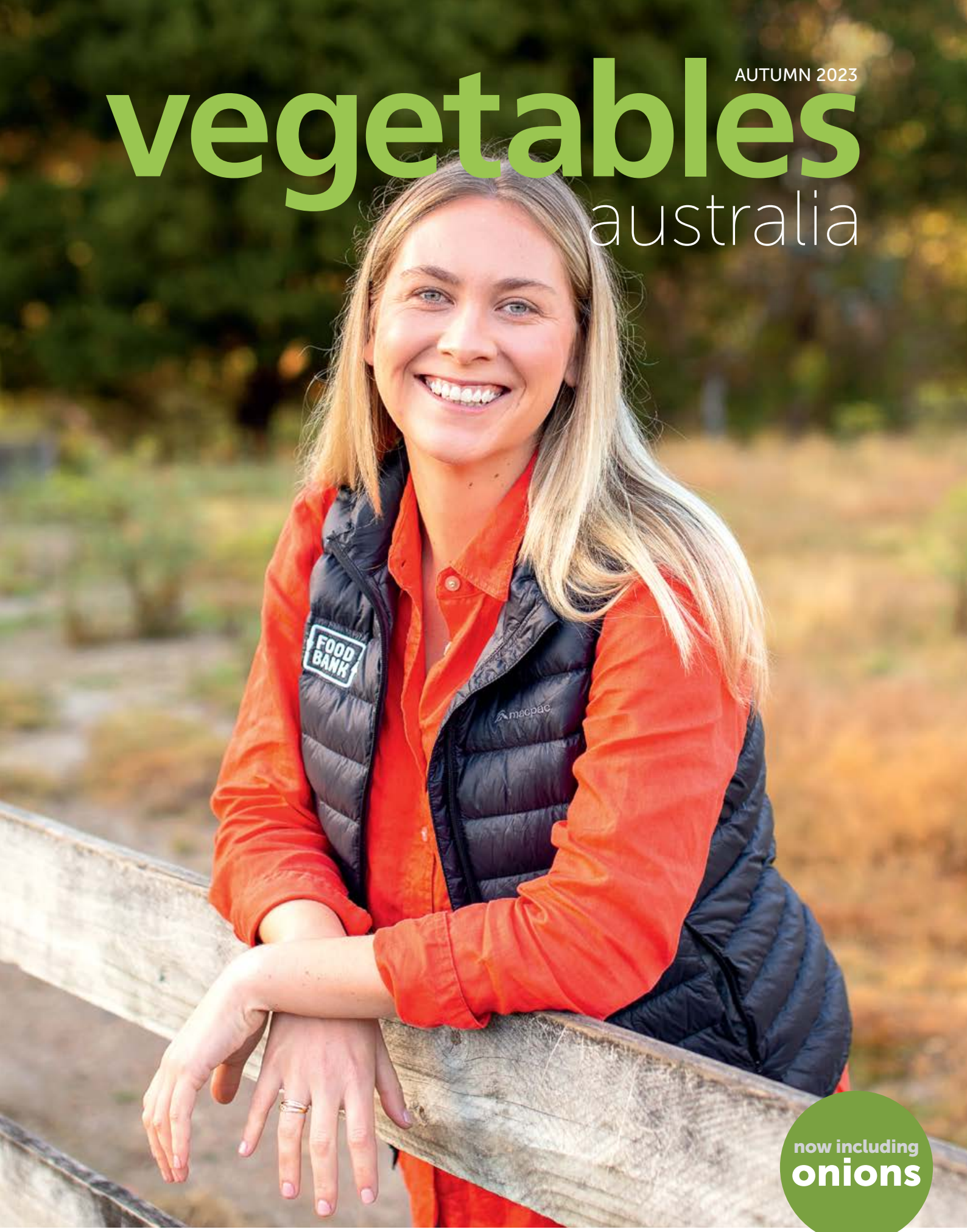
AUTUMN 2023

vegetables australia



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TAYLA FIELD - VEGETABLES TO FOODBANK | FAIR WORK ACT CHANGES FOR HORTICULTURE
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FAIR WORK ACT CHANGES FOR HORTICULTURE
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Export and Biosecurity

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

AUSVEG WOULD LIKE TO THANK ITS LEAD STRATEGIC PARTNERS

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Cover. Meet Tayla Field, National Program Manager, Agriculture with Foodbank Australia. *See Page 26.*

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

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cab

From the Editor

It is extraordinary how quickly we have moved into Autumn – Hort Connections is now weeks away, not months, and plans, programs and speakers, and finer details are well underway..

In this issue, advocacy is a focus in light of recent changes to the Fair Work Act, some of which are already in play, and many more to come in effect throughout the year. We strongly urge you to take the time to familiarise your business with the changes, which are detailed on page 12.

The latest data is out for vegetables and onions in the Hort Innovation Hort Stats handbook – we have a look at what that means for the value and volume of domestic and export production for both vegetables and onions. We have some terrific resources for onion growers as well as industry news that are well worth a read.

In the past couple of months, a number of horticulture industry members have been recognised for their contributions to the sector. The Weekly Times Coles Horticulture Farmer of the Year finalists included the Donovan Family from Bundaberg, the Jurgens Family for Vee Jay's Kalfresh, and Quality Fresh, South Australia for herbs and Asian vegetables. The Donovan Family, who have a substantial avocado business, were the Hort Connections 2022 Syngenta Grower of the Year (you can read more about their story in *Vegetables Australia* Summer 2022/23), while Damian Manno of Quality Harvest was the winner of the Hort Connections 2022 Corteva Agriscience Young Grower of the Year. Congratulations to the Jurgens Family on their win as the Weekly Times Coles Horticulture Farmer of the Year.

Closer to home, the nominations for the Hort Connections 2023 Awards for Excellence are open.

The winners will be announced during the Gala Dinner at Hort Connections. If you know a person or business who should be recognised for game changing improvements and achievements for our industry, nominate now via the Hort Connections website.

I am loving the journey into horticulture and looking forward to presenting you with some lovely surprises in future issues of our dedicated industry magazines.

Stay safe
Deborah

Message from the Chair

As growers all around the country work hard to ensure Australians have adequate supply of fresh vegetables, the AUSVEG team has hit the ground running in 2023, with our programs under full swing. Our VegNET program, supported by 10 on-the-ground regional development officers, is again reaching out to growers directly in their communities; our biosecurity program is active on the ground with AUSVEG officers assisting growers with managing diseases and pests; and our export program is once again assisting growers access new markets and promoting the high-quality products and growing practices of Australian growers on the international stage.

These programs are all delivered by industry experts within AUSVEG, and supported by the levy system that helps ensure the industry is productive, competitive and profitable.

The Vegetable R&D Levy is collected by the Federal Government and provided to Hort Innovation, as the horticulture industry's Research and Development Corporation, to invest in research, extension and communications programs to improve the sector. Growers and industry have direct input into how the levy is allocated via Strategic Investment Advisory Panels that are representatives of the industry and understand the priorities the industry faces.

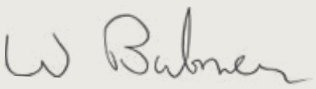
AUSVEG is a service delivery partner of levy-funded programs in different areas, including communications, extension, export development and knowledge-sharing events and initiatives.

Growers also pay a biosecurity levy to Plant Health Australia, which invests in programs and activities that help protect Australian farms from the devastating impact of pests and disease. AUSVEG is a service delivery partner with Plant Health Australia in biosecurity-related activities that are designed to arm the Australian vegetable industry with tools and knowhow to better protect itself from pests and diseases.

These services that AUSVEG provides are designed with growers front-of-mind, and I encourage all growers to make the most of the programs and experts within AUSVEG.

I was encouraged to see that Australian produce is still well-regarded on the international stage at Gulfood in Dubai early this year, with our clean and green produce highly sought-after from international buyers. This is a credit to our exporting growers and the good reputation of Australian growing practices established over many years. While the majority of our produce is sold domestically, export markets can be an additional market for those who are able to take advantage of the opportunity. Our export team has extensive experience in facilitating and advising growers on all stages along the export process, so reach out if you want to find out more.

On behalf of the AUSVEG Board, I wish you well with the coming season.



Bill Bulmer
AUSVEG CHAIR

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Message from the CEO

The vegetable industry has faced significant stress and hardship over the last 12-24 months, whether it be from severe weather events, increases to costs of production, labour shortages or dealing with the increased costs of living that every Australian family and household is dealing with.

In February, AUSVEG presented to the Senate Select Committee on the Cost of Living, with key areas of conversation including increases to critical farm inputs, labour shortages, retailer price challenges, food security including recent significant weather events and the availability of fresh produce.

AUSVEG advised the Committee that part of the long-term solution to this issue is changing the current perception and building awareness of the fresh produce sector in the public eye. This will help educate the consumer about the food system and the real cost of fresh produce.

AUSVEG also discussed sustainability and climate change, highlighting the decades of on-farm improvements growers have undertaken to become more sustainable, such as increasing efficiencies in irrigation management. While this will be an ongoing discussion for the broader agricultural industry, vegetable growers should be applauded for the work already undertaken to operate more sustainable businesses and help boost the sustainability of the entire sector.

Given the significant challenges of the sector in recent times, it is critical that we take the opportunities to meet up with each other face-to-face. There is no better opportunity to do this for growers than the upcoming Hort Connections conference in Adelaide from 5-7 June, with the theme '*Growing Together*'.

The conference Trade Show is sold-out with over 200 businesses exhibiting this year, and the lineup of speakers is shaping up to be the biggest and most engaging yet, with new speakers still being added to the program.

An important aspect of the event is acknowledging the outstanding businesses and individuals who have contributed significantly to our industry through the year at the Hort Connections Awards for Excellence, presented at the Hort Connections Gala Dinner. Nominations are still open for industry members to nominate those in their communities who have excelled not only in growing produce, but also those who have excelled in marketing, exporting, sustainability and other ways to serve in the community and create impact in the industry.

It will be an extraordinary event this year and I look forward to meeting with many of you in Adelaide.

Michael Coote
CEO, AUSVEG

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industry update

Growing a Career in Horticulture

A career in horticulture can be rewarding and satisfying with a diverse range of skills and aptitude from working outside with your hands to transport to business analyst. If you are looking for a new opportunity in horticulture, the AUSVEG Career booklet may have the new you.

It's time to start showing off our industry and all the incredible careers and pathways it has to offer. From an irrigation manager in the NSW Riverina to an agronomist in Tasmania, a quality assurance manager in QLD, or a Horticulture Grower in WA there are many opportunities to be excited about.

The horticultural industry is short 10,000 workers spanning from roles on farm, in packing sheds, management, and administration. In September 2022, there were six jobs for every agriculture graduate in Australia. The industry is booming and growing exponentially with innovation, ag-tech, and efficiencies across the sector.

Unlike many other industries, there will always be a job in horticulture, because we all need to eat, every day, three times a day.

The current public perception of careers in horticulture is limited to very physical or unskilled seasonal roles such as harvesting or packing. Whilst these roles are critical for our industry, there are so many more exciting and rewarding opportunities.

Because of this perception, there are fewer and fewer students studying horticulture. As a result, there are fewer training organisations offering certificates and degrees in horticulture. The reality is, is that we have an aging workforce - the average farmer is 58 - and less than a quarter of the workforce is under 35.

We need to change the perception of our industry and showcase what is has to offer to attract young people back into horticulture.

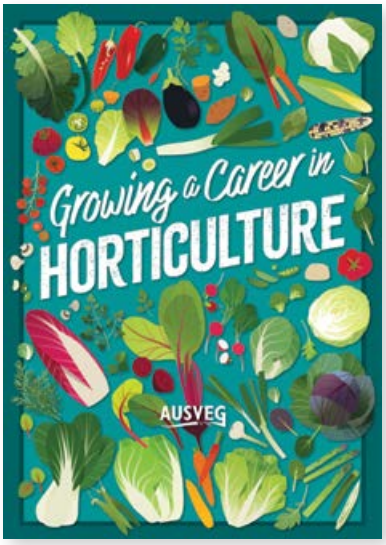
There are careers to suit everyone from all backgrounds, disciplines, and ages. Choose a role that is hands on/off, inside/outside, with/without people, whatever suits you!

AUSVEG has produced a Career booklet to show off an array of careers in horticulture at all stages of production. The booklet highlights the relevant skill and core tasks of each role as well as the different study pathways. Accompanying each career is a video of an employee on an Australian farm doing that role.

The booklet is aimed at students, teachers, parents, career counsellors and anyone looking to make a career change or learn about the industry.

AUSVEG has developed a Careers Strategy and will be engaging with secondary and tertiary schools and institutions, attending career expos and sharing the Careers booklet and other resources with our state members and other organisations to help encourage more people into our great industry.

Please share this resource with anyone who is considering (and not considering) a career in horticulture.



Careers covered in this booklet:

- Agronomist
- Biosecurity Officer
- Entomologist
- IMP Officer
- Mechanic
- Mechanical Engineer
- Ag technician
- Maintenance Electrician
- Fitter and Welder
- Hort Grower
- Hort Farm Manager
- Senior Nursery Person
- Nursery Person
- Nursery Supervisor
- Irrigationist and Irrigationist Assistant
- Horticulture Section Manager
- Production Horticulture Supervisor
- Farm Assistant
- Harvest Hand
- Machinery Manager
- Machinery Supervisor
- Irrigation designer/ Manager
- Cold Storage Manager
- Facility Plant Manager
- Facility Supervisor
- Truck Driver
- Forklift driver
- Mobile Plant Operator
- Section Supervisor
- Warehouse Packer
- Distribution Manager
- Human Resource Manager
- Marketing Manager
- Hort R&D Officer
- Quality Assurance Manager
- Health & Safety Manager and Officer
- Sales Manager
- Finance Manager
- Operations Manager.

FIND OUT MORE

For more information contact the AUSVEG Advocacy team, Lucy Gregg on **lucy.gregg@ausveg.com.au** or Chloe Betts at **chloe.betts@ausveg.com.au**

Growing a Career in Horticulture Booklet
Scan to view

NOW AVAILABLE

Latest horticulture industry statistics

The *Australian Horticulture Statistics Handbook* (Hort Stats) is the leading resource for Australian horticulture statistics and market information. It is an analysis that combines all available data on production, international trade, processing volumes and fresh market distribution to produce statistics on more than 70 horticultural categories. The latest edition of the Handbook was released in February 2023, unpacking the sector's performance during the financial year of 2021/22.

The latest Hort Stats Handbook has officially been launched, offering the most comprehensive and contemporary data available on all sectors of the Australian horticulture industry in one easy-to-read guide.

The Handbook, developed by Freshlogic and funded by Hort Innovation, features more than 470 pages of information drawn from several supply chain sources, including international trade statistics and industry peak bodies. It includes data on more than 70 horticultural products including fruit, nuts, vegetables, nursery, turf and cut flowers.

Hort Innovation CEO Brett Fifield said that "In 2021/22 the production value of Australia's horticulture industry grew to a new high of $15.62B, with the total production value of Australian's horticulture industry growing steadily by $381.3m (2.5 per cent)," Mr Fifield said.

"Australia is producing 850,000 additional tonnes of produce than we were in 2012/13 and the annual value of horticulture production is up $6.15b compared to the same period. This means the industry has added, on average, around $680M in value every year for the past decade."

AUSVEG CEO Michael Coote said that while the long-term growth in the vegetable industry has been impressive, the industry has recently been struggling with weather events, higher production costs and labour shortages.

"Weather events, labour shortages and supply chain issues have impacted production volumes of many vegetables, which has been challenging for growers," said Mr Coote.

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

HORTICULTURE

All fruit, vegetables, nuts and cut flowers

Year ending June	2021	2022	▲%
Production (t)	6,639,296	6,545,575	- 1%
Production ($m)	$15,241.10	$15,622.40	+ 3%
Fresh Export (t)	761,560	754,504	>-1%
Fresh Export ($m)	$2,368.80	$2,471.00	+4%
Fresh Supply (t)	4,061,886	3,965,822	-2%
Fresh Supply Wholesale Value ($m)	$15,633.50	$15,939.50	+2%
Supply per capita (kg)	157.74	152.84	-3%

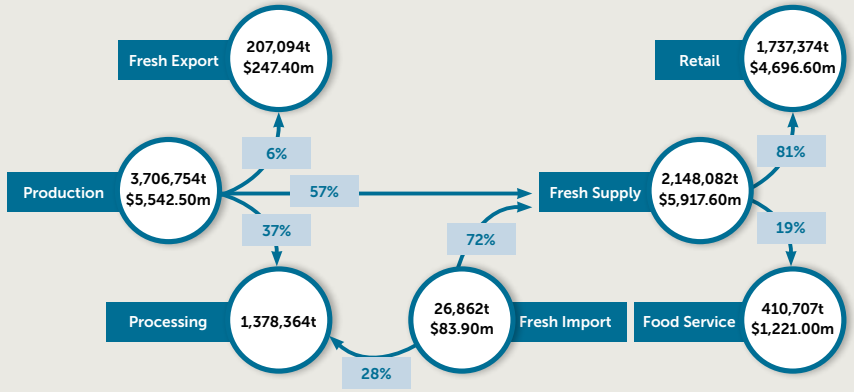
Highlights for 2021/22

More data and insights from the 2021/2022 Handbook include:

- Head lettuce increased by 55% (+$94.8 million), leafy salad vegetables increased by 19% (+$94.2 million), and tomatoes increased by 15% (+$83 million).
- Leafy salad vegetables also reached new production volumes, increasing by 5.3% in 2021/22.
- Vegetable production values reached an all-time high of $5.54 billion in 2021/22, despite a modest decrease in volume.
- Beans had the highest annual growth rate of all vegetables, with value up 64% in 2021/22 and recording its highest production value of $134.4 million.
- Onions reached new production value highs, exceeding $248 million. For a full analysis of onions *see page 71*, which will be the deep dive.

FRESH VEGETABLES

Supply chain overview - Year ending June 2022

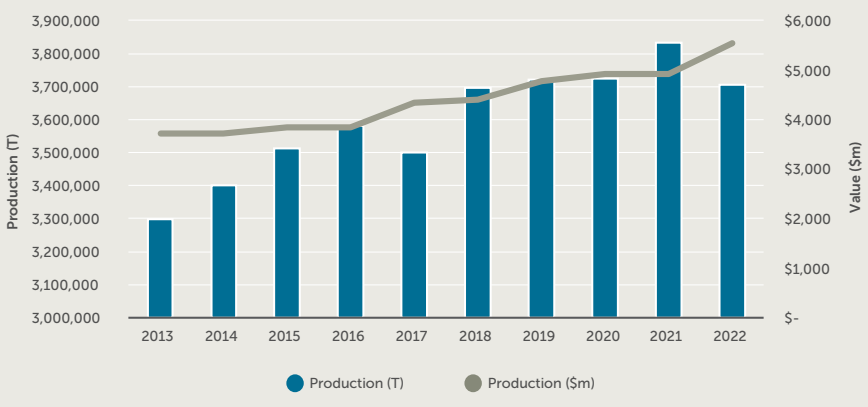


Sources. ABS; AC; AUSVEG; CFVIWA; GTA; MP & DD (Freshlogic Analysis)

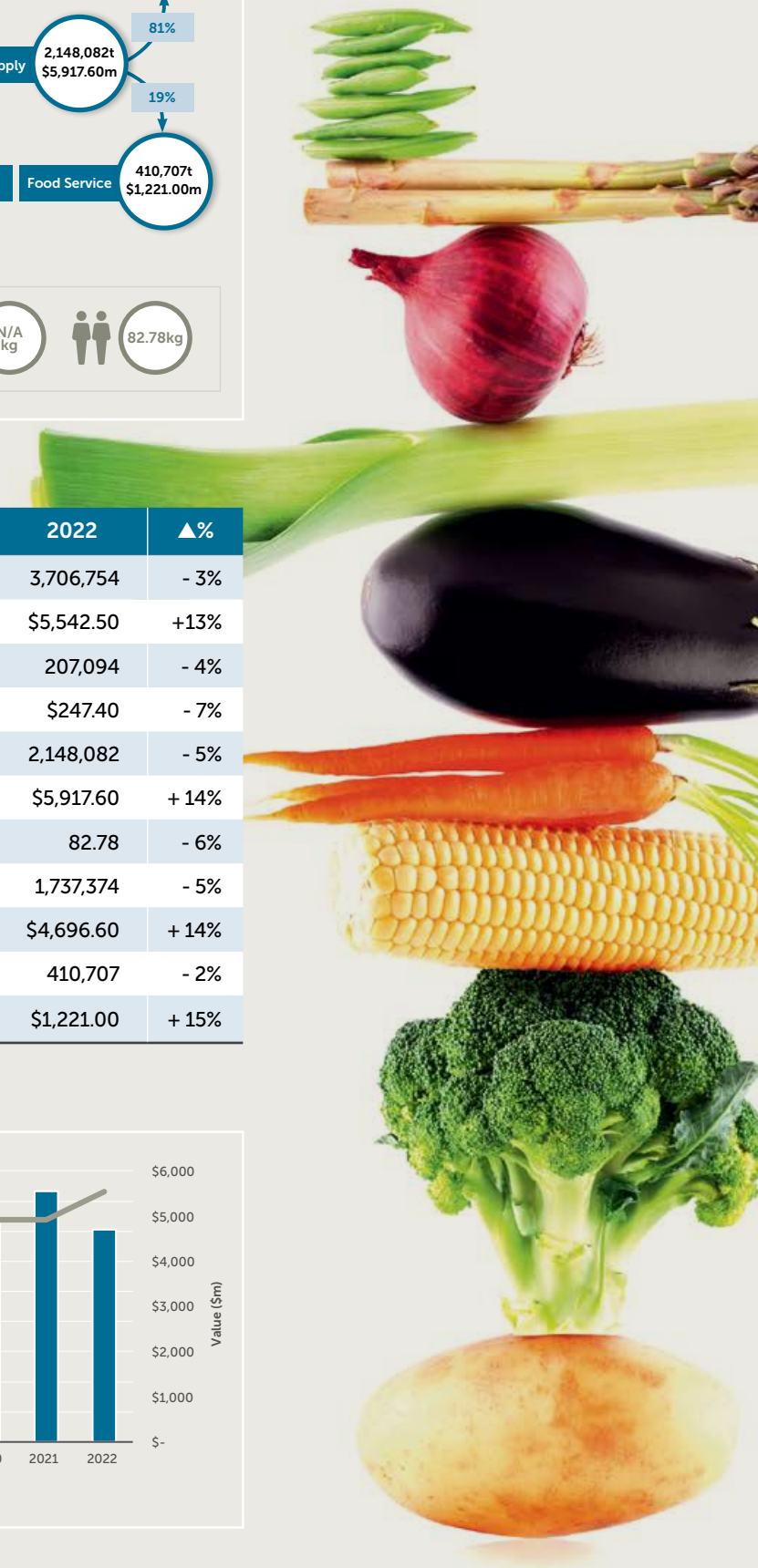
Vegetables 2021-2022

Year ending June	2021	2022	▲%
Production (t)	3,830,319	3,706,754	- 3%
Production ($m)	$4,910.90	$5,542.50	+13%
Fresh Export (t)	215,396	207,094	- 4%
Fresh Export ($m)	$264.60	$247.40	- 7%
Fresh Supply (t)	2,256,376	2,148,082	- 5%
Fresh Supply Wholesale Value ($m)	$5,190.70	$5,917.60	+ 14%
Supply per capita (kg)	87.63	82.78	- 6%
Retail Supply (t)	1,835,743	1,737,374	- 5%
Retail Supply Wholesale Value ($m)	$4,130.50	$4,696.60	+ 14%
Food Service Supply (t)	420,634	410,707	- 2%
Food Service Supply Wholesale Value ($m)	$1,006.00	$1,221.00	+ 15%

All vegetables production value and volume 2013-2022



Source. Hort Statistics

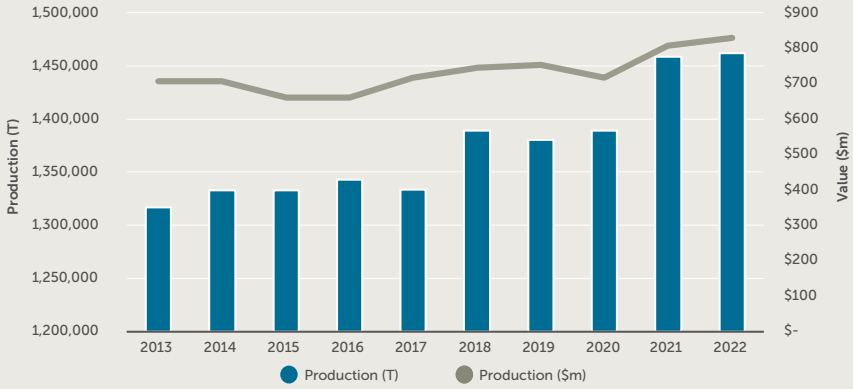


COMMODITY CASE STUDIES

Potatoes

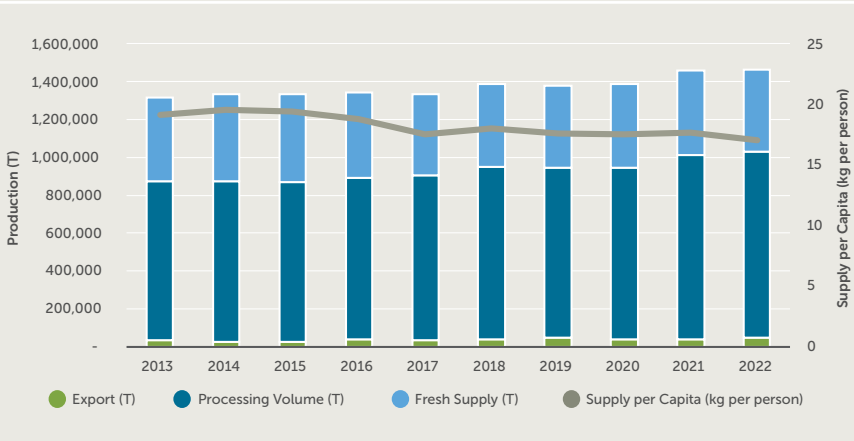
Year ending June	2021	2022	▲%
Production (t)	1,458,991	1,462,065	<1%
Production ($m)	$807.30	$830.20	+3%
Processing volume (t)	975,000	982,700	-3%
Fresh Export (t)	37,274	45,661	+23%
Fresh Export ($m)	$31.10	$36.20	+17%
Fresh Supply (t)	446,717	433,705	-3%
Fresh Supply Wholesale Value ($m)	$522.80	$526.30	<1%
Supply per capita (kg)	17.65	17.01	-4%

Production volume and value 2013-2022



Source. Hort Statistics

Production and supply per capita 2013-2022



Source. Hort Statistics

FIND OUT MORE

To access Hort Innovation's Australian Horticulture Statistics Handbook, please visit **horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/australian-horticulture-statistics-handbook/**

The Handbook's interactive dashboard is suitable for viewing on desktop computers and mobile phones.

Australian Horticulture Statistics Handbook 2021-22 to 2023-24 is a whole-of-horticulture project that has been funded by Hort Innovation using industry levies and contributions from the Australian Government.

