest vegetable research and innovation conducted by Agriculture Victoria Research to explore packaging options to extend storage life and sea freight potential involved simulated sea freight export and marketing of asparagus.

In this experiment, the impact on storage and shelf-life of current packaging was compared to that of a commercial high humidity liner and a modified atmosphere (MA)



FIGURE 1. Packaging treatments used in an asparagus sea freight simulation and marketing experiment; Air control (left), a commercial micro-perforated high humidity liner (middle), and a commercial modified atmosphere (MA) liner (right).



liner (*Figure 1*). Asparagus visual quality was assessed directly after simulated sea freight export (i.e., cool storage) at 1 °C for 0, 7, 14, 21 or 28 days followed by a marketing period at 8 °C for 3 and 6 days, to simulate distribution and retailing.

The MA liner significantly increased spear marketable quality score after extended cool storage beyond 14 days compared to current asparagus packaging in air (*Figure 2*), with MA liners reducing spear shrivel and yellowing (*Figure 3*).

Spear marketable quality was also scored based on visual quality rating scale (where 4 = excellent; 3 = good; 2 = limit of marketability; 1 = poor; and 0 = extremely poor). The MA liner was significantly more effective in maintaining spear quality after 28 days simulated sea freight compared to the high humidity liner.

The high humidity liner appeared to provide little improvement in asparagus quality over current commercial packaging after sea freight simulation beyond seven days, although further testing is required to confirm this finding.

The applicability of both MA and high humidity liners for asparagus sea freight export was only limited by development



FIGURE 2. Effect of current packaging (Air), high humidity liner and modified atmosphere (MA) liner on asparagus marketable quality score during storage at 1 °C to simulate sea freight export. Dashed line is the score at the limit of marketability, error bars show \pm standard error of each mean, and different letters within a storage duration indicate significant differences between packaging treatments at P = 0.05.

FIGURE 3. Comparison of asparagus spear marketable and visual quality observed within current packaging (Air; left) and in the modified atmosphere (MA) liner (right) and after simulated sea freight for 28 days at 1 °C.

of soft rots, particularly after 21 and 28 days of simulated sea freight, and after marketing for six days at 8 °C. Soft rot issues after export can likely be minimized by ensuring that washed spears are dried effectively during postharvest processing prior to packaging.

Celery and broccoli sea freight trials

Similar sea freight simulation experiments have been completed for bunched and fresh-cut celery, and non-iced broccoli.

Preliminary findings indicate that under optimum sea freight temperatures of 1 to 2 °C, storage potential of Winter bunched celery is up to six weeks, whilst fresh cut celery has a potential storage life of two to three weeks utilizing current perforated film bags.

An optimum storage temperature of 1 °C significantly increased storage life of fresh cut celery by up to four days compared to product stored at 4 °C, the latter being a commonly used storage temperature in domestic and export supply chains.

Preliminary observations suggest that non-iced broccoli packed in MA liners has a storage potential of at least 4 to 5 weeks which would provide sufficient storage life for sea freight export and subsequent marketing. Detailed findings from these experiments will be fully reported in upcoming issues of the *Vegetables Australia* magazine.

This project is funded by the *Food to Market Program*, which is a \$15M state government initiative under the new strategy for Agriculture that helps provide financial support for projects investing in the Victorian agri-food supply chain. AUSVEG is a partner in the project.



L-R: Glenn Hale and John Lopresti.

For more information

The Food to Market program is funded by the Victorian State Government. Contact John Lopresti (Project Leader) at Agriculture Victoria on 0419 997 740 or john.lopresti@agriculture.vic.gov.au

Camilla's dynamic R&D career in horticulture

At a glance

Name: Camilla Humphries Job: Horticulture Research & Development Manager

Private companies, grower organisations and state government agencies make large investments in research and development to support the success of Australian horticulture businesses

Camilla is a research and development (R&D) Manager at Hort Innovation, which is the grower-owned, not-for-profit research and development corporation for Australia's horticulture industry. It which manages the investment of grower levies in research and development. Its primary function is to create value for horticulture growers and those across the horticulture supply chain.

Horticulture R&D Managers like Camilla Humphries, determine, implement and monitor research and development strategies, policies and plans for the horticulture sector.

Camilla's interest in horticulture started at a young age, growing up on her family's hobby apple orchard in Red Hill, Victoria, where she now also makes commercial apple cider.

She has a Masters degree in Agricultural Science from the University of Melbourne. Camilla connects professional alumni with agriculture science students and offers them support, mentoring and career advice. She encourages inspiring agriculture science students or graduates to get in touch with her at camilla.humphries@horticulture.com.au.

Camilla, can you outline your role at Hort Innovation and what it entails?

I'm a research and development manager for Hort Innovation in Australia, the Research and Development Corporation for the Australian horticulture industry.

We broker grower levies matched by government funding to procure new research investments in collaboration and consultation and with 37 levy-paying industries

Some of my daily tasks involve procuring new investments, writing research proposals, pitching new concepts to the industry strategic advisory panel, and working closely with delivery partners - be it researchers from universities or private and government research organisations.

Over the last year, I've been managing research projects in the Integrated Pest Management and Human Health Nutrition portfolios. An interesting project I've been managing in the Integrated Pest Management portfolio is the national Area Wide Management of endemic and exotic viruses and bacterial diseases. That is conducted by the New South Wales Department of Primary Industries and Queensland Department of Agriculture and Fisheries.

How did you get into horticulture?

I have a Masters degree in agricultural science from the University of Melbourne, and what sparked my interest in horticulture was growing up on the family hobby apple orchard in Red Hill on the Mornington Peninsula, where I make commercial apple cider.

My background is in plant nutrition and physiology.

I spent a number of years working for the private sector in agronomy and also in product development. I've also worked as a field officer for the apple and pear industry.

What are some of the things you enjoy about your job and what advice do you have for someone considering a career in the horticulture industry?

It's very fulfilling to know that your research is creating positive impact for horticultural production, while improving productivity and gaining the understanding of what processes are involved with taking a horticultural commodity from paddock to plate.

I would certainly recommend a career in horticulture as it involves a range of opportunities from applied research in disease diagnostics to entomology and pathology to field research, agronomy consulting, working as an industry representative, and working in the private sector in research and development for agrochemical products, as well as an extensive opportunity to travel and work in research for agriculture and international development, with our neighboring countries.

The horticulture industry is very dynamic and it's very seasonal as well.

Depending on which industry you work in, during harvest, it can be incredibly busy, however, if you work in research, there is always research happening within the sector. It is very dynamic and you need to be adaptable.

We are in great need of filling the research capacity gap in the horticultural sector, as a lot of highly experienced researchers are retiring from the industry, so there are a number of organisations and companies that offer graduate programs.

I'm involved with a mentoring program, an initiative of the University of Melbourne, which connects professional alumni with agricultural science students

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and offers them support and mentoring and career advice.

Please get in touch because I'm really willing to help an aspiring agricultural science student or graduate, as we certainly need you in the industry.

FIND OUT MORE

AUSVEG has launched the Grow Your Career in Horticulture video series, which highlights the diverse range of careers in the Australian horticulture industry.

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

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



Grow Your Career video series



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At Native Co, Marlon Motlop and team grow a collection of native foods such as River Mint, Sea Parsley, Salt Bush and many more, available for consumers and on the wholesale market.

Making First Nations foods accessible for all Australians

In 2018, Marlon Motlop noticed a gap in the market – for readily accessible native ingredients and First Nations foods, especially in his home state of South Australia. Fast forward two and a half years, and the original vision has scaled up – to creating a governance framework for distribution of these culturally significant foods, that ensures input from Aboriginal and Torres Strait Islander groups every step of the way.

Marlon Motlop met Damian Manno, Director at Quality Harvest and recently named Corteva Agriscience Young Grower of the Year in the National Awards for Excellence, through Marlon's cousin Daniel – who himself works in native produce supply.

With the help of Joe Capobianco, it wasn't long before they conceptualised and developed the Native Co. They produce a collection of native foods such as River Mint, Sea Parsley, Salt Bush and many more, available for consumers and on the wholesale market.

"Food is such a great way of bringing people together. It's how we share our cultures and our stories," says Marlon, Director and Farm Manager at Native Co.

But there were setbacks along the way.

Setbacks

Getting a new business off the ground is hard, but facing off with a global pandemic in your first few years of operating is another matter altogether. Marlon says there were moments when he wasn't sure they were going to make it.

"I looked to Damian and Daniel a lot, for advice and guidance. There's a meaningful and respectful relationship between the three of us," he says.

A passion for preserving and sharing the cultural significance of these foods helped the team persist.

"A lot of these products have cultural properties, traditional meanings or have been used medicinally by First Nations cultures," says Marlon.

"We wanted to explore, acknowledge and respect those roles first, before taking them into a commercial context."

Raising awareness of First Nations food

The goal of Native Co is to make these products available at every level of the food spectrum, increasing awareness and knowledge of the unique tastes and precious qualities available in plants right here in Australia.

The Native Co website includes recipes for the herbs and greens it sells, easy swaps to make for your own favourite recipes and tasting notes. Scoring press and TV slots has also helped to elevate knowledge of these foods amongst Australians.

By creating greenhouse environments, Native Co has been able to revitalise endangered species of First Nations foods and preserve them for future generations – all with a minimal carbon footprint.

Wholesalers, retailers and consumers can all place orders directly through Native Co, and the products are also available to consumers at the Adelaide Central Markets.

Marlon says winning the Butler Market Gardens Environmental and Sustainability Award has helped shine a light on the real story of Australia, the history and lineage of Aboriginal and Torres Strait Islanders, and the other cultures we were trading with for hundreds if not thousands of years before colonisation. It was also an acknowledgement of "a lot of effort and persistence".

Creating opportunities for First Nations peoples

Preserving these culturally significant foods, for Marlon, goes hand in hand with creating economic opportunities for First Nations peoples. Supply Nation has found that Indigenous-owned businesses are 100 times more likely to employ Indigenous Australians than non-Indigenous-owned businesses.

Setting up Native Co has given Marlon the opportunity to involve other First Nations people in a commercial context, and this is just the beginning for how these foods can contribute to income and commercial opportunities for Aboriginal and Torres Strait Islanders.

Marlon and the team behind Native Co are already diversifying and responding to shifts in the market as they appear. They are starting to consolidate the growing and production of Native Co products into Quality Harvest supply lines, freeing up some of Marlon's time to explore other opportunities, such as First Nation Fresh Produce.

The concept started as a way to deliver fresh produce and essential items to Aboriginal communities during the pandemic. It's now evolved into product evaluation.

Marlon has also been awarded a Nuffield Scholarship, which he is using to research how First Nations foods are being preserved, utilised and commercialised around the world. He is also exploring how to build a deeper understanding of Australia's First Nations foods, their application and use around the country.

With so many diverse languages groups and Indigenous nations, there's a lot of knowledge to tap into and learn from.

He says something he would love to do through the Nuffield Scholarship is not only bring insights from around the world back to Australia, but also to identify ways to protect and celebrate culture.

"[I'm keen to] create a framework or model for preserving these foods that has First Nations input every step of the way: from capturing traditional uses and cultural practices, harvesting and growing, right through to selling to consumers in a way that honours and shares the lineage of these plants and their significance."

Not only an entrepreneur, Marlon is also a musician, collaborating with former AFL team mate Rulla Kelly-Mansell, amongst others. While he's a busy man, his passion for sharing these foods and utilising their significance to uplift the Aboriginal and Torres Strait Islander community keeps his feet firmly planted in the horticulture sector.

Sponsoring the Butler Market Gardens Environmental and Sustainability Award

Butler Market Gardens is very proud to be the on-going sponsor of the Environmental and Sustainability Award.

Sustainability is one of our business' four core pillars of focus. We certainly understand and support its importance to the industry.

To us, sustainability is about strengthening and improving a business and the environment it works within.

We believe sponsoring this award prompts and promotes businesses and individuals to continually challenge, improve and refine practices and procedures within their business. It promotes innovative thinking and leadership within the industry and leads to collaboration and sharing of new techniques which strengthen the industry as a whole.

It's very important we recognise and celebrate those who excel in this area to continue the growth.

The goal being to achieve ongoing supply of great quality produce for generations to come.



Sponsoring the E. E. Muir & Sons Community Stewardship Award

E.E. Muir & Sons are passionate about improving the environmental sustainability of agriculture. We recognise that the long-term financial success of our business and our customers is inextricably linked to the protection and enhancement of the natural resources we rely on to produce the best quality fresh produce in the world. We are proud sponsors of the Community Stewardship Award and congratulate this year's deserving winner.

Above. Sam Kisvarda, Chief Marketing officer at Flavorite, has played a crucial role in the organisation's partnership with Maddie Riewoldt's Vision.

Aussie-grown tomatoes support research for bone marrow failure syndromes

Flavorite, the largest glasshouse grower in the southern hemisphere, has partnered with the charity Maddie Riewoldt's Vision for seven years. The winner of this year's E.E. Muir and Sons Community Stewardship Award isn't satisfied with just raising funds – they're committed to telling Maddie's story and raising awareness of bone marrow failure syndromes (BMFS).

Beginning in the early 1990s as a tomato grower, Flavorite has since diversified its product range to become a leading Australian supplier of not just tomatoes but also capsicums, cucumbers and blueberries.

In 2019, one of its founders, Mark Millis, lost his battle with a rare blood cancer called Multiple Myeloma. Before he passed, Mark was adamant about finding a way for Flavorite to give back to the community. This led to a partnership with the charity Maddie Riewodlt's Vision, which has now been going strong for seven years.