Project Code: **MT21006**

Hort Innovation Strategic levy investment | VEGETABLE FUND

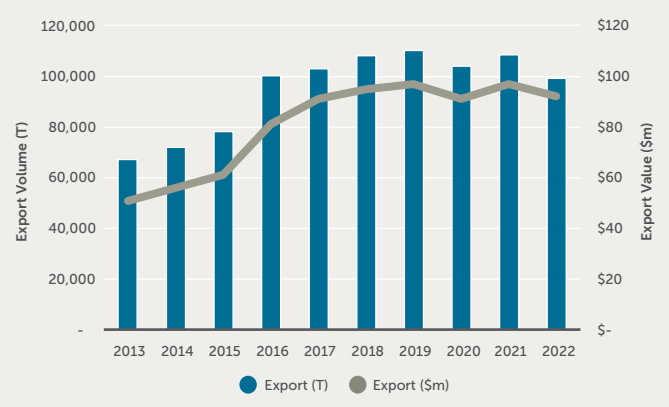
COMMODITY CASE STUDIES

Carrots

Year ending June	2021	2022	▲%
Production (t)	335,527	306,394	-9%
Production ($m)	$256.00	$247.90	-3%
Fresh Export (t)	108,356	99,247	-8%
Fresh Export ($m)	$97.00	$92.20	-5%
Fresh Supply (t)	206,545	188,313	-9%
Fresh Supply Wholesale Value ($m)	$202.30	$197.70	-2%
Supply per capita (kg)	8.02	7.26	-10%

Source. Hort Statistics

Export volume and value 2013-2022

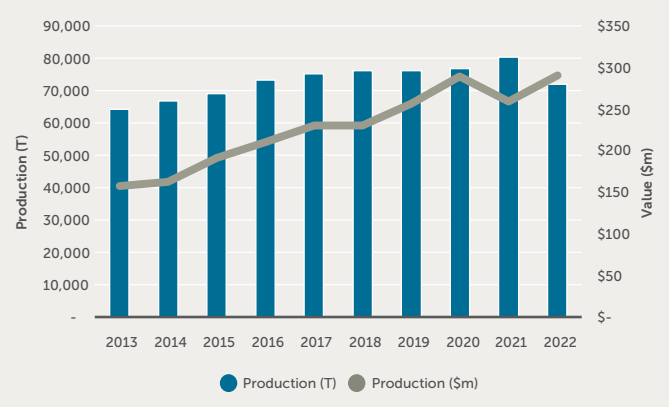


Broccoli / Baby Broccoli

Year ending June	2021	2022	▲%
Production (t)	80,199	71,786	-10%
Production ($m)	$260.30	$289.90	+11%
Fresh Export (t)	3,619	1,648	-45%
Fresh Export ($m)	$15.80	$8.40	-46%
Fresh Supply (t)	72,599	66,628	-8%
Fresh Supply Wholesale Value ($m)	$289.40	$331.40	+15%
Supply per capita (kg)	2.82	2.57	-9%

Source. Hort Statistics

Production volume and value 2013-2022

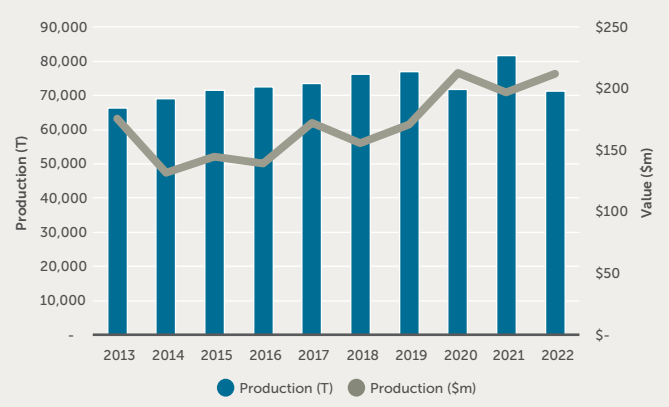


Capsicum

Year ending June	2021	2022	▲%
Production (t)	81,735	71,383	-13%
Production ($m)	$196.60	$211.80	+8%
Fresh Export (t)	381	360	-6%
Fresh Export ($m)	$1.50	$1.50	<1%
Fresh Supply (t)	77,294	67,638	-12%
Fresh Supply Wholesale Value ($m)	$230.70	$249.30	+8%
Supply per capita (kg)	3.00	2.61	-13%

Source. Hort Statistics

Production volume and value 2013-2022



Know the changes to the Fair Work Act

Horticulture has a heavy reliance on workforce – it's the nature of the industry and changes to workplace law can have substantial impacts on our sector.

In late 2022 there were significant reforms to the Fair Work Act with the passing of the *Fair Work Legislation Amendment (Secure Jobs, Better Pay) Act 2022*. Since the passing the Act it has been difficult to source detailed information on how the changes may affect the horticultural sector specifically.

Given the uncertainty around the changes, AUSVEG wants to ensure that growers had access to accurate information and timely advice and kept informed about what changes may be ahead in further industrial reforms planned for 2023.

AUSVEG understands how important workplace relations are in the running of horticultural businesses. Recently we have made submissions reinforcing the importance of PALM and other visa schemes, provided feedback into the Jobs and Skills White Paper, and highlighted the fact that workforce shortages have and will continue to affect the price and availability of vegetables in our Food Security in Australia submission.

In February, AUSVEG appeared at the Senate Select Committee Hearing into the Cost of Living and once again highlighted impacts of workforce challenges on the sector and the flow effects to consumers. AUSVEG is also providing input to the Agricultural Workforce Working Group (AWWG) (formed as a result of the Jobs and Skills Summit) and are a member of the AWWG Worker Protection and Migration Sub-Group.

AUSVEG have partnered with AiGroup to bring our growers a series of four Workplace Relations webinars to be held in the first half of 2023. AiGroup is one of Australia's largest national industry associations which, represents the interests of more than 60,000 Australian businesses. AiGroup have a strong focus on industrial relations and they employ around 40 industrial relations lawyers across the country.

The first webinar, held in January, was designed as an overview of the changes and what they mean for the sector. Table 1 gives a list of the topics covered in the first session and Fact Sheets can be found on the AUSVEG website for each of the changes and what it means for your business.

AUSVEG have partnered with AiGroup to bring our growers a series of four Workplace Relations webinars to be held in the first half of 2023.

Table 1. *Fair Work Legislation Amendment (Secure Jobs Better Pay) Act 2022* – **Operative Dates**

7 December 2022	6 March 2023	Earlier of 6 March 2023 or an earlier day to be proclaimed	6 June 2023	Earlier of 6 June 2023 or an earlier day to be proclaimed	1 July 2023	Earlier of 6 Dec 2023 or an earlier day to be proclaimed
Initiating Bargaining	Sexual Harassment	FWC Expert Panels	Flexible Work	Multi-employer bargaining	Small Claims Jurisdiction	Fixed Term Contracts
Termination of EAs and			Unpaid Parental Leave	EA Approvals		
Sunsetting of Zombie Agreements				BOOT		
Pay Secrecy				Industrial Action		
Job Advertisements				Intractable bargaining		
Anti-Discrimination						
Equal remuneration						

- Enterprise Making and BOOT
- Fixed Term Contracts
- Industrial Action and Bargaining Disputes
- Initiating Bargaining and Termination of EAs
- Job Ads and Small Claims
- Multi-Enterprise Bargaining: Cooperative Bargaining Stream
- Multi-Enterprise Bargaining: The Supported Bargaining Stream
- Multi-Enterprise Bargaining: Single Interest Bargaining Stream
- Pay Secrecy
- Sexual Harassment and Anti-Discrimination
- Zombie Agreements.

Importantly some of the changes to the Legislation commenced on 6 December 2022 including workplace rights in regards to pay secrecy, rules in relation to advertising pay rates in job advertisements and new prohibition against sexual harassment in the Fair Work Act 2009.

Table 1 shows the dates that changes will come in to affect.

A link to the first webinar can be found at **ausveg.com.au/ausveg-webinars.**

A second webinar held on 9 March 2023 on Workplace Agreements and the accompanying Fact Sheets are now available on the AUSVEG website. The topics for the subsequent seminars will be chosen based on feedback from the growers participating in the on-line webinar surveys. Details of future webinars will be available through Weekly Updates and Advocacy Updates or the AUSVEG website.

Fair Work Legislation Amendment (Secure Jobs Better Pay) Act 2022 – Job Advertisements and Small Claims Jurisdiction

On 2 December 2022, the **Fair Work Legislation Amendment (Secure Jobs, Better Pay) Act 2022** (Cth) (**Amendment Act**) was passed by the Commonwealth Parliament and received Royal Assent on 6 December 2022.

The Amendment Act introduces major changes to the Fair Work Act 2009 (FW Act) including a new prohibition on non-compliant job advertisements and the monetary threshold to the small claims jurisdiction

This Summary provides an overview to the new requirements on the contents of job advertisements and the change small claims jurisdiction.

Job Advertisements

The Amendment Act prohibits employers from advertising, or causing to be advertised, a job with a pay rate that would breach the FW Act or a fair work instrument. For example, a job advertisement that specifies a rate of pay below the applicable modern award rate would contravene the new provision.

The Amendment Act also requires advertisements that include specific piece rates to specify any periodic rate of pay to which the pieceworker would be entitled. For example, the Horticulture Award 2020 contains a minimum wage guarantee. This means that growers who propose to hire an employee under a fair work instrument that contains both a piece rate and a minimum wage, and who choose to specify a piece rate in their advertisement, would need to also specify either the hourly or weekly rate which would be payable, or include a statement to the effect that a periodic rate of pay applies.

Fair Work Inspectors can now also issue compliance notices if a reasonable belief is formed that the provision has been contravened. A compliance notice can required employers take specified action to remedy the contravention, which in this case could require an employer take down or revise the advertisement.

The FW Act introduces a civil remedy provision to enable Fair Work Inspectors and unions to commence legal proceedings for breaches of this provision. A failure to comply with a compliance notice is also a civil remedy provision.

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An employer will not contravene this provision if they have a 'reasonable excuse' for non-compliance. The term 'reasonable excuse' is not defined. What a reasonable excuse is will depend on the circumstances, considering the purpose of the provision. For example, an employer may have a reasonable excuse if they exercised due diligence to ensure they advertised compliant rates of pay, but incorrect advice about the applicable rates was given to them and they reasonably relied upon on it.

When do these changes come into effect?

These provisions commenced on 7 December 2022 and are already in operation.

What should Growers do?

As a matter of legal compliance, it will be necessary to ensure that all job advertisements contain the correct rates of pay in line with the minimum rates of pay and entitlements relevant to the applicable modern award, or other instrument that may apply.

FOR MORE INFORMATION

Contact the AUSVEG Advocacy team,
Lucy Gregg on **lucy.gregg@ausveg.com.au** and
Chloe Betts on **chloe.betts@ausveg.com.au**

Small Claims

Under the FW Act, an employee can make an application in the small claims jurisdiction within the Fair Work Division of the Federal Circuit and Family Court of Australia, or a Magistrates Court, and seek orders for compensation relating to entitlements that an employer was required to pay to, or on behalf of, an employee.

Currently, an employee can make an application for compensation in the small claims court if the claim is $20,000 or less and the order for compensation of unpaid/underpaid entitlements relates to:

- a term of a NES;
- a term of a Modern Award;
- a term of an enterprise agreement;
- a workplace determination;
- a national minimum wage order;
- an equal remuneration order; or
- a safety net contractual entitlement (which could include a contractual entitlement that relates to the NES or any term that is permitted by a modern award, for example minimum wages, overtime, penalty rates, allowances etc).

Employees are also permitted to make an application in the small claims jurisdiction to settle some disputes that relate to the conversion of casual employment to full-time or part-time employment.

The small claims jurisdiction is not bound by the ordinary rules of evidence and may inform itself in any manner it thinks fit, without regard to legal forms or technicalities and therefore the process is generally informal compared to most court proceedings. Further, lawyers do not have an automatic right of appearance and are not permitted to appear on behalf of parties unless permission is granted from the court.

From 1 July 2023, the Amendment Act increases the maximum monetary threshold on amounts that can be awarded in small claims proceedings from $20,000 to $100,000 (exclusive of interest). The types of claims that can be brought by an employee (limited to those listed) not changed.

The court in a small claims proceeding will also be empowered to award to a successful claimant any filing fees they paid to the court, as costs from the other party (which is not currently available).

When do these changes come into effect?
These provisions commence on 1 July 2023

Melbourne Wholesale Market
Epping

It is now seven years since the wholesale fruit, vegetable and cut flower market moved from Footscray to its current location in Epping north of Melbourne, and sellers, traders and buyers are reaping the benefits.

FOR MORE INFORMATION
Visit melbournemarkets.com.au

Above. Early hours of Melbourne Market.
Below L-R. Traders stands at Melbourne Wholesale Market. Plenty of well known onion brands available. Buyers walk. Fresh leeks, herbs and beetroot.

A massive expanse of sheds covering 67 ha, the site was purpose built for the fruit and vegetable industry to trade with warehousing, coolstore and supply chain logistics built into the design.

As part of a US Grower tour organised by VegNET Gippsland and Victoria, a visit to the wholesale market wrapped up two weeks of learning on Australian vegetable production *(see Page 104).*

For fruit and vegetables, traders at the market can operate through the trading floor which holds 330 stands. The buyers' walk is home to 156 permanent stores (many are lockable coolstore facilities), leased by businesses which enables produce to be stored between market days for longer life fruit and vegetables. The cut flower market is in a separate building, home to around 60 stall holders, supplying more than 700 floristry businesses.

Stand holders are a mix of farm to buyer and traders, with produce sourced locally or interstate. Familiar grower names in the industry provide in-season fruit and vegetables, while traders tend to offer interstate produce – especially mangoes, dragon fruit and the like – to the stalls.

Buyers negotiate with stand holders for produce, which is then taken to two separate warehouses for pick up by the buyer transport.

The Market operators are working to increase recycling at the facility, with collections for packaging, food waste and other waste items. Food that is not sold is donated to Foodbank and FareShare. Food waste is either collected by local farms as livestock feed, or used by Yarra Valley Waste to produce clean renewable energy to power a neighbouring a sewage plant.

Trade for fruit and vegetables is Monday to Friday from 3.30am – 7am, while cut flowers key trading days are Tuesday, Thursday, and Saturday mornings.




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Elders for local communities with $20,000 donation

For more than 180 years, Elders staff have been living and working within rural communities all over Australia.

More than your local rural products supplier, you may know your local Elders team from your community sports club, seen them on the side lines umpiring, or when help is needed most, volunteering alongside local emergency services.

This spring, Elders gave back to the community with a cash donation of $20,000 to help local clubs and charities across South Australia and Victoria.

The 'Kick In' campaign enabled horticulture-focussed Elders branches the opportunity for them and their customers to give back locally.

Elders South Australia Rural Products Coordinator, Matt Wetherall, designed the promotion to facilitate a way for customers to give back to their community.

In initiative was designed in that customers entered by purchasing a supply of horticulture products.

"They then received an automatic entry into the draw, where they could win the chance to select a club or charity to receive a $2,000 cash prize," he said.

The 'Kick In' campaign was available at ten Elders and DJ's Growers horticulture locations in the southern region.

This spring has been unseasonably wet which has brought with it a range of problems for horticulturists.

Molly Black, Horticultural Agronomist at Elders Robinvale, Victoria, explained that the high rainfall had resulted in growers needing extra spray to protect their crop.

"Of course, we do what we can to help save on costs through recommend-ations and prior planning but, if clients are needing to buy more products to combat the rainfall this year, it's great to be able to provide this extra incentive," she said.

Craig Reimann, Branch Manager at Elders Roseworthy, South Australia, commented that his branch is always looking for new fundraising ideas, and the 'Kick In' campaign was well received.

"At Roseworthy, we have held can drives, shearing events, auctions, and our staff have even shaved their heads to raise money," he said.

"Our community means everything to us, and this campaign was another great way to give back to both our customers and community."

Each location was able to present one lucky customer a $2,000 cheque to give to a local club or charity of their choice.

Kingston Estate's Limestone Coast Vineyards won for the Naracoorte Elders branch and nominated Naracoorte Lucindale Community Care Network (NLCCN) as the beneficiaries of the $2,000 donation.

NLCCN provide response to critical areas of need such as emergency relief food vouchers, care packages, homelessness support and provide a community Christmas lunch. They were very happy for the timely donation and would like to thank everyone involved.

Other donations have gone to clubs and charities such as the Penola National Trust, Riverland Power Boat Club, Adelaide Hills Little Athletics, the Royal Flying Doctor Service, and more.

Elders is active in rural communities across Australia.

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Growing for the future
Damian Manno embraces hydroponics

Damian Manno started Quality Harvest at just 32, with his brother Adam. Nine years later, the South Australian has won the 2022 Hort Connections Corteva Agriscience Young Grower of the Year Award, recognising his drive to advance fresh, quality produce.

A passion for quality produce from a young age

Damian grew up on a family vineyard, where he worked and fostered a passion for growing commercial crops. Having studied and worked on other vineyards, where Damian heard about hydroponics, he became curious. Hydroponics use less chemicals and resources than traditional in-soil methods – which means a lower environmental footprint.

"Our thinking was to be closer to the market and create something high quality. We just need water for the plants and gas to power the site. We use far less chemicals and work in a much smaller area than traditional growing," says Damian.

With creating a quality product top of mind, Damian found a space suited to growing herbs and greens at Kudla, north of Adelaide.

"Even though the site is small, by taking advantage of protective cropping, we have more than enough space for growing our range of herbs, Asian vegetables and native greens."

Above. Damian Manno. *Photo courtesy Andrew Beveridge, absCreative*

Moving in the right direction

For Damian, winning the Corteva Agriscience Young Grower of the Year award was a vote of confidence from the industry for his approach to growing.

"It takes a lot to start your own business and build it up. Having that recognised by the horticulture sector means a lot."

Damian is motivated by conserving resources and preserving the lifestyle he feels lucky to have enjoyed, for his own children.

"Having immigrants for grandparents makes you conscious of how lucky we are in Australia. My grandparents came here from Italy, and they instilled in me a real appreciation for things I might have otherwise taken for granted."

Delicious produce has always been the focus at Quality Harvest. Its range has now expanded to include both traditional and native herbs, Asian vegetables, pre-packaged products and the Herbalicious range – a new innovation design to improve shelf life of herbs by keeping the root mass intact.

Damian was sick of seeing wilted, sad herbs in major supermarkets. Not only a waste of resources, it's also a bad experience for consumers purchasing the herbs. Wanting to improve the quality of herbs available, Damian set about putting a Quality Harvest spin on supermarket herbs.

By leaving the root mass intact, the herbs are effectively sold as a living product. Consumers can keep them for two to three weeks by dropping into water at home, or even trim the herbs down and plant them.

The best part is that utilising the root mass extends shelf life without having to resort to using chemicals.

Embracing sustainable growing

For the Quality Harvest team, sustainable horticulture goes beyond how their produce is grown. It's the entire product value chain.

Damian has his sights set on switching to biodegradable options across all company packaging that uses plastics, within the next six months.

"I don't want to just follow the same growing traditions," says Damian.

"We have plenty of fresh food now, but to ensure that continues into the future, we need to think about sustainability and look after the environment."

Collaborating to bring First Nations foods into Australian households

Quality Harvest has been working with Marlon Motlop of the Native Co to make native herbs available to everyday Australians.

Australian native foods have been used at the restaurant level in Australia for a long time, but Damian and Marlon wanted to make these flavours accessible for everyone.

Damian describes working with Marlon, and his cousin Daniel Motlop – also involved in the native food industry – as "beyond business".

"Daniel and Marlon have become family. I would call them my brothers."

The trio are bringing native herbs to the pre-packaged range at Quality Harvest, making them longer lasting and thus accessible for home cooks.

Damian says the passion he has for fresh produce has translated to native products under the careful tutelage of Marlon and Daniel.

"To be able to have that knowledge and understanding of not just the flavour, but the cultural significance of these foods, that's a real gift."

While the market for the products is still young, Damian has plans. A range of rubs and spice mixes is on the horizon, entirely shelf stable and made from 100 per cent native produce. His team is investigating the use of freeze-drying Kakadu plum, maintaining the integrity of the plant's nutritional profile while extending how long it can be stored at home.

With multiple avenues for incorporating native foods into home cooking, Damian says: "You don't need to change up your whole diet to be able to experiment with indigenous and native products."

Damian's approach at Quality Harvest is a testament to taking chances and doing things differently.

"We can and will continue to improve and push even harder – but right now, we feel like we're on the right track."

Andrew Klein
Master of Ceremonies,
Hort Connections

Sharon Chapman
Founder,
ABC Software

Jordy Kitschke
Founder,
Flux Robotics

Jeff Kraak
Program Manager,
Fertilizer Australia

Tony Hunter
Global Food
Futurist Speaker,
Future Cubed

Stephanie Alexander
Cook, restaurateur, food writer and champion of the quality and diversity of Australian food.

Hort Connections 2023 is thrilled with the stellar line-up of speakers.

HORT CONNECTIONS 5-7 June 2023 Adelaide Convention Centre

INTERNATIONAL FRESH PRODUCE ASSOCIATION™ AUSVEG

With a range of trade show speakers, plenary sessions and industry specific themes, the three day event will give delegates knowledge and advice for their business. Hort Connections will also host the horticulture National Awards for Excellence at the Hort Connections Gala Dinner, Women in Horticulture event, and farm and retail tours in conjunction with the event.

While at the venue, you need never experience 'extreme boredom' with our **MC Andrew Klein**, who left the law profession for exciting adventures as a professional presenter. An engaging presenter, Andrew has more than 25 years' experience with Australian conferences with a casual yet corporate style that is well respected by his peers and clients alike.

The Trade Show speaker sessions bring together knowledgeable industry leaders in their field from software, AgTech, to agronomy.

There is a saying that goes, you can't improve on what you can't measure – understanding what your labour costs, harvest and inputs can lead to greater efficiencies. One speaker on Day 1, **Sharon Chapman**, Founder of ABC Software, will present *"Information Automation to grow your knowledge and grow your business".*

Sharon Chapman is the founder of ABC Software, a company specialising in on-farm and packhouse software solutions. She was raised on a farm in the fruit bowl region of Hawkes' Bay, New Zealand, and began her career in IT in 1983, and founded ABC Software in 1996. Her understanding of horticulture and software enables a deep insight into her clients' businesses. ABC Software offers solutions to help growers and packers automate their information and grow efficiencies.

Some people see an endless spray boom, others see opportunities for improvement. Such is the case with **Jordy Kitschke** who is a serial AgTech entrepreneur and problem solver, born and bred in the mid-north of South Australia. Jordy's presentation, His presentation, *Farmer-Driven R&D: How to go from Back-of-Napkin to Paddock in 15 months,* highlights the possibilities as he sees them.

Jordy has founded multiple companies and has worked on technologies across several agriculture sectors including livestock, cropping, and horticulture. Jordy's latest enterprise is Flux Robotics, an AgTech startup working on robotic solutions to reduce the reliance of pesticides on-farm.

Knowing which fertiliser to use in Jordy's latest venture is vital to ensure good growth, with knowledge of how, where and when to use it. **Jeff Kraak**, Program Manager of Fertilizer Australia will present *Sourcing fertilizer with poor labelling & truth in labelling, could be placing your business at risk.*

Jeff has a long history in the fertiliser industry in a range of sales, marketing and technical support roles, including many years with Incitec Pivot Fertilisers.

Having worked across much of eastern Australia, he has had exposure to industries such as vegetables, tree crops, sugar cane and grains. Jeff is now part of Fertilizer Australia. His main area of responsibility is to manage the industry's environment and food safety stewardship program, Fertcare.

With a broader industry mindset, the plenary sessions will give delegates food for thought, starting out with **Tony Hunter**, who is a global futuristic speaker with Future Cubed. Tony is a food scientist,

Mark Bennett
Head of Agribusiness and Emerging Corporate, Regional Business Banking,
ANZ Banking Group

Gus-Balbontin
Former Executive Director and CTO,
Lonely Planet

Jan Kamper
Market Development Lead, Glasshouse,
Bayer Vegetable Seeds

Matty Blomfield
CEO and Co-Founder
Hectre

Dr Max Teplitski
Chief Science Officer,
International Fresh Produce Association

Bridgit Hawkins
Chief Sustainability Officer
CropX

author and strategic consultant specialising in the future of Food and Agriculture. He speaks on and advises global food and agricultural companies on the technology and consumer trends shaping this rapidly changing sector.

His distinctive combination of scientific qualifications, business experience and detailed understanding of food technologies allow him to deliver a unique perspective on the Future of Food.

Closer to home, **Stephanie Alexander** aims to bring the next generation closer to food through her well regarded Stephanie Alexander Kitchen Garden Foundation. Her presentation on her own exposure to fruits and vegetables at a young age and how it affected her own life and carried through her work with children is sure to inspire.

Stephanie Alexander AO is regarded as one of Australia's great food educators. Her reputation has been earned through her thirty years as an owner-chef in several restaurants, as the author of 18 influential books and hundreds of articles about food matters, and for her ground-breaking work in founding and supporting the Stephanie Alexander Kitchen Garden Foundation.

Stephanie's fifth book, The Cook's Companion is regarded as an Australian classic and has sold over 5,000 copies, now in its 24th printing. In 2013 this monumental work, was published as a successful digital app. Her latest book, 'Home' was published in September 2021. Stephanie states that her life's work has been to convince as many as possible that cooking a lovely meal without anxiety adds so much to the joy of living.

Stephanie has always had a commitment to training and mentoring young people.

She was awarded an Order of Australia (OAM) in 1994 for her services to the hospitality industry and to tourism, and for encouraging young apprentices. In 2004 she established the Stephanie Alexander Kitchen Garden Foundation, a not-for-profit organisation, with the aim of introducing pleasurable food education to Australian children. The program originally concentrated on the primary years but has since expanded its reach with pilot programs The Kitchen Garden Program for Early Childhood and The Kitchen Garden Program for Secondary Years.

Mark Bennett, Head of Agribusiness and Emerging corporate, regional business banking with the ANZ Group. His *Greener Pastures 2* presentation looks at how the Australian agriculture sector has developed to become a world leader in quality, safety, environmental awareness and investment.

Mark was raised on a dry land cropping property at Waitchie, Northwest Victoria where the family continue to farm today. With a degree in Business Economics, Mark has dedicated his career to banking Australian agriculture, with a career spanning nearly 30 years.

For the last 11 years, Mark has been responsible for the performance of ANZ Agribusiness in Australia, providing service to family farms through to the broad financial needs of larger corporate farmers, investors and Agribusiness.

FOR MORE INFORMATION
Register to attend Hort Connections at Horticulture's premiere conference and trade show
hortconnections.com.au

GREATER SHEPPARTON
A GREAT PLACE TO GROW

Victoria's Greater Shepparton is renowned as the food bowl of Australia. With its soils, irrigation water and connectivity to capital cities and export markets, Greater Shepparton is well poised to grow even more. What has been traditionally mostly processing fruit and milk country is now opening up to new industries of vegetables, fresh fruit varieties and large scale irrigated cropping.

SOILS

Greater Shepparton has some of the most fertile soils in Australia. The Shepparton fine sandy loam which dominate the fruit growing areas are highly suited to irrigated annual and perennial horticultural crops. Detailed soil maps of the region are available.

CLIMATE

Greater Shepparton has a Mediterranean climate, suitable for the production of a wide variety of fruits and vegetables throughout the season. Commonly grown vegetable crops in the region are tomatoes, capsicums, zucchini, corn, cauliflowers and broccoli, just to name a few.

WATER

The Goulburn Murray Irrigation District (GMID) has been upgraded thanks to the $2 billion Connections Project, improving the efficiency of water delivery to agricultural properties in the region. This world-class irrigation system allows growers to order water online, from a high quality supply distributed through the automated channel network. Goulburn Murray high security irrigation water right is among the most reliable in Australia.

LAND

Agricultural land in Greater Shepparton occupies 8,840 square kilometres or 81 per cent of the region, so there's plenty of land available. And its cheaper ($7,000 to $14,000 per hectare) when compared to traditional growing regions of peri-urban Melbourne ($90,000 to $110,000 per hectare). Land holdings are greater than 40 Ha, and as the food bowl, the infrastructure is well and truly in place to support new horticultural ventures.

FOOD MANUFACTURING

Greater Shepparton has a high concentration of food manufacturing businesses, including Campbell's Soups and the iconic SPC. In addition to this are a number of milk processing factories in the region, producing cheese, milk and powdered milk products.

TRANSPORT & LOGISTICS

Located perfectly for transport connectivity to the Melbourne, Sydney, Brisbane and Adelaide markets and ports, Greater Shepparton is the ideal location for consolidated warehousing, storage processing and manufacturing. Given 25% of truck registrations in Victoria occur in Greater Shepparton, it is no surprise that the region is recognised as a thriving 'Transport and Logistical Hub'!

Greater Shepparton – a great place to grow a family and grow a business. Get in touch today.

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Greater Shepparton City Council
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Donating to Foodbank has never been simpler for growers

Tayla Field National Program Manager Agri - Foodbank Australia.

The ever-increasing need in our communities to provide food relief is a daily challenge for organisations such as Foodbank, but a collaborative approach between growers and the organization makes the process that much more easy, and timely.

Joining the team at Foodbank Australia in November 2022, is Tayla Field as the national program manager for agriculture. Her role is to work with Foodbank's national produce donors to help deliver more fruit and vegetables to Foodbank via various structured supply and donation programs.

Foodbank Australia coordinates procurement of in-demand produce for state members, manages the national donor and national food programs, undertakes federal government advocacy and conducts research and analysis at a national level to help raise awareness. Tayla says that Foodbank is the 'pantry for the charity sector'.

At last count, Foodbank provided food and groceries to 2,625 registered charities and provided food for school breakfast programs to around 3,000 schools around the country, making it the largest food relief organisation in Australia. In 2022, Foodbank sourced 45.6 million kilograms of product, equating to 82 million meals.

Many people have the misconception that food insecurity is a city problem, but in fact 30% of all the resources provided by Foodbank went into rural and regional charities to meet local community needs.

"The increase in needing help has risen significantly even just in the past 12 months," said Tayla. "A lot is due to the rise in the cost of living. For many, bill shock from a cold winter or a large repair expense may put families back for a month or two and they need assistance, but now we are seeing people who need help for longer periods of time. They have the same income, but the dollar doesn't stretch as far as it did 12 months ago. We don't see that changing anytime soon."

Advocacy has played a pivotal role in addressing the issue of food relief. Foodbank Australia CEO Brianna Casey and other organisations such as OzHarvest, SecondBite and Fight Food Waste CRC have been integral to conversations with state and federal governments.

Currently, a tax proposal has been presented to coincide with the next federal budget, to give growers an additional incentive to donate rather than dump unwanted produce into landfill. The National Food Donation Tax Incentive aims to reward growers (and transporters, coolstore and others) with donating product to charities to give food relief, and reduce food waste.

Meeting the demand and supply logistics

As families feel the pinch, often the first thing that is taken out of the supermarket trolley is protein, followed by fruit and vegetables. As a consequence, demand for fresh produce for the fridge, or supplies to make value-add products such as pasta sauce is rising.

"There is plenty of opportunity for fruit and vegetables that are surplus, out of-spec, or nearing the minimum acceptance date for the retailers. A lot of our donors support us directly from the farm. Our challenge is more around consistency of supply. For example, bananas are a staple part of the food for the school breakfast program, but if they

are not available, our members need to find other options to fill that gap."

For growers that supply ALDI and Woolworths, an initiative advocated by Foodbank is via the HarvestMark system used by the supermarkets to accept – or reject – produce. In the event that produce is rejected, the grower can opt for the produce to be donated to Foodbank, rather than being collected or sent to landfill. Foodbank then collects the produce from the distribution centres alongside other produce that is to be donated. Foodbank has also received authorisation from the retailers for suppliers to donate packaged private label products to Foodbank, to avoid growers having to remove product from packaging and or send it to landfill.

A common scenario, said Tayla, is for collection directly from farm, to minimise the transit and handling of product from farm to families.

"There are a few different ways we can work with growers to pick up donated produce off-farm. The first is ad hoc donations, where a grower has surplus and or non-spec stock, that is still fit for us but they can't find a buyer or home for it. We can usually find a home for it and will work with the grower to find a simple solution for them.

"There are also seasonal opportunities, where a grower may have surplus supply of product or non-spec produce throughout the season that can be donated to Foodbank. In this instance, we can plan ahead on how to best use the resource and work out the logistics ahead of time.

"We can work with growers to have Hat bins and or CHEP bins available on farm at the start or throughout a season, so product can be loaded straight into bins allocated to Foodbank from the packing line or harvest. They can let us know a few days ahead of time when pick up is available and transport can be arranged."

"One of the bigger challenges is actually around freight as it is one of the biggest costs for the donation process. If the grower has contracts in place with a transport company, it can be easier to piggyback on that. We do have partner

freight companies that will do pro-bono pick ups for Foodbank, and we also have some resources to pay for the freight."

Looking ahead at what is needed

Collaborative agreements along the supply chain, for example to make pasta sauce or sausages, means that the cost burden of donating is reduced for each supply chain member. Foodbank may find opportunities to source inputs for the grower, the pasta sauce manufacturer may donate time on the production line, the packing shed may pack in bulk rather than punnets.

Tayla sees an opportunity to grow Foodbank's national potato program and establish similar programs across other categories such as tomatoes to provide in demand products ongoing.

"If we know we have four bins of potatoes coming in every week for the next eight weeks, we can streamline the delivery of produce programs for agencies, and work with other supplies that we have sourced, rather than an ad hoc approach. Potatoes and tomatoes are such versatile staples.

"Having said that, ad hoc donations of vegetables such as corn and beans are a nice change in variety, and well appreciated – they go out the door very quickly."

Get in touch and donate

Tayla recognises that each grower has a unique set of circumstances to overcome to become a donor directly from-farm but sees that increasing demand by families will require extra resources.

"I want to make the process of donation as simple and rewarding as possible for the grower," she said.

"I encourage growers to get in touch with me or their State Foodbanks, to start the conversation, about how much they feel comfortable with donating, whether it is a seasonal surplus or something more long term.

"We can have a chat about how often it is picked up, what we can do about transport costs, or alternatively establishing a collaborative partnership for processed goods. Let's work together to create a calendar for our members and agencies that shows what produce is coming in and when."

About Tayla Field

Tayla is passionate about horticulture, coming to love the industry through university. Raised in Sydney, Tayla initially studied environmental systems, where many subjects had crossovers with agricultural science streams. She quickly swapped over and hasn't looked back. Following a career pathway program with the International Fresh Produce Association, she knew horticulture was her future.

Her background includes several years with One Harvest in Tasmania working on the farms, before moving back to Sydney to work in the manufacturing side of the business. She has also spent time as an account manager with the sales team.

As an advocate for agriculture, Tayla is also involved in a program to foster emerging young leaders to become confident role models and trusted choices for the industry.

FOR MORE INFORMATION

Please contact Tayla Field National Program Manager Agri - Foodbank Australia on 0433 744 075 or email **tayla@foodbank.org.au**

More yield, fewer inputs a focus for local growers

- **Supporting Australian growers through specific seed development**
- **Climate change, sustainability, labour on global radar**
- **Energy a priority for local growers.**

Greenhouse vegetable growers are looking for ways to produce more from less and global seed developer Bayer Crop Science is using science and tech to meet the challenge.

Anne Williams, global head of Bayer's protected cropping business, was recently in Australia to gain an understanding of the local value chain, fresh produce markets, and "what growers are looking to grow". She says as a business, Bayer is putting local listening at the heart of its global vegetable seeds strategy.

"The world is at something of a tipping point in terms of climate – Australia in particular has been at the mercy of a lot of weather this year – and everyone is really looking hard

at life, jobs, incomes, sustainable production and food security," Ms Williams said.

"From Bayer's point of view, we're thinking about how we continue to support growers to consistently produce great quality, fresh produce in the face of these challenges.

"Everyone has issues with climate change, sustainability and labour. Regions are approaching these challenges differently but if we apply lessons from across the world, there are some really innovative solutions out there."

She said with their understanding of the challenges and experience around the world Bayer Crop Science is able to support sustainable agriculture at the local level – helping growers produce more yield from fewer inputs.

"A universal challenge, and one I've been hearing a lot while in Australia, is energy. With prices on a long-term upward trajectory, we're working on breeding and selecting tomato varieties that perform better under lower light intensity and in colder conditions – essentially, they need less electricity."

Ms Williams said input from local teams about what's going on in their own markets, directs the Bayer Crop Science seed development pipeline. And while there are some common themes, regions have different points of focus at any one time.

"Take for example packaging. While it's on everyone's radar, it is a significant concern in the United Kingdom and Netherlands. To combat the issue, we're working with our local teams on supplying cherry tomatoes on the vine.

"We've found that with the truss in they have better transportability, and there is no wound, so the shelf life is improved. They're also better to manage at home, you find less are wasted, and they taste and look good."

By comparison, Ms Williams said the production of 'pesticide-free' vegetables is what is on everyone's mind in France.

"There has been a lot of public discussion around this issue and as a business we're working hard to provide growers with options that mean consumers have a choice. It is important that growers have the ability to access any market sector.

"We breed to the highest market standard within a pipeline, then when we go to the trialling phase, we include high density pest and disease environments managed across a range of agronomic systems; including those using chemicals and biological products as well as certified organic growers."

In America, there is a particular focus on 'mini' varieties.

"Mini-vegetables are seen as being a lot more fun. Globally – but especially in the US – we're seeing a lot more snacking ranges across cucumbers, tomatoes and of course berries, and it is trend that looks like continuing. Beyond breeding the mini-varieties, quality and shelf-life is a big challenge in the snacking category. Bayer has been working with industry on solutions for some time," Ms Williams said.

Above. Anne Williams Head of Protected, Bayer Vegetable Seeds at Bayer Crop Science.

FOR MORE INFORMATION
Visit crop.bayer.com.au



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Horticulture is part of a sustainable future

Many industry sectors are reflecting on how best to become more sustainable, often developing sustainability frameworks to give industry participants aspirational goals on what the future may look like for their business. The horticultural industry, can proudly say it has been doing it's bit for on farm sustainability, for many decades.

Agriculture accounts for 14% of all emissions in Australia.

Horticulture represents 1% of that 14%

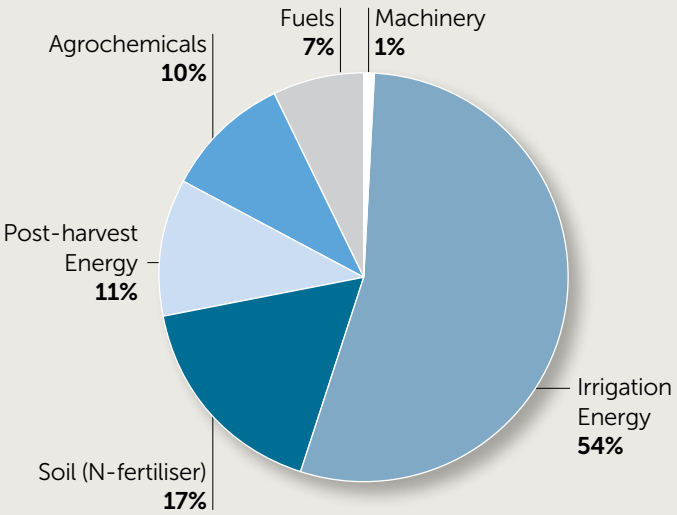
70% FROM **Fuel & Electricity**

20% FROM **Nitrogen-based Fertiliser & Manure**

10% FROM **Waste & Refrigerant losses**

Source. Agriculture Victoria 2020

FIGURE 1: GREENHOUSE GAS EMISSIONS FROM FARM INPUTS / ACTIVITIES IN THE AUSTRALIAN VEGETABLE INDUSTRY.



Source. An Assessment of greenhouse gas emissions from the Australian vegetables industry.

People and communities

The meat raffle at the RSL is a classic example of local business supporting local community groups, who in turn work at the local butcher or meat processor.

Donating a fruit box to the local primary school, ploughing the footy field for the next season are other examples of local agricultural enterprises giving back, where often those family run businesses are an integral part of the community.

Providing a safe work environment where staff are valued by the grower and the community goes a long way to retaining staff in rural areas. The pandemic highlighted with stark clarity just how much the industry relies on itinerant workers and retaining permanent staff. Advocacy by industry groups such as AUSVEG, have gathered pace in recent years making improvements to worker conditions.

Resources

Monitoring water usage has allowed producers to irrigate as needed, capture wastewater and ensure that discharges comply with local environmental laws. In some instances, capturing rainwater has significantly reduced water requirements, while re-using water for applications such as vehicle washdown also gives further savings.

Integrated pest management is now an accepted tool in farm management with many growers recognising that soil and crop health can be improved by understanding the relationship that crops have with both 'good bugs' and 'bad bugs', that protect against disease, thereby reducing the use of herbicides and pesticides.

Any producer is well aware of the risks associated with poor biosecurity on farm and the devastating effect a new incursion can have on horticulture.

Much has been made in media about regenerative agriculture, but for most farmers, soil health is fundamental to producing a good quality yield. Understanding of inputs such as fertilisers is determined as much by geospatial mapping of soil deficiencies as it is by the increasing costs of fertiliser. Investment in understanding what is in the soil therefore allows producers to plan not only this year's crop, but what has gone in the past, to prepare for future years.

Horticulture in itself has enormous capacity to put carbon back into the soil, through crop rotations and cover crops - all techniques that have been used by growers for a very long time.

Waste

As state governments phase out single-use plastics such as drinking straws and coffee cups, the agricultural sector has already implemented a number of initiatives to reduce on-farm plastic and packaging waste. drumMuster for example recycles chemical drums used widely across the sector, while plans are underway for a similar program, bagMuster for seed bags. Plastic mulch has been difficult to dispose of, but using alternative materials for mulch, and soft plastic recycling (where available) has reduced the waste associated with this plastic.

Decomposing fruit and vegetables are also known to produce emissions. The National Food Waste Tax Incentive is before federal government to introduce a tax incentive to growers for unwanted produce to divert it to organisations like Foodbank from landfill. By partnering with organisations such as FoodBank, off-spec, near best before dates or 'ugly fruit' produce can be given a purpose, reducing the burden of produce going into landfill and providing food relief where it is needed most.

Innovation and technology

Agtech has been a substantial force in giving producers greater efficiencies on farm and in processing with innovations. Robotics for improved picking rates and worker safety; supply chain and inventory software, traceability and identification have led to less wastage on farm and time spent managing the business. Drones have been effective for checking on crops, while on farm weather stations give a greater insight into local climatic conditions.

Energy, particularly for refrigeration is a significant expense for the grower and the packer. Improvements in cool room design, optimising cooling systems and insulation, and monitoring temperature, humidity and airflow will reduce expenditure, and reduce on farm emissions. The benefits to extended shelf-life and therefore reduced food waste gives the producer and the packer greater profitability and reputation with the consumer.

Alternative forms of energy such as biogas from pig manure has been used in the livestock industry for many years and has potential in horticulture. Solar and wind generated energy are also employed by industry to power everything from electric fences through to bore pumps and heating greenhouses, often as a more cost effective method than relying on energy infrastructure.

As an industry, horticulture has been employing more sustainable technologies for many years, but recognises there is more that can be done.

Growers continue to adopt new machinery that is more efficient, friendlier on the environment, better for workers, increases product quality, reduces waste, and reduces costs of production.

AUSVEG has identified 'Sustainability' as a key action area for our growers in 2023. We are currently assessing gaps in information, and canvassing growers on what support we can provide to assist them in implementing further sustainable practices on-farm and in their packing sheds. It is through this process that we also understand that their needs and issues are quite diverse.

AUSVEG is also cognisant that growers don't want additional compliance systems that are resource heavy on an already strained workforce. But we are also aware that growers need to keep evolving and in some cases their customers will be asking for conscious changes to farming practices.

Programs such as EnviroVeg have played an important role to-date in assisting growers implement sustainable practices on-farm and we will assess what other programs and tools we can further utilise to ensure that the vegetable industry remains committed to ongoing improvement in this area.

FOR MORE INFORMATION

Contact the AUSVEG Advocacy team
Lucy Gregg at **lucy.gregg@ausveg.com.au** and
Chloe Betts at **chloe.betts@ausveg.com.au**

Coles Nurture Fund fast tracks organic supply – Agricultural Networks

Queensland business Agricultural Networks is breaking new ground for local organic produce growers in the Gatton region to help meet the increasing demand for organic fruit and vegetables.

Agricultural Networks was awarded a $189,000 grant as part of the Coles Nurture Fund in 2022 to develop a dedicated organic certified packing and distribution facility at Gatton.

This grant will help fast-track access to organic fresh produce in key growing regions which will enable the business to pack and supply increased volumes of produce from many local growers.

Agricultural Networks Operations Manager Rodney Tripp said the business was thrilled to receive a Coles Nurture Fund grant.

"Over the past few years, Agricultural Networks has developed a group of organic growers and a packing facility in Gympie, South Queensland, for the supply of organic fruit and vegetables exclusively to Coles," Rodney said.

"The funding is being used to expand the range and volume of organic produce for supply to Coles by developing a second organic hub in Gatton, including a dedicated packhouse, and supporting the transition of more growers from conventional to organic farming practices."

Having faced difficult growing conditions due to two flood events combined with labour and transport challenges, Rodney believes that building a secondary hub for organics assists in ensuring the longevity of the local horticulture economy.

Furthermore, this project will help to secure more organic produce from a pool of local growers that would typically struggle to comply with current food safety, trade and legal requirements, and can instead focus on growing high quality organic fresh produce.

"Developing a hub for organics in Gatton helps to mitigate against climatic risk and maintain supply of organic fresh produce for consumers," Rodney said.

"Having a packhouse located in a key growing region will provide efficiencies through minimising the need to transport bulky produce to alternative packhouses three or four hours away, reducing food miles as well as providing market access to growers that previously struggled to meet packing and compliance requirements."

With the project aiming to deliver a sustained benefit to the local organic produce industry, Rodney noted that receiving a Coles Nurture Fund grant enabled the business to fast-track their innovative idea.

"It would have been a lot more difficult to get this project off the ground without the financial support from Coles. The Coles Nurture Fund is an excellent way to accelerate projects that may otherwise prove too slow or expensive to develop," he said.

"In addition, being able to work closely with Coles to determine demand needs has enabled us to plan supply quantities more accurately and reduce risk. The commercial and technical teams have a wealth of knowledge that can help refine and optimise ideas to better meet the current and emerging needs of consumers."

The Coles Nurture Fund was launched in April 2015 to help Australian food and liquor producers innovate and grow. Since then, Coles has provided more than $30 million in financial support to more than 90 small and medium-sized businesses, with round 11 of the Coles Nurture Fund currently underway.

Above. Troy Huggins with Rodney Tripp, Operations Manager of Agricultural Networks.

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Tracing Potatoes and Cherries through the supply chain

A multi-faceted trial to test traceability through the supply chain for Woolworths using GS1 Global Location Numbers and QR codes has been completed, with promising results.

The traceability project was developed to assess ISO/IEC recognised GS1 global data standards in the fresh food industry to track products from the property to the consumer. Using potatoes and cherries, the investigation looked at the the benefits of having real time information on plant produce from paddock to plate. In the event that an emergency response is needed, or a biosecurity incursion is detected, traceability can also assist with identifying a product's location anywhere along the supply chain from the point of origin to its intended destination.

The contributing partners, headed up by NSW Department of Primary Industries, included Woolworths Supermarkets, Food Agility CRC, FreshChain Systems and GS1 Australia, with Mitolo Family Farms and Cantrill Organics participating for potato and cherry tracing, respectively.

About the project

The overall objectives of the project were to use ISO/IEC compliant data standards to:

- Identify the product and its properties throughout the supply chain;
- Demonstrate that the data associated with the product was sufficient to provide efficient emergency responses and supply chain logistics;
- Identify points in the supply chain where product remained too long or was exposed to unfavourable conditions, thereby reducing waste.

Full traceability to date has been problematic, often as different supply chain points have differing systems that do not 'talk' to each other, making it difficult to maintain connection throughout the supply chain.

The GS1 system utilises an international common data structure that is readily integrated. A unique identifier using a QR code was applied to punnets of organic cherries and bags of brushed potatoes for the program.

The location data was encrypted into the GS1 system, which was also scannable by consumers to provide feedback on their experience. The GS1 Digital Link enabled the product to be traced in real time, from property to store, including how long it spent at each location.

Specifically, the following outcomes were achieved:

- successful proof-of-concept of ISO/IEC-compliant data standards;
- understanding the value of the GS1 Global Location Number and National Location Registry for integrated traceability;
- understanding the importance of a digital traceability system for managing an emergency, biosecurity incursion or food safety recall;
- exploring the importance of data sharing agreements and permissions-based data;
- realising the potential for data standards to provide a framework for electronic certification for market access and protocol requirements;
- increased awareness of the value of connecting the grower and consumer via the GS1 Digital Link.

Potato bag with unique code for traceability.

How the traceability system worked

Potatoes were used as it is a well-established industry and staple product for Woolworths, while the organic cherries are keen to use traceability technology to gain market access under the Woolworths 'Macro Organics' brand.

Labels with unique QR codes were applied to potato bags and punnets, linking them to shipping crates and containers. These unique identifiers were than shared into the FreshChain platform which would then identify where the product was in the supply chain. Dataloggers were incorporated into the information for each product unit (bag or punnet) to record temperature, location and light interception.

To verify the data, samples of potatoes and cherries were compared to their physical presence to the digital information to verify the accuracy of the data. A simulated food recall was also set in place to test the effectiveness of a recall for consumers.

The FreshChain dashboard gives a visual display of the location, and in the instance of an issue, an alert is raised when the QR code is scanned. Product can be traced by entering the batch number or packed date

Image. Courtesy Melanie Wishart, GS1 Australia

and all data associated with that number will be identified and displayed as shown in batches. There is a 'lock down all' button that, when activated, will send a recall message to the identified affected batches.

For the consumer, the benefit of a unique QR code is the ability to access the provenance of the product, health ratings, ingredients, the organic accreditation for the cherries, or other agreements such as FairTrade. Consumers can also opt to provide feedback and ratings to the grower and retailer.

Biosecurity and tampering

A clear benefit of a traceability system is the ability to identify where product originates from, and prevent movement into sensitive regions. A good example is Queensland Fruit Fly (QFF), where the FreshChain system can hold certificates of treatment against QFF to facilitate trade access into other domestic markets, or export.

Product tampering points can also be more readily identified, with each point in the supply chain verifying the integrity of the product, and certificates electronically moving along the chain of data. Should environmental conditions of storage or transport be altered, datalogger information can also be linked in the FreshChain system.

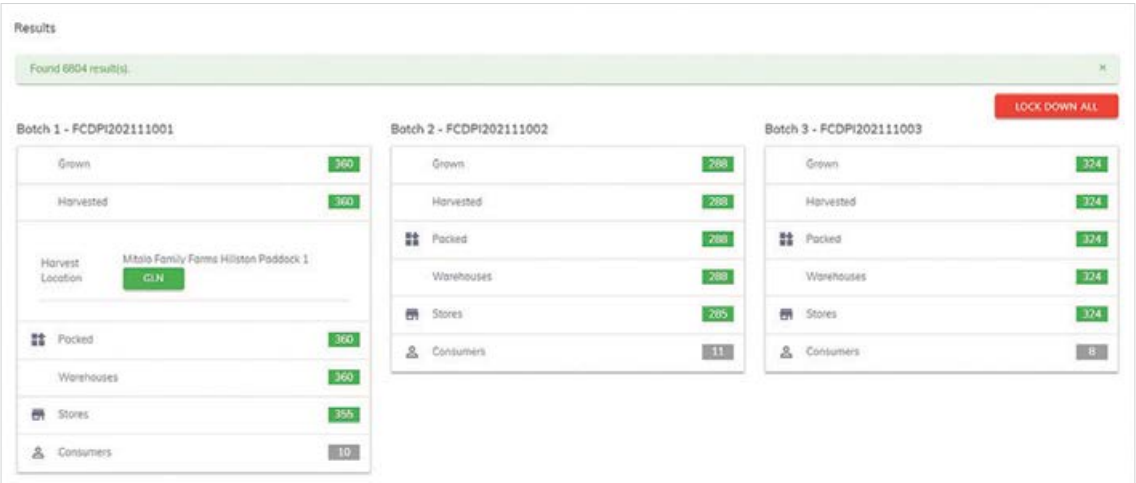
Project lead with NSW DPI, Jessica Fearnley said, "A key objective of the trial was to assess the ability to instantly identify properties in NSW through a central repository in the event of a biosecurity threat such as bushfires and deploy resources where they are needed.

"We are all too aware that these threats remain and it is critical that we work toward a more centralised approach for identification, containment and support deployment," added Fearnley

Director of FreshChain Systems, Greg Calvert, welcomed the opportunity to provide the digital traceability solution and advanced quality control sensors for the project.

"We will continue to see further benefits of digital transformation and that is an exciting prospect for speed, accuracy and data access. More relevant data, linked to create valuable insights and enhanced visibility, will support all partners in the supply chain. For consumers, this is the next best thing to being on-farm."

FIGURE 1: FRESHCHAIN DASHBOARD



Applied enzymes boost production

Australian vegetable growers are now well supplied with farm inputs that protect and enhance their property's natural resources while profitably producing high quality fresh produce.

SA potato trial 2 months after planting, grower standard practice.

SA potato trial 2 months after planting, grower standard practice plus NUCLEON.

A new category enzymes, researched and developed by US-company Elemental Enzymes, is now being distributed in Australia by Agreva, a company devoted to sourcing agricultural inputs with superior environmental credentials.

Enzymes improve efficiency and yields in vegetable crops

Agreva general manager Danny Thornton said recent trials across Australian vegetable crops had proved the economic and environmental advantages of adding specific enzymes for more efficient use of nutrients and other inputs, increasing yield and improving quality.

Already commercially successful in the US, several enzyme products have been tested extensively in Australia and are now available to distributors and growers.

Mr Thornton says this exciting new field of biological products could revolutionise agriculture by supporting plants' ability to survive and thrive from the best to the harshest of conditions, and by boosting yield from existing farm practices, resources and inputs.

He said important roles for applied enzymes in Australian agriculture included accelerating and enhancing soil conversion of unavailable nutrients like phosphate into plant-available forms, and breaking down crop residues and soil organic matter into available nutrients.

"Enzymes are produced naturally by soil microbes and plant roots, but growers can accelerate and enhance these processes by applying concentrated enzymes that rapidly disperse through the soil, working quickly in a range of soil moisture and pH (5-10) conditions.

"Compared with applied microbes, enzymes are far more consistent, with reactions beginning as soon as they are applied and continuing for days and up to weeks, as well as increasing activity of native microbe populations. Enzymes applied with fertiliser at planting start to work immediately, accelerating release of plant-available nutrients so plants germinate or are transplanted into a nutrient-rich zone for better and quicker crop emergence and establishment."

Enzyme products now available in Australia

Following three years of testing in a wide range of crops under local Australian conditions, enzyme products including Nucleon, Magno and Res+ are now available here.

NUCLEON

A concentrated liquid blend of two enzymes (lipase and mannanase), Nucleon is ideal for use in horticulture with liquid fertilisers or as a stand-alone side dressing, enhancing uptake of water and nutrients by plant roots, and improving plant growth and yield plus soil and plant health.

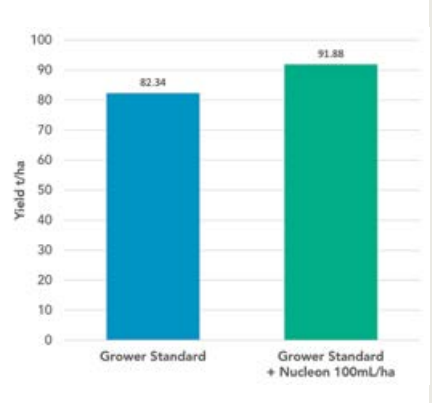
"Nucleon triggers soil organic matter to release bio-available N, P, K nutrients and water, and stimulates native microbial activity. At the same time, it acts on the outer layers of the root tip to create ideal soil conditions for plant-root growth."

2022 POTATO TRIALS
Tasmania and South Australia

In potato trials at Table Cape in Tasmania, Nucleon increased yield by 5.5 tonnes per ha, with potatoes in the treated area having more fibrous root systems, cleaner skins and less raised lenticels.

In trials at Virginia, South Australia on potatoes (variety Almera), Nucleon also increased yields by 6 to 23%. Nucleon-treated potato plants were visually different throughout the trial, with a 12% total yield increase of 9.54t/ha for extra revenue of $4,014 t/ha – a return on investment of 46:1.

SA Nucleon potato trial Total Yield Graph



WA carrot field using grower standard practice plus NUCLEON.

2022 CARROT TRIALS
Western Australia

In trials at Myalup in WA, Nucleon was applied in-furrow to a carrot crop to enhance nutrient uptake, leading to improved emergence, yield, and both root and top-length.