Sam Kisvarda, Chief Marketing Officer, has been with Flavorite for 17 years. He worked with Mark Millis and says the personal connection the team feels to the cause is what spurs them to grow the campaign every year.

A truly worthy cause

Maddie Riewoldt was just 26 years old when she died of complications of a Bone Marrow Failure Syndrome called Aplastic Anaemia. She was diagnosed at 21 years and for five tough years, she put up a brave fight. Maddie spent those years enduring several bone marrow transplants, hundreds of blood transfusions and ongoing treatments. Maddie wanted to ensure nobody else went through what she did. Maddie Riewoldt's Vision is her legacy.



Each November, Flavorite runs their

across Australia. Flavorite tomatoes

and capsicums are wrapped in purple

packaging - the branding colour used

by Maddie Riewoldt's Vision. Ten cents

from every specially marked pack sold

is donated directly to Maddie Riewoldt's

Vision to assist in the search for a cure to

the often-fatal syndromes affecting bone

Flavorite has raised \$100,000 in donations

each year for the last six years. In fact,

it was one of the first major businesses

seventh year, the partnership has made

a significant contribution to the research

capacity of Maddie Riewoldt's Vision. But

Sam says: "It's not just about the money -

"A lot of our work has been about tapping

into our network to bring more partners

syndromes and the huge amount of work

improve how BMFS can be managed and

on board and raise awareness of these

that needs to happen if we're going to

to partner with the charity. Now in its

marrow failure patients.

there's much more to it."

ultimately cured."

Maddie's Month campaign in Coles stores

Each November, Flavorite runs their Maddie's Month campaign in Coles stores across Australia. Flavorite tomatoes and capsicums are wrapped in purple packaging – the branding colour used by Maddie Riewoldt's Vision.

Raising awareness

Every year, Flavorite looks for different ways to grow its contribution. Four years ago, it brought Coles on board. Now, with each campaign, Coles supports the program with advertising and in-store marketing materials. They've even been able to foster relationships with Australian sport stars to advocate for the cause.

Winning the national E.E. Muir and Sons Community Stewardship Award this year was the first time Flavorite has been recognised within its own sector for this contribution. It has been another opportunity to raise awareness and "get the cause in front of our industry peers" says Sam.

He says working to give back on a specific issue helps the team at Flavorite to tap into, and stay connected to, their community.

"The more you talk to people, the more you realise the long ranging impact these syndromes and cancers have. I've spoken to customers that have a connection to this cause, I've heard from our partners, friends, colleagues and more."

Sam is always looking for ways to scale up the partnership, Flavorite's contribution and awareness.

"I would love to see year-round recognition. So not just Maddie's Month in November with Flavorite, but something happening every month to keep this cause top of mind."

PROFILE | HORT CONNECTIONS WINNER



Giving back to the community

For horticulture as a sector, or indeed any organisation looking to get active in their community, Sam has some words of advice.

"We're all working hard; it can be easy to think we'll get around to these things later. But the key for us at Flavorite was to make it a part of business as usual. Find ways to make it something that's a part of your every day, that you naturally just do."

For the Flavorite team, these BMFS are close to their heart after having it affect one of their own. Finding a cause that resonates with the team, something they are passionate about, keeps them engaged in the campaign year after year.

"That's what I keep coming back to, those conversations with Mark when we were first getting the partnership going. I know he would be proud of where the program is now."

So, what's next for Flavorite and Maddie Riewoldt's Vision?

"The more partnerships we form, the more networks we become a part of – that's how we can share this important message."

Above. The Flavorite team has a personal reason to support Maddie Riewodlt's Vision. In 2019, one of its founders, Mark Millis, lost his battle with a rare blood cancer. Before he passed, wanted to find a way for Flavorite to give back to the community. This led to a partnership with the charity.



Innovative technology eases labour strain for growers

J-Tech is in the business of making life easier for growers. Their latest offering, the Aporo, allows orchardists to grow their business despite labour shortages hitting the industry. This innovation resulted in J-Tech winning the UPL Tech Innovation Award at Hort Connections 2022.

J-Tech supplies labelling, packaging and automation solutions to fruit and vegetable growers across Australia. When its parent company, the Jenkins Group, took on global distribution for the Aporo, Tim Bond, Sales Manager for Automation at J-Tech, knew they were onto something special. He was confident it would change how growers, big and small, package their fruit for market.

The Aporo is an automatic packer that places apples into packing trays, with other fruit varieties currently being trialled. This year, J-Tech took home the UPL Tech Innovation Award for its work in bringing the Aporo to the Australian market.

"J-Tech has always been an innovative company and we put a lot of effort into getting out across the world to look for new products and tech, to bring back and make available to the Australian fresh produce industry," says Tim.

Two companies with which J-Tech had long-standing relationships through labelling systems, Blue Moon Packing (in Western Australia) and Montague's (in Victoria), came on board as early Aporo adopters. They invested in the technology before they had even seen it in action.

"That's a real testament to the trust they have in us, and the excitement around this innovation," says Tim.

Flexibility key to success

It also gave all three companies the opportunity to make changes to the Aporo setup, learning as they went and trying out different iterations. The flexibility in Aporo's system is crucial to its success. Shed to shed, all growers and packers have differences in how they package and label products. A technical product that can adapt to different environments means a custom experience for the different growers.

For example, of the three organisations currently using the Aporo in Australia, each has its own approach. Blue Moon Packing had a shed and grader designed specifically for the Aporo to be integrated, while GV Independent Packers use the Aporo as its main packing apparatus. The third, Montague's, initially only used it for specialty product lines. But have since integrated it into major packing lines for shorter runs and higher volume specialty packs.

The Aporo has three different modes. At its simplest, it moves apples from crate to packing tray. In presentation mode, it

looks for blush and places that side up when it moves the apple into the packing tray. Finally, it can be set to rotate apples until it finds the blush for each one.

Orientation can always be set, and the machine is responsive to different inputs. Even if the packing pockets aren't consistent, it will spot this - using built-in cameras - and pack accordingly.

It can even be integrated into existing setups, including for mixed sizes and grades of fruit. This helps to improve overall consistency of the end product.

Easing labour burden

The labour market in Australia is currently under pressure. Lots of sectors, including fruit growers and packers, are facing shortages. The Aporo has started easing this burden to its current users, and there is potential for it to dramatically change how the sector operates.

"We estimate for each Aporo, three to four people can be removed from the packing process," says Tim.

"The original narrative was around saving money by not having to pay wages.



"But actually, what we're seeing now is that the Aporo is about something much more significant for growers. It means they can grow their business without having to increase infrastructure."

Automation can also help with reducing the logistics that come with managing labour in a market under pressure, which is a huge win, especially for smaller operations. For owners, the Aporo frees up mental bandwidth – for working on their business, instead of in it. For managers and staff, the Aporo gives them back time to focus on higher value activities.

"We've seen different customers come to us with a core group of reliable staff, that have been with them and know the business. The Aporo doesn't replace these staff, it gives them the freedom to come off the packing line and work on activities that require more problem solving or creative thinking," says Tim.

And for businesses, it means they can jump on extra orders when the opportunity arises.

What's next?

This is just the start for the Aporo. J-Tech is working on ancillary automation to go around it, removing the need for manual placing of crates and packed trays.

Plus, apples were just the first focus for this innovative technology. J-Tech has investigated how the machines can be modified to work with stone fruit. Field testing was completed in the United States last season, and this application is now available to Australian growers.

The team at J-Tech would love to see this innovation explored for avocados, pears. mangos - anything that's being packed in a dimpled tray.

"We're currently in discussions with some growers to work on this next cycle of development - so stay tuned," Tim says.

The Aporo in action, packing apples for Australian growers.

Delivering long-term, sustainable solutions to preserve freshness in broccoli



From 2014-2017, a project was undertaken that investigated the cooling and packaging processes of broccoli. One of the activities looked at the effects of the fumigant 'SmartFresh' on broccoli storage and shelf-life. Western Australia broccoli grower Brad Ipsen was at the forefront of the SmartFresh trials and in this edition, he speaks to Vegetables Australia about his involvement and the positive outcomes so far.

Process improvements for preserving peak freshness in broccoli (2) (VG14062) was a strategic levy investment under

the Hort Innovation Vegetable Fund. Led by Dr Jenny Ekman from Applied Horticultural Research, the project examined some of the factors that could increase or decrease the retail freshness of broccoli including harvest time, delay before cooling, cooling method and packaging materials.

One of the major outcomes of the project - which concluded in 2017 is the introduction of the SmartFresh In-Box system. This is a formulation of 1-methylcyclopropene (a synthetic plant growth regulator) that blocks the product from producing or responding to ethylene and in turn, reduces postharvest quality loss.

AgroFresh gathered the data required to register the new InBox formulation of 1-MCP for commercial use on broccoli in Australia, which was approved by the Australian Pesticides and Veterinary Medicines Authority (APVMA) earlier this year. It is now registered, and commercial uptake has commenced.

Grower involvement

Brad Ipsen is the first vegetable grower in Australia to use the SmartFresh In-Box system. Brad and his family run Twin Lakes – a mixed farming

operation located in Manjimup, about 300 kilometres south of Perth. The main horticultural crop is broccoli, which is grown on 85 hectares between November and June. Twin Lakes also produces citrus, sheep and cattle.

Eight years ago, Brad met Dr Ekman when she was conducting a postharvest webinar. He says her presentation and extensive expertise had an immediate impact on his business.

"I left that meeting and spent around \$400,000 on a hydro vacuum cooler. That was my first involvement with Jenny," Brad reflects.

Dr Ekman then approached Brad to be involved in project VG14062.

"Jenny said 'Brad, I think this is a good thing that you should try. You're well set up to do it.' She knew our farm and our processes," Brad says.

"I didn't have to question if the project was worthwhile, because Jenny has the academia in post-harvest of broccoli. We're lucky in Australia to have a person of her knowledge and her education level. She is a tremendous resource.

"To me, Jenny's like a God of broccoli."

Addressing issues

Traditionally, broccoli has been packed in Styrofoam boxes with ice. This keeps

broccoli cool and hydrated through the transport chain and looks good when the box is opened.

However, Brad explains that this system has disadvantages including cost.

"Making ice is an expensive operation. I've got a six-tonne ice machine and I'm shipping water around Australia and overseas," he says.

Another challenge is maintaining freshness of the broccoli.

"The whole issue with ice is that people think that the broccoli sitting in that ice is fresh, because the ice hasn't melted," Brad says.

"Domestically in Western Australia, it's never a problem because it sits in Perth in a cool room refrigerator but when you're sending to the east coast for instance, you open the box, and the ice is all melted - so it's not fresh. It doesn't change the status of the product though."

When broccoli sits in water, it can attract bugs that then deteriorate the shelf life of the broccoli, which Brad says is a big problem.

Finding a solution

During the project, Brad and the research team conducted SmartFresh trials that involved packing sachets of the 1-MCP into liners, placing them in either

polystyrene or cardboard boxes and shipping them around WA and across the Nullarbor.

This produced encouraging results and earlier this year – once the product was registered and available to use - Twin Lakes received a commercial quantity and rolled out 2.000 cartons that included the sachets.

Customers were shocked to find the broccoli wasn't being transported on ice.

"We told our customers that there would be no ice but then they're on selling someone else who was wondering where the ice was," Brad says.

Another benefit to using SmartFresh is environmental, with Twin Lakes moving away from polystyrene as it becomes less acceptable. Replacing ice with sachets means no sogginess or collapsing of cardboard boxes and Brad says he is confident that this new method will overcome these challenges, as well as deliver a fresher product.

"These things are going to need a fair bit of education to our customers that this is how it's going to be. Because next year, polystyrene will probably be phased out in WA. I'm preparing for that," Brad added.

Another challenge is controlling temperature. "When you're shipping the product, you need to have a good

Developing the **Commercial Product**

Peter Vedeniapine is AgroFresh Account Manager – South Australia and Western Australia. AgroFresh is an agricultural company that conducts research to develop integrated solutions for freshness and quality in fruit and vegetables.

AgroFresh made mutual connections to Jenny through attending horticulture industry conferences and in 2014, she asked Peter to present the use of SmartFresh in broccoli to growers in Manjimup.

"During the meeting, we found that the room delivery system that we use for apples did not fit well with broccoli, and Jenny suggested that we use the sachet – now known as SmartFresh InBox – as the delivery system. Brad Ipsen was in the meeting, and he mentioned that if SmartFresh could be delivered using a sachet delivery system then growers

temperature-controlled environment. And if you can bring those two things together, it's very exciting. But as I said, education is needed and we've done guite a bit of that to show when these potential advantages are," Brad says.

"We've already seen that the product is fresher and crispier, and our customers within Australia and overseas have said that too."

The levy at work

Brad says being involved in this project presented him with a first-hand look at an alternative way to send broccoli around Australia and the world. He recommends other growers become involved in levyfunded projects such as this if they are suitable and applicable to their farm or their operation, and they have a high degree of trust in the researchers.

"A lot of research is done without enough collaboration with the industry. And industry pays the funds that the Federal Government matches. Sometimes. growers need to show initiative," Brad says.

"Once you pay your funds, you can't get them back. You can't go and say "hey, I haven't used any research, send me a rebate on my funds."

"It's a non-discriminatory tax. When you're paying a non-discriminatory tax

There were challenges that took time and patience to work through. "The metabolism study (residue data work) had to be done, which took time to complete but gave us the results we needed to continue - there were no residue issues. One time, due to weather in Victoria we could not get the quality of broccoli we wanted for the trials. We had to make do with what we could get." Peter says.