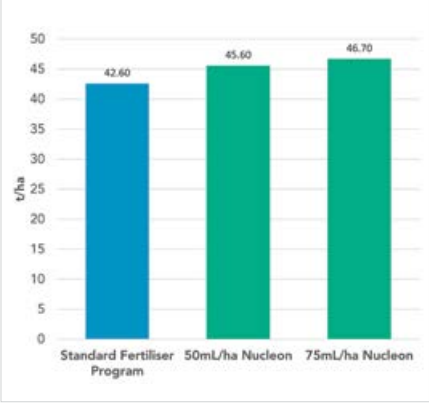
Nucleon at 50mL/ha added to the grower's standard fertiliser program increased returns by $3,000/ha (with ROI 67.6). A higher rate of Nucleon at 75mL/ha increased return by $4,100/ha (with ROI 61.5).

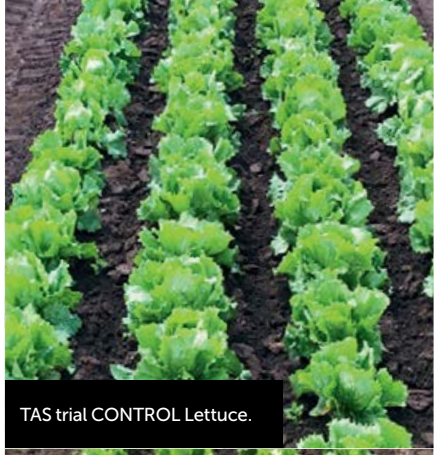
MAGNO

Aimed at improving phosphorus availability, Magno is a good fit for vegetables. A concentrated dry granular enzyme formulation, Magno can be applied to soil with liquid or soluble fertiliser, or as a stand-alone product.

The phosphatase enzyme in Magno improves phosphate uptake, starting to work immediately in moist soil releasing unavailable organic phosphate in the soil's organic nutrient bank into plant-accessible form. The mannanase enzyme breaks down exudates around the outer layer of root tips, enabling flow of water and plant-available nutrients plus soil conditions ideal for plant growth.

WA trial Nucleon on carrots yield increase





TAS trial CONTROL Lettuce.

TAS trial improved colour and yield MAGNO-treated Lettuce.

DEC 2021-JAN 2022 LETTUCE TRIALS
Tasmania

RES+

In trials on Iceberg lettuce at Forcett in Tasmania, Magno applied to the soil and watered in following planting increased head field weight by 6 per cent and noticeably improved lettuce colour.

Containing many key factors needed by soil microbes to grow and spread on residues, Res+ provides a simple way to optimise and speed up microbial conversion of residues and nutrient release, accelerating crop-residue breakdown, kick-starting soil microbial activity, and increasing yield potential.

Sprayed onto stubble after harvest or added to pre-planting knockdown and pre-emergent herbicides, Res+ immediately starts stubble breakdown and nutrient release, providing nutrient-rich soil for improved crop establishment.

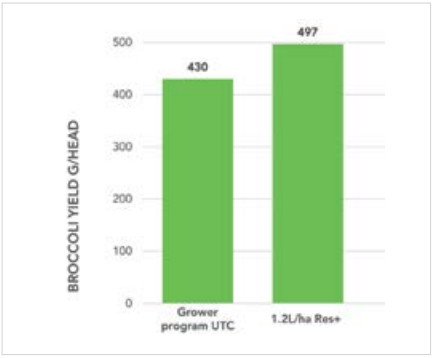
Multiple trials across Australia confirmed the ability of RES+ to speed up breakdown of crop stubble, for quicker release of nutrients and improved soil structure for the following planting. Applied post-harvest or ahead of planting at 1.2L/ha, Res+ has led to higher yields and higher income from subsequent crops.

Broccoli QLD Trial.

2021 BROCCOLI TRIALS
Queensland

At Clifton on Queensland's southern Darling Downs, applying Res+ on forage sorghum stubble three weeks prior to sowing increased yield of the following broccoli crop by 15.5pc, with increased head weight of 67 grams/head plus improved broccoli head quality estimated to be worth $5,401/ha. On the Res+ treated portion, the soil was easier to work and plant the broccoli crop in August, with the October-picked crop ready for harvest a week earlier than the untreated area.

Broccoli Trial Clifton



Agreva General Manager Danny Thornton

FOR MORE INFORMATION
agreva.com

R&D vegetable fund update

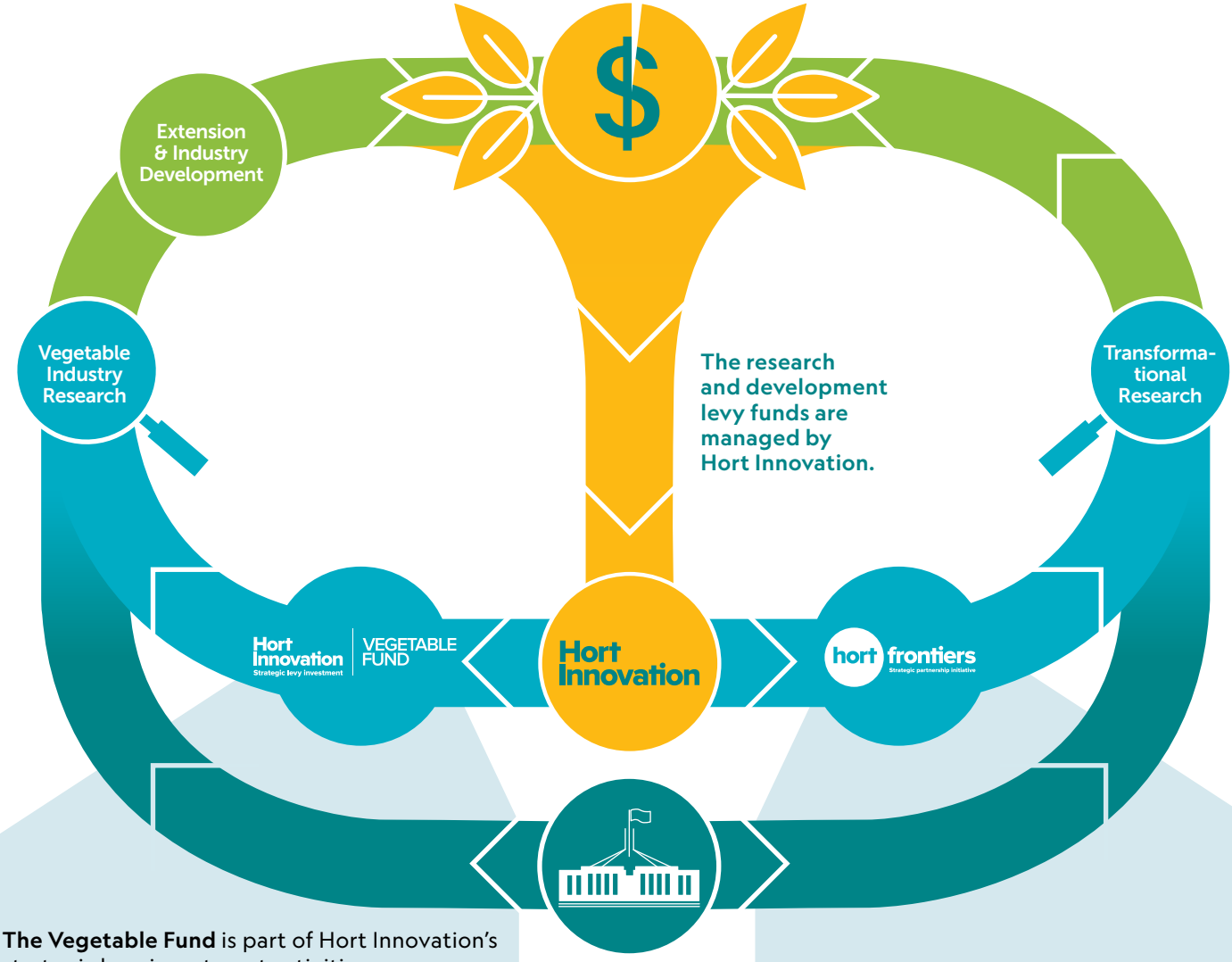
Communication of vegetable levy-funded research and development is funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government.

Hort Innovation
Strategic levy investment

VEGETABLE FUND

How does the vegetable R&D levy work?

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



The Federal Government also provides funding

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

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

Hort Innovation Strategic levy investment | VEGETABLE FUND

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

Watch the explainer video:

Healthy soils, healthy profit from precision ag trial at Koo Wee Rup

The Soil Wealth and Integrated Crop Protection (ICP) project works with growers to put soil management and plant health research into practice. This article explores some of the key findings and benefits at the project's Koo Wee Rup demonstration site in Victoria over the last five years. *Soil Wealth ICP Phase 2* (VG16078) is a strategic levy investment under the Hort Innovation Vegetable Fund.

From 2018-2022, Schreurs & Sons, Stuart Grigg Ag-Hort Consulting and the Soil Wealth ICP team partnered to explore the application of precision agriculture in celery, leek and baby leaf production systems. The demonstration site is located at Adam Schreurs' Cora Lynn farm, about 80km south-east of Melbourne, Victoria.

Over the past five years Adam and the team have aimed to improve nutrition, irrigation and drainage management, and insect pest and beneficial monitoring as a basis for soil and crop health. To achieve this, the team used technology like EM38 mapping, gridded soil sampling, variable rate fertiliser spreading, remote weather stations with soil moisture probes, automatic insect pest traps with cameras, microwave weeding prototypes and drones.

Key trial findings

Increased yield and crop uniformity

Celery yield assessment showed higher average celery heart weights and more uniformity across the trial block from 2018-2020. This meant easier grading and packing of celery by staff and ability to supply customers with a product that better met their specifications.

"The harvest from the demo site this year [2020] was so uniform. It was really noticeable when it was coming off the block. It was a fantastic result – it beat the best crop off the farm," Adam explained during the trial.

Average leek yield increased in the trial area compared to the control from 2020-2022, with a significant increase in minimum yield. This improved Adam's ability to target important markets with larger sized leeks that met customer needs.

Improved soil health

Soil health has improved in the trial area when looking at soil fertility indicators, nutrient status, plant nutrient availability and free-living nematodes.

Large areas of the trial site have improved uniformity of nutrient availability due to the gridded soil sampling and variable rate fertiliser spreading over the past five years.

Reduced soil-borne disease pressure

There has been a reduction in soil-borne disease risk and severity over time at the site, which has been more pronounced in the trial area compared to the control. This may be due to the precision agriculture activities at the trial site as well as other factors such as soil moisture, temperature and variation in planting times.

Increased profitability

Improved yield and crop uniformity contributed to increased gross profit-ability of $53,000, or $5,000 per hectare, based on the leek harvest in 2021. This was largely driven by reduced costs from post-harvest labour efficiencies in cleaning, grading and packing produce.

Even through there were some additional costs, such as gridded soil sampling and depreciation on equipment, these were minimal and did not offset the positive profit result. A great outcome for Adam and the business.

TABLE 1: PARTIAL BUDGET ANALYSIS BASED ON LEEK HARVEST IN 2021

Item	Calculation	Value ($/ha)
Additional revenue	A	$7,825
Reduced revenue	B	$0
Additional costs	C	$6,861
Reduced costs	D	$52,326
Net change in gross profit	**A-B-C+D**	**$53,291**
Net change in gross profit (/ha)	**÷ 10.1 ha trial block**	**$5,276**

Above L-R. Koo Wee Rup remote weather station. Jake Ryan from Three Ryans, Manjimup.

Lessons learnt

The team learnt many lessons in implementing precision agriculture practices and technology at the site over the past five years.

These include:

- Gridded and pre-plant soil testing allowed more detailed understanding of where nutrients are available to the plant.
- Development of a nutrition program and variable rate spreading enabled precise nutrition application across smaller areas.
- Drainage and crop health monitoring using drones meant problem areas could be identified and managed early before they impacted yield and the bottom line
- Plant tissue testing provided a useful cross-check to see what nutrients the plant had taken up and whether this varied across a paddock
- Installation and use of remote monitoring insect traps provided another 'safety net' cross-check for manual scouting
- Remote weather stations and soil moisture probes have improved irrigation scheduling and managing problematic waterlogged areas.

Next steps

Adam will continue to refine and expand the use of the precision agriculture technology across other farms to continually improve yield and crop uniformity.

"It's a really good demo of what technology can be used in the field and what we can get out of it. All of those things I'll be using in the future, more and more," he said.

Stuart added: "It's been a pretty exciting journey taking this precision agriculture technology from the broadacre grains industry into vegetables. It's a no-brainer for anyone breaking up new country, but a real revelation for how it can work on older country and the benefits it can give to growers more broadly."

ACKNOWLEDGEMENTS

The Soil Wealth ICP team acknowledge the significant contribution, time and expertise of our demonstration site growers and industry partners.

To read the full demonstration site case studies with detailed trial results, visit: soilwealth.com.au/resources/case-studies/

Western Australia

Three Ryans
Manjimup

The Three Ryans first became involved with the Soil Wealth ICP project in 2019, with the goal of improving their soil health by trying cover cropping combined with strip tillage.

Fast forward three years and, despite some hurdles along the way, the Ryans have adopted the use of cover crops and strip till more permanently in their operations at Manjimup. Key benefits include:

- Reduced labour costs – reduction in number of passes from 10 to four, saving 10 hours per week during the vegetable growing season
- Reduced cost of fuel – 10,000L saved in the first year
- Improved crop health and produce quality
- Improved soil structure and drainage
- Improved soil biology – including three times more earthworms than previously found
- Improved working conditions – inter row zone is less muddy
- Maintained yields
- Enhanced water retention through plant residue on soil surface
- Reduced erosion
- Reduced delays in field operations following heavy rainfall – possible to plant and harvest earlier than other growers in the region
- Reduced weed pressure.

"The strip-till machine paid itself off within the first year, given the time and fuel we saved from reducing tillage," Jake Ryan said.

"The changes we have made have been beneficial not only to the success of our vegetable crops, but also to the health of our livestock."

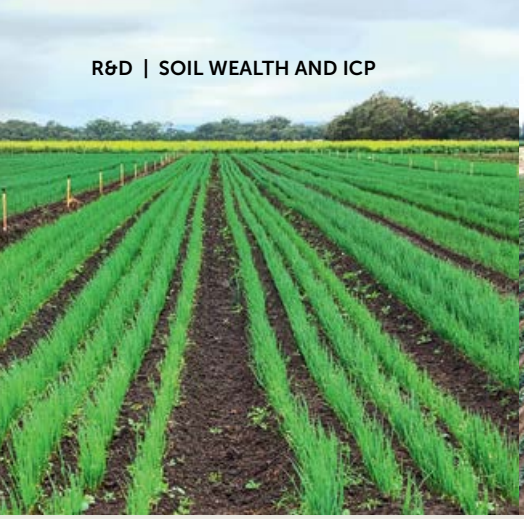
FIND OUT MORE

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**

Hort Innovation Strategic levy investment | VEGETABLE FUND



More grower demo site case studies available at soilwealth.com.au!

SOUTH AUSTRALIA

Thorndon Produce
North Adelaide Plains

Thorndon Park Produce, owned and run by the De Ieso family, has been growing vegetables in Australia's North Adelaide Plains since 1945.

The initial objective of this demonstration site was to showcase compost use in commercial vegetable production to increase marketable yields and quality. This was to be achieved by improving soil health, reduce the effect of saline irrigation water and decrease the use of inputs especially fertilisers and irrigation water. Major soil health challenges were compaction and low organic matter levels.

During the trial, compost treated plots showed:

- Heavily reduced fertiliser use and irrigation water needs
- The introduction of organic matter and reduced water irrigation need allowed for better management of the effects of salinity on the block and improved soil drainage
- Healthier root growth and better uptake of trace elements were observed and confirmed via plant testing
- More even crop growth and quality (colour, feel) as well as plant size resulting in a better cut out rate (marketable yield)
- Improved crop longevity and thus a longer harvesting period with less individual cuts
- The stronger, more even plant growth and quality led to a reduction in labour requirements overall. Harvesting and packhouse costs were much lower from the composted area due to reduced grading need and the high percentage of marketable produce with less wastage.

Thorndon Park Produce has since expanded its use of compost, using pelletised compost and trialling biological products to enhance soil health.

NEW SOUTH WALES

Mulyan Farms
Cowra

Brothers Ed and James Fagan run their 1,400-hectare farm on the banks of the Lachlan River near Cowra, NSW.

The Fagans have been involved with the Soil Wealth project since 2014. They have embraced considerable change, with benefits as well as some difficulties along the way. Their experience highlights the importance of finding systems and practices that suit a farm's specific circumstances, including its business priorities.

The big winners for Mulyan Farms were reduced tillage and adoption of cover crops, with a strong economic case for continuing these practices.

"The soil health benefit that we see is that you improve structure, and improve water infiltration and nutrient uptake. It took a few years; the first year we were looking at it going 'it looks much the same as it did last year' and then the second year it looked a little bit better and now you dig in and dig worms up whereas before you were struggling to find a worm anywhere," Ed said.

"A lot of the tillage we've had to do in the past to break up compaction layers and bulk density is now being done by the worms and microbes in the soil... The more activity you've got in the soil the quicker the residue from the previous crop breaks down. So, a lot of the breakdown of the crops has been mechanical in the past, whereas now, the soil is doing it for us."

GIPPSLAND

Mulgowie Farms
Maffra

Mulgowie in collaboration with Soil Wealth ICP decided to trial strip tillage combined with their existing cover cropping practices at their Maffra farm, 220km east of Melbourne. Their primary goal was to use strip tillage to improve soil health characteristics like water infiltration and water holding capacity, to improve crop health and yield, reduce costs and ultimately improve profitability.

"For me, seeing was believing. Despite my original scepticism, after half an hour of trying strip tillage in different cover crop scenarios [at the Maffra site], we were all quite blown away by how it could convert the cover crop to an area ready for planting vegetables," said Michael Evans, the former farm manager of the site. "We purchased the machine on the spot, and the trial went from a few hectares to being adopted across the 200 hectares destined for growing corn."

"After using strip tillage, the corn crop was the most even I've ever seen it in my 17 years of farming, despite the gullies through the paddock and uneven beds. We saved costs on in-crop herbicides, fuel and labour hours."

Above L-R. Thorndon Produce - spring onions. Mulyan Farms - demo site. Mulgowie Farms - worm example.

AUSVEG's Zarmeen Hassan hosting a panel on the VEGNET program with Ossie Lang (not pictured), Rob Arvier, Kim Ngov, and Sylvia Jelinek, at the AVIS 2022. *Credit: Andrew Beveridge, AUSVEG, 2022.*

2022 AVIS recordings

Vietnamese and Punjabi translations now available

These recordings are available via the AUSVEG website ausveg.com.au/ausveg-webinars/#in-person.

The subtitles can be turned on by clicking on the **Settings** button in the bottom right corner of the video, selecting **Subtitles/CC,** and selecting either **Punjabi** or **Vietnamese.**

The Annual Vegetable Industry Seminars (AVIS) is series of webinars and in-person events held for Australian vegetable growers. The topics covered are chosen to highlight current areas of interest to vegetable growers, new on-farm management techniques, and research and development projects funded through the Vegetable Levy.

As part of this program the recordings of the in-person seminar have been translated and subtitled into Vietnamese and Punjabi.

The 2022 Annual Vegetable Industry Seminar was held on the 6th of June 2022 and included the following Sessions:

- VegNET 3.0 and Regional Development Officers in your area
- Owner reimbursement costs – Grower financial recovery after new pest or disease detection
- Transitioning to protected cropping – what are the considerations?
- Increasing international and domestic horticulture market access opportunities
- The Soil Wealth & Integrated Crop Protection team
- Warren Davies - The Unbreakable Farmer.

2023 Annual Vegetable Industry Seminar

The next in person seminar will be held at the Adelaide Convention Centre in Riverbank Rooms 6 and 7 on the 5th of June 2023, 12-4pm. The event is free to attend, and lunch will be provided.

There are limited funds available to help growers who are under 35 years old or come from culturally or linguistically diverse communities cover the cost of attending. To learn more about the funding please email marketing@ausveg.com.au or visit ausveg.com.au/vegnet to find the details of your local VegNET RDO.

Fast-tracking robotics and automation for horticulture

Robotics and automation are the key features of FIRA US.

Agtech has many facets across software and hardware solutions. For horticulture, the vagaries across vegetable types, field management and labour can be quite different. Finding the right technology that is fit for purpose can require producers to consider overseas offerings.

The Gatton Smart Farm Initiative aims to accelerate the adoption of agtech into horticulture by enabling co-innovation between the Australian industry, research community and agtech suppliers to give growers the next step to solve challenges around labour management, product quality, climate variability and supply chain wastage.

Headed up by Ian Layden, Director Vegetables, Systems and Supply Chains with Queensland Department of Agriculture and Fisheries (DAF), the aim is to undertake a more strategic style of investment into robotics and automation, with the aid of growers to identify a technology stack that can be initiated either now or in the short term. The Queensland Government has identified farm automation as a critical area to assist growers in the adoption process.

Part of the research process are fact finding missions, including a visit to the FIRA USA 2022 Field Robotics event in Fresno California, which specialised in robotics and automation for specialty crops.

A three-day event, FIRA USA is one of the only dedicated trade shows tailored specifically to showcasing field robotics solutions for high value crops such as vegetables. It presents the perfect opportunity to see innovations in agtech firsthand, engage with the world's leading manufacturers and assess performance in field trials and on grower farms.

"The project to date has conducted a lot of the research into the future of robotics and automation that may be suitable

for Australian conditions, but it was principally through videos and online conversations with overseas suppliers, making it difficult to really get a feel for whether the solution would be a good fit for Australian growers," said Ian.

"The FIRA expo gave us the opportunity to immerse ourselves in the industry, and focus on what we could see and hear in front of us, talk with the companies and watch the product work in the field. It was clear that some technologies we thought might work, won't be considered, while there are others we are already having discussions with the suppliers to establish a plan for the future."

As Australia is a small market, Ian says there are basically two options for growers to assess new technologies – wait until the supplier sets up a distributorship in Australia, or engage early with potential suppliers to take advantage of the innovation sooner.

"Being able to talk directly with the manufacturer was invaluable to see who stands behind the product, whether the company had a strategy for the Australian market, or if the product would give a good return on investment."

The grower perspective of FIRA

The DAF led trip, to FIRA USA provided an opportunity for a few growers to self-fund their attendance. One such grower is Ed Windley, of Kengoon Farming in the Scenic Rim of Queensland. Ed grows sweet corn and green beans in the summer, and carrots in the winter, across 201 hectares. In the past Ed has looked to technology to improve irrigation, drainage and soil health and compaction. The trip to the US gave Ed greater insight into what the next steps in agtech may look like, and potentially whether it is adaptable to Australian conditions.

"I like to stay up to date with agtech and adopt improvements that makes economic sense for our business. I am happy to give things a go, but equally if they don't work out as well as we thought, I will discontinue it.

"The automation we have for irrigation is a great example of what really does work that delivers a benefit – it reduces time and increases efficiencies. It seems the next progression in technology is now focusing on robotics and automation for spray systems and weeding."

Ultimately, what Ed is looking for is a solution that has a high degree of reliability, is efficient and effective. Like Ian, Ed found that the initial research online and emailing suppliers only went so far in assessing the merit of the technology. The trip to FIRA US and meeting with US vegetable growers quickly revealed which solutions were genuinely paddock ready and had an attractive return on investment.

The two systems of note were the camera-based weeding systems that was capable of differentiating between broccoli and a weed at seedling stage; and spraying systems for green on green that reduced the use of chemicals on the crop.

"One group that impressed me from Canada was a grower support group that works with manufacturers and growers. They assess new robotics and automation systems and give the supplier unbiased feedback to improve the technology, while assisting growers on-farm to validate and adopt automation. It is definitely something we could consider here as a way to accelerate adoption and to collaborate with overseas suppliers, who are interested in testing the Australian market."

Innovation and adoption of new technology takes time, said Ed. Time to see the value in the technology and for the product to be more robust and give a greater return. Support from the manufacturer is vital to ensuring that the technology will be used.

"It has to be easy to use, reliable and effective at what it does. But I would recommend that if you are interested in taking on new technology to do your research and go to events such as FIRA. It is easy to go in with preconceived ideas, but important to keep an open mind to what is achievable. Talk to growers and the manufacturer so you can sift through the hype to the reality."

The project pipeline is to establish a series of investments in the coming years so that new technologies can be put in place to increase productivity as machinery nears its lifespan.

FIRA USA will be held again in October 2023 in Salinas, California. If you are interested learning more about FIRA USA or are keen to attend in 2023, please contact Ian Layden for more information.

FIND OUT MORE

Contact Ian Layden for more information
Phone 0409 495 737
email: ian.layden@daf.qld.gov.au

The Gatton Smart Farm Initiative is a Queensland Government funded program that is supported by Hort Innovation via the Driving Ag-Tech Adoption across Australia (AS20007) project. Driving Ag-Tech Adoption across Australia (AS20007) is funded by the Hort Frontiers Advanced Production Systems fund, part of the Hort Frontiers strategic partnership initiative developed by Hort Innovation, with co-investment from Department of Agriculture and Fisheries (DAF) and contributions from the Australian Government.

Project Number: **AS20007**

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?

A 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 0.5 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?

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

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

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

For the previous vegetable SIP, a performance report has been developed to demon-strate 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 for the five year period, 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 invest-ment 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.

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 milestone reports on their progress and at the end of each investment, a final report is produced that is made available to industry on what the project has achieved.

How to keep track of investments

Investments in the Hort Innovation Vegetable Fund are detailed in the Growers section – Your Investments 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 (VG22000), also provides regular information on levy-funded activity.

FIND OUT MORE

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

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

Hort Innovation Strategic levy investment | VEGETABLE FUND

Who are the members of the Vegetable SIAP?

The vegetable SIAP consists of industry supply-chain stakeholders, most of whom are levy-paying growers. Panels also include industry representative body representation.

To ensure that all ideas for levy investment are given the time to be considered seriously, the Vegetable Fund has two different SIAPs: pre-farm gate and post-farm gate, with each SIAP comprising growers and industry members with specialised knowledge of their respective area of responsibility. For investment decisions that span the entire value chain, both SIAPs can come together to jointly consider investment priorities and opportunities

Pre-farm gate SIAP

Name	Organisation	Location
Bill Bulmer	Bulmer Farms	VIC
Andrew Craigie	Craigie Bros	TAS
Edward Fagan	Mulyan	NSW
Zarmeen Hassan	AUSVEG	VIC
Rachel Lancaster	EATS*	WA
Ian Layden	DAF*	QLD
Michael Radcliff	Rhebanvale	TAS
Angus Galloway	Simplot Australia	TAS
Sharron Windolf	Windolf Farms	QLD
Bob Granger	Chair	

Post-farm gate SIAP

Name	Organisation	Location
Michael Coote	AUSVEG	VIC
Nathan Free	Duralgai Horticultural	VIC
Jason McNeill	Premium Fresh Tasmania	TAS
Andrew Moon	Moonrocks	QLD
Greg Owens	NT Farmers	NT
Shane Quinn	Mulgowie Farming Company	QLD
Scott Samwell	Samwell & Sons	SA
Kingsley Songer	4 Ways Fresh Produce	SA
Lynley Van Lathum	Rugby Farms	QLD
Kees Versteeg	Qualipac	QLD
Bob Granger	Chair	

* EATS - Environmental & Agricultural Testing. DAF – Department of Agriculture and Fisheries.

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 for the next five years.

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 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.

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.

OUTCOME 3

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 industry supply chain actively engaged in implementation of this strategy;
- Growers, supply chain, media and governments being well-informed on industry initiatives and achievements as a vital part of regional communities and networks;
- Increased on-farm use of R&D outcomes that will build a stronger, more resilient industry – in addition to improved networks and cross-industry collaboration;
- Proactive strategic and evidence-based decision-making in businesses and for industry on investment, priorities and risk management.

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.

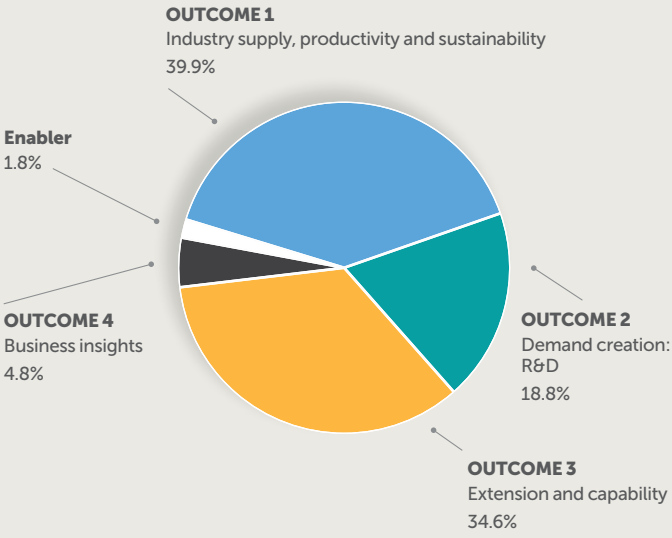
Achieving the outcome will involve reliable baseline data and analysis to provide insights and understanding of current and emerging trends. Key investments will support the provision of consumer knowledge and tracking,
access to trade data, production statistics, forecasting and independent reviews to enable better decision-making process at industry level and individual businesses.