It was a long process to get from conception to registration and labelling, but now AgroFresh has the full label. This also includes other SmartFresh InBox suitable crops such as melon, tomatoes and cucumbers.

make sure the system was implemented correctly. "The voice of the customer had stated that the sachet in the box delivery system was required so it could be adopted widely." Peter says.

would be able to use it," he says.

Peter explains how important it was to

and utilise it, it can be good. But you don't want to just do it for another box to tick - I don't think that's the idea. I think it's got to be applicable, and there's got to be a high degree of trust between the grower and researchers."

Brad acknowledges that not every project will be a success.

"Just because it's an idea doesn't mean it's going to work. It's like anything two things have got to meet. I'm seeking a solution to lowering my shipping costs and increasing my units in a container, and there's a creditable solution," he says.

"This is an example of bringing good research and researchers into the commercial crossover with industry. As a levy payer, that's what it's about. I pay a levy to get a better commercial outcome."

Below: Brad Ipsen with his hydro-vacuum cleaner.

Find out more

The final report for this project is available on InfoVeg. Readers can search 'VG14062' on the InfoVeg database: ausveg.com.au/infoveg/ infoveg-database.

For more information about the research, please contact Dr Jenny Ekman on 0407 384 285 or email jenny.ekman@ahr.com.au

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

Project Number: VG14062







"At the time, approximately half of Australian broccoli was packed using polystyrene and topped with ice. This offered a big enough opportunity to replace something that was costly and created an environmental issue for retailers with something cheaper and did not. It was a win for growers as well as the environment – and a commercial opportunity for us.

"When you believe something is the right fit, to make it happen you have to make an allout commitment to seeing it through."



Mick Keogh, ACCC Deputy Chair

Improving market transparency through the Horticulture Code

There's been some debate in recent months about whether the historically high prices that consumers have paid for vegetables like lettuce, broccoli and beans reflect what is paid to the growers who supply the produce.

You'll hear contrasting perspectives from different parts of the supply chain, with many arguing that higher prices were mostly due to shortages caused by floods in the growing regions.

Beyond that, arguments about retailers' profits and growers' margins raise long-standing questions about market transparency. Cynicism is understandable if the market structure that's evolved over time prevents the growers of the goods seeing what the retailers or other buyers pay for them.

This lack of transparency, or information asymmetry as economists call it, was one of the reasons the Horticulture Code of Conduct was legislated in 2017. Industry codes aren't a panacea for all bargaining power imbalances and are not intended to set prices, but they can be effective in addressing problems in specific markets.

> First and foremost, the Horticulture Code requires that trading between growers and wholesalers happens through written contracts, called Horticulture Produce Agreements. But it also obligates some traders to report the price they paid growers for the produce and the price at which they on-sold it. This allows growers to see what price is paid for their produce as it moves through an intermediary.

The ACCC audited a cross-section of fruit and vegetable traders at the start of this year and found that some weren't meeting their legal obligations under the code

After reviewing the range of potential breaches and engaging with horticulture produce traders it was clear that some in the industry needed additional guidance on their legal responsibilities under the code. For this reason, in the shortterm, we decided that increasing our engagement with industry was more appropriate than enforcement action.

To support any traders with different interpretations of the code's requirements, we have just published updated Horticulture Code guidance for traders and growers.

The update provides extra detail on some of the key elements of the code, including the requirements for traders to publish their terms of trade, and for merchants who operate under a pricing method or formula to report to the grower the gross sales price received when selling the grower's produce to a third party.

We are now stepping up our engagement and giving the industry enough time to consider the guidance material, but our focus will turn to enforcement in the very near future. Fruit and vegetable traders should be on notice that future non-compliance risks penalties.

The ACCC has previously identified and recommended fixes for some of the regulatory gaps that are allowing harmful practices in agricultural industries to continue. But we've also pointed out that the existing regulatory framework already deals with some of these issues.

We strongly urge fruit and vegetable traders and growers to read our updated guidance material and review their contracts and statements in light of it.

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40.6mm x 45.7n

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CONTACT :

Nick Sanders Commercial Director - Asia Pacific Region

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PLEASE NOTE: Individual results may vary. Read entire label and directions before using this product. Please dispose of used SmartFresh™ InBox sachets and packaging with general waste.SmartFresh™ InBox Post-harvest Growth Regulator is registered by the APVMA (Product No. 89703)

Costs of production and produce prices – not a short-term problem for growers

While costs of production and produce pricing have recently been in the limelight, especially the past 6 months, the difference between cost of production and produce pricing has been an ongoing problem for many years. AUSVEG Policy Officer Chloe Betts provides a report on its advocacy activities for growers.

The costs of production covers all inputs from fertilisers and fuel to wages and packaging. The prices of these inputs have steadily increased over the last decade, and more rapidly over the last few years. However, the retail prices that the public pays for vegetables and potatoes have not.

Historic Data 2013 to 2021

When we look at the historic price of vegetables, it is clear that the farm-gate value of produce is relatively flat.

Take potatoes as an example.

Potatoes are an Aussie favourite they are versatile, easy to prepare, and great for your health and well-being.

However, according to Hort Stats (Hort Innovation | Australian Horticulture Statistics Handbook 2020/21), over a nineyear period from 2013 to 2021, the dollar per kilo value of fresh supply (i.e. produce that goes to retail and food service) of potatoes (total volume of fresh supply over the value), potatoes have only increased by 5.4 per cent, nowhere near keeping up with the costs of inflation or the increases in production costs.

While there are many factors that influence this, including the improved production practices of potato growers, this is concerning for the long-term viability of many businesses.

Consumers are understandably concerned that their prices are increasing, but they should also be aware and concerned that the prices growers are receiving has hardly increased in the last decade.

The outlook for other commodities for fresh supply is also similar:

| Vegetables \$/kg Fresh supply | 2013 | 2021 | % Change |
|---|-----------|-----------|----------|
| Potatoes | \$1.11/kg | \$1.17/kg | 5.4% |
| Onions | \$0.75/kg | \$1.02/kg | 36% |
| Carrots | \$0.88/kg | \$0.98/kg | 11.4% |
| Head Lettuce | \$1.29/kg | \$1.45/kg | 12.4% |
| Celery | \$0.94/kg | \$1.06/kg | 12.8% |
| Broccoli / Baby Broccoli | \$3.07/kg | \$3.96/kg | 29% |
| Tomatoes | \$3.00/kg | \$2.63/kg | -12.3% |
| All Vegetables | \$1.99/kg | \$2.31/kg | 16.08% |

Part of the persistent issue is that consumers not knowing the cost of growing food, resulting in fresh produce being undervalued.

Another problem facing growers is buyers (i.e. retailers, processors, wholesalers) not paying growers a fair price for their produce.

Food and Grocery Code of Conduct

To assist in negotiating a better price, growers who have contracts with the major retailers (Woolworth, Coles, Aldi, and Metcash) can use the Food and Grocery Code of Conduct (FGCC). The code is underutilised but contains important protections and procedures for growers to receive a fair price.

How to negotiate a better price and elevate issues with the FGCC

STEP 1 A

Ensure your grocery supply agreement with the retailer includes a mechanism to negotiate price on a regular basis.

In this mechanism should be a 5-day timeframe for the retailer to conclude price increase negotiations from the day you inform the retailer

Supplier identification details.

complaint.

Arbiter process.

proposed remedy.

Reviewer

STEP 2

STEP 1 B

of the price increase.

Submit a price increase request to the retailer.

If the retailer rejects the price increase or you are unhappy with the outcome, you can elevate your issue to the Code Arbiter or straight to the independent reviewer.

Your complaint will be treated confidentially, and you can control when you want your identity (or the identity of your organisation) to be disclosed to the retailer. You can also be represented by a third party when undertaking this process.

The independent **Reviewer oversees** conduct including the dispute resolution process of all retailers and suppliers.

You can also speak confidentially with the code arbiter to make an informal complaint. This does not require a written submission and can be used by the code arbiter in an aggregated and de-identified format to provide to the retailers of early signs of bad behaviour. You can remain anonymous.

For more information

Please refer to the ACCC website, the Food and Grocery Code Legislation, the FGCC independent reviewer website or contact Policy Officer Chloe Betts at chloe.betts@ausveg.com.au

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The Code Arbiters are individuals appointed by the retailers to investigate and resolve complaints.

Lodge your complaint with a Code Arbiter.

When lodging your complaint, you must include the following details: · Contact details for the supplier. • Details of the conduct giving rise to the complaint.

• The provision of the code you think is relevant to the

• There is no cost to you as the supplier for using the Code

The Code arbiter will conduct an investigation and provide a

If you do not accept the proposed remedy, you can refer your complaint to the Independent

STEP 3

Refer your complaint to the Independent Reviewer.

The independent reviewer will conduct an investigation and make recommendations to the Code Arbiter to reconsider your case if insufficient procedures were taken.

If the Independent Reviewer finds any breaches of the FGCC that have not been addressed by the Code Arbiter or retailer, he can refer the matter to the Australian Competition and Consumer Commission (ACCC) for potential enforcement action.

There is no cost to you as the supplier for this Independent Reviewer process.

STEP 4

Mediation and Arbitration.

Suppliers can also choose to take an alternative dispute resolution system. Provisions in the Code make it compulsory for the supermarkets/ wholesaler to take part in mediation or arbitration in good faith.

Supplier can take their own legal action or lodge a complaint directly with the ACCC regarding breaches of the Code or other breaches in the Competition and Consumer Act 2010.







VegNET 3.0: Year 1 survey results released

Over the first year of the new VegNET program, the team of on-the-ground regional development officers (RDOs) has focused on delivering regional value, with support from AUSVEG as the national coordinator for the program. AUSVEG National Manager – Engagement and Extension Zarmeen Hassan reports on the project's first survey.



"VegNET materials haven't driven the decision but allow us to benchmark our practice against new developments or industry best practice." GROWER, TASMANIA Year One of *VegNET 3.0* saw a foundational survey undertaken of growers, agronomists and key stakeholders to understand key communication and engagement preferences and knowledge attitude skills and aspirations of growers, with a key focus on understanding knowledge change and adoption.

The survey will guide the team's efforts to ensure that activities delivered in the regions meet the specific needs of the region and its growers.

The survey achieved national coverage of each of the 10 VegNET regions with a total of 172 responses received.

Knowledge and skills

Knowledge and skills are required for growers and other industry stakeholders to build an understanding of different practices and technology that are relevant to their vegetable business.

Respondents were asked to identify how they have been involved in VegNET. The most common engagement method was a workshop, forum or information session (54 per cent), one-to-one farm visit with the RDO (44 per cent), field day or farm walk (31 per cent) and webinar (27 per cent).

Respondents were least likely to be involved in a Community of Practice (5 per cent), study tour (7 per cent) or master class (11 per cent).

Respondents highlighted the importance of direct contact with their local RDO either through farm visits, trials or phone or as part of another event or networking opportunity, most commonly a regional agriculture industry group BBQ. One-to-one farm visits were most commonly identified by respondents from Gippsland Victoria, New South Wales, Northern Queensland and Wide Bay-Burnett Queensland.

Knowledge and adoption attributable to VegNET

The survey results showed that almost half (45 per cent) of respondents had improved their knowledge on one or more of the focus topics partly because of VegNET, with an additional 13 per cent identifying this knowledge gain as definitely because of VegNET.

Almost one fifth (18 per cent) had increased knowledge but not because of VegNET, as this was due to other support or information. Approximately 14 per cent had not increased their knowledge on the focus topics, while nine per cent were unsure.

Of those respondents who had improved their knowledge, they identified direct contact with the RDO, field trials or demonstrations, and their own experience as the reason for the improvement.

Highlighted topics were waste management, precision agriculture, soils (cover cropping) and pest and disease.

"[The] VegNET RDO has made me aware of the focus areas affecting growers due to the rise in chemicals and fertilisers being a high priority to the regions growers." AGRIBUSINESS SERVICE PROVIDER, SOUTHERN QUEENSLAND



Practice change

Practice change occurs when knowledge, skills and confidence are sufficient to adopt a practice or technology that will improve a vegetable businesses productivity, profitability, preparedness and/or competitiveness.

Respondents were asked to identify activities they were undertaking aimed at improving the topics on their farm, or in the advice they provide across: biosecurity; pests and diseases; water management; production systems; soils and nutrient management; markets; business capacity, costs and labour; waste management; and precision agriculture.

The survey showed that over one third (35 per cent) of respondents were undertaking activities partly because of VegNET, with an additional 13 per cent identifying this practice change as definitely because of VegNET.

"Investing in new packing equipment to reduce labour and increase efficiencies."

GROWER, WIDE BAY-BURNETT QUEENSLAND

Over one third (35 per cent) did change practice but not because of VegNET as they were going to do it anyway. Approximately 10 per cent did not change practice at all, with seven per cent unsure.

There was no apparent difference in analysing only the grower respondents.

Further information provided by respondents highlighted the importance of continually improving production systems or business processes and that VegNET facilitated networking and allowed a degree of benchmarking against industry to assist with making this change.

"VegNET has been a good refresher for knowledge and more importantly helped introduce me to contacts needed." GROWER, SOUTH AUSTRALIA

Areas of adoption and practice change

Soil and nutrition management

Through reducing synthetic fertiliser inputs, reduced tillage, soil testing and more site specific nutrition management, increased focus on soil biology and fertility.

"Moving away from chemicals and artificial fertiliser, and focusing on biology, biodiversity in our soil through minimal disturbance, quality compost, and multi species cover cropping." Grower, North, West, South-East Victoria

Pest management and IPM

Through improved trapping, identification, scouting and more effective control measures.

"Improvement of pest control under IPM and identification of alternative chemical treatment compatible with this system." Grower, South Australia

Water management

Including water quality testing and monitoring, use of irrigation scheduling equipment and decision support tools, different irrigation systems to improve application efficiency, minimising run-off.