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 aligned R&D initiatives.

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

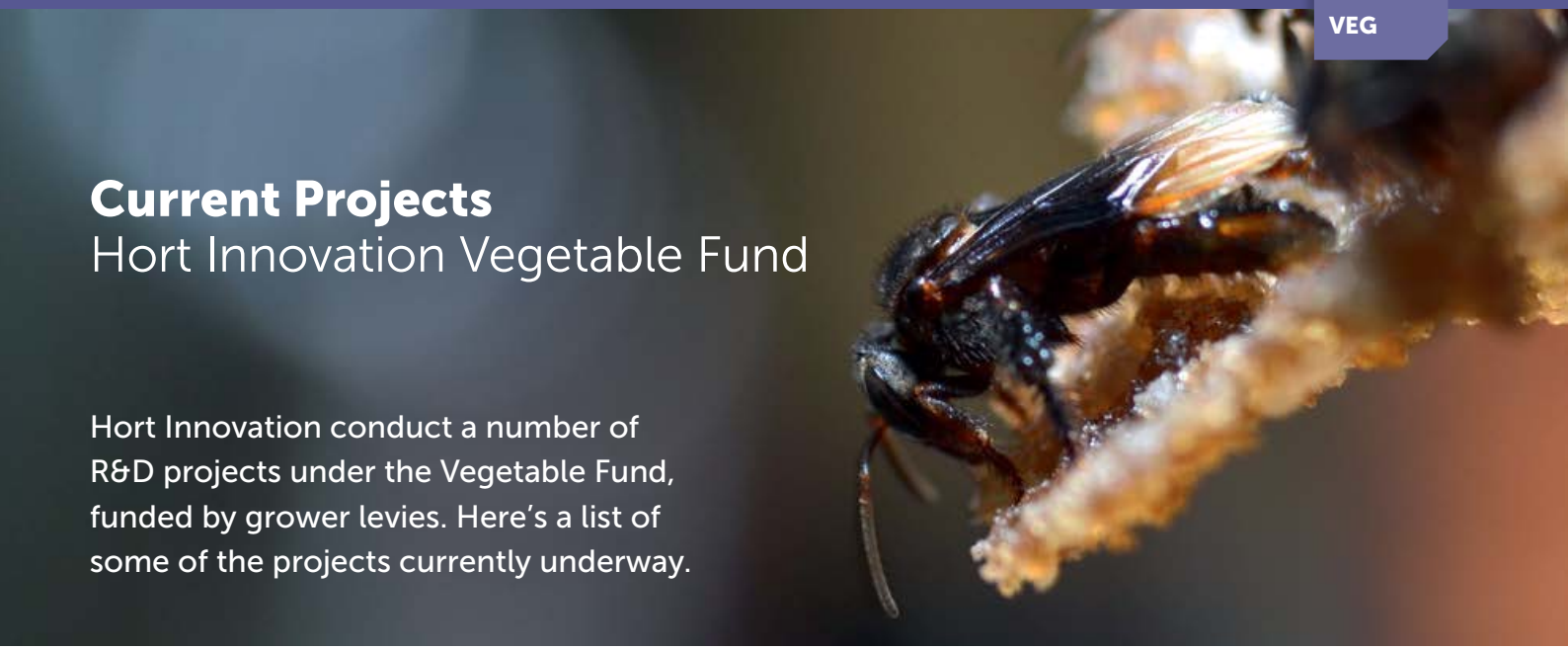


FIND OUT MORE

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 Strategic levy investment | VEGETABLE FUND



Current Projects
Hort Innovation Vegetable Fund

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

Stingless bees as effective managed pollinators for Australian horticulture (PH16000)

KEY RESEARCH PROVIDER: UNIVERSITY OF WESTERN SYDNEY

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

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

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

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

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

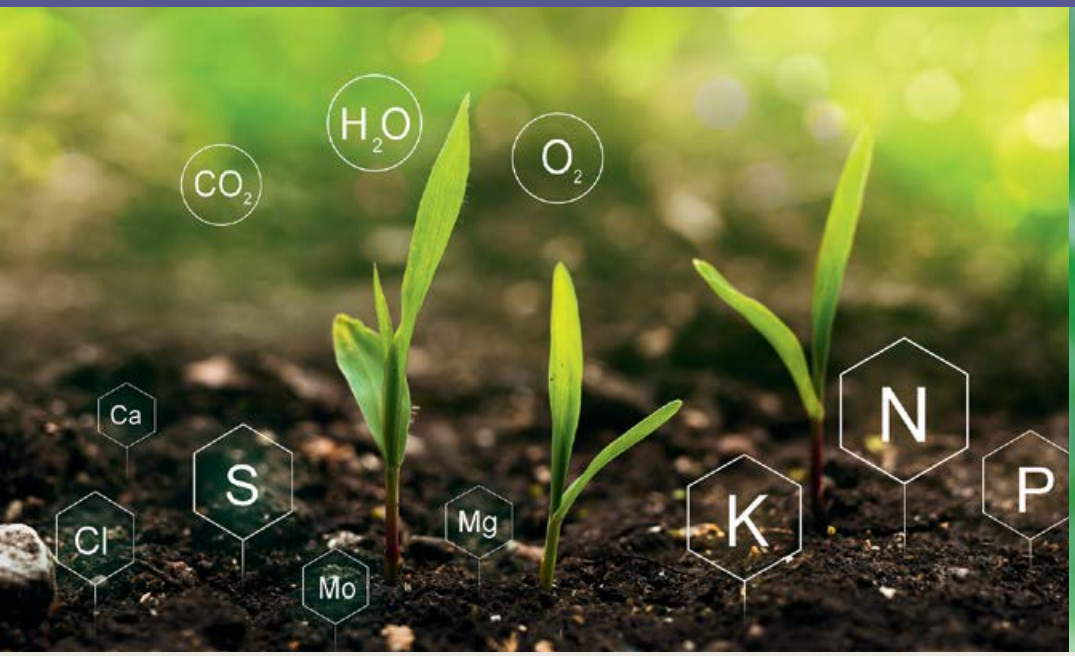
Also look out for project updates and learnings to be shared via levy-funded communications channels such as the AUSVEG newsletter, social media, the *Vegetables Australia* magazine and through the VegNET network.

Vegetable industry minor use program (VG16020)

KEY RESEARCH PROVIDER: HORT INNOVATION

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

All current minor use permits for the industry are searchable at **portal.apvma.gov.au/permits**. Permit updates are also circulated in Hort Innovation's Growing Innovation e-newsletter, which levy-paying members receive monthly.



Soil wealth and integrated crop protection – Phase 2 (VG16078)

KEY RESEARCH PROVIDER: APPLIED HORTICULTURE RESEARCH

This investment continues to provide vegetable producers with the latest information in soil and pest related areas, in formats that are readily accessible and easy to use, through **soilwealth.com.a**u, workshops, webinars and other resources. It brings into one investment the industry's well-respected Soil Wealth initiative – previously run under Soil condition management – extension and capacity building (VG13076) – and the industry's Integrated Crop Protection initiative, previously facilitated by Extension of integrated crop protection information (VG13078).

The focus is on helping growers deal with future challenges posed by changes in the natural and business/market environment. Helping growers implement the efficient use of appropriate, trialled and tested new technologies as they become available, is also key.

In 2018, the fresh and processing potato industries also began contributing to this initiative, providing potato growers and industry participants access to Soil Wealth and Integrated Crop Protection Program events, resources and advice.

For more information, visit **soilwealth.com.au** for all project resources, engagement opportunities and more.

Area wide management of vegetable diseases: viruses and bacteria (VG16086)

KEY RESEARCH PROVIDER: THE QUEENSLAND DEPARTMENT OF AGRICULTURE AND FISHERIES

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

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

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

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

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

For more information, outputs from the project include:

- **Guide to identification and management of major virus diseases affecting Australian field vegetable crops**
- **Guide to understanding and managing bacterial diseases affecting Australian vegetable crops.**

Management strategy for serpentine leafminer, Liriomyza huidobrensis (MT20005)

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

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

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

Areas of work include:

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

Current Projects
Hort Innovation Vegetable Fund

VegNet 3.0 (VG21000)

KEY RESEARCH PROVIDER: AUSVEG

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

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

To contact your regional regional development officer, see page 91.

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

KEY RESEARCH PROVIDER: AUSVEG

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

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

The export program comprises the following activities:

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

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

Vegetable industry communications program (VG22000)

KEY RESEARCH PROVIDER: AUSVEG

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

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

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

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

Current Vegetable Fund Investments

Current Project Name	Project Code	Delivery Partner
National tomato potato psyllid and zebra chip	MT18008	The Department of Primary Industries and Regional Development, Western Australia in collaboration with others
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
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
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
Management strategy for serpentine leafminer, Liriomyza huidobrensis	MT20005	Queensland Department of Agriculture and Fisheries
Regulatory Support & Response Co-ordination	MT20007	AKC Consulting Pty Ltd
National Bee Pest Surveillance Program: Transition Program	MT21008	Plant Health Australia Limited
Co-developing and extending integrated Spodoptera frugiperda (fall armyworm) management systems for the Australian vegetable industry	VG20003	Queensland Department of Agriculture and Fisheries
VegNET 3.0	VG21000	AUSVEG
Demonstrating the benefits of building capability and capacity in extension delivery in the vegetable industry	VG21002	University of Melbourne
Consumer behavioural data program	MT21004	Nielsen
Annual Vegetable Industry Seminar	VG21003	AUSVEG
Multi-industry export program (Vegetables, Onions and Melons)	MT21009	AUSVEG
Fund Impact Assessment 2020/21: Cherry, sweetpotato, vegetables and small tropicals	MT21013	Ag Econ
Horticulture Impact Assessment Program 2020/21 to 2022/23	MT21015	Ag Econ
Generation of data for pesticide applications in horticulture crops 2022	ST21001 and ST21006	Agreco and Eurofins
Australian horticulture international demand creation	ST21007	Kantar Insights
Consumer usage and attitude tracking 2022/23	MT21202	Fifty-Five Five
National Fruit Fly Council - Phase 4	FF20000	Plant Health Australia
Feasibility/scoping study: Surveillance and diagnostic framework for detecting soil-borne pathogens in vegetable industries	MT21016	NSW Department of Primary Industries
Vegetable industry communications program	VG22000	AUSVEG
Generation of data for pesticide permit applications in horticulture 2022	ST22001, ST22003 and ST22004	Agreco, Eurofins Agroscience Services and Kalyx
People development strategy for the vegetable, potato, onion, and banana industries	MT22002	RMCG

Commodity profile

Sweet corn

In the latest 52 weeks ending Jan 2023, **sweetcorn dollar sales growth decreased marginally by 1.6%, with 51% of households buying sweetcorn.** Sweetcorn volume declined by 15.4%, compared with 6.5% for all vegetables.

SOURCE: HARVEST TO HOME

IN TERMS OF SALES

South Australia **grew sales by 9.1%** while Victoria, New South Wales and Queensland all declined.

SOURCE: HARVEST TO HOME

Among its competitive set (carrots, broccoli, capsicum, zucchini, beans), capsicum gained the most (13.3%) in terms of dollar sales change, **with sweetcorn declining by -1.6%**

SOURCE: HARVEST TO HOME

According to the 2021-22 Hort Stats Handbook, Sweetcorn production dropped by 3% in 2021-22 to 74,685 tonnes, while the value grew 13% to $150 million.

SOURCE: HORT STATS

54% of sweetcorn went to processing in 2021-22.

46% went to fresh supply, of which
88% retail - $140M
12% food service - $20M.

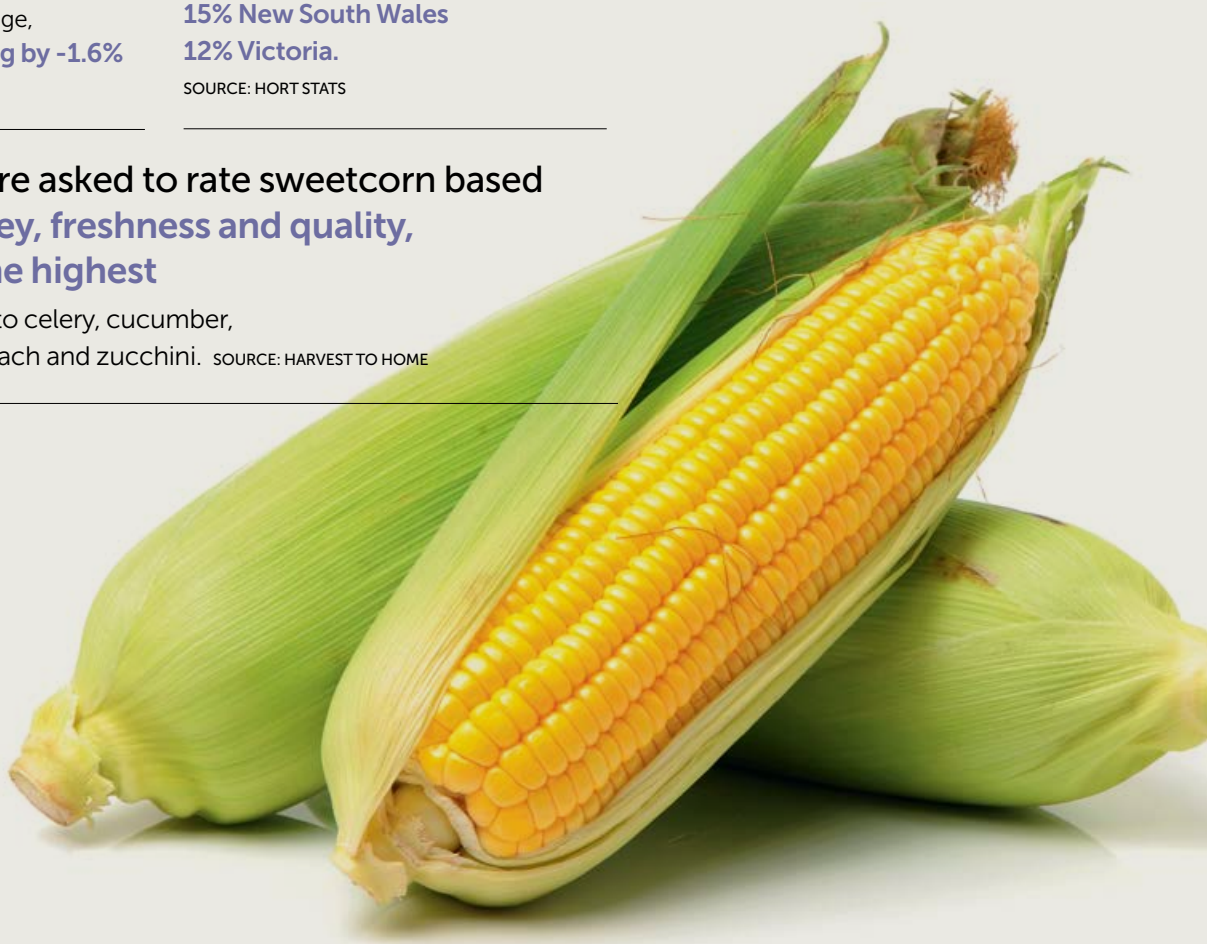
SOURCE: HORT STATS

While sweetcorn is grown around Australia, approximately

70% is grown in QLD,
15% New South Wales
12% Victoria.

SOURCE: HORT STATS

When shoppers are asked to rate sweetcorn based on **value for money, freshness and quality, sweetcorn had the highest** overall rating compared to celery, cucumber, fresh salads, lettuce, spinach and zucchini. SOURCE: HARVEST TO HOME



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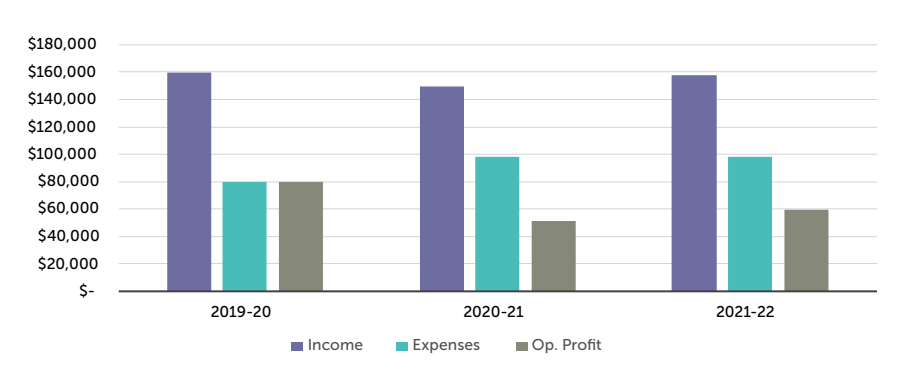
AUSVEG

How the vegetable industry is responding to the **changing economic circumstances**

The Annual WA vegetable industry benchmarks have been published for the Financial Year 2021-22. Produced by the Building Horticulture Business Capacity Project, the WA vegetable industry now has six years of industry data, demonstrating consistent trends to draw on.

The financial year 2021-22 saw the start of a significant rise in input costs together with labour cost and availability issues. Overall, while industry average performances were generally solid across FY2021-22, there has still been a variety of results. There is also a deeper concern relating to the impact of the rising cost environment for those who haven't put in the groundwork to control the costs within their business.

TOP 25% OF PRODUCERS



AVERAGE PRODUCER

BOTTOM 25% OF PRODUCERS

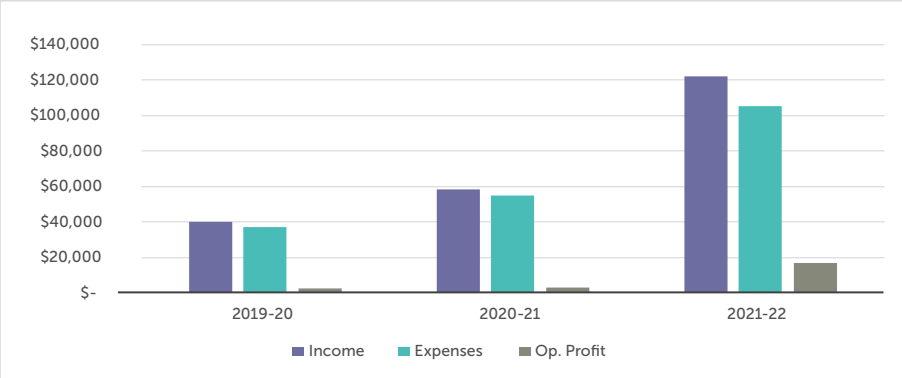


TABLE 1: LABOR EXPENSES PER HECTARE

	2019-20	2020-21	2021-22
Top 25%	$21,180	$30,306	$34,482
Average	$26,086	$26,436	$30,723
Bottom 25%	$14,793	$21,425	$44,309

TABLE 2: CHEMICALS EXPENSES PER HECTARE

	2019-20	2020-21	2021-22
Top 25%	$1,450	$4,004	$9,468
Average	$2,468	$2,298	$5,358
Bottom 25%	$1,030	$2,053	$3,743

There is a growing concern within the results of the bottom 25% of profitable growers.

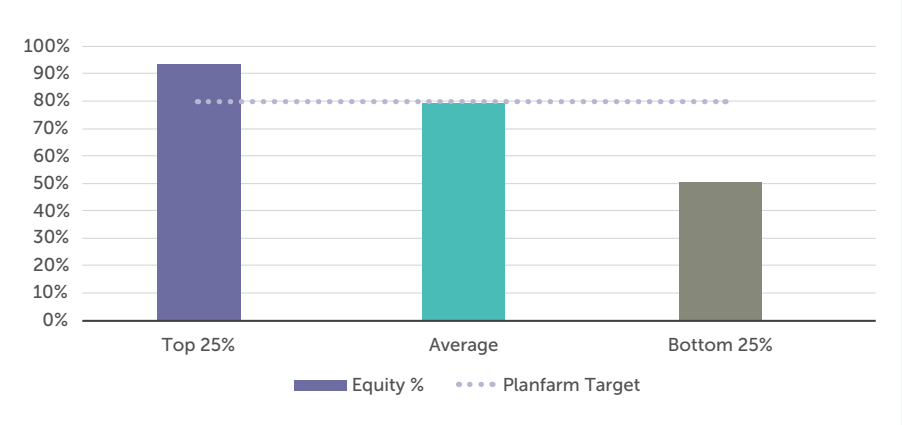
Comparing results of the average producer for FY2021-22 to the previous year, expenses increased approximately $12,000/ha. However, income increased by approximately $17,5000/ha to produce a $115,000/ha income which gave growers an average profit of $29,662/ha.

Focusing on the most profitable growers in FY 2021-22, while the top 25% spent approximately $13,000/ha more on expenses than the average producer ($157,743/ha), they were able to generate 37% ($42,700/ha) more income from that spend, which translated into $30,000/ha more profit ($59,334/ha) than the average producer.

Looking back, the Top 25% profitable vegetable growers managed to control expenses to a similar level to the previous year but returned approximately $8,500/ha more in income and therefore profit.

The key differentiator between top 25% profitable growers and the average was saleable yield. Often the yield across most of the participating growers was relatively similar, however

EQUITY %



what differentiated the top 25% was greater levels of saleable yield, which transferred into greater levels of income and then profit.

More profitable growers were able to maintain a clear line of sight across all spend, in particular labour and chemicals (*see Table 1 & 2*), through to saleable yield and therefore income into their business.

Within this group, profit per hectare for FY2021-22 significantly increased nearly five times from the previous two years ($16,821/ha); yet was still below the industry average. On the surface increased profits is always a positive result. However, it was a function of a doubling in expenses ($105,472/ha) that was met by a dramatic rise in income ($122,293/ha); note expenditure for the bottom 25% was larger than the average producers and top 25%.

Whether this was a conscious decision or passive consequence of market forces is unclear, however there is concern going into current FY2022/23 with known continued expenditure rise, whether the general vegetable market will continue to increase prices for produce and whether growers will therefore meet the cost of production. If not, margins will erode impacting equity levels.

The average equity position for FY 2021-22 vegetable industry was 79%, with the top 25% being significantly higher at 94%. Both are strong positions that can assist businesses to survive shocks such as negative surplus (deficit) caused from production, market influences or pricing catastrophes.

Concerns for vulnerable businesses

The bottom 25%, however is at a worrying 50%, which is a more vulnerable position. If in current FY2022-23 this cohort does struggle to secure income to meet the known rising input costs, there could be significant impact to the underlying stability within these businesses.

There is also an additional wider concern in the findings. The data collected to produce the benchmark results is gathered from the participants of the Building Horticulture Business Capacity Project. As part of participation, all growers have worked closely with farm management consultants, Planfarm, for some time continuing to analyse the performance of their business and take the necessary action to maintain, or improve, margins and profitability. With this context in mind, it is a possibility that the findings of both the Top 25% and the average producers are now a 'leading group' within the industry and that the findings of the bottom 25% are a truer reflection of the wider industry beyond the participating growers.

Know cost of business for resilience

Between these general findings and what is already known about economic conditions in the current financial year, now more than ever there is a need for all vegetable business owners to be clear and up to date on the details of the cost structure, cost of production and required margins of their vegetable business in order to remain profitable and resilient.

Cost cutting is less of an option given the input rise environment that faces the industry. As mentioned above, all spend needs to have a 'clear line of sight' of contribution to saleable yield and therefore income for the business.

Similar to the previous year, other key areas that separate the top 25% from the rest and can be easily adopted are:

- **Market Access and relationships with buyers/customer**s – Assessing markets and determining which best suits your product, location, and timing of sales. Producers who have good relationships with their customers or buyers often have greater scope for negotiating pricing, which is vital in the current environment of rising costs;
- **Focus on a limited range of products** – Less is often more. Results showed that keeping the business simple and consistent correlates with higher profitability;
- **Business focus** – persistent inclination to look more deeply into their business, rather than being in the business, and challenge everything.

Further benchmark detailed data is available, including further six-year findings, at **buildingwahorticulture.com.au**

It is strongly recommended to all vegetable business owners to spend some time comparing the performance, spend and income of their own business against the available data to identify which cohort your own business is performing in.

The Building Horticulture Business Capacity project is funded by The Department of Primary Industries and Regional Development, Hort Innovation Frontiers Leadership Funds and Agricultural Produce Commission Pome and Vegetables sub committees.

FOR MORE INFORMATION

If you wish undertake a take a detailed analysis into your own business and access professional support, then please contact Bryn Edwards at vegetableswa or Paul Omodei at Planfarm.

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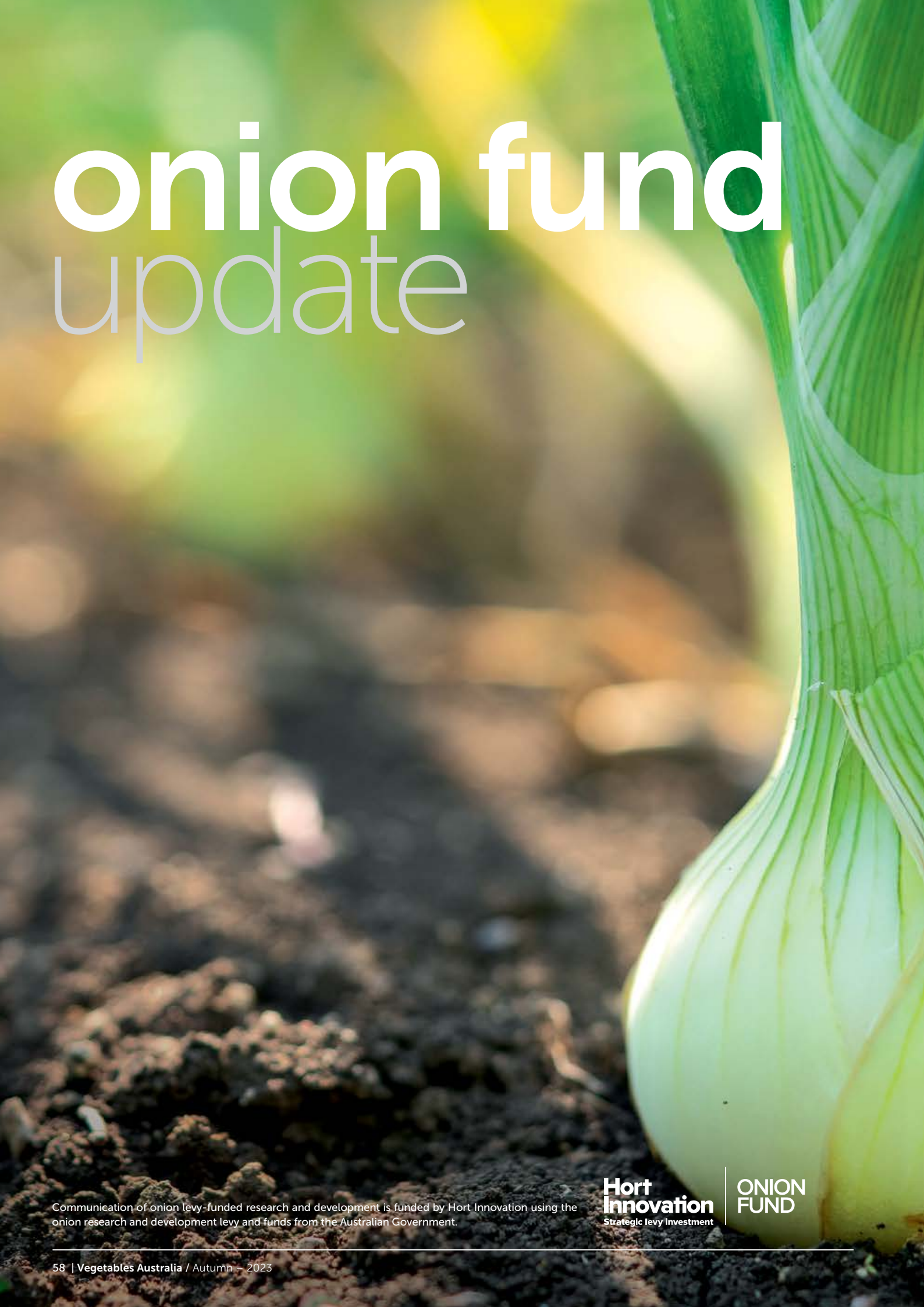
onion fund update



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

Hort Innovation
Strategic levy investment

ONION FUND

What to use in onion crops to combat herbicide resistance

The rate of herbicide resistance in weeds, particularly annual ryegrass has increased significantly in the past decade. For onion growers it poses a difficult proposition to know which herbicide will still be effective, and how to best use them.