"Water management equipment management using technology." Grower, Gippsland Victoria

Cover cropping

Trialling multi and mixed species cover crops.

"Continuing to improve how we utilise cover crops to keep weeds down in permanent crops and annual crops." Grower, North, West, South-East Victoria

Monitoring

Including broader crop monitoring related biosecurity, as well as supply chain monitoring through temperature trials.

"We have traps out on all maize and corn crop over summer monitoring fall armyworm." Agribusiness service provider, Gippsland Victoria

"We continue to get information and support from our local grower group which the VegNET officer is based, so it would be a combined level of support." GROWER, WIDEBAY-BURNETT QUEENSLAND

Effectiveness of VegNET

The effectiveness of VegNET can be analysed by looking at the usefulness, currency and relevance of the support and information provided through the program in each region.

Almost half (44 per cent) of respondents found the support and information provided through VegNET quite useful, while another 20 per cent found it very useful.

Fourteen per cent of survey respondents had not used the support or information from VegNET, while the minority found the information not very useful (five per cent) and not useful at all (one per cent).

"More face-to-face and works shops needed, direct interaction with farmers." AGRIBUSINESS SERVICE PROVIDER, NEW SOUTH WALES

Almost half (48 per cent) of respondents felt somewhat

informed about the latest advancements in the vegetable industry as a result of VegNET, with an additional 26 per cent feeling well informed.

A minority of respondents felt they hadn't been kept informed (nine per cent) or that it wasn't important to them (six per cent). A total of 14 people (10 per cent) were unsure.

"Very good with [chemical] permit updates." ADVISOR, TASMANIA

"I'm getting summaries, but now more interested in details." RESEARCHER, NORTHERN QUEENSLAND

Benefits of being involved with VegNET

Information

Being kept informed about important R&D issues (e.g. biosecurity) through multiple channels that is packaged in relevant and different ways (m = 21).

"Being made aware of new tech, new ideas and general information that I may not have found had I not been contacted by the local RDO." Grower, Wide Bay-Burnett Queensland

"Farm visits to gather key information I require for areas of the business we are working on." Grower, Western Australia

Industry

Awareness and knowledge of advancements and best practice across the vegetable industry

"Having a connection to activities happening in the wider industry that we wouldn't have known about before VegNET." Grower, Gippsland Victoria

Networking

Opportunities to network and meet other growers and industry stakeholders, ability to engage and seek information from the RDO as a local point of contact.

"Networking across industry with different growers, advisors and experts." Grower, South Australia

"Connections to growers, soil health network [and] working and learning together." Industry association, Northern Territory

Growers

Tailoring support, information and engagement for different growers in each region.

"Definitely the articles about precision agriculture give me something to discuss with my growers when visiting them on farm." Supply chain participant, Tasmania

New

Improved awareness and connection to new ideas, information, stakeholders and opportunities.

"I wouldn't say we have been directly involved in the VegNET program yet, but we are always looking forward to getting involved in new programs that can help our business." Grower, Wide Bay-Burnett Queensland

Good practice

Awareness and understanding or good or best management practices, such as input use efficiency.

"We have been asked for assistance from the local VegNET Officer to assist in promoting good crop management as a method in reducing Crop Input costs. With the rising costs, we can potentially save growers money by ensuring they only add what their crops require." Agribusiness service provider, Wide **Bay-Burnett Queensland**

"With costs going up continually, we are always trying to find and edge or make savings in our business and this is where levy systems help." GROWER, WESTERN AUSTRALIA



Relevance of levy-funded R&D

Just under half (41 per cent) of respondents rated the vegetable research and development (R&D) funded by Hort Innovation as quite relevant to their business, with a further 28 per cent rating it as very relevant. Approximately 11 per cent while a minority found the R&D not very relevant (nine per cent) or not at all relevant (three per cent).

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"We pay large amounts to the veg levy, so we hope the money is being put to good use to improve the industry." GROWER, WIDE BAY-BURNETT QUEENSLAND

"Things have been going backwards with Hort Innovation for the last few years." GROWER, SOUTH AUSTRALIA

Find out more

Please contact AUSVEG National Manager - Engagement and Extension Zarmeen Hassan via email at Zarmeen.hassan@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





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R&D / VEGNET LOCKYER

Overcoming a challenging 2022

It is no secret that the last few months have been extremely challenging for growers all over Australia, but particularly those affected by the floods in the Lockyer Valley region of southern Queensland. VegNET regional development officer (RDO) Caley Croft provides an update from her region, as well as a grower case study and Q&A.



VegNET RDO update for the Lockyer Valley

We know that for many of you, the last months have been some of the most challenging you have faced in many years. The resilience of growers, employees and industry partners has been evident and true testament to you all.

The Lockyer Valley Growers calendar has been very full and impactful with three grower BBQs, a working lunch, a farm demonstration, fortnightly e-news updates, two printed newsletters and a large number of grower visits.

We have been humbled to witness how willing you are to share your stories and support each other to grow and connect. Each grower event was filled with large crowds of growers who engaged in topics such as strip tillage, the benefits of beneficial insects, soil health strategies, how to improve your wellbeing and flood recovery support.

Additionally, these events finished with meaningful conversations that lifted the spirits of many. We welcome feedback on how you would like us to continue to grow our events and we encourage you to come along in the future.

Thank you for welcoming me as your Regional Development Officer onto your farms during grower visits and sharing your stories and hope for the future. These visits allow us to stay current and connected with your needs, which supports us to develop content that is meaningful. Please reach out if you would like to share your horticulture story with us.

We look forward to hosting many more meaningful events in the future. We trust that you all stay well and wish you all the best of luck for the spring season.





Additionally, these events finished with meaningful conversations that lifted the spirits of many. We welcome feedback on how you would like us to continue to grow our events and we encourage you to come along in the future.

R&D / VEGNET

GROWER CASE STUDY

ATT BE A MA

Caley Croft speaks with Julia Linnan HR Manager from Maragi Farms

Julia made the move back to the family farm and entered the horticulture industry from the education sector in 2020.

She openly discussed how she felt "the need to come home when COVID hit" as she had the desire to support the family through this tough time. This need 'to come home' is not surprising given her strong family farming connections on both sides.

Her father Tim is a fourth-generation farmer on the current property at Lake Clarendon and her mother Christine is the fifth-generation female working in farming businesses in the Lockyer Valley. The family are broccolini and shallot growers and have seen the best and worst times in farming.

Julia's role involves recruitment, training and development of staff and supporting with quality assurance. She has found her education background to be beneficial and is always reflecting on how she can improve herself and others around her. The transition to horticulture has been a positive one, saying she "really enjoys working with adults and the diversity of her role."

Extension activities benefiting businesses

One of the biggest challenges in the role is balancing the seasonal nature of farm work with creating sustainable training plans for skilled line management that are often transient. This is one area she would like to tap into the Lockyer Valley Growers capacity building opportunities more.

Lockyer Valley Growers hold quarterly networking/regional capacity building

extension activities through *VegNET 3.0.* These events include Working Lunches held at Porters Plainlands that focus on best practice in HR/ Quality assurance and The Lockyer Valley Grower BBQs/ information nights held at the Gatton Shire Hall.

"These opportunities provide a space for employers to come together to discuss current challenges and find solutions in a collaborative way," says Julia. Her mother often looks to the e-news briefs and quarterly Newsletters (created by the VegNET-funded RDO from Lockyer Valley Growers) to keep up to date with industry trends.

These extension activities have helped Julia implement quality processes on their farm, such as keeping up to date with current fair work awards and adjusting HR plans to enhance employee wellbeing.

Recent challenges

When speaking about the challenges faced in the farming industry, Julia reflected on the last couple of months with the floods.

"I knew growing up on the farm, that times got tough, but it is a whole other level when you work in it day-in and dayout. The need for informal mental health supports is crucial in a time like this," says Julia.

Julia went on to say that the VegNETfunded Lockyer Valley Grower events in her mind has "strengthened the community mindset to access positive supports and this has been shown through the flood." The Lockyer Valley Grower BBQs that recently focused on flood support and mitigation has been beneficial to her family for not only sense of community but also created easy access to government supports like Queensland Rural and Industry Development Authority, Department of Agriculture and Fisheries and Growcom, which has supported the family to gain funding/ receive advice on how to build back better and get back into production.

Additionally, after The Grower BBQ in May, her brother connected with Kelvin Montagu from AHR and started a conversation about how to improve soil health post flood. This led to additional plans being put in place in their business resilience plan around this topic.

"The need for the farm to become as resilient as it can be, has been even more highlighted with the two recent flood events and COVID," says Julia.

"I can see how us connecting with researchers/networks through events and regional development is vital for us to move forward."

Coming from physical education background, Julia is a huge advocate for community-led leadership around wellness in the workplace for not only farmers but employees. Julia spoke of the desire to 'do more in this space.'

Julia is looking forward to connecting with other HR representatives through the Lockyer Valley Grower network by attending future working lunches to dive deeper into these challenges, find solutions and adopt them together.

Q&A with Michael Nguyen

Can you please give me a brief overview of your business and the produce that you grow?

Our business is a family business that grows cucumber, capsicum and eggplants under protective cropping. We distribute to central markets in Melbourne, Sydney and Brisbane.

Being a free agent allows us to be very aware of the market supply and demand. I also have diversified into a crop protection distribution company called Horticraft Australia.

How did you become involved in the vegetable industry, and how did you get to where you are today?

My mum escaped the Vietnam war and Australia sponsored us. We lived in a refugee camp for two years before coming to Australia. I was only 6 months old in the camp, but mum tells the story where she used my blanket as a sail because our motor broke down getting to refugee camp in Hong Kong. From there our family established a farm in Queensland. My mum in a way is our angel.

As a young adult I was involved in protective cropping and also worked at NAB as a credit analyst. I was lucky enough to have gained a Bachelor of Economics and Finance. My parents wanted to expand their business, so we purchased this additional farm ten years ago.

My background in finance really helped the business grow and understand the market. I have picked up on the farming side of things by standing on the shoulder of giants in our network who have 20 years' experience. I piggy backed off them and they helped me a lot through consultancy.

What is your proudest achievement as a vegetable grower?

Seeing the growth of the business and the growth in myself. I am pencil pusher by nature, I have sports background but was always hands on, I am proud of myself. When I first came down here, I was clean cut and not a drop of dirt on my clothes and people said – he isn't fit for this.

Turns out, I surprised myself and them, I can do this.

This place was bare when I came here, there are moments when I look around and think- how did I get here? But I think in some ways I am meant to be here to help others in my community.

Do you have any plans for the future of the farm – is there a particular direction you'd like to pursue?

Horticraft is part of the future of this farm. I want to help other protective croppers with their needs, like how I was helped when I got here.

I will always be growing food because when I am growing, I am always learning. It helps me understand how to grow a good crop, stay current and more importantly humble. When you grow you can have one day on top of the world and the next your face in the dirt – in a way, that is the magic of it. It teaches



you to go with the ebbs and flows of the seasons. It always keeps me grateful.

What challenges do you face as a vegetable grower?

There as so many – biggest ones are things you cannot control. Weather and market influences.

Farming in its essence is putting out fires well – whether that be managing people, external partners, and disasters. For example, in the first 5 years, I had to learn how to grow the thing. After backto-back losses, you learn a lot and grow as a person.

It is like being able to palette eating a dirty sandwich well every day.

How do you manage these challenges, or try to overcome them?

You just got to dust yourself off and get up again. Also, protective cropping helps us mitigate some of the weather impacts.

Find out more

Please email VegNET RDO Caley Croft at ido@lockyervalleygrowers.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





R&D / VEGNET

WOOLGOOLGA, NEW SOUTH WALES

Greenhouse grower Cheyne Clarke in focus



Cheyne Clarke grows vegetables and berries in the field, in greenhouse tunnels and in one of the most high-tech greenhouse structures in the region. Cheyne's farm is located in the hills near Woolgoolga on the NSW North Coast.

Matthew Plunkett from Local land Services linked up with Cheyne back in the early years of VegNET in 2016 and helped him to improve his irrigation and nutrient management. Cheyne has not been afraid to take on a challenge and try new things, loves growing and seeing results from hard work.

He enjoys giving back and driving change in the industry by being a member of the Protected Cropping Australia and Industry Advisory Council.

Can you please give me a brief overview of your business and the produce that you grow?

I started out growing blueberries in soil and then changed to growing them in substrate in tunnels. I wanted to diversify production, so I started growing cucumbers in tunnels. I have recently expanded with a climate control Harford greenhouse that has its first crop of eggplants and various tomato varieties.

What challenges do you face as a vegetable grower?

The current challenges I face is the severe weather events that have been occurring on the East Coast of NSW and labour shortages just like most people growing here on the North Coast.

How do you manage these challenges, or try to overcome them?

I have a full climate control greenhouse that helps to mitigate the weather challenges. I grow what I can manage and use labour hire companies when extra workers are needed.

What new innovations, research and/or practices has your business implemented recently?

Stepping into the future and installing my own Harford greenhouse using a precise irrigation and water recirculating system and climate control including fully automated screens, vents and fans.

Tony Bundock (Genesis Horticultural Solutions), Cheyne Clarke (Bark Hut Berries. Right. Paul Drop (Powerplants Australia), Cheyne Clarke (Bark Hut Berries), Tony Bundock (Genesis Horticultural Solutions), Matthew Plunkett (Greater Sydney Local Land Services).

I installed with the help from Paul Drop greenhouse PRIVA drain tray and filtration system and blended back into

How do you maintain your disease resistance and ongoing sustainability of the farm?

The climate-controlled greenhouse assists includes beneficial releases of Encarsia for whitefly, Californicus for two spotted mites

what do you think is vital to the vegetable industry right now? More research and development, to nutrient recycling systems in water use and reducing run-off.

What is your proudest achievement as a vegetable grower?

all things technology and innovation.

Top. Tony Bundock (Genesis Horticultural Solutions), Cheyne Clarke (Bark Hut Berries), Matthew Plunkett (Greater Sydney Local Land Services)







In terms of research and development,

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Hort VEGETABLE

VegNET Gippsland Soil moisture monitoring demo site results

VegNET Gippsland has recently wrapped up the first year of a demonstration trial of soil moisture monitoring, hosted by Tripod Farmers at their Boisdale farm.

New soil moisture monitoring technology was trialled over the 2021-22 peak summer growing season in Gippsland to encourage adoption of agtech and demonstrate environmental stewardship in the region.

The demonstration was funded by the Future Drought Fund as part of the Natural Resource Management (NRM) Drought Resilience Program.

The project involved a collaboration with the local Sustainable Irrigation Program, delivered by Agriculture Victoria and the West Gippsland Catchment Management Authority, as well as involvement and guidance from AUSVEG and Elders agronomists.

Warts and all reflection

On 6 May 2022, about 20 growers and industry stakeholders gathered in Boisdale to see and hear more about the trial and technology. VegNET RDO Bonnie Dawson and Host Grower Walter Chadwick gave a 'warts and all' reflection on the project.

Due in part to the La Niña summer, the soil moisture monitoring technology had issues calibrating and providing accurate data to the grower. This therefore limited the confidence of the grower, and the project reference group, to respond to the technology.

The project did successfully increase the knowledge of the host grower about soil moisture monitoring, and although the technology wasn't fully adopted by the end of the first growing season, they were glad to have had the opportunity to trial the technology.

Walter reflected, "Like with everything in farming, I learnt more from when things went wrong."

Positively, Walter is keen to continue trialling the technology over the coming summer.

Key learnings

A key learning has been that adoption of soil moisture monitoring isn't a simple linear process and may take longer than a year to confidently integrate into an intensive vegetable production system.

A presentation from Marek Matuszek of AqLogic consolidated many of the learnings that had been gained over the previous 9 months. Importantly, Marek highlighted that when used optimally, soil moisture monitoring can add more to your system than simply increasing water use efficiency and automating irrigation.

The project demonstrated that adoption of this technology is not about completely replacing current methods of irrigation scheduling, such as physically checking the paddock, but the data made available can add to a grower's understanding of the interaction between plant, water and soil. The three reasons to use soil moisture monitoring which Marek highlighted before irrigation scheduling were:

· To develop your understanding of the relationship between your plants, soil and water. At different depths,

the data can illustrate where water is being utilised, providing an indication of root depth and soil architecture, and soil limitations and variability across a paddock

- · To identify the cause of disease and pests – the data can contribute to your understanding of risks and the effectiveness of potential mitigation strategies
- To validate your system capacity is it behaving as you expect it to?

Project resources

The project developed two factsheets to support intensive vegetable growers to select appropriate technology when first considering adopting this agtech:

- Irrigation Planning: resources for Gippsland vegetable growers www.foodandfibregippsland.com. au/s/FS-irrigation-planning
- Deciding on soil moisture monitoring technology: Tips to make those first steps and setting your expectations www.foodandfibregippsland.com. au/s/FS-Deciding-on-soil-moisturemonitoring-technology.

These factsheets have been designed to complement the poster previously developed by the VegNET Victoria project (available on the AUSVEG Vic website at www.ausvegvic.com.au/ crop/tech-time-a-guide-to-gettingsoil-moisture-monitoring-right).

Benefits of the project

Overall, one of the greatest benefits of the project was having various stakeholders around the table, which brought together perspectives from local irrigation specialists, regional natural resource management and industry advisors.

The opportunity to work cooperatively on this project increased the shared knowledge and skills of Agriculture Victoria, WGCMA and VegNET (both Gippsland and Victoria projects) 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.

Through regular update meetings and problem-solving discussions, the PRG co-developed knowledge

SUSTAINABLE IRRIGATION PROJECT TEAM MEMBER.

R&D / VEGNET

which was also fed through to the technology developer. The benefit of this engagement with the technology company is evidenced in the ongoing changes they have made to the telemetry, which has become more relevant to the intensive vegetable industry over the period of the project.

As a result of the project, the Victorian Drought Resilience Hub has confirmed funding for five additional trial sites. which will be situated in different catchments across the region and supported by VegNET Gippsland over the coming year.

Find out more

Gippsland growers who are interested in participating in the project are invited to contact Bonnie Dawson. Phone: 0407 683 938 or email: bonnie.dawson@foodandfibregippsland.com.au 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



"...we have learnt some valuable lessons on what to look for when planning a SMM system for the vegetable industry..."



Native Vegetation Insectary Trial Expanded in 2022

Karen Thomas and Abigail Woods inspecting native seedlings for NVI planting at Boratto Farms.

After a damp winter, site preparation and planting of the next round of Native Vegetation Insectaries has been undertaken in both Werribee South and Bacchus Marsh in Victoria's western vegetable growing region. With strong support from Karen Thomas and Melbourne Water, the conversion of dam banks into pollen sources for beneficial insects continues to garner interest in the region and beyond.



ee South NVI Inspection September 2022 - Stephen Moore E.E. Muir and Karen Thomas, Melbourne Water

Werribee South - Native **Vegetation Insectary Trials**

Native vegetation insectaries (NVIs) are areas of flowering plants on a farm. They attract and maintain beneficial insect populations by providing shelter from highly disturbed crop areas, as well as alternative food sources, namely pollen and nectar.

The importance of beneficial insects is key to any integrated pest management (IPM) program. The goal of planting NVIs in the Werribee South region in 2021 was to enhance biodiversity and increase the abundance of beneficial insects on a vegetable property to build resilience, particularly against seasonal variations and pest incursions.

The planting also was seeking to replace weeds that harbour pests and diseases of vegetable crops with native plants that do not harbour them.

The second trial of NVI plantings in the Werribee South region and beyond has modified the selected weed management

option and has included a scheduled weed management component to continue to improve the early weed management in NVI plantings.

Werribee South 'Open House'

In the autumn of 2022, an "open house" was held at one of the vegetable properties trialling the NVIs in the Werribee South region of Victoria.

Attendees inspected the native vegetation insectaries planted in April 2021 and learnt about selecting plant species and what is involved with site preparation and maintenance. A major learning from the NVI trial planted in the autumn of 2021, related to the importance of weed management during the establishment phase of an NVI.

Several growers expressed their interest to trial planting NVIs on their farm and two additional vegetable producing businesses have since decided to proceed with planting NVIs on their own vegetable growing properties.



Victorian farms get involved in NVI 2022 Trials

Boratto Farms Expand Native Vegetation Insectary Planting Region

the Werribee South region. Boratto Farms, located in the Bacchus Marsh

allowed several potential NVI sites to be

The plants selected and planted at Lemon Beauty-heads (Calocephalus citreus), the prostrate shrub Boobialla Pigface (Carpobrotus rossii).

One of the main objectives for Boratto a test of the ability of this approach to

The trial, if successful, would allow for several large areas around the property

Fresh Select participates in Native Vegetation Insectary Trial Expansion

producing businesses participating in the

The site selected for this initial foray into NVIs has been the shallow dam bank This site will allow for easy monitoring of

Sentek



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According to Shane Sutherland from to plant something similar on a larger dam bank toward the back of the block."

Find out more

ectaries can be found via ausvegvic.com.au/ o-content/uploads/2021/09/NVI-case-study West and Southeast), please contact e Park on 0432 324 822 or email

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Meet Northern Territory's new RDO – Mariah Maughan

Name: Mariah Maughan Region: Northern Territory Organisation: Northern Territory Farmers Association



Mariah Maughan joined the *VegNET 3.0* project in April 2022 as the NT regional Development Officer based out of Darwin.

I grew up in a small town in the southwest of Western Australia called Harvey. After finishing high school, I got a job on a cropping and cattle station in the Kimberley, 234km east of Broome.

These first two years, working on the station really shaped me as a person and my work ethic. I learnt to work hard and to not let what I thought I could and couldn't do limit what I could actually achieve. Living and working with a small group of people, I learnt the value of good working relationships and how integral they are in achieving outcomes. I also developed a high level of respect for the producers. It takes a balance of physical skill, knowledge and people skills in order to run a station/ farm well.

While on the station I completed a certificate II in Agriculture which got me thinking about what qualifications may help me in my career in Agriculture. In 2017 completed a Bachelor of Science with a double major in Animal Science and Animal health whilst still getting a solid month of mustering in my midyear breaks!

Upon graduating I was accepted in a position with the Department of Primary Industries and Regional Development (DPIRD) as a Development officer based out of Broome. During this role I was fortunate enough to work with producers from all over the Kimberley and Pilbara regions (over 2300km from NE to SW). Our project provided several services, one being a grant program that allowed pastoralists to trial new technologies. Where I saw the most value was providing an outlet to share the knowledge and trial findings from the producers with other producers through workshops, articles and case studies.

At the start of 2020 I moved to Kununurra where I worked for DPIRD as a Biosecurity Officer. Here I spent a significant amount of time around the horticultural industries. As I approached the end of 2021, I was interested in



continuing to assist the agricultural industry however through an industry Organisation, which led me to NT Farmers.

The past 6 months has been a mixture of adapting the skills I have previously gained especially as a development officer for DPIRD, to this role, and gaining as much new knowledge about horticulture in the NT to better help me identify the key issues, barriers, and opportunities to focus on. I am fortunate to have a solid 5-year plan behind me and look forward to growing in the role and in my relationships with growers in order to achieve key outcomes in a variety of development areas.

Project Update

The NT 2022 vegetable season has been a productive one for VegNET NT, seeing a lot of the initial planning and preparation come to fruition. The season started off with grower meetings in two regions of the top end. These had a focus of building relationships between growers and industry providers as well as providing an opportunity to provide project updates and gain initial surveys from the growers.

From here the focus went to producing and delivering our 2022 Integrated

Pest Management (IPM) field trial in partnership with the Department of Industry Tourism and Trade (DITT). This trial showcased two plots which grew common industry vegetables, one plot had conventional pest control methods and the other used IPM techniques. The trial was monitored by DITT Entomologists, and the findings presented at two industry field walks. The trial was also used to host two school excursions as an introduction to horticulture and pest management for students.

In between these field walks we also helped facilitate a field walk at a soil health demonstration sight in Katherine alongside Soil Wealth ICP. The field walk showcased a sight where a grower implemented practices to improve his soil health over a one-year period.

The event was a great opportunity for other growers and industry people to see how certain management practices have significantly improved his soils in a reasonably short time period and the follow-on benefits he has encountered.

In the water efficiency space, moisture probe sites went in on several farms this season. This serves two purposes, one being to gain valuable data specific to the



LIVESTOCK & RURAL PROPERTY AGENTS

R&D / VEGNET NORTHERN TERRITORY

crop and soil type. The second is to allow growers to decide if the technology is worth adopting on their property after the project. We look forward to seeing what data we get by the end of the season and into the next season.

September saw Cherry Emerick from AUSVEG and John Duff from the Department of Agriculture and Fisheries (DAF QLD) visit to engage with industry regarding American Serpentine Leafminer. We ran information sessions alongside DITT NT for growers, agronomists and industry in Darwin and Kununurra raising awareness of the emerging pest and the research being done.

Looking to 2023, we have initiated the planning on shifting our focus slightly away from IPM and soil health to create a greater focus on protected cropping. This will likely be in the form of a protected cropping trial site. IPM, soil health and water efficiency will however continue to be showcased to industry in 2023 as part of the *VegNET 3.0* project. We look forward to wrapping up the busy year and working towards another successful year in 2023.

Find out more

Please contact NT Farmers Vegetable Industry Development Officer Mariah Maughan via email at ido@ntfarmers.org.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.

VEGETABLE

Project Number: VG21000

Hort Innovation



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R&D / VEGNET



Innovation and collaboration the key to addressing sustainability in North Queensland

Protective films or polyethylene (PE) mulch is one of the largest issues that the North Queensland horticulture industry faces. Most of the fruit and vegetable growers in the region use single-use PE mulch because of the benefits it provides, including weed control, soil temperature and moisture conservation, minimisation of nutrient loss, crop yield and quality. Plastic mulches, however, have a negative impact on the environment, are difficult to recycle and rely on fossil fuels for manufacturing.

The Bowen-Gumlu growing region produces large quantities of trellised tomatoes, capsicums, chillies, cucurbits, melons and sweet corn, which have PE mulch mechanically laid before seedlings are inserted through the plastic into the soil.

With large stockpiles of plastic waste visible throughout the region, it has become apparent that managing the disposal of PE mulch is a problem for growers. Traditional practice in the region has been to take it to landfill (which can be expensive), stockpile it on the farm, or bury or burn it onsite.

The negative environmental impacts of PE mulch are of great concern. When the mulch is removed from horticultural beds it takes a long time to degrade and, until recently, has been difficult to recycle.

When PE mulch is exposed to the harsh North Queensland sun and heavy rainfall events, it becomes brittle, difficult to remove and gets washed into waterways, which are catchments for the Great Barrier Reef

Improving industry sustainability Improving the sustainability of the industry's existing processes is vital in order to preserve the surrounding environment for future generations.

With increasing input costs, labour shortages due to COVID-19, minimal increase in farmgate prices and the lack of affordable recycling options, there has been little incentive for growers to pay for more environmentally-friendly disposal methods.