Dr Peter Boutsalis, discusses herbicide resistance for onion growers. *Image courtesy Stephen Smith Agri MC Bendigo*

The *Onion Project webinar – Herbicide resistance in onion cropping systems* provides onion growers with useful knowledge and tactics to understand the issue and which herbicides are likely to be more effective.

Dr Peter Boutsalis from Plant Science Consulting has been involved in herbicide resistance research for more than 30 years. He currently works with the University of Adelaide to understand and identify herbicide resistance. Peter has a consulting firm that does commercial resistance testing for farmers, as well as conducting plot trials for companies wishing to trial new herbicides.

Grass weeds are more sensitive before they tiller and, in many cases, even if they are resistant, can be controlled at young stages but survive once they are tillering.

What is resistance?

Resistance is defined as 'the inherited ability of an individual plant to survive and reproduce seeds after exposure to a lethal dose of herbicide". It is not based on weed escapes from herbicide applications or species that are not controlled by that particular herbicide.

In Australia annual ryegrass has the most resistance along with winter grass (poa annual *Poa annua*) in golf courses (turf) displaying resistance to many mode of action herbicides – herbicides that kill in different ways. Wild oats, barley grass and brome grass also have multiple modes of action resistance. For broadleaf weeds, wild radish in Western Australia, flax-leaf fleabane and sowthistle are resistant to many different herbicides.

Most herbicides operate by binding to a specific enzyme encoded by genetic code. Binding usually inactivates that enzyme which can be fatal. Some gene mutations cause a change in the enzyme structure and if this structural change occurs at a site where a herbicide binds and reduced or no binding occurs the plant keeps on growing leading to herbicide resistance.

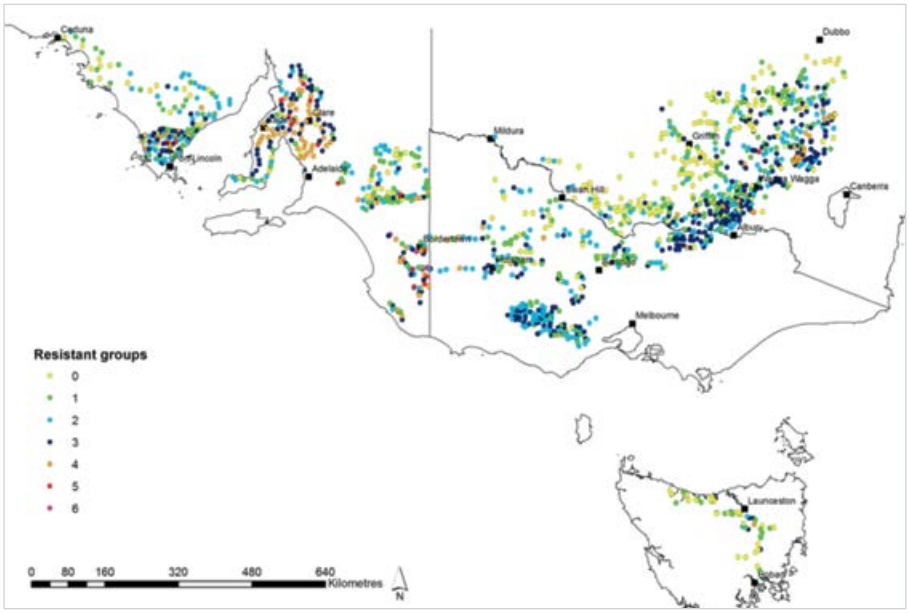
Annual ryegrass is the biggest challenge for onions, as it is resistant to most herbicides – some farmers are running out of options to control it. Dr Boutsalis says is it important to know your cropping history – if herbicide has been used extensively in previous years prior to planting onions, there is a high risk of a resistant variant, and recommends that a resistance test be conducted so you know what you are dealing with.

"Glyphosate has been used since the 1970s, but the first recorded resistance of herbicides in ryegrass occurred in an orchard in 1996," said Dr Boutsalis. "Since then, the rate of resistance has grown almost exponentially."

Research in southern Australia over a number of years has shown that there is a lot of resistance to the FOP group of herbicides eg Verdict or Targa, Fusilade. Resistance to Group D herbicides such as Stomp are more prevalent in South Australia while the Group A DIMs do not display a lot of resistance; and glyphosate is not as severe.

Multiple resistance in ryegrass to different mode of action herbicides

It is clear that some regions of southern Australia have greater resistance to different mode of action herbicides usually occurring in the higher rainfall areas. These areas as expected have higher ryegrass populations.



The yellow dots represent the number of herbicide groups that ryegrass is resistant to (zero); blue dots have 3 modes, while orange and red displayed 5 and 6 mode of action resistance. *Data courtesy of John Broster, Wagga Wagga*

Factors that increase herbicide resistance

- Repeated use of the same herbicide each year
- Rotating similar herbicides eg Targa, Fusilade, Clethodim (Group A) that target the same enzyme a specific enzyme
- Low rates, or reduced kill rate can fast track resistance
  - Poor application
  - Application under extreme temperatures
  - Stressed/large weeds – need a higher rate
  - Poor quality herbicides
  - Reduced efficacy eg adjuvants, poor water quality, frost.

Planning an onion crop

With limited options for weed control in onion crops, Dr Boutsalis says that a resistance test is essential to make the right plan ahead of planting. The process may take a few years to prepare the paddock to ensure that the resistant weeds have been addressed.

"Other options to eradicate resistant weeds is via mechanical control or using a herbicide that should work like glyphosate or paraquat. It may take a number of sprays to reduce the numbers of weeds – don't leave survivors as they are usually the ones that are resistant and will appear next season.

"In a recent pot trial ryegrass populations sprayed under optimum growing conditions at a young growth stage not only survived label rates of clethodim but rates several times greater even at 2 L/ha. To become so resistant, takes several generations where ryegrass that survives clethodim cross pollinates with other survivors stacking the resistance genes resulting in progressively higher levels of resistance."

Post-emergent herbicides for onions

Grass weed herbicides

"There are hundreds of herbicide products, but they only form a few actual herbicide chemicals eg for the herbicide clethodim, the most important herbicide used in onions to control ryegrass. There are over 100 registered products in Australia such as, Select XTRA, Havoc, Status etc. Use herbicides from reputable companies to ensure high quality products.

" In the broadleaf weed herbicide category, Group G eg Goal (Oxyfluorfen) is still effective in Australia, there is no known resistance. Group C have active ingredients such as ioxynil, linuron, methabenzthiazuron – these all act the same way. Control is pretty good with these herbicides."

Residual herbicides in onions

Using a residual herbicide for onion crops can be an effective tactic to use through the growing phases as they have multiple modes of action, targeting different genes and usually control multiple weed species. Residual (pre-emergent) herbicides include Group 3 (Stomp) which has pendimethalin or Group 15 herbicides ethofumesate (Matrix, Tramat). Consider at a minimum using a residual (pre-emergent) herbicide followed by a post-emergent herbicide introducing two tactics to target the same weed species to reduce weed numbers.

Webinar poll: are you seeing resistance in the field?
83% said yes and it was ryegrass.

Testing

Dr Boutsalis says that testing will give an indication of whether there is resistance present, but may suggest that another reason may exist as to why those plants survived. It is also possible to test for other herbicides to provide information of which are the most effective herbicides in that field. The process is to remove the weed from the field and send them to the testing lab. At the lab, the plants are trimmed, transplanted and when the recover, sprayed with herbicides at label rates. The symptoms are assessed and then reported. This takes about 4 weeks.

FIND OUT MORE

To watch the webinar in full go to: **soilwealth.com.au/resources/webinar-recordings/herbicide-resistance-in-onion-cropping-systems/**

This article was produced as part of the Hort Innovation funded project Accelerating the adoption of best management practices for the Australian onion industry (VN21000).

Hort Innovation Strategic levy investment | ONION FUND

ONION INDUSTRY CASE STUDY

Harvest Moon, Tasmania

Onions are in the top five vegetables grown in Australia, with South Australia and Tasmania the powerhouse growing regions. While growing conditions between the two states have their differences, there is a lot of commonalities for the industry.

Between them, Tasmania and South Australia account for more than 70% of the onions grown in Australia. For Tasmania it is principally brown and red onion varieties in the north and northwest of the state where the climate is predominately Mediterranean, with mild dry summers and cooler winters, on red volcanic soils.

Historically in the 1990s, onions were twice the volume of today, with a significant portion destined for export markets. A change from letters of credit, to price paid on landing, saw many in the industry pull out of exporting, not willing to take the higher risk.

Domestic markets make up almost 100% of the onions grown in Australia, with Tasmania producing upwards of 55-65 thousand tonnes a year. At least half is under contract to the major supermarkets, while independents, greengrocers and processors take the remainder with exports.

"Good, productive soil is a premium in Tasmania, so it is highly competitive amongst the growers and packers of onions, and with other crops such as process potatoes," said Mark Kable managing director of Harvest Moon. "You need to have good contracts in place to reduce your exposure and risk on the open market."

Onion consumption in Australia is at a mature stage, with growth in the industry remaining static. As a consequence, to grow a business, export markets are coming back into focus, especially into Asia. Australia's reputation for consistent, reliable product, says Mark, holds Australian growers in good stead to supply overseas markets.

Growing the right bulb for the right customer, means less wastage in the paddock, and a greater return-less risk for the grower.

Growing a Tassie onion

The amount of daylight hours and latitude defines which varieties of onions can be planted. For Tasmania's north west, the longer daylight hours means planting can be later in the season than the mainland. Typical planting windows are May and after the winter equinox, for harvest five months later, commencing in January to April.

The stable summer means that the majority of Tasmanian growers cure the onions in field windrows for 2-3 weeks to dry the skins and necks, before packing directly into crates or bulk bags. According to Mark, the major retailers are looking for the amount of skins on the onions, as well as graded by size. The skin provides additional protection during harvest and transport. Red onions however, require a little extra care in handling, as they are softer than the browns.

The size of the onion bulb is a function of the nutrients and water available. Irrigation is vital for most onion growers, and does occur in Tasmania during the warmer summer months. Harvest Moon would irrigate in the order of 40-50mm a week on the hotter days.

Nutrient inputs are based on N, P and K, as well as calcium and potassium nitrates. Mark said that to reduce the risk of neck rot, regular leaf analysis to check the levels of nitrogen is needed.

"Our contracts supply a range of bulb sizes – one export market requires them to be bigger, while the supermarkets are looking for medium sized bulbs. On the other hand, the pickling processors want smaller ones. The foodservice industry usually want onions that are sliced and diced. Growing the right bulb for the right customer, means less wastage in the paddock, and a greater return-less risk for the grower."

Bugs, weeds and biosecurity

The cooler temperatures of Tasmania, means that insect incursions are not a major threat to the local onion industry – however, onion thrip can be a problem.

The biggest threat to onions is weeds and disease. Onions are not competitive in the early growth stages, allowing weeds to take hold if they are unchecked. The top weeds to cause issue are resistant ryegrass, wireweed, burr chervil and cleavers. Resistance to herbicides has increased significantly in recent years, such that there are less effective options available to onion growers.

White rot is a major disease in Tasmania. A fungal disease, it is soil borne and reduces the yield of the Allium family by attacking the root system, resulting in foliage collapse. Downy mildew creates lesions on leaves and spread by wind-blown spores.

"As an island we have the advantage of isolation from mainland pests and diseases, but our downfall is that we all use the same contractors for planting and harvesting. If the equipment is not cleaned properly, or contractor footwear, pests and diseases get carried from one farm to the next. As a consequence we are seeing a build-up of new weeds in northwest Tasmania, that had not been there before."

Organisations such as Tasmanian Agricultural Productivity Group are working with farmers and contractors to educate on how weed seeds, pests and diseases are carried and methods to reduce the spread.

Hort Innovation Strategic levy investment | ONION FUND

Supply, demand and staying ahead

The onion market worldwide is described by Mark as 'a bit of rollercoaster' in that two years ago the onion price slumped, while currently onions are attracting far greater prices.

Input costs such as urea and labour play a significant part in the production of onions, however making the most of technology improvements can make for a more efficient business model.

"There have been terrific advancements in agtech for onions in the past few years for irrigation, spraying, soil and leaf analysis, as well as harvest and packing equipment," said Mark.

"There have been a lot of smaller growers that have become contract growers, or got out altogether, which is a shame. If you want your business to grow, you have to invest in the business and back yourself and stay in the game with a sustainable business.

"Tasmania is a great place to grow onions, with our mild, stable summer and rich soils which means we can grow consistently reliable produce to meet our contracts, as well as look to expanding into export markets."

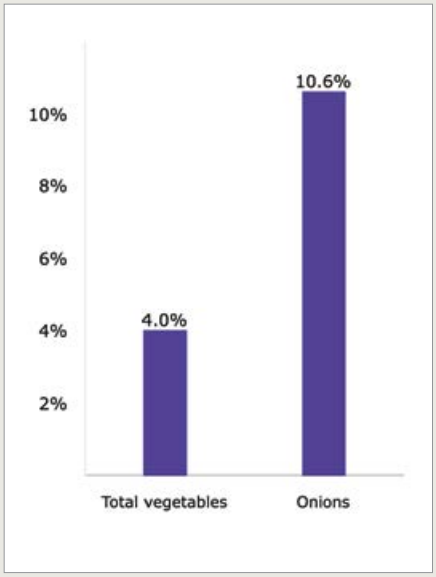
What Households Want
Harvest to Home Insight into Onions

The most recent data for What Households Want under the Harvest to Home project MT21004 delivered by NielsenIQ.

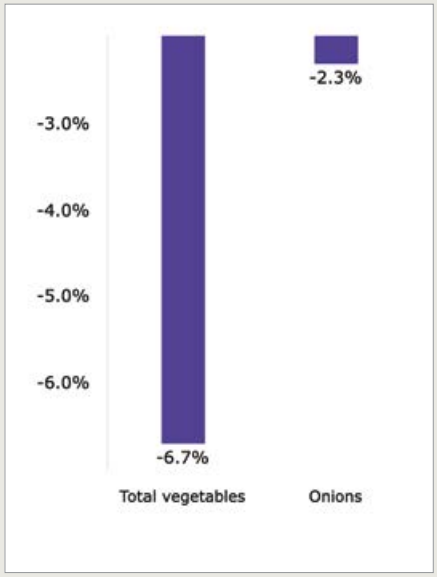
In the year ending January 2023, onions have decreased in monetary terms but decreased in volume outputs. The number of households buying onions remained relatively steady but the amount of onions purchased fell slightly.

Market Overview

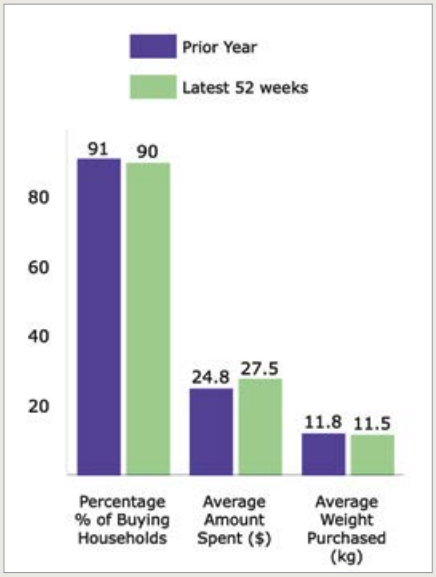
DOLLAR SALES ($)
GROWTH VERSUS TOTAL VEGETABLES



VOLUME (KG)
VERSUS TOTAL VEGETABLES



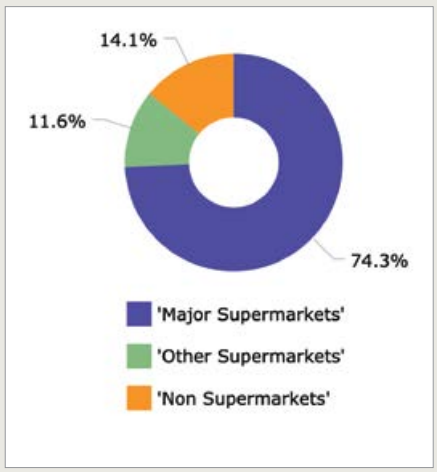
HOUSEHOLD BUYING BEHAVIOUR



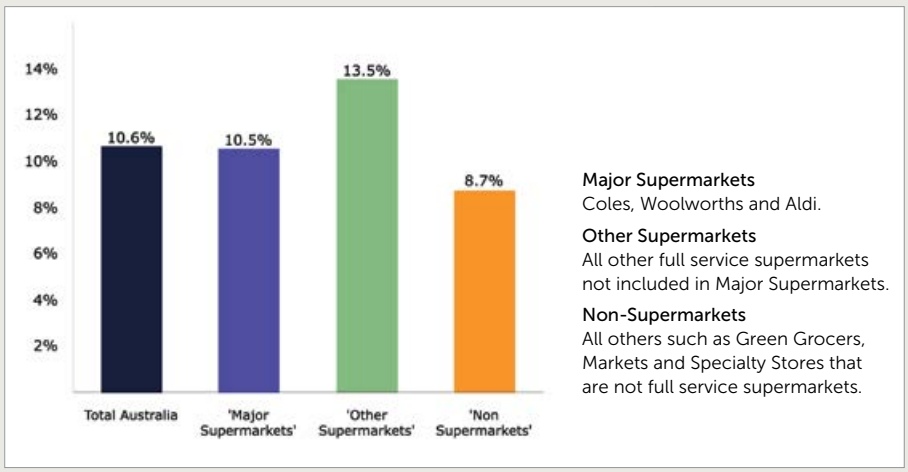
Retail Overview

The big major supermarkets still hold market share for retail onion sales, commanding 74%, however 'other supermarkets' (independents) are making ground with market growth of 13.5% compared to the major supermarkets growing at 10.5%. Grocers and markets have shown modest growth at 8.7%.

RETAILER DOLLAR ($) SHARE OF TRADE



RETAILER DOLLAR ($) GROWTH

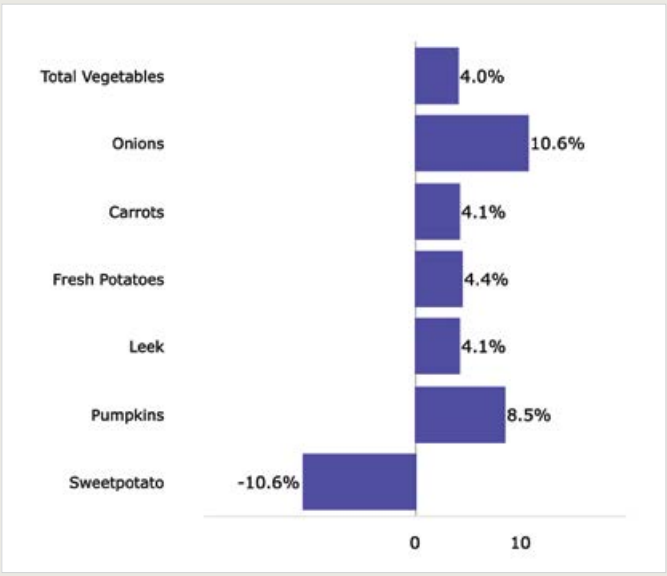


Source. NielsenIQ Homescan for the 52 weeks ending 01/01/2023 for the Australian market.
See harvesttohome.net.au/vegetables/latest-highlights/onions

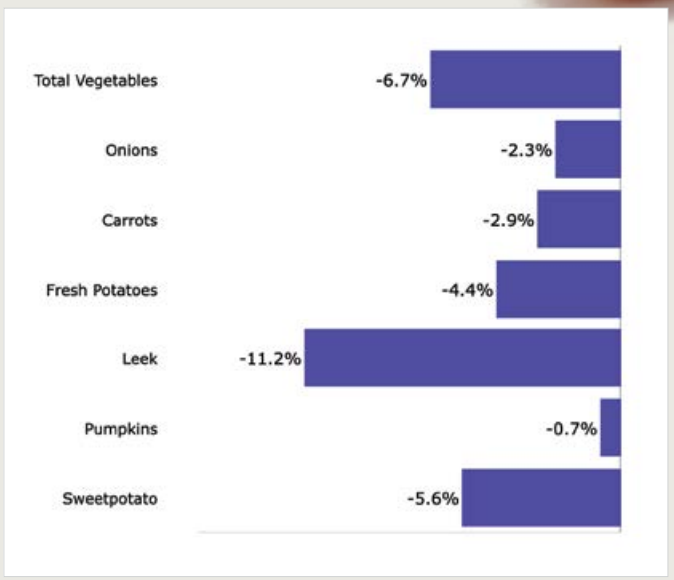
Who is growing what?

By volume and sales growth, South Australia shows the strongest growth with 3% and 21.3% respectively as producers. Western Australia follows with 2.1% volume growth (kg), while Victoria is lagging behind at -10.9%. Queensland shows the second highest growth ($) at 16.3%.

$ SALES % CHANGE THIS YEAR VS. PRIOR YEAR



KG % CHANGE THIS YEAR VS. PRIOR YEAR



Source. NielsenIQ Homescan for the 52 weeks ending 01/01/2023 for the Australian market.*©2023 Nielsen Consumer LLC.*
See harvesttohome.net.au/vegetables/market-overview/onions

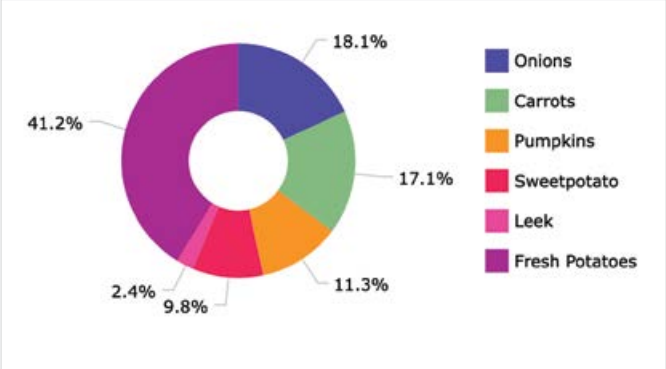
Year by year

In comparison for the same period in the previous year, onions have shown the greatest $ sales increase compared to all vegetable categories at 10.6%, with pumpkin exhibiting strong growth at 8.5%. In terms of volume (kg), onions have declined (-2.3%) – compared to leeks which have slumped in volume (kg) at -11.2%

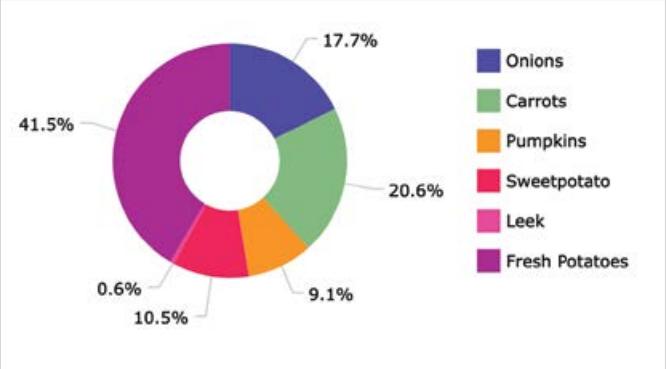
Sales volumes compared to other vegetables

Compared to carrots, pumpkins, sweetpotato and leeks, fresh potatoes and onions make up the lion's share of sales ($) at 59.3% of which onion constitute 18.1%. Based on volume (kg), fresh potatoes and onions continue to hold sway with 59.2%, with onions at 17.7%.

DOLLAR SALES SHARE OF COMPETITOR VEGETABLES



VOLUME (KG) SHARE OF COMPETITOR VEGETABLES



Source. NielsenIQ Homescan for the 52 weeks ending 01/01/2023 for the Australian market.*©2023 Nielsen Consumer LLC.*
See harvesttohome.net.au/vegetables/what-households-think/ratings/onions

FIND OUT MORE

The reports are outputs of **Consumer Behavioural Retail Data Program** (MT21004) and intended for use by Hort Innovation, Australian horticulture industries, and other stakeholders in the context of understanding and diagnosing market performance and shopper behaviour.

This project has been funded by Hort Innovation, using the Australian Horticulture research and development levies, and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

Hort Innovation Strategic levy investment | ONION FUND

But do shoppers see value in onions?

On a rating of 0 to 10, shoppers were asked to rate vegetables on attributes such as value for money, quality, varieties and whether they were price aware.

Overall, onions had an overall rating of 8.1, comparable to leek. Carrots and cauliflower rated 8.0; while pumpkin and sweetpotato ranked 8.2 and 8.3 respectively.

Onions ranked highly on value for money and portion size (9.0) while quality and freshness came in at 8.9. The question on Australian owned gave a rating of 8.4 – consistent with most vegetables in the study.

In terms of price awareness, 46% of shoppers were aware when the price of onions changed – 34% were not aware/or notice the price. The willingness to pay the normal price was 45%, while 23% of respondents said they would pay 'whatever it costs'; only 8% would buy if onions were at a reduced price.

Registrations are now open

HORT CONNECTIONS

5-7 June 2023
Adelaide Convention Centre

Knowledge for growth

INTERNATIONAL FRESH PRODUCE ASSOCIATION

AUSVEG

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

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

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

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

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

EARLY BIRD

All-Access Passes are again on offer

What's included:

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

FIND OUT MORE

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

Onions for health and nutrition research update

"Beneath the layers of the humble onion lie many nutrition benefits. From folate and Vitamin C to prebiotic fibre and powerful polyphenol antioxidants, onions have positive health benefits for gut and heart health, diabetes, weight management, cancer and even bone health. This report uncovers the latest research into the powerful health benefits of enjoying red, white and brown onions every day for all Australians". TERI LICHTENSTEIN, ACCREDITED PRACTISING DIETITIAN.

Two progress updates have now been delivered for VN2002 Australian onions nutrition literature review, which is a strategic levy investment under the Hort Innovation Onion Fund, to summarise the latest research on onion nutrition and health. The project provides information for health professionals and foodservice to better understand the use of onions for health and suggestions to make the most of those health benefits in meals.

Within the project, a digital hub has been delivered to host the information, as well as ongoing communication and resources, including:

- Onions for weight loss patient resource;
- Healthy 7-day meal plans incorporating onions;
- Onions for food service including simple ways to eat onions;
- Health and nutrition resources.

To see the full range of information visit: **australianonions.com.au/food-service.**

Latest Research Updates

The link between dietary intake of flavonols and cognitive performance

During a seven year span, 961 people between the age of 60 and 100 years old, were assessed annually for cognitive performance and their flavonol intake. The research showed that a higher dietary intake of total flavonols and flavonol constituents was associated with a slower rate of cognitive decline.

The mechanisms on how this occur are not fully understood, but appears to have the ability to diminish or even prevent cellular damage, extending to the brain. The study findings suggest that dietary intake of flavonols and constituents may slow cognitive functions including episodic memory, semantic memory, visuospatial ability, perceptual speed and working memory.

- Flavonoids are a large class of bioactive polyphenolic compounds found in plants, with substantial amounts found in fruits and vegetables, and especially in onions;
- Foods that are high in flavonols and flavonol constituents (specifically quercetin in onions, as well as myricetin, kaempferol and isorhamnetin) may help reduce the effects of cognitive decline in an ageing population;
- Flavonols are a powerful type of antioxidant.

How cooking methods can influence the beneficial phenolic compounds we get from onions

The choice of cooking onions can affect how much the body absorbs the beneficial phenolic compounds into our blood stream.