With new strengthened reef protection regulations coming into effect in 2024 that require an environmental authority to operate a horticulture business, it is now even more critical that growers adopt sustainable production methods.

The first step to better management practices is to collect and remove the existing PE mulches from farms. The most viable solution to burning or burying the plastic stockpiles is to send the PE waste to pyrolysis manufacturing facilities, which turn the plastic into value added products.

Bowen Gumlu Growers Association (BGGA) has engaged with the team at Zero Emission Developments, an innovative waste recycling company, which is planning to build a pyrolysis plant in Bowen and remove and reuse existing stockpiles of PE mulch.

Alternatives

There are also alternatives to conventional black and white PE mulch in the form of organic mulch materials. BGGA is encouraging growers to steer away from using single use PE plastic mulch and move to alternatives such as biodegradable mulch.

As part of this education process, BGGA is conducting a trial of two types of natural and biodegradable mulch this year. The first is a Bio-Calcium mulch made by Listen Green Technology. Sea and egg shells are broken down into Calcium carbonate and modified into a resin compound. The second is called BioAgri, developed by BioBag Australia, which is a bioplastic raw material created by complexing starch with polyesters.

Both biodegradable mulches completely and safely decompose in the soil, eliminating the need for, and time spent on, removing the plastic after harvest.

In addition to addressing the issue of agplastic disposal, a key focus for BGGA is to provide growers with information about new and improved ways to enhance and simplify their farming practices by utilising innovative technologies.

BGGA is holding an Innovation Field Day at the Department of Agriculture and Fisheries office in Bowen on Friday 4 November. The field day will have an agtech and pest and disease management focus, showcasing current tech solutions for the horticulture industry.

Above. Stockpile of PE mulch on North Qld property.

Find out more

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







04.11.22

INNOVATION



11am - 4pm **DAF Bowen, 45 Warwick Road**



t. 0419 429 808 | e. rdo@bowengumlugrowers.com.au www.bowengumlugrowers.com.au



R&D / VEGNET BOWEN -GUMLU



Increasing fertiliser efficiency with soil amendments

With increased fertiliser prices and no sign of a decrease on the horizon, growers are seeking ways to reduce input costs while retaining a profitable yield. Soil First Tasmania has completed some grower trials to examine if soil amendments when paired with reduced fertiliser can retain profitable yields. The trial results were shared at a recent field day with the Tasmanian Institute of Agriculture, Soil Wealth and Integrated Crop Protection (SWICP) and VegNET Tasmania.

With increasing fertiliser costs, it is more important than ever for growers to be getting the best nutrient use efficiency they can from their applied fertilisers.

The grower group Soil First Tasmania conducted on-farm trials over the 2021-22 growing season to examine if soil amendments paired with reduced fertiliser input can produce a marketable yield comparable to (or better than) a more conventional fertiliser program. The results from this trial were shared at a recent field day at the Tasmanian Institute of Agriculture (TIA) Forthside Vegetable Research Facility.

The Trials

Each of the growers involved was able to select from a range of amendments to include in their trial. The amendments included humates, chicken manure pellets, Neutrog and kelp-based products, along with microbial and micro-nutrient products.

The general aim was to combine organic material alongside the synthetic fertiliser to promote nutrient availability for the crop. Potatoes, which are the largest annual crop (by tonnage and dollarvalue) in Tasmania, were selected for these trials but the principles apply across all crops.

The Results

At harvest, strips were dug by hand from the trial rows and the potatoes weighed and recorded. Yields were then analysed to determine the marketable yield from each strip and extrapolated to determine marketable yield per hectare. This allowed us to determine a yield that growers can sell at harvest.

Yield results were a mixed bag with some areas yielding up to 11 tonne/ha above the control through to nearly 8 tonne/ha below the control. While variable most results were above or close to the control plots despite having reduced fertiliser applied (see Figure 1).

Treatment costs were calculated and compared with the marketable yield returns for each treatment against the control. These were combined to calculate a net benefit in \$ per ha for each treatment. Again, the results were varied with benefits ranging from nearly \$4,000 per ha to costs of around \$2,000 per ha.

Figure 2 shows the results for one of the growers with the Humates, chicken pellets and soil wetter treatments all showing a net benefit with the blended fertiliser and zinc, microbes and fertiliser treatments with a net cost compared to the control treatments.

Sap testing

Alongside yield results each of the treatments had sap testing completed to determine if there were observable differences in how the crops responded to the different treatments. While there were no significant differences across the treatments there were some observed general trends. Overall nitrogen levels were quite high and micro-nutrient levels were low for all treatments.

What Next

The participating growers have indicated they will be using some of these amendments in the upcoming season. Further trial work will be undertaken in future years to refine the use of these amendments in conjunction with the fertiliser applied.

Cover Cropping Research

The field day also involved exploring species diversity in cover cropping. Theresa Chapman, a PhD candidate with TIA, led the group through her research plots where she is assessing the impact of species diversity with plots of 1, 2, 4 and 16 species in each cover crop mix.

Theresa is examining a range of factor's while aiming to emulate a normal Tasmanian cash crop rotation between the cover crop plots. With the cover crops about to be terminated ahead of a potato crop this season Theresa has been collecting data and will be sharing the data once analysed.

One early (and visual) result was an increased weed pressure in the single species plots compared with the more diverse plots. While cover cropping is becoming a more regular practice within the industry there is still plenty to learn as growers and agronomists work through how they can achieve their desired outcomes. Theresa's research will help to fill some of these gaps.

Acknowledgements

The trial was funded by Landcare Tasmania and the Tasmanian Landcare Fund. SWICP and VegNET are vegetable research and development levy funded projects. The full report will be available through Soil First, SWICP and VegNET shortly.

"What we learnt is that there are options to reduce the amount of fertiliser we plant with but what we really learnt is that there is a lot more work to be done." ROBIN TAIT, SOIL FIRST

onomists taking in the results from the trial

FIGURE 1.

Yield comparison for each treatment against each grower's control plots.



FIGURE 2.

Example of some of the net benefit results for one of the trial growers.



Find out more

Please contact Ossie Lang on 0430 380 414 or email ossiel@rmcg.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

VEGETABLE FUND



Mid-year update from **VegNET RDO Michael Bartholomew**

It has been a mild winter for the West Aussies, giving us plenty of time to get back into the swing of things following one of our hottest Summers on record. VegNET WA has been working hard behind the scenes preparing to assist growers with adopting new technologies and management practises that can help them reduce their costs for the upcoming warmer months.

Efficient input use for a greater gross margin

So far this year, the agriculture industry has needed to face fresh challenges amidst already one of the most challenging times to produce. While we consider ourselves lucky in the West to have avoided the devastating flooding that has occurred along the East Coast, we've still been hit with the same cost of production increases which have put a strain on farm budgets.

One of the focus areas for VegNET in WA is addressing input use efficiency to ensure that your farm is getting the most out of what you put in.

Gone are the days of blanket applications of chemical and fertiliser, because if you can avoid or delay applications and ensure that you are not over-applying, then that can end up being a significant cost savings when multiplied by the size of your farm.

Over the last few months, it was therefore great to see some growers south of Perth adopting soil moisture monitoring on their farms. Perth and surrounds have some of the world's worst soils for growing crops on; Spearwood and Bassendean sands dominate the landscape and have very little water holding and cation exchange capacity - in simple terms, water and fertiliser fall straight through.

Above. Wattleup grower Paul Glavocich participating in a series of biosecurity videos aimed at targeting the 6 most common entry pathways for pests and disease to enter a farm

The trial is hoped to expand shortly to form something of a demonstration site for other interested growers to inspect the technology and ask questions. Soil moisture monitoring is more than just that - it can monitor fertiliser levels too. The accessible



Using this information, you can decide when to water (saving on pumping costs and water allocation) and when your crops may need additional fertiliser. Placing monitoring probes at depth will also let you know if any water and fertiliser is being wasted past the root zone and tell you when the perfect irrigation timings are to ensure that all inputs are being used as efficiently as possible.

New resources available for growers soon

A suite of new resources is currently in development to assist growers in tackling often complex tasks. One such tool is a series of biosecurity videos aimed at demonstrating how cheap and easy it can be to implement a biosecurity plan on your farm.

Every farm is different, small growers don't need a ten-thousand-dollar vehicle washing facility, it's all about identifying the entry pathways of pest and disease and controlling them within the means of the size of your business. After all, while biosecurity is a shared risk to the whole industry, it's a business risk to your farm.

To complement this, a new website tool will be made available soon which aims to increase the accessibility of relevant and up-to-date information to growers. Currently, there is so much agricultural information available online that it can be difficult to find something that is relevant, in-date and available. Many websites



currently have poor search functions, hidden documents or reports hundreds of pages long which are just too difficult for a time-poor grower to access and decipher.

Of course, while the easiest option would be to contact an agronomist (or your local RDO!), this isn't always feasible for everyone and being able to solve problems your way may be the best way of doing it.

This new website tool acts as a catalogue of resources from across the web that fit some strict criteria;

- 1. The information must be easy to read and understand.
- 2. The information must be relevant to West Australian production.
- 3. Your local RDO can assist with any follow-up questions.

In doing this, it ensures that growers who access this information don't end up stuck or give up on their search because the information is either too fragmented, difficult to understand or not specific enough to their unique challenge. Keep an eye out for further updates when this resource will be made available on the vegetablesWA website.

Developing your farm business

VegNET WA will hold an additional business development focus, aimed at expanding and strengthening farm business management skills to increase competitiveness. While still early days, this focus will aim to increase the knowledge and skills of West Australian vegetable growers to grow their farm business and be resilient in the face of contemporary challenges.

This will include all aspects of business development such as risk management planning, contingency and scenario budgeting and general business management knowledge to support growers at all levels of understanding. More advanced businesses can participate in technology trials to increase business operating efficiency. Get in touch if you would like to know how we can help!

There are many more promising farm trials coming up soon with some enthusiastic and passionate growers that it is an absolute pleasure to work alongside in growing the vegetable industry. If you would like to get involved with anything mentioned today or if you would like to try something new and don't know where to start, please reach out using the contact details below.

Find out more

Please contact Michael Bartholomew on 0427373037 or email michael.bartholomew@vegetableswa.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

Project Number: VG21000









Name: Olivia Pineau **Region:** South Australia Organisation: AUSVEG SA



Joining the AUSVEG SA and VegNET 3.0 team is Olivia Pineau as the new RDO for South Australia. Originally from Canada, Olivia moved to Australia in May 2019 to pursue a career in Agriculture. She completed the Master's of Global Food and Agribusiness at the University of Adelaide with a focus on public agricultural policy and market development.

Olivia has a wide range of past experiences in state and federal government. She has worked in multiple government departments, the Prime Minister's Office, and in private sector communications and stakeholder relations. She has coupled that experience with her studies here in Adelaide to provide high-level strategic advice and support to growers of all kinds.

Most recently, Olivia held the position of Senior Policy Advisor with NSW Farmers, focused on extensive livestock, animal health & welfare, and biosecurity.

Olivia's primary focus for VegNET 3.0 will be to provide fit for purpose R&D programs and projects for growers while supporting productivity, profitability, and competitiveness of South Australian horticultural businesses.

As the South Australian VegNET RDO, Olivia will be responsible for delivering the

strategic plans that have been developed by AUSVEG SA and building connections between growers, researchers and industry partners.

The past few years have seen increased costs for production across all South Australian horticultural businesses, with supply chains at all points being impacted. Olivia's focus will be addressing growers concerns through innovation, market access and precision agricultural technologies.

Over the next five years, Olivia looks forward to seeing the VegNET program embed itself into the ecosystem of SA horticultural production, and the enhancement of the region's vegetable production and value.

Olivia is keen to get to know as many SA growers as possible and establish her profile as a resource, advisor and ambassador for producers. On the weekend you can find Olivia in her own herb and veggie garden, at the beach or at the footy.

Project Update

joint event with Protected Cropping protected cropping growers. This farm in Virginia to understand the principles of IPM and how to implement a system hygiene and protected growing best

returning to the Produce Markets in an increased focus on R&D projects, technology and innovation to support the rising costs of production across

AUSVEG SA looks forward to welcoming officials to the Expo.

AgTech Adelaide community to identify around South Australia providing expert





Find out more

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

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



R&D | SOIL WEALTH AND ICP

Demonstrating innovations in vegetable production



The Soil Wealth and Integrated Crop Protection (ICP) project works with growers to put soil management and plant health research into practice. This edition shares recent insights, learnings and innovations from the project's demonstration sites around the country including New South Wales, Victoria, Tasmania, Queensland and the Northern Territory. Soil Wealth ICP Phase 2 (VG16078) is a strategic levy investment under the Hort Innovation Vegetable Fund.

Demo site growers share innovations at the Annual **Vegetable Industry Seminar**

The Annual Vegetable Industry Seminar, held ahead of Hort Connections 2022, attracted a room full of growers on 6 June in Brisbane.

Presentations included a grower panel from the Soil Wealth ICP project which discussed the cutting-edge practices and technologies that are key to improving productivity, profitability and sustainability in the Australian vegetable industry.

Team members Dr Gordon Rogers and Carl Larsen facilitated the discussion with growers who currently or previously hosted demonstration sites as part of the project. The growers shared why they became involved in Soil Wealth ICP, the areas of soil management and plant health that their demonstration sites focused on, as well as the benefits and lessons learnt, and what's next for their soil and plant health journey.

Through their involvement in the project's demonstration sites, all four growers questioned many traditional methods of farming and changed their production practices to increase productivity and profitability, while taking care of soil and plant health.