Phenolic compounds are readily absorbed through the intestinal walls; the health benefits are linked to antioxidant, anti-inflammatory, antimicrobial activities amongst others.

The take advantage of the health benefits, the phenolic compounds need to be readily extracted by the body – different cooking methods can have an effect on that availability.

The study used four common cooking methods – baking, boiling, frying and grilling on yellow skinned and red-skinned onions. Of all the cooking methods, baking produced the greater number of phenolic compounds available for digestion, followed by grilling compared to raw onions.

Onions are a treasure trove of bioactive phytochemicals with many prospective health benefits.

A review of health benefits of onions from a pharmacological perspective that included anti-cancer, anti-diabetic, antioxidant, anti-depressant and more. As part of a healthy diet, the review highlighted:

- **Anti-microbial effect:** Onions are effective in the treatment of various infectious diseases, and many fungi, bacteria and viruses have been found to be vulnerable to components of *Allium cepa* (onions);
- **Cardiovascular diseases:** Onions contain flavonoids which are used for the treatment and prevention of heartburn and cardiovascular diseases. Quercetin, in particular, reduces blood pressure in hypertensive subjects, activates platelets and has shown some cardiovascular benefits;
- **Cancer benefits:** Studies suggest that onions have anticancer and similar biological properties, which are thought to be due to the presence of different organosulfur derivatives, flavonoids, polyphenols, quercetin and glycosides;
- **Diabetes management:** There are many new studies being investigated to determine the antidiabetic properties of onions. One experiment, involving diabetic rats, showed the aqueous extract of onions reduced blood glucose level in the same manner as that of a conventional antidiabetic drug;
- **Bone disorders:** Onions have been used to increase bone resorption activity (osteopenia) and bone density, and treat osteoclastogenesis and osteoporosis.

Extra virgin olive oil enhances polyphenol and carotenoid extractability: A study applying the sofrito technique.

The sofrito technique is common in a Mediterranean diet and is based on lightly frying onion and garlic in olive oil. Cooking with olive oil increases the bioavailability of carotenoid (Z-isomers) and phenolic compounds. The amount of absorption differs from person to person, but is enriched by the presence of the onions in the sofrito preparation.

Typical dishes that use sofrito as the foundation include:

- Rice dishes such as paella;
- Sauteed vegetables;
- Soup, stews and stocks.

Anti-diabetic potential of onions: *A review*

The extract of the onion bulb has been found to be strongly associated with helping lower high blood glucose (sugar) and managing diabetes and reducing complications.

The flavonoids in onion have been shown to increase insulin secretion by releasing the hormone release from pancreatic cells, leading to an uptake of glucose.

A review of several studies reported that the onion bulk lowers blood glucose levels by facility glycogen storage.

Effects of storage, food processing and novel extraction technologies on onions flavonoid content: *A review*

To maximise the flavonoid content of onions, research reviews found that onions stored at room temperature is preferable to cold storage; freezing onion portions minimises waste and helps to preserve the flavonoid content, and that freeze-fried onions can be stored for up to six months in airtight containers with no significant loss of flavonoid quality.

What's it all about?

Onion nutrition education program for health professionals and the food service industry (VN20002). This investment is delivering evidence-based information about the health benefits of Australian onions to health and food service professionals in Australia.

FIND OUT MORE

This project is a strategic levy investment in the Hort Innovation Onion Fund and an extension of two projects - **Australian onions nutrition literature review (VN18002)** and the **Onions food service farm tour and education pilot (VN18000).**

Hort Innovation Strategic levy investment | ONION FUND

Onion Levy Update

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

What is the onion levy?

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

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

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

How are levy investment decisions made?

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

What is the onion Strategic Investment Plan (SIP)?

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

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

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

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

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

What is the onion Annual Investment Plan?

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

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

The AIP provides detailed information on:

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

Where do investment ideas come from?

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

How are investments prioritised?

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

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

Hort Innovation sends alerts about project updates to its members.

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

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

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

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

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

How are investments progressed?

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

How to keep track of investments

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

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

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

FIND OUT MORE

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

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

Hort Innovation Strategic levy investment | ONION FUND

NOW AVAILABLE

Latest onion industry statistics

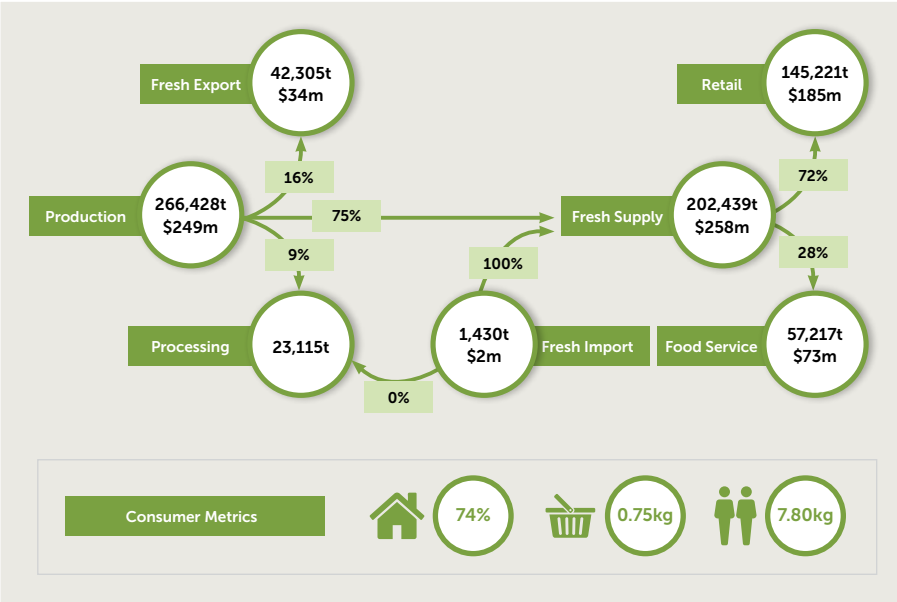
Hort Innovation works with industry to invest the onion levy and Australian Government contributions into initiatives to help growers be as productive and profitable as possible, through the Hort Innovation Onion Fund.

The *Australian Horticulture Statistics Handbook* (Hort Stats) is the leading resource for Australian horticulture statistics and market information. It is an analysis that combines all available data on production, international trade, processing volumes and fresh market distribution to produce statistics on more than 70 horticultural categories.

The latest edition of the Handbook was released in February 2023, unpacking the onion sector's performance during the financial year of 2021/22.

Fresh Onions Supply Chain Overview

Year ending June 2022



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

Fresh Onions

Year ending June	2021	2022	▲%
Production (t)	271,383	266,429	-2%
Production ($m)	$202.7	$248.7	+23%
Fresh Export (t)	44,873	42,305	-6%
Fresh Export ($m)	$30.4	$33.9	+11%
Fresh Supply (t)	206,538	202,439	-2%
Fresh Supply Wholesale Value ($m)	$209.6	$258.0	+23%
Supply per capita (kg)	8.02	7.8	-3%

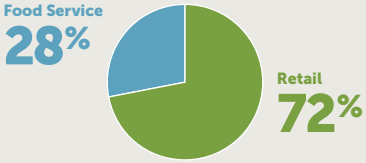
Source. Onions Australia

Total production

$248.7M

266,429t produced and valued at **$248.7M** with **9%** sent to be processed.

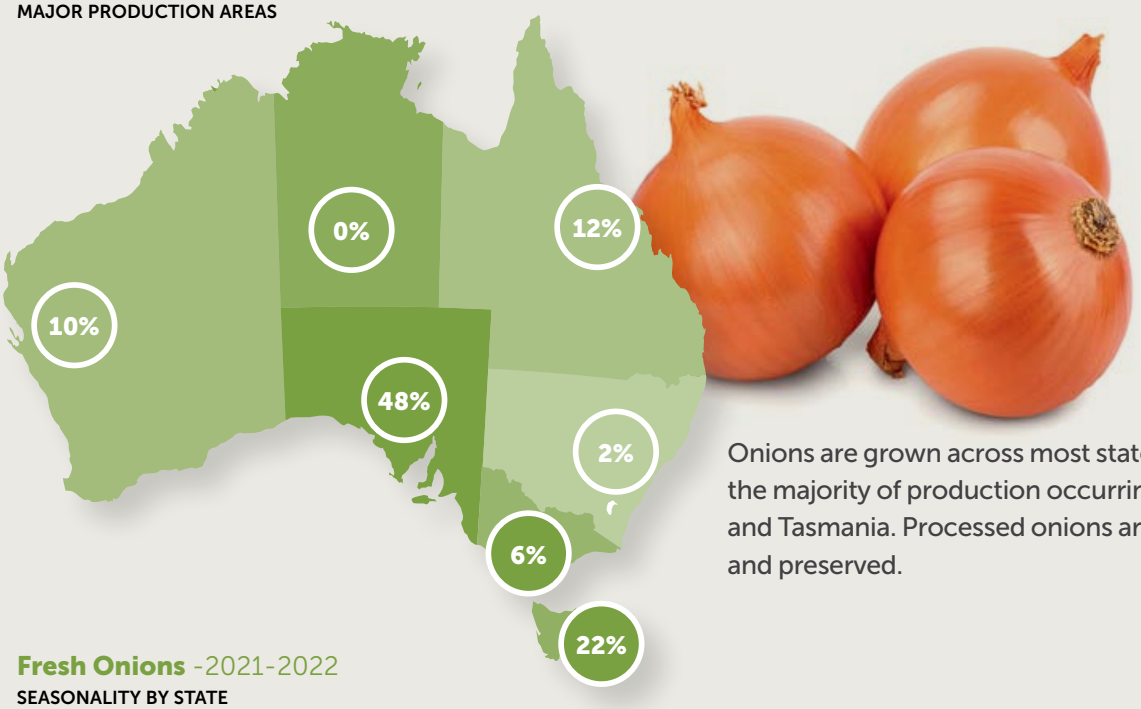
Retail vs food service



The wholesale value of the fresh supply was **$258.0M**, with **$185.1M** distributed into retail and **$72.9M** into food service.

Fresh Onions

MAJOR PRODUCTION AREAS



Onions are grown across most states of Australia, with the majority of production occurring in South Australia and Tasmania. Processed onions are typically dried and preserved.

Fresh Onions -2021-2022

SEASONALITY BY STATE

State	Volume Tonne	Value ($)	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	Jun
NSW	5,456	$5m												
VIC	16,674	$16m												
QLD	32,616	$30m												
WA	25,500	$24m												
SA	126,841	$118m												
TAS	59,341	$55m												

Availability legend: High, Medium, Low, None

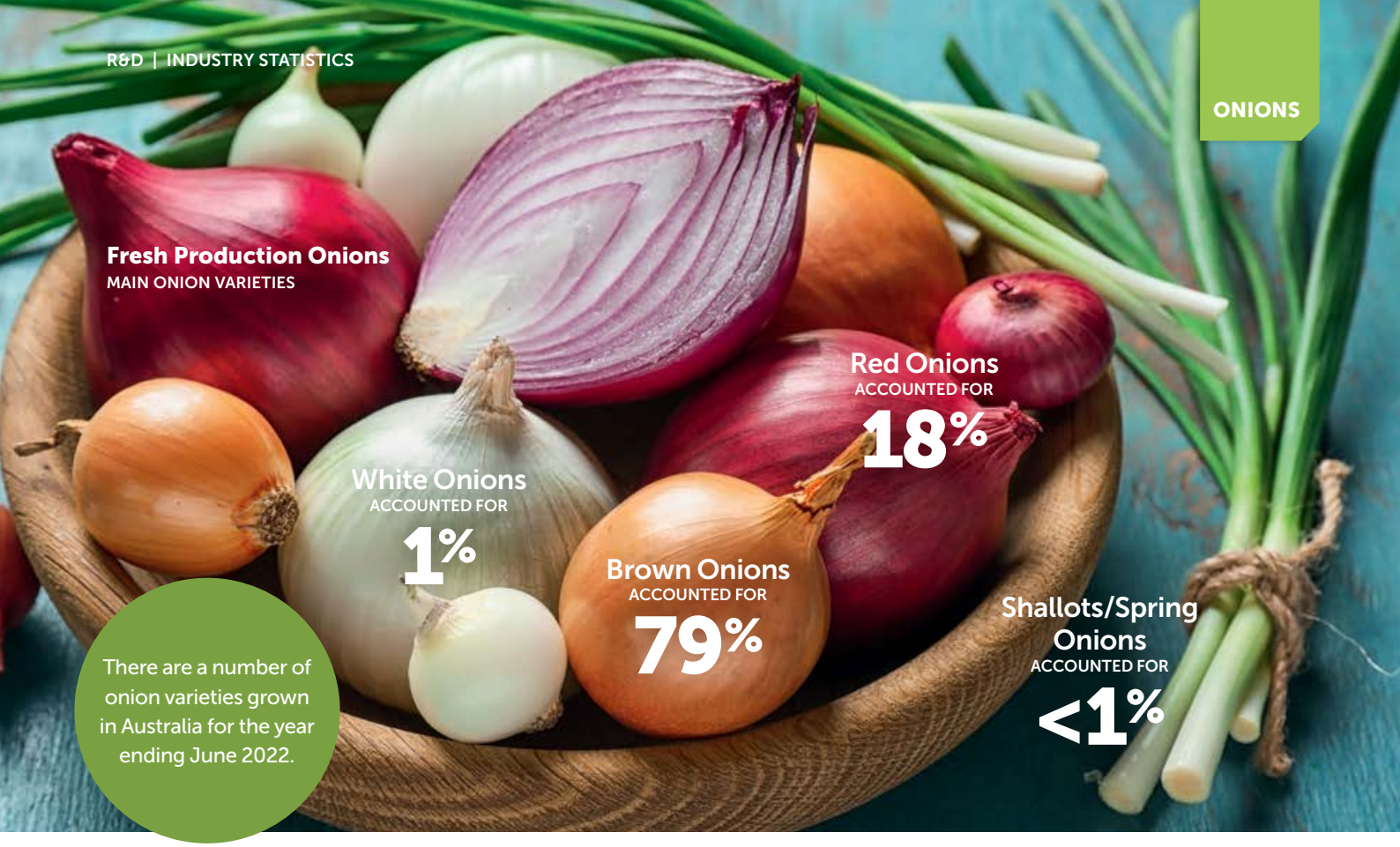
Onions -2021-2022

SEASONALITY BY VARIETY

Variety	Volume Tonne	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	Jun
Brown	200,596												
Red	48,498												
White	2,419												
Shallot/ Spring	1,218												

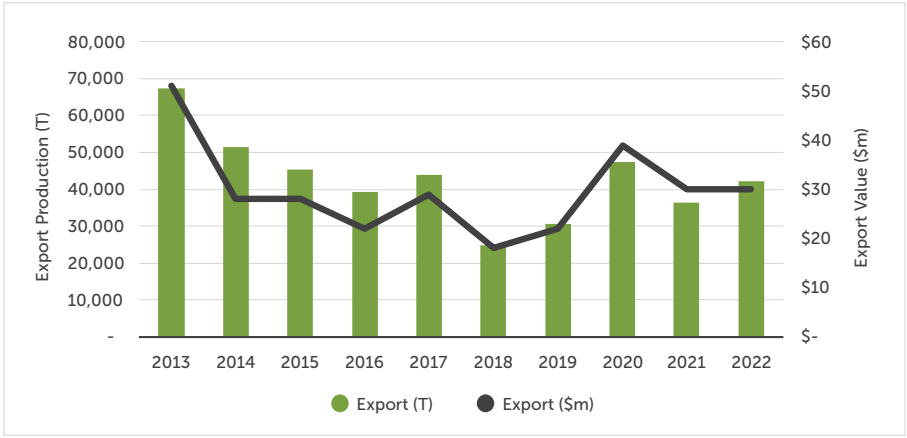
Availability legend: High, Medium, Low, None

Source. Onions Australia



Onion Ten year trends

ONION EXPORT VOLUME AND VALUE 2013-2022



ONION PRODUCTION VOLUME AND VALUE 2013-2022

Source. Hort Stats

FIND OUT MORE

To access Hort Innovation's Australian Horticulture Statistics Handbook, please visit **horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/australian-horticulture-statistics-handbook/**

The Handbook's interactive dashboard is suitable for viewing on desktop computers and mobile phones.

Australian Horticulture Statistics Handbook 2021-22 to 2023-24 is a whole-of-horticulture project that has been funded by Hort Innovation using industry levies and contributions from the Australian Government.

Project Number: **MT21006**

Hort Innovation

Current investments
Hort Innovation Onion Fund

Generation of data for pesticide applications in horticulture crops (ST18001)

KEY RESEARCH PROVIDER: PERACTO

What's it all about?

The generation of pesticide residue, efficacy and crop safety data is required to support label registration and minor use permit applications and renewals made to the Australian Pesticides and Veterinary Medicines Authority (APVMA) which, when approved, provide access to safe and effective chemicals for the management of pests, weeds and diseases.

In 2019, Hort Innovation secured more than $900,000 in assistance grants under the Australian Government's Access to Industry Uses of Agricultural and Veterinary (Agvet) Chemicals program. Under ST18001, this funding is being used, along with levy contributions, to generate the data required for a range of product registrations across a variety of horticulture crops. See the specific work for each industry below:

Onions

For the onion industry, the project is producing the data required to support a Syngenta prosulfocarb + S-metalachlor herbicide label registration for the control of annual ryegrass.

Vegetables

For the vegetable industry, the project is producing the data required to support a Bayer spiromesifen (Oberon 240 SC) label registration for the control of mites in spinach and silverbeet. Specific mites targeted by the product include two-spotted mite, tomato russet mite, European red mite and rust mite.

Onion industry minor use program (VN16000)

KEY RESEARCH PROVIDER: HORT INNOVATION

What's it all about?

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

For more information on minor use permits, and to see a list of all permits for the onion industry. The permit list is updated on a quarterly basis.

All current minor use permits for the industry are searchable at **portal.apvma.gov.au/permits.** Permit updates are also circulated in Hort Innovation's Growing Innovation e-newsletter, which levy-paying members receive monthly.

National Bee Pest Surveillance Program: Transition program (MT21008)

KEY RESEARCH PROVIDER: PLANT HEALTH AUSTRALIA

What's it all about?

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

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

Several levy industries are contributors to the work, and the program is part of the Hort Frontiers Pollination Fund.

Hort Frontiers is Hort Innovation's strategic partnership initiative, with more information available at **hortfrontiers.com.au**

Management strategy for serpentine leafminer, Liriomyza huidobrensis (MT20005)

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

What's it all about?

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

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

Areas of work include:

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

Regulatory support and coordination (pesticides) (MT20007)

KEY RESEARCH PROVIDER: AKC CONSULTING

What's it all about?

This project provides the Australian horticulture industry with key information regarding domestic and international pesticide regulation. A component of this is the production of Ag Chemical Updates, which provide information on any developments in regulatory oversight of relevant chemicals. It is an opportunity for

industry to consider and develop responses to issues arising from actions proposed that may impact on grower ability to access and use needed pesticides.

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

For more information

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

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

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

Download the September 2022 agrichemical regulatory risk assessments for Onion.

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

KEY RESEARCH PROVIDER: ARVENSIS

What's it all about?

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

The research will incorporate:

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

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

Project update: July 2022

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

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

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

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

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

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

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

KEY RESEARCH PROVIDER: THE UNIVERSITY OF ADELAIDE

What's it all about?

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

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

Onion nutrition education program for health professionals and the food service industry (VN20002)

KEY RESEARCH PROVIDER: BITE COMMUNICATIONS

What's it all about?

This investment is delivering evidence-based information about the health benefits of Australian onions to health and food service professionals in Australia.

On average, Australian adults consume just three grams of onion per day. In contrast, consumers in the United States and Europe consume twice as many onions as Australians. In order to close this gap, initiatives to educate health professionals and the food service

industry are key as they are significant influencers of consumer food behaviour.

This project will extend previous research conducted by levy-funded project **Australian onions nutrition literature review (VN18002)** and the **Onions food service farm tour and education pilot (VN18000)** by communicating the nutritional benefits of onions to health professionals, food service professionals and industry stakeholders.

Consumer behavioural data program (MT21004)

KEY RESEARCH PROVIDER: NIELSEN

What's it all about?

This multi-industry investment is tasked with providing regular consumer behaviour data and insight reporting to a range of industries, through the Harvest to Home platform **harvesttohome.net.au**.

The platform has a dedicated dashboard for each commodity, making data and reporting easily accessible for industry participants.

The information is intended to assist growers and supply chain partners in decision-making for their businesses and, for the wider industry, the data and insights will be available to support strategic activities.

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

KEY RESEARCH PROVIDER: AUSVEG

What's it all about?

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

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

The export program comprises the following activities:

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

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

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

KEY RESEARCH PROVIDER: AUSVEG

What's it all about?

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

VegNET is a nationally-coordinated, regionally-delivered extension program that increases the industry's awareness of and engagement with best practices

in high-priority areas. The program has regional development officers (RDOs) in ten key vegetable-growing regions around Australia.

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

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

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

FOR MORE INFORMATION

Sign up for communications from AUSVEG at: **ausveg.com.au/news-media/subscribe-to-ausveg** or get in touch with the AUSVEG National Manager – Extension and Engagement at **zarmeen.hassan@ausveg.com.au**

Gulfood 2023 the Middle East's largest food exhibition

In February 2023, AUSVEG led a trade mission delegation to attend and exhibit at Gulfood – the world's largest food exhibition, held from 20 - 24 February 2023. Gulfood welcomed 90,000 trade professionals and visitors from across the globe and more than 5,000 companies from over 125 countries exhibiting in the MENA region.

The Middle Eastern region is an important trading partner for the Australian vegetable and onion industries, with the United Arab Emirates being the second largest destination for Australian vegetable and onion exports. Australian vegetable and onion industries exported $32.7 million at 33,392 tonnes of fresh vegetables to the United Arab Emirates annually.

AUSVEG had a 64sqm space at Gulfood, with the stand located at the World Food Sector within the Australia pavilion and located next to the Austrade stand. The AUSVEG stand incorporated Australia's national brand as well as providing a centralised space for fruit and vegetable growers to meet with international buyers and businesses from across the MENA region. There were five vegetable and onion levy-paying growers that participated in this trade mission.

The delegation visited Bustanica - Emirates CropOne, the world's largest vertical farm as the first stop of the market insights tour. It is a joint venture between Emirates Flight Catering Group and CropOne, with the main objective to reduce the United Arab Emirates' reliance on fresh produce imports and to reduce the amount of water required to grow produce by 95% by creating the optimal growing environment of theses plants all year around.

L-R. Michael Coote (AUSVEG), Sharooq Khajotia (Austrade), Bill Bulmer (AUSVEG Chair), Pennie Patane (Patane Produce), Jen and Steve Moffatt (Moffatt Fresh Produce), Ian Halliday (Australian Consulate-General Dubai), Kees Versteeg (Qualipac), Emily Wood (Austrade), Doug Smith (DJS Fresh).

Bustanica produces leafy greens with less water

The 31,000m² Bustanica - Emirates CropOne farm is equivalent to farmland that is two times the area of Dubai International Airport. It has the capacity to produce over 900 tonnes of leafy greens annually. The vertical farm uses advanced technology from Crop One's best-in-class technology to grow more with less land and less water than a conventional farm. The farm reuses and recycles every drop of water used to grow the produce to ensure zero waste. The technology and set up allows all produce to remain untouched from seed to harvest, providing the consumer with the safest, freshest, most hygienic, and most delicious produce.

Following the visit to Bustanica-Emirates CropOne, the delegation visited a range of retail stores in Dubai as part of a market insights tour to further understand the local supply chain and product offerings in the market.

The overall trade show exhibition and market sentiment were buoyant with interest continuing to be shown for Australian fresh fruits and vegetables, especially on carrots and potatoes.

Above. AUSVEG stand at Gulfood 2023.
Left. Retail outlet in Dubai. *Photos courtesy Lin Shu Ting.*

Below L-R. Bustanica showcasing vertical farming for leafy greens. Fresh, safe, delicious leafy greens at Bustanica. Leafy greens grown in vertical farming for less land and water.

FIND OUT MORE

Please contact Andrea Lin, International Trade Specialist, AUSVEG **andrea.lin@ausveg.com.au**. P. +61 3 9882 0277, M. 0420 236 211

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

Project Number: **MT21009**

Hort Innovation Strategic levy investment | VEGETABLE FUND

Hort Innovation Strategic levy investment | ONION FUND

Hort Innovation Strategic levy investment | MELON FUND

The next Gulfood will be held from 19-23 February 2024 at Dubai World Trade Centre.

International Trade – Onion Fund

Australian onion exports performance overview Jan to Dec 2022

TABLE 1. CHANGE IN ONION EXPORTS BY DESTINATIONS JANUARY TO DECEMBER 2021- 2022

Trade Partner	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total Fresh Onion Exports	**$33,460,527**	**49,552**	**$29,729,874**	**33,934**	**-11%**	**-32%**
Thailand	$7,981,653	13,154	$7,396,794	11,337	-7%	-14%
Taiwan	$4,715,962	7,884	$5,128,199	4,949	9%	-37%
Japan	$747,718	664	$4,133,803	3,334	453%	402%
Spain	$1,109,189	1,477	$1,610,768	1,999	45%	35%
United Arab Emirates	$1,789,164	2,157	$1,283,193	1,349	-28%	-37%
France	$1,606,273	2,245	$1,137,371	1,348	-29%	-40%
Italy	$2,385,503	2,630	$1,109,928	925	-53%	-65%
Indonesia	$661,704	664	$993,841	744	50%	12%
Singapore	$1,433,400	2,019	$954,946	1,354	-33%	-33%
Netherlands	$1,948,755	2,955	$912,908	1,239	-53%	-58%

Based on data from the Global Trade Atlas, there was a 11 percent decrease in export value, from $33.4 million to $29.7 million and total export volume dropped by 32 per cent from 49,552 tonnes to 33,934 tonnes. The top four markets for fresh onion exports were Thailand, Taiwan, Japan, and Spain.

Thailand remained the top Australian fresh onion export destination, with a decline of 7 percent in export value from AUD$7.9 million to AUD$7.4 million, and a decrease of 14 percent in export volume, from 13,154 tonnes to 11,337 tonnes. Taiwan has recorded a 9 percent increase in export value from AUD$4.7 million to AUD$5.1 million and declined in volume by 37 per cent. Onion exports to Japan has a significant growth of 453 per cent, from $747,718 to $4.1 million, and increased in volume by 402 per cent, from 664 tonnes to 3,334 tonnes. Spain has also recorded a strong growth of 45 per cent in value and 35 per cent in volume.

Onion Exports to Japan

Based on Global Trade Atlas, the Australian fresh onion exports to Japan have been recorded from February 2022 to August 2022.

TABLE 2. FRESH ONION EXPORTS TO JAPAN BY MONTH JANUARY TO DECEMBER 2022

FEB 2022		MAR 2022		APR 2022		MAY 2022		JUN 2022		JUL 2022		AUG 2022	
AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
$221,946	160	$951,101	708	$939,687	810	$1,200,148	1,095	$492,112	445	$231,434	85	$97,375	30

Onion Exports to Indonesia

Based on Global Trade Atlas, the Australian fresh onion exports to Indonesia have been recorded from February 2022 to August 2022.

TABLE 3. FRESH ONION EXPORTS TO INDONESIA BY MONTH JANUARY TO DECEMBER 2022

FEB 2022		MAR 2022		APR 2022		MAY 2022		JUN 2022		JUL 2022		AUG 2022	
AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
$47,208	54			$54,132	78	$223,470	312	$186,758	260	$167,388	260	$275,990	390

Onion Exports to Spain

Based on Global Trade Atlas, the Australian fresh onion exports to Spain have been recorded from February 2022 to May 2022.