Mulyan Farms Director Ed Fagan is a third-generation vegetable grower near Cowra, New South Wales. Ed and his brother James have taken a whole farm approach to rebuilding their soils, employing carefully planned crop rotations, reduced tillage and cover crops to revitalise the soil and enhance their productivity.

"Cover crops have made a world of difference and we're putting in legumes to help manage the high cost of nitrogen fertilisers." Ed said.

"Trash management is an ongoing challenge ... but it's amazing how healthy your soils can get by putting in cover crops."

Schreurs & Sons Director Adam Schreurs has partnered with the Soil Wealth ICP team since 2014 to explore the use of cover crops and the application of precision agriculture in Koo Wee Rup, Victoria

"We saw a lot of degradation over the years and when the demonstration sites came along we thought it was a great opportunity to get involved," he said.

While ryegrass and ryecorn cover crops were found to work well with leek crops, a change to an integrated pest management approach meant that Adam has transitioned from calendar spraying insecticides every week to first identifying pests and beneficials in a crop and only

using targeted, softer products when needed throughout the growing season.

Harvest Moon Director Mark Kable has collaborated with the project for many years on controlled traffic farming, strip-till and cover crops in north-west Tasmania. He has also worked to share the lessons learnt to the broader industry.

"We've struggled with controlled traffic farming due to the typography of the area, but we worked with the ripper mulcher to help stop soil erosion and it's still used today," he said.

Mulgowie Farming Company in Queensland is one of the project's newest demonstration sites. The business has a strong focus on innovation and sustainable farming practices, and their next goal is to better understand how to manage beneficial soil biology.

Specifically, Director Andrew Johanson is working with the Soil Wealth ICP team to improve mycorrhizal fungi in his soils.

"We introduced a soil health strategy and we were surprised to see how quickly we turned the farms around," he said.

"Given the different soils across our farms, a slightly different management approach is needed in each area. Minimum till has led to more microbiology building up and the soil structure has changed, creating extra nutrients."



New resources on area wide management of insectvectored viral and bacterial diseases

Area wide management (AWM) strategies for vector-borne diseases help to prevent or minimise the development of insecticide resistance in vector populations, improve the efficiency of biological agents released for control of vectors, and better protect host resistance genes against the emergence of resistance-breaking strains of the viruses. It also provides management options when host resistance genes are not available.

A new webinar recording is now available on the Soil Wealth ICP website which provides an overview of AWM for insectvectored viral and bacterial diseases in vegetable crops.

You can also watch a series of three 30-minute webinars which focus on AWM strategies to control the following key viruses:

- Cucurbits: Cucumber green mottle mosaic virus (CGMMV) and zucchini yellows mosaic virus (ZYMV))
- Capsicums: Tomato spotted wilt virus (TSWV), pepper mild mottle virus (PMMoV) and insect transmission
- Lettuce: lettuce necrotic yellows virus (LNYV), lettuce mosaic virus (LMV), tomato spottled wilt virus (TSWV) and Big Vein.

Visit soilwealth.com.au/resources/ webinar-recordings to watch the presentations.

There are also a range of new fact sheets available at soilwealth.com. au/resources/fact-sheets/pestand-disease-management/areawide-management-of-vegetablediseases-resources/

Top End field walk showcases soil health improvements

Hosted by grower Jeremy Trembath, the Soil Wealth ICP demonstration site in Katherine, Northern Territory focuses on improving soil health and building soil resilience to weather events, particularly during the wet season, to prevent erosion and to protect soils.

To achieve this, Jeremy has used cover crops and reduced tillage in preparation for his sweet corn cash crop, and utilised an integrated approach to pest, disease and weed management.

An inaugural field walk in June 2022, supported by NT Farmers, aimed to share the learnings of the demonstration site so far and to better understand the challenges unique to vegetable growers in the Northern Territory.

Jeremy explained his approach to vegetable farming and attendees observed the demonstration area which has several small blocks of sweet corn planted at different times. The sweet corn is under sown with lucerne to protect the soil, with sabi and jarra grass planted between the blocks. Some areas of the paddock had bare soil before Jeremy had utilised the paddock.

In June 2021, Jeremy planted a mixed cover crop with:

- Legumes (sunn hemp, lablab, blue pea, cow pea, cavalcade all with rhizobial inoculants)
- Broadleaf (sunflower)

The use of cover crops has produced a range of benefits including protecting the soil from erosion, retaining soil moisture and nutrients, and building organic matter, soil structure and soil biology levels. Attendees witnessed the clear differences in root presence and improved soil structure for areas of the paddock where a cover crop was planted compared to areas of bare soil.

• Grasses (oats, millet, rhodes grass)

Biofumigant (jackhammer radish 2%).

Additional discussions included the learnings associated with competition between cover crops and cash crops, the role of cover crops in disease management and the presence of beneficial mycorrhizal fungi in root samples taken at the site.

Jeremy also shared his approach of using minimum tillage and its benefits, as well as his management of fall armyworm which is supported by the biodiversity of beneficial insect species in the area.

Benefits of ryegrass ground cover at Sydney Basin demo site

At the Soil Wealth ICP Sydney Basin demonstration site in Wedderburn, grower Kim Ngov has transitioned from a successful inter-row ryegrass program to now growing high seeding rates of ryegrass as ground cover, in replacement of plastic mulch.

The Tetila ryegrass was hand sown over formed beds at >100kg/ha on 21 February 2022. Since sowing, the site has received over 660mm of rainfall. Kim has been happy to have the ground cover as it has already played an important role in reducing erosion and has eliminated the difficult task of laying plastic in wet conditions.

Kim is working with Soil Wealth ICP to trial different termination widths of the ryegrass prior to planting snow peas. The termination of ryegrass with herbicide has been successful, leaving the site ready for planting when conditions are favourable. The varying termination widths will be considered during the assessment of weed competition, crop vigour, yield and guality through winter and spring.

The Soil Wealth ICP team would like to thank its demonstration site growers for their involvement in the project and sharing their learnings with the wider industry.

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 research and development levy and contributions from the Australian Government

Project Number: VG16078





New agtech plant pest surveillance trials for winter production of vegetables in North Queensland

A new pest and disease monitoring system is currently underway in one of Australia's most important vegetable-growing regions. The iMapPESTS project is using the latest technologies to build pest and disease surveillance networks for multiple agricultural sectors, including viticulture, grains, cotton, sugar, forestry, and horticulture. Currently running a trial in Bowen, the iMapPESTS: Sentinel Surveillance for Agriculture project combines the latest in surveillance technology with the most up-to-date diagnostic tools available. At the heart of this system are the mobile surveillance units, known as sentinels.

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, only requiring an operator to be present once a week to collect the samples and program a new sampling regime.

The surveillance initiative is working towards cross-industry monitoring, with the aim of reporting pest and disease surveillance results across multiple industries (eg. vegetables and sugarcane).

Above: iMapPESTS mobile surveillance unit, Sentinel 6, sampling airborne pests at Queensland's Department of Agriculture and Fisheries Bowen Research Station in North Queensland.

Monitoring airborne insect populations

To understand how a plant pest surveillance network can effectively monitor high-priority pests and diseases across Australia's diverse growing regions, iMapPESTS researchers are investigating how the results from the suction traps compare with traditional surveillance activities and the relevance of data from one location to area-wide management.

Trials have been conducted across vegetable growing regions in South Australia and Queensland's Lockyer Valley in 2020-2021, however, plant pest surveillance further north in regions considered to be high risk for incursions of high priority exotics remain unexplored using the sentinel surveillance technology.

iMapPESTS, in collaboration with Queensland's Department of Agriculture and Fisheries (QDAF) and Bowen Gumlu Grower's Association (BGGA), developed a case-study to trial the surveillance agtech in the Bowen Gumlu region. Commencing in late June, the trial aims to monitor priority insect pests (such as thrips and aphids) during the winter production of vegetables.

The sentinel is located at the Bowen Research Station, a QDAF site that conducts research into vegetable crops including sweet corn, tomato, capsicum, pumpkins, and cucumbers.

To assess the sentinels' capacity to monitor priority insect pests and the relevance of data outputs from suction trap samples, crop monitoring observations from a local agronomist are being shared with the project.

To date, the number of insects trapped by Sentinel 6 at the Bowen site has been very low. This aligns with observations made by the agronomist monitoring the crops surrounding the surveillance trial. This could potentially be explained by the increased number of insecticide sprays across the region as a zerotolerance approach is taken to control the fall armyworm (FAW; *Spodoptera frugiperda*).

Furthermore, wet and colder than usual weather conditions across the region could also have contributed to less than favourable conditions for insect pest populations. Despite low pest populations, thrips are persistently showing up in trap samples. Associated with the spread of important plant viruses, such as Tomato Spotted Wilt Virus, thrips can dramatically increase in numbers under ideal environmental conditions. It is important to monitor for signs of viruses in crops throughout the season.



Agtech in crop protection workshop to showcase sentinel surveillance unit

In collaboration with VegNET, QDAF, and AUSVEG, iMapPESTS will demonstrate the sentinel device at an upcoming afternoon field day at the Bowen Research Site on the 4th of November. The field day will include demonstrations from a range of agtech initiatives and updates on priority pests and diseases, such FAW and the serpentine leafminer (SLM; *Lyriomyza huidobrensis*). Stay tuned for more information on how to register your interest.

Find out more

The iMapPESTS team will work with growers and industry representatives to understand the best way to communicate and visualise the dynamic pest and pathogen information for end-users. Growers and those involved in plant pest management are encouraged to visit the iMapPESTS website for more information or to get in touch.

If you wish to learn more about the project, please contact iMapPESTS Project Coordinator Shakira Johnson on 0433 937 564 or shakira.johnson@ausveg.com.au for more information on the project.

Further details can be found at the iMapPESTS website: **imappests.com.au**. You can follow the project on Twitter: @iMapPESTS.

The program (2017-2023) is 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



Resistance to spirotetramat found in Australian green peach aphids

The green peach aphid has a high propensity to evolve insecticide resistance.

The resistance of green peach aphid (*Myzus persicae*, GPA) to numerous chemical mode of action groups makes it an ongoing management challenge. In Australia, GPA has evolved high-level resistance to synthetic pyrethroids and carbamates, and low-level resistance to organophosphates and neonicotinoids. Quite recently, low-level resistance to sulfoxaflor has also evolved in some Australian field populations.

Australian researchers have found populations of GPA with resistance to spirotetramat, the active ingredient in Movento® 240 SC Insecticide, as well as several generic products containing the same active ingredient. Spirotetramat, a Group 23 insecticide, is an important tool in GPA management in vegetable crops in Australia.

This discovery was made through collaborative research between Cesar Australia and the University of Exeter (UK), led by Associate Professor Paul Umina, Director of Cesar Australia, a Melbourne-based scientific research organisation. The research was a co-investment by Bayer Crop Science and the Grains Research and Development Corporation (GRDC). "Resistance to spirotetramat has been confirmed in a small number of GPA populations collected from Queensland vegetable crops, and importantly, this resistance has been shown to persist after multiple generations of culturing in the laboratory, demonstrating there is an underlying genetic basis", Associate Professor Umina says.

Spirotetramat resistance in GPA has not been found in any other country, despite this product being widely used to manage GPA in a range of crops around the world.

"Clearly, there is something that we are doing in Australia that is selecting for resistance in this species, which really should be looked at", Associate Professor Umina says. Troy Mulcahy, Bayer Crop Science Market Development agronomist based in Victoria, recommends Movento[®] is applied early before pest numbers build up. "For best results, Movento[®] should be applied as two sprays 7-10 days apart to target a single generation of aphids for the most effective control" says Mr Mulcahy.

Research has demonstrated that the correct adjuvant (e.g. Agride[®], Hasten[®]) is essential to achieve high level pest control when using Movento[®]. Without the correct adjuvant, poor product performance will result.

"Thorough coverage is also critical, so spray booms need to be set up to deliver the chemical where the aphids are located and growers should pay attention to dust and honeydew on the leaf as these factors can all reduce product performance." says Mr Mulcahy. High water volumes, correct nozzle selection and appropriate ground speeds will help to ensure Movento® gives the expected efficacy. It is critical that the full label rate is used, as lower rates will often be insufficient and only serve to increase selection pressure for further resistance.

"We know from this research that the resistance mechanism present in these GPA populations results in cross resistance to other Group 23 insecticides", Mr Mulcahy says.

In order to limit the spread and restrict the further evolution of resistance it is important that Movento® and other Group 23 insecticides are used responsibly within a framework of Insecticide Resistance Management.

"While Movento® remains a highly effective means to control GPA in many parts of Australia, this discovery serves as an important reminder to use the





Above: Green peach aphids are a major vector of turnip yellows virus (TuYV) in canola. Left: New research has discovered yet another case of resistance in the green peach aphid.

product judiciously", says Associate Professor Umina.

For a species like GPA, which has a high propensity to evolve new resistances, this means only spraying insecticides when absolutely needed and rotating insecticides from different mode of action groups in those instances where multiple sprays are required in a single season.

For more information

Growers are urged to keep a close eye on their crops this year and to contact their local Bayer Crop Science territory manager if unsatisfactory aphid control is observed following the application of Movento[®].

How does the vegetable R&D levy work?



Minor use Permit

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

* NOTE: Permit updated to include alternative to existing product and new concentration. ADAMA advised they discontinued production of Veritas Fungicide (120 g/L AZOXYSTROBIN and 200 g/L TEBUCONAZOLE) and replaced with the new higher loaded product, Veritas Opti (APVMA Number 89698), a suspension concentrate formulation containing 370 g/L tebuconazole + 222 g/L azoxystrobin. APER85103v3 - Continued issuance of this permit is subject to the outcomes of the current APVMA review of neonicotinoids. This permit may be impacted by the outcomes of this review.

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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



~PER14596v4 - Continued issuance of this permit is subject to the outcomes of the current APVMA review of chlorpyrifos. This permit may be impacted by the outcomes of this review. + NOTE: Continued issuance of this permit is subject to the outcomes of the current APVMA review of chlorpyrifos. This permit may be impacted by the outcomes of this review. **NOTE: Bulb onions - The APVMA requires this use to be registered in a major crop. ^ Continued issuance of this permit is subject to the outcomes of the current APVMA review of chlorpyrifos. This permit may be impacted by the outcomes of the review.

What is the Emergency Plant Pest Response Deed?

The Emergency Plant Pest Response Deed is a formal legally binding agreement between Plant Health Australia, the Australian, state and territory governments, and national plant industry bodies representing specific cropping sectors. The Deed covers the management and funding of nationally agreed responses to emergency plant pests.

The Emergency Plant Pest Response Deed (EPPRD) replaces previous informal arrangements and provides a recognised role for 'affected industry parties' to participate in approved responses, and assume a greater responsibility in decision making.

The EPPRD is the plant sector equivalent of the Emergency Animal Disease Response Agreement which operates in the animal (livestock) sector.

AUSVEG is a signatory to ensure adequate representation of our potato and vegetable growers with regard to exotic plant pest incursions.

What are the benefits of the EPPRD?

The EPPRD provides a consistent and agreed national approach for managing EPP incursions. This allows industries and governments to respond quickly and effectively to an EPP incident, while minimising the uncertainty over management and funding arrangements.

- Allows industry to be directly involved in decision making about mounting and managing an EPP response from the outset. Industry and government representatives are appointed early and given authority to commit to actions and funding decisions, which also ensures that trained and accredited personnel are involved in EPP responses wherever possible.
- Ensures costs are minimised for all parties. There is a requirement that all funding parties remain engaged in cost sharing until the response is successful or a decision is made that it is no longer feasible or cost effective. Potential liabilities are known and funding mechanisms are agreed in advance.
- Owners may be eligible for reimbursement of certain direct costs if their crops or property is directly damaged or destroyed as a result of implementing an approved response plan. The Australian Government has an agreement to underwrite an industry party's share of costs where that industry party has an approved mechanism for repayment.
- **Commitment to risk mitigation** by all parties through the development and implementation of biosecurity strategies and programs.
- **Performance standards for government parties** All state and territory government parties are required to meet performance standards for emergency response resources and to provide legislative support for response activities and grower reimbursement payments.

Why is AUSVEG a signatory to the EPPR Deed?

If AUSVEG was not party to the EPPR Deed on behalf of vegetable and potato growers, there would be no mechanism for the Government to contribute to response plans. The EPPR Levies are the most important means the industry has to co-ordinate resources and responses to effectively deal with these threats.



Key Terms

Emergency plant pest

For a pest to be classified as an emergency plant pest (EPP), it must either be listed in Schedule 13 of the EPPRD, or be determined by the Categorisation Group or National Management Group to be of potential national significance and meet at least one of the criteria below:

- a known exotic pest.
- a variant form of an established plant pest.
- a previously unknown pest.
- a confined or contained pest.

Consultative Committee on Emergency Plant Pests

The Consultative Committee on Emergency Plant Pests (CCEPP) provides technical and scientific advice in response to exotic plant pest and disease incursions. It is chaired by Australia's Chief Plant Protection Officer and comprises the Chief Plant Health Managers from each state and territory, other specialists from government, Plant Health Australia, and representatives from affected industries. To date, the CCEPP has met on six occasions to discuss the Varroa destructor response.

National Management Group

The National Management Group (NMG) consists of Chief Executive Officers from government agencies responsible for agriculture and affected industry organisations. It is chaired by the Secretary of the Australian Government Department of Agriculture, Fisheries and Forestry. Plant Health Australia is a non-voting member.

NMG makes decisions on whether to support national eradication programs for pest or disease outbreaks under the Emergency Plant Pest Response Deed. NMG considers recommendations provided by the consultative committee before making decisions on whether a pest or disease is technically feasible to eradicate and cost beneficial to do so.

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Emergency Plant Pest Response Levy

The Emergency Plant Pest Response Levy (EPPR Levy) provides a mechanism for the industry to fund eradication activities to reduce the threat of exotic plant pests. To make a change to the rate of an EPPR Levy, an industry body needs to undertake the following:

- 1. Consult with the Department of Agriculture and Water Resources to determine whether the benefit of a levy is greater than the cost to industry and calculate a levy rate to raise sufficient funds.
- 2. Undertake public notification that a levy is to be amended.
- 3. Write to the Minister for Agriculture and Water Resources requesting the levy rate be increased.
- 4. Hold an objection period for a minimum of 30 days and publicise the methods for lodging an objection. At the end of this period, the industry body needs to respond to the Department to notify it of any objections received and how they were responded.

The Department makes the final determination as to whether the EPPR Levy should be increased.

For more information

Contact AUSVEG National Manager – Engagement and Extension Zarmeen Hassan at Zarmeen.hassan@ausveg.com.au, or 03 9882 0277. You can learn more about the EPPRD on the Plant Health Australia website at planthealthaustralia.com.au/biosecurity/emergency-plantpest-response-deed

What are some of the high priority plant pests for the vegetable industry?

Exotic Leafminers

FEATURES: Tiny insects whose larvae cause damage by tunnelling through the inside of leaves leaving a meandering track.

WHERE THEY'RE FROM: North, Central America and Caribbean, South America, Europe, Africa, Asia, Oceania.

HOW THEY SPREAD: Importation of infested plants or cut flowers; pupa in soil; locally by flying.

AT RISK: Leafminers threaten Australia's vegetable, potato, melon, cotton, onion and grain crops as well as production nurseries.

Leaf miners are tiny greyish black flies about 2 mm long, whose larvae (grubs) feed under the surface of leaves. Feeding causes loss of healthy leaf tissue, so the plant can't capture enough sunlight and often becomes infected with disease. Plants often fail to grow or produce crops.

While there are over 300 leaf miner species worldwide, there are five considered to be serious pests:

Already detected in Australia

- Vegetable leafminer (Liriomyza sativae)
- American serpentine leafminer (Liriomyza trifolii)

Not yet detected in Australia

- Tomato leafminer (Liriomyza bryoniae)
- Chickpea leafminer (Liriomyza cicerina)
- Serpentine leafminer (Liriomyza huidobrensis)

What to look for?

- Trails or 'mines'-light green to white squiggles-on leaf surfaces.
- Sometimes a blackened stripe at the tunnel edge.
- Trails get wider as the grubs grow.
- Adult leaf miners are tiny flies-just 1-2mm in length. Their colour varies with the particular species.

While similar damage could be caused by other leaf mining insects that are already in Australia, if you see squiggly leaf mines, particularly on a number of species of plant, don't hesitate to report it.

Exotic invasive snails

FEATURES: A number of snail species including the giant African snail which is large with a long and narrow pointed shell

WHERE THEY'RE FROM: Asia, Africa, North America, Central America, Caribbean, South America, Oceania.

HOW THEY SPREAD: Stowing away on imported goods or packaging; illegal importation as pets.

AT RISK: Over 500 plant species are at risk from exotic snail species including fruit and vegetables; nurseries and rice; natural environment and humans.

The giant African snail is one species of exotic invasive snails that would damage crops and the environment if it established here.

What to look for?

Any snail on imported goods should be reported.



Top: American serpentine leafminer. Source: Alice Ames, Department of Primary Industries, Bottom: Giant African snail, Source: Brian Smith. Queen Victoria Museum, Launceston, Tasmania.

Giant African snails:

- are around six times larger than the common garden snail
- distinctive conical shell usually twice as long as wide
- have a long, narrow, cone-shaped shell that is usually 5 to 10cm long, but can reach up to 20cm
- vary in colour, but are usually light brown with alternating brown and cream bands on its upper whorls
- lay oval cream to yellow eggs about 5mm across, in batches of 100-400

The golden or channelled apple snail:

- is a fresh water snail
- it has a thin smooth shell
- is 3-6 cm in height
- shell colour varies from yellow-brown to greenish-brown or dark chestnut
- it lays clusters of round eggs that are deep pink to orange in colour, above water on vegetation or bridges.

What to look for?

Exotic invasive snails can arrive in Australia either as adults or as egg masses on imports through our airports or seaports, hitching a ride on:

- shipping containers
- cars
- soil and fertilisers
- machinery.

Sometimes snail trails may also be seen.

Brown Marmorated Stink Bug

FEATURES: Shield shaped marbled bug up to 17mm long that eats crops and ornamental plants; becomes a nuisance in homes and buildings.

Europe, Oceania and South America.

HOW THEY SPREAD: Hitchhikes on imported goods, including personal items, machinery and vehicles, ships, boats and aircraft.

AT RISK: Over 300 agricultural and ornamental plant species; our way of life.

L-R: Brown marmorated stink bug. Source: Ken Walker, Museums Victoria. Potato cyst nematodes. Source: Gordon Berg, DPI Victoria

While this exotic stink bug looks similar to native stink bug species, it would devastate crops and ornamental plants and become a smelly nuisance if it established in Australia

What to look for?

Australia has its own native stink bugs which can look similar, making it tricky to spot this exotic invader. Key distinguishing features of the adult brown marmorated stink bug:

- smaller than many stink bugs at 14–17mm
- shield shaped
- most are marbled with a faint reddish tinge
- have white banding on the antennae
- alternate black and white markings on the edges of the abdomen
- light green to white barrel-shaped eggs laid in clusters of 25 to 30 on the underside of leaves.

Young bugs:

- are 2–12mm long.
 - have a dark head with an orange to red abdomen with black stripes around the outer edges and down the centre.
 - do not have fully developed wings.
- become darker as they grow with

WHERE THEY'RE FROM: Asia, North America,



For more information

Visit agriculture.gov.au/biosecurity-trade/

pests-diseases-weeds/plant

bands on legs and antennae.

Cyst nematodes of grains and vegetables (exotic species)

FEATURES: Exotic species of nematodes (microscopic worm like animals) that damage grains and vegetables.

where they're from: Europe, Asia, Africa, North America, Central America, South America

HOW THEY SPREAD: Importation of infested plants or soil, contaminated machinery and footwear.

AT RISK: Grains (oats, wheat, barley, soybeans, rye, maize, sorghum), pulses (chickpea, lentil, broad bean) grasses and vegetables (carrots, beans, peas, beetroot).

Patchy growth in cereal rye caused by one of the species of cyst nematodes.

What to look for?

In cereals and vegetables:

- · yellowing, stunting of plants, poor tillering (production of side shoots), and patchy growth
- · thin leaves with a reddish yellow colouring
- damaged roots, often with a knotted appearance due to cysts, or are ropey and swollen
- tiny white cysts on roots, which turn brown as the season progresses.





Foot and Mouth Disease: Not just an animal issue

Foot and Mouth Disease is the highest profile biosecurity risk to Australian agriculture since its spread to popular holiday destination Bali. While it is not a disease that directly affects vegetables, an outbreak of Foot and Mouth Disease in Australia would be detrimental to all agricultural sectors, including vegetable growers.

What is Foot and Mouth disease?

Foot-and-mouth disease (FMD) is a serious and highly contagious animal disease that affects all cloven-hoofed animals including cattle, sheep, goats, camelids, deer and pigs.

FMD is a disease of animals, not humans and is a different disease than Hand, foot, and mouth disease which is common in young children. FMD is not transmitted to humans by eating affected meat.

FMD virus is carried by live animals and in meat and dairy products, as well as in soil, bones, untreated hides, vehicles and equipment used with these animals. It can also be carried on people's clothing and footwear and survive in frozen, chilled and freeze-dried foods.

Previous outbreaks overseas have resulted in the mass culling of millions of infected and non-infected animals, including over six million animals in 2001 during the UK's devastating FMD outbreak.

For more information

Visit agriculture.gov.au/biosecurity-trade/ pests-diseases-weeds/animal/fmd

Implications if FMD arrives in Australia?

According to the Department of Agriculture, Forestry and Fisheries, an outbreak of FM in Australia could have devastating consequences for our community in lost production, trade and tourism.

A 2013 ABARES report 2013 estimated an FMD outbreak would result in severe direct economic losses to the livestock and meat processing sector over a ten-year period. These losses ranged up to \$52 billion over 10 years, largely due to lost export market access and the costs of responding.

An update to this estimate conducted in 2022 found the same large outbreak in multiple states would now have a direct economic impact of around \$80 billion (in 2020-21 dollars).

Aside from the economic impact, the environmental, human and animal welfare toll would be catastrophic.

When speaking to the University of New England's Connect series, Dr Paul McGreevy, UNE Professor of Animal and Behaviour, says "there will be significant animal welfare implications if FMD arrives; a prospect that is truly terrifying.

"There will also be profound implications for veterinary and biosecurity personnel, and, with large numbers of carcasses to dispose of, there would be environmental impacts."

Reduced tourism, mental health impacts for those who administer and witness stock culls, and a change in what we pay at the grocery store, are all consequences if FMD were to spread.

What is the impact for vegetable growers?

While FMD does not impact vegetable crops, there are significant consequences for vegetable growers and their communities if FMD reaches Australia.

"Many vegetable growers are mixed farmers, so while FMD does not impact vegetables, many producers will be required to cull livestock in the event of an FMD outbreak, which will have grave economic and mental health implications for those growers," said AUSVEG National Manager – Communications Shaun Lindhe.

"The flow-on effects for regional and rural communities would be devastating. The economic toll to regional communities and the implications for major economic and employment providers in the regions would not just impact livestock producers, but all farmers and community members."

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