TABLE 4. FRESH ONION EXPORTS TO SPAIN BY MONTH JANUARY TO DECEMBER 2022

FEB 2022		MAR 2022		APR 2022		MAY 2022	
AUD$	TONNES	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
$461,536	648	$1,098,232	1,276	$34,000	49	$17,000	26

International Trade – Vegetable Fund

Australian vegetable exports performance overview Jan to Dec 2022

TABLE 1. CHANGE IN VEGETABLE EXPORTS BY DESTINATIONS JANUARY TO DECEMBER 2021- 2022

Trade Partner	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Total Fresh Vegetable Exports	**$250,303,308**	**221,675**	**$235,377,494**	**190,740**	**-6%**	**-14%**
Singapore	$48,535,891	27,493	$42,130,029	22,975	-13%	-16%
United Arab Emirates	$32,072,117	34,634	$32,717,628	33,392	2%	-4%
Malaysia	$29,057,227	29,092	$23,031,131	20,208	-21%	-31%
Thailand	$14,948,269	19,118	$18,298,466	17,388	22%	-9%
Korea, South	$12,294,061	16,973	$16,512,819	19,712	34%	16%
Hong Kong	$18,984,376	8,465	$16,223,290	7,205	-15%	-15%
Saudi Arabia	$16,574,589	18,774	$13,896,998	14,630	-16%	-22%
Taiwan	$9,162,121	10,734	$10,352,258	7,905	13%	-26%
Japan	$7,938,657	2,714	$8,858,454	4,786	12%	76%
Qatar	$8,774,982	9,039	$8,178,295	8,454	-7%	-6%

Based on data from the Global Trade Atlas, there was a 6 percent decrease in export value, from $250 million to $235 million and total export volume dropped by 14 percent from 221,675 tonnes to 190,740 tonnes. Singapore, United Arab Emirates, Malaysia, and Thailand remained as the top four markets for fresh vegetable exports.

In 2022, Singapore was the top Australian fresh vegetable export destination by value, despite a decline in export value by 13 percent, from AUD$49 million to AUD$42 million and a decrease in export volume by 16 percent, from 27,493 tonnes to 22,975 tonnes. The United Arab Emirates was the top export destination by volume, recording a slight increase of 2 percent in export value, from AUD$32 million to $32.7 million, with a decline of export volume by 4 percent, from 34,634 tonnes to 33,392 tonnes. Australian fresh vegetable exports to Malaysia contracted by 21 percent in value and decline by 31 percent in volume (refer to Table 1).

Vegetable exports by crop highlights

TABLE 2. CHANGE IN VEGETABLE EXPORTS BY CROP FROM JANUARY TO DECEMBER 2021-2022

Crop	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Carrots	$91,287,607	103,045	$89,283,499	93,453	-2%	-9%
Potatoes	$40,392,764	47,781	$41,009,661	46,754	2%	-2%
Onions	$33,460,527	49,552	$29,729,874	33,934	-11%	-32%
Cauliflowers & Broccoli	$15,171,676	3,167	$11,844,827	2,010	-22%	-37%
Asparagus	$9,970,168	1,183	$10,737,665	1,026	8%	-13%
Lettuce	$8,738,453	1,261	$7,825,567	1,113	-10%	-12%
Celery	$8,495,970	4,695	$7,137,617	3,904	-16%	-17%
Tomatoes	$5,116,715	1,021	$5,132,234	849	0%	-17%
Beans	$7,562,470	1,511	$4,874,406	702	-36%	-54%
Pumpkins	$4,464,659	3,072	$3,711,751	2,544	-17%	-17%

Source. Global Trade Atlas 2023

Vegetable exports by country highlights

Singapore

TABLE 3. CHANGE IN VEGETABLE EXPORTS TO SINGAPORE FROM JANUARY TO DECEMBER 2021-2022

Crop	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Carrots	$11,787,543	12,875	$11,127,979	11,948	-6%	-7%
Cauliflowers & Broccoli	$9,241,198	2,054	$6,277,293	1,105	-32%	-46%
Potatoes	$4,036,974	2,699	$4,102,341	2,636	2%	-2%
Lettuce	$5,059,234	754	$3,869,254	487	-24%	-35%
Pumpkins	$3,278,484	2,587	$3,023,208	2,342	-8%	-9%
Celery	$3,301,401	2,052	$2,945,075	1,858	-11%	-9%
Tomatoes	$1,668,941	301	$2,264,927	365	36%	21%
Asparagus	$1,107,764	150	$1,542,676	200	39%	33%
Onions	$2,385,503	2,630	$1,109,928	925	-53%	-65%
Cabbages & Kales	$1,128,621	311	$537,370	94	-52%	-70%

Malaysia

TABLE 4. CHANGE IN VEGETABLE EXPORTS TO MALAYSIA FROM JANUARY TO DECEMBER 2021-2022

Crop	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Carrots	$14,544,699	16,938	$13,128,888	14,882	-10%	-12%
Potatoes	$3,845,985	3,456	$2,919,409	2,235	-24%	-35%
Celery	$3,332,761	1,981	$2,647,272	1,554	-21%	-22%
Cauliflowers & Broccoli	$1,352,584	249	$813,629	118	-40%	-53%
Onions	$3,118,953	5,802	$805,028	883	-74%	-85%
Spinach	$761,681	116	$721,168	112	-5%	-3%
Pumpkins	$297,482	95	$229,384	69	-23%	-27%
Asparagus	$106,016	15	$127,292	13	20%	-13%
Salad beets	$168,278	47	$125,689	28	-25%	-40%
Cabbages & Kales	$321,580	127	$99,221	56	-69%	-56%

Japan

TABLE 5. CHANGE IN VEGETABLE EXPORTS TO JAPAN FROM JANUARY TO DECEMBER 2021-2022

Crop	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Onions	$747,718	664	$4,133,803	3,334	453%	402%
Asparagus	$4,787,533	581	$3,117,097	345	-35%	-41%
Carrots	$1,340,366	1,166	$1,057,628	973	-21%	-17%
Salad beets	$394,390	108	$252,379	78	-36%	-28%
Brussels Sprouts	$158,797	33	$162,330	27	2%	-18%
Leeks	$43,200	11	$84,450	16	95%	45%
Cauliflowers & Broccoli	$183,396	17	$37,800	3	-79%	-82%
Pumpkins	$182,705	127	$8,800	9	-95%	-93%

Korea

TABLE 6. CHANGE IN VEGETABLE EXPORTS TO KOREA FROM JANUARY TO DECEMBER 2021-2022

Crop	2021		2022		%↑ 2021–2022	
	AUD$	TONNES	AUD$	TONNES	AUD$	TONNES
Potatoes	$9,642,314	16,512	$12,578,309	19,402	30%	18%
Asparagus	$1,494,147	182	$2,718,676	132	82%	-27%
Brussels Sprouts	$930,984	166	$1,102,133	167	18%	1%
Cauliflowers & Broccoli	$148,717	41	$81,261	8	-45%	-80%
Salad beets	$21,890	3	$8,240	1	-62%	-67%
Carrots	$50,187	69	$3,200	0	-94%	-100%

International trade events 2023

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

Trade Events	Date	Location
Gulfood	20–24 Feb 2023	**Dubai World Trade Centre** DWTC
Foodex	7–10 Mar 2023	**Tokyo Big Sight** Japan
FHA F&B	25–28 April 2023	**Singapore Expo**
Reverse Trade Mission (inbound)	June 2023	Various states within Australia
Asia Fruit Logistica	Sept 2023 (TBC)	**Asia World Expo** Hong Kong

biosecurity + minor use update

Guava-root knot nematode continues to be detected

Guava-root knot nematode has been identified as a high priority pest in biosecurity plans for ginger, papaya, potato, sweetpotato and vegetable industries. It is the number one threat to the sweetpotato industry.

The latest site to detect Guava-root knot nematode (GRKN) is Hervey Bay, Queensland, where Biosecurity Queensland found the pest in a private backyard garden. This latest site, brings the total number of detections identified to nine across Queensland and Northern Territory.

GRKN is a highly pathogenic and invasive pest that is a microscopic plant parasitic roundworm, that affects a broad range of vegetables. The pest induces galls on the roots of infected plants, which can stunt the growth of the plant, cause wilting and leaf yellowing.

As a consequence, crop yield can be greatly reduced, and the quality of root and tuber vegetables severely affected. In severe attacks, it can make plants more susceptible to other diseases.

It has a higher infection rate than other types of root-knot nematode species, and is able to reproduce on crops that are resistant to other species of root-knot nematodes. As a result, it is difficult to eradicate. GRKN can be transmitted via soil, growing material, plants, bulbs and tubers, and potentially farm equipment and footwear.

Life cycle

The life cycle of guava root-knot nematode is very similar to other root-knot nematodes.

The eggs hatch as second-stage juveniles into soil. These juveniles then migrate in water films through the soil searching for susceptible host roots. Juveniles are the only infectious life stage. Once a suitable root is found they invade the root tip and establish a permanent feeding site, where the third and fourth stage juveniles and developing adults feed.

The plant responds to the nematode invasion with root cells surrounding the feeding site enlarging and multiplying, to form a gall in which the juveniles and developing adults are embedded.

The juveniles eventually develop into globose females or vermiform (worm-shaped) males. Females produce eggs which are deposited into a gelatinous matrix known as an egg mass outside the gall.

A single female can produce 500–1000 eggs. Mature males cease feeding and exit the roots. Males are not required for reproduction (mitotic reproduction).

Biosecurity and reporting

To reduce the risk of GRKN from entering your far; or property, growers are being urged to practice good farm biosecurity practices which include:

- Visibly inspecting plant material arriving on your property to ensure it is healthy and is free of pest and disease symptoms.
- Sourcing clean planting material from reputable suppliers;
- Purchasing healthy seedlings from reputable nurseries;
- Keeping records of where plants/ planting material are sourced from, and where and when they are planted on your property.
- Ensure all visitors and staff disinfect equipment, vehicles, and footwear to reduce spread from infected properties.

If you suspect your property may be affected, phone the Exotic Plant Pest Hotline on 1800 084 881. This will put you in touch with your state or territory's biosecurity agency.

AUSVEG

Fall Armyworm resources

Fall armyworm (FAW; *Spodoptera frugiperda*) is a destructive pest that attacks more than 350 plant species overseas. Affected vegetable crops include sweet corn, capsicum, beetroot, tomato, onion, cauliflower, cucumber, lettuce and potato. Other crops affected include maize, rice, sorghum, sugarcane and wheat.

Fall armyworm (FAW) continues to be a headache for Australian horticultural since its detection in 2020 and is a recognised pest in many states.

What does Fall armyworm look like?

The caterpillar phase of the FAW causes extensive damage to foliage by attacking leaves, stems, shoots, flowers and fruit and feeds at night. The females lay eggs on leaves, which hatch after 2-4 days when the temperate is favourable (21-27°C). The newly hatched larvae will cause some damage, which increases as the caterpillar grows. The larvae will burrow into the soil where the adult develops. By 8-9 days the moth emerges, and the cycle starts once more.

Correct identification of FAW is important as there are a number of armyworm, cutworms, and native species in Australia. However, there are two distinguishing features to identify a FAW caterpillar:

1. **Four black spots, arranged in a square configuration on the end of its body.**
2. **Dark head with an upside down, pale Y-shaped marking.**

If you are unsure growers can utilise the **MyPestGuide Reporter** for confirmation.

1

2

MyPestGuide Reporter
A communication tool for everyone to report pests

MyPestGuide Reporter is a free photo reporting app built for the public, farmers, agronomists, landholders, pest controllers, researchers and the entire industry community to quickly and easily report pests (insects, animals, weeds, diseases) across Australia.

For more information regarding MyPestGuide Reporter visit agric.wa.gov.au/apps/mypestguide-reporter **or via the QR code.**

Access the APVMA website portal.apvma.gov.au/permits or via this QR code and search 'fall armyworm'for a comprehensive permit list.

Integrated pest management approach

Research of the genetic origins of Fall Armyworm show that it is likely to have originated in West Africa and evolved to suit local conditions across East Africa, equatorial regions of north and south Americas, India and southern China. Genetic markers of the populations in Australia show that while they look the same, the FAW in rice and corn crops, are hybrids.

Dr WeeTek Tay, senior research scientist with CSIRO, said in a **Plant Biosecurity Research Initiative podcast** that, "We know that there is resistance in FAW genetics to Bt3 and Cry1AC for cotton overseas, it is not unreasonable to expect that with further migration into Australia FAW will bring that resistance into Australian crops. Populations in Africa and China have the genes for organophosphate resistance – it is possible that within a short time frame, that we will see the same here." This knowledge has helped inform pest management strategies, and the need for further research into biosecurity preparedness and response.

The key to controlling FAW populations comes down to a successful integrated pest management (IPM) program, early detection and implementation of control methods. There are now several insecticides that are available for FAW control in Australia.

Choosing the right chemical control needs to consider the affect the active ingredient may have on beneficial insects, Mode of Action and the timing of application in relation to the lifecycle of FAW. There are several emergency minor-use permits issued by the Australian Pest and Veterinary Medicine Authority (APVMA), which are listed at **portal.apvma.gov.au/permits**

The use of biological controls – through natural predators, parasites and pathogens – has had varied success internationally. Research into biological controls in Australia is still in the early stage. Some Australian predators (Assassin bugs, black ants, earwigs and spine shield bugs) have been noted attacking FAW eggs and larvae, are under investigation through Hort Innovation funded project MT19015 by Queensland DAF.

Pathogens including bacteria, viruses and fungi, need to be applied with caution, and effectiveness to date has been variable.

Crop management through crop residue clean up after harvest, farm hygiene, crop rotation, and weed control are encouraged to reduce the risk of pest establishment, reproduction, dispersal and survival of FAW.

The Plant Health Australia and AUSVEG Fall Armyworm Guide outlines the methodology for crop monitoring to detect FAW eggs and larvae, and reduce damage and harvest losses.

1. Check a sample of seedlings prior to planting for eggs and larvae
2. Monitor susceptible host crops as soon as plants emerge
3. Weekly monitoring during plant growth
4. Recording of plants infested with eggs and larvae. Keep track of leaf damage – small amounts indicates young larvae, while 'shotgun' damage suggests older larvae.

Top Left. FAW neonate larva on maize.
Above. FAW corn leaf damage. **Below.** FAW egg mass on maize.

FOR MORE INFORMATION

Download the AUSVEG Fall Armyworm fact sheet here: ausveg.com.au/app/uploads/2021/12/Final-pdf-standard-faw-guide_compressed.pdf

Field studies investigated the potential use of predator insects to manage FAW on sweetcorn, capsicum and melons.

Identifying potential parasitoids of the fall armyworm
MT19015

This investment, which ran from early 2021 to 2022, examined potential parasitoids of fall armyworm and delivered extension materials to growers on how to effectively manage the pest. The research team identified parasitoid species present in horticultural crops and provided recommendations on potential candidates for future biological control of fall armyworm, as well as local information on established locations, host range, infestation levels on horticultural crops and damage patterns.

Field studies investigated the potential use of predator insects to manage FAW on sweetcorn, capsicum and melons.

The team discovered 18 endemic parasitoid species that attack egg and larval stages of fall armyworm. Among the list, three species are unique to Australia and have not been previously reported as attacking fall armyworm larvae. Better understanding of the parasitoid and predatory fauna will allow growers and consultants to make better decisions about spray timing and pesticide selection, including using 'softer' insecticides to preserve beneficial populations.

The next step is to investigate the potential of these for controlling armyworm nationally. The team also documented an armyworm host plant list to help growers manage cultivated crops and surrounding non-crop areas to reduce pest populations.

For more information go to: ausveg.com.au/app/uploads/2021/12/Final-pdf-standard-faw-guide_compressed.pdf

Top. FAW Corn leaf damage. **Left.** AUSVEG Fall Armyworm fact sheet.

Farm Biosecurity Project continues to deliver positive impact

The AUSVEG Farm Biosecurity Project, a collaboration between Plant Health Australia (PHA) and AUSVEG, continues to strengthen the vegetable and potato industry's preparedness, response, and management of national biosecurity risks.

As part of the MOU between PHA and AUSVEG to promote on-farm biosecurity and better outcomes for growers, this is the third iteration of the project and has been delivering on-going value. The second phase of this project, funded through the AUSVEG-PHA National Vegetable and Potato Biosecurity Levy, kicked off in July 2021, after the successful completion of the first phase. Phase 2 focuses on recognising the importance of urban biosecurity and creating research, development and extension programs for farm biosecurity.

"The project continues to promote the shared responsibility of all key stakeholders to improve biosecurity resilience and increase on-farm preparedness measures implemented by Australian growers," said Sarah Corcoran, CEO of PHA.

The project has positively impacted both at macro and micro level by effectively raising industry awareness and understanding of the biosecurity threats affecting vegetables and potatoes, while increasing vital face-to-face connection with growers to discuss on-farm practices, hygiene and concerns.

Over the past 12-months, the project achieved all milestone deliverables. Most notably, the biosecurity officers delivered 15 face-to-face workshops, visited 72 growers in five states and territories, and attended 22 field days, meetings and other industry events.

Key biosecurity messages such as information sessions on priority pests, demonstrations on new diagnostic tools and the latest R&D developments were delivered to industry through face-to-face workshops, online webinars, speaking engagements at industry events and visits to growers across Australia.

"The willingness of growers to engage with the biosecurity team demonstrates an increasing recognition of the project and its objectives," said Ms Corcoran.

"Online and in-person programs have enabled the biosecurity team to engage effectively, and they plan to continue investigating new ways to communicate with emerging growers and further building on existing relationships" she said.

Communication and collaboration between AUSVEG, state and federal agricultural departments, regional vegetable and potato industry bodies and other horticultural industries have strengthened considerably, resulting in more efficient and effective dissemination of biosecurity information.

"As a result, exotic pest and disease detections have increased and have led to successful eradications in urban environments," said Ms Corcoran.

Valuable relationships have also been fostered with local and regional agronomists, councils, research bodies, service providers and non-grower industry representatives, furthering reach and engagement and providing home and community gardeners with access to important information and resources.

Communication has also played a significant role in the project and the biosecurity officers have used traditional, online and social media to convey key biosecurity messages, priority pest updates and other important, relevant information.

Over the 12-month period, the AUSVEG Biosecurity and Crop protection webpage had 84,867 visitors and 89 media mentions, resulting in a total audience reach of over 2 million. AUSVEG also published nine articles in print media, produced 31 online articles and Twitter followers increased by 10%.

Numerous resources were also developed over the milestone period, including the publication of a **Guide to Security for Home and Community Gardens**, finalisation of a four-page guide on brown marmorated stink bug, a silver leaf whitefly fact sheet, development of a fact sheet for varroa mite and a draft foot bath guide.

The project and MOU is scheduled to renew in July 2023.

Minor use Permits Vegetable Industry

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

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

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

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

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

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

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

Minor use Permits Onion Industry

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

Current minor use permits

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

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

All efforts have been made to provide the most current, complete and accurate information on these permits, however you should always confirm all details on the APVMA website at portal.apvma.gov.au/permits. Details of the conditions of use associated with these permits can also be found on the APVMA site.

vegnet update

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

National Vegetable
Extension Network

Showcasing the **National Vegetable Extension Network**

Cherry Emerick

The *VegNET 3.0* program continues on the great work that has been done in the past, with on the ground extension to growers through our regional development officers (RDOs). A part of the RDO role is to identify each region's key priorities, and assist them to grow better crops and operate more efficient and profitable businesses.

As part of our work, we celebrate the successes our regions have had to improve conditions in their own backyard – from integrated pest management through to grower recovery after major weather events.

A collection of case studies has been compiled to bring to growers an idea of what can be achieved and how our RDOs assisted with the project.

Over the coming issues, we will publish case studies from around Australia. For the Autumn issue we have shared the case studies for Far North Queensland and Wide Bay Burnett regions. For FNQ the issue is around salinity and reducing food waste in the supply chain around Townsville found results.

I encourage you to reach out to our Extension Network to discuss how we can help your business be more successful.

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

Region	Regional Development Officer	Contact Email	Phone
New South Wales	**Sylvia Jelinek** Local Land Services, New South Wales	Sylvia.jelinek@lls.nsw.gov.au	0427 086 724
Northern Territory	**Mariah Maughan** NT Farmers	ido@ntfarmers.org.au	0410 067 422
Queensland North and Far North	**David Shorten** Bowen Gumlu - Growers Association	rdo@bowengumlugrowers.com.au	0419 429 808
Queensland Wide Bay Burnett	**Andrew Halpin** Bundaberg Fruit and Vegetables Growers	vegnet@bfvg.com.au	0407 366 797
Queensland Southern	**Lockyer Valley Growers Inc**	ido@lockyervalleygrowers.com.au	0456 956 340
South Australia	**Peta Coughlin** AUSVEG SA	peta.coughlin@ausveg.com.au	0409 029 745
Tasmania	**Ossie Lang** RM Consulting Group	ossiel@rmcg.com.au	0430 380 414
Victoria Gippsland	**Bonnie Dawson** Food and Fibre Gippsland	Bonnie.dawson@foodandfibregippsland.com.au	0407 683 938
Victoria Northern, Southern and Western	**Danielle Park** AUSVEG	Danielle.park@ausveg.com.au	0432 324 822
Western Australia	**Katrina Hill** vegetablesWA	katrina.hill@vegetableswa.com.au	0427 373 037
National	**Cherry Emerick** AUSVEG	Cherry.emerick@ausveg.com.au	0418 389 680

Stay cool: The importance of temperature to reduce waste in the fresh produce supply chain

Case Study September 2022

National Vegetable Extension Network

Introduction

The supply of fresh produce to Australia's domestic market, especially major retailers, was brought into sharp focus in the past 18 months following labour shortages, natural disasters and international supply chain issues for inputs such as fertilisers and chemicals.

With demand routinely outstripping supply in recent months, greater emphasis is being placed on improving efficiencies and production gains for available fresh produce.

Organic waste is an ongoing issue that all sectors of the industry want to avoid or minimise. However, growers ultimately pay the price for many supply chain breakdowns with produce being rejected or downgraded due to failures in the cold chain from farm gate to the retailer.

While these rejections and downgrades can occur for a variety of reasons, the cold chain plays a significant role in protecting and prolonging the shelf life of produce. It also holds the potential to exponentially reduce the amount of organic waste produced in the supply chain.

Waste not, want not

All fresh produce has a limited shelf life. From the moment it is harvested, produce begins to degrade. This risk is continuously mitigated throughout the supply chain to ensure the produce is as fresh as possible when it reaches the consumer.

As a nation we set very high food safety standards and retailers demand the best quality fresh produce to meet consumer expectations. Growers must ensure their produce is delivered to the required standards, one of which is the correct temperature when sampled upon arrival.

A survey was recently conducted by VegNET Wide Bay Burnett across several industries in the agricultural sector. This survey focused on post harvest losses throughout the supply chain for growers, transporters, wholesalers, retailers and processors.

Results across the agriculture industry showed that the cold chain plays an important role in the delivery of the final product to the consumer. However, the least reliable areas of the cold chain varied for each industry sector: the journey for some produce can be straightforward, travelling from grower to market to processor. Others can be more complex, travelling to a large metropolitan market, a distribution centre and finally a local supermarket.

Any additional changeover creates potential cracks in the cold chain that need to be monitored and maintained throughout the journey of the fresh produce.

Key messages

- **Failures in the fresh produce supply chain – particularly the cold chain – can result in rejection or downgrades of produce, leading to increased organic waste and lower profitability for growers.**
- **Six vegetable growers are participating in a VegNET Wide Bay Burnett trial which provides live electronic monitoring of their transported produce from the farm gate to a metropolitan market or supermarket distribution centre. The high-tech trackers collect real time cold chain data, including temperature, humidity, movement and light exposure.**
- **Initial trial findings have highlighted the importance of chilling fresh produce to the required temperature at the farm gate prior to loading for transport. At the conclusion of the trial, additional insights will be shared with the industry to ensure growers can overcome quality issues within the cold chain.**

Hort Innovation Strategic levy investment | VEGETABLE FUND

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

AUSVEG

Bundaberg Fruit & Vegetable Growers

Stay cool: The importance of temperature to reduce produce waste

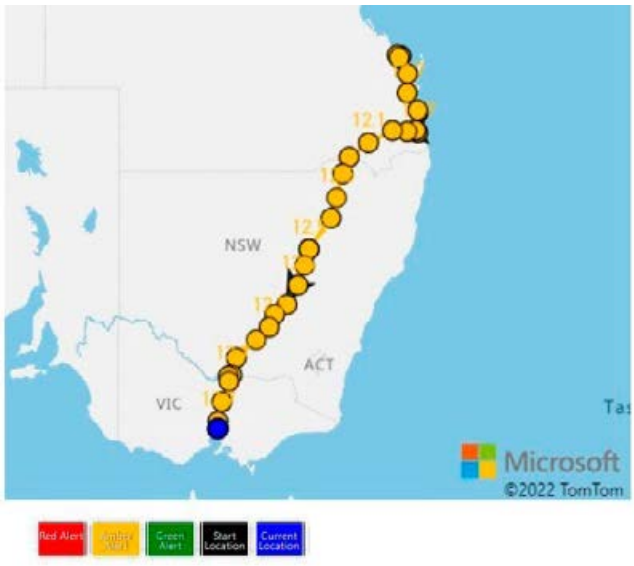
Tracking the supply chain

VegNET Wide Bay Burnett developed agreements with six vegetable growers in the region (who had also participated in the post harvest loss survey), to undertake a live electronic monitoring program of their transported produce from farm gate to a metropolitan market or supermarket distribution centre.

The trackers from Escavox collected real time cold chain data, including temperature, humidity, movement and light exposure. The six growers were supplied with up to 30 trackers each, with a minimum of six trackers per vegetable type. The monitored commodities included cucumber, zucchini, capsicum, eggplant, snow peas, sugar snap peas, lettuce and assorted leafy greens.

The trial was held for five months, covering both warmer and cooler weather conditions. While most monitored produce travelled relatively short journeys, primarily to the Brisbane metropolitan area, the sampling area included tracking to Townsville, Melbourne and smaller metropolitan regions including Newcastle in New South Wales and the Nambour Coast in Queensland.

The trackers monitored transit and storage times ranging from six hours to more than 72 hours for a single track.



Temperature Alerts

Alert Type	Leg	# Alerts	Total Duration
Amber (High)	Transit	66	16 hrs 30 mins
Amber (High)	Transport Hub	3	45 mins
Amber (High)	Supplier DC	14	3 hrs 30 mins
Red (High)	Supplier DC	2	30 mins

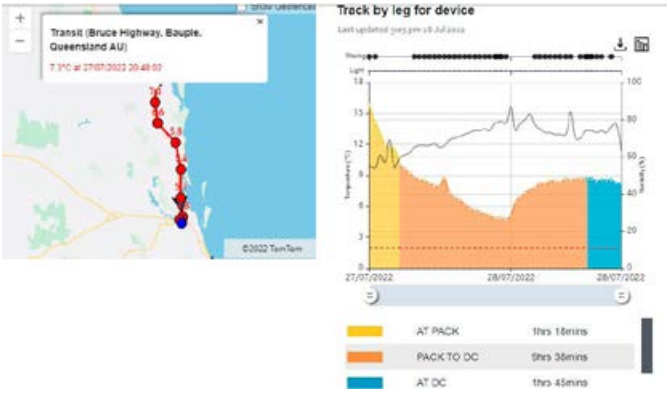
Produce transported at the incorrect chiller temperature (just outside the preferred band, not critical).

Trial insights

The trial was still in progress at the time of writing. To date, the data has presented information that contradicts some of the assumptions shared by many industry sectors in the post harvest loss survey. The grower respondents and some retail and wholesale representatives believed that failures within the transport sector were responsible for produce temperature "knockbacks", while produce downgrades were due to a perceived failure to maintain the cold chain through poor policy and procedures.

Grower groups also identified that major cold chain failures occurred in unloading and loading of product at transport, market and distribution centre hubs, with the belief that produce was potentially being left out of chillers on docks for extended periods of time. This was only partially supported in the tracker data – while it was the case in some instances, the pre-established temperature of produce prior to it being loaded for transport was a more significant factor.

Refrigerated transport vehicles are primarily used to maintain the set level of temperature of the product they are collecting and transporting. These trucks do not have the ability to significantly reduce potentially 20-30 tonnes of produce in transit to the desired temperature. This trial has highlighted the importance of growers ensuring that their produce is cooled prior to collection to guarantee that the produce at least starts its journey within the desired temperature band.



Produce was not chilled to the correct temperature on-farm before being transported.

Hort Innovation Strategic levy investment | VEGETABLE FUND

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

AUSVEG

Bundaberg Fruit & Vegetable Growers

Stay cool: The importance of temperature to reduce produce waste

The trial also highlighted concerns surrounding multi-produce shipments, with variance in the required temperature bands for each produce line. This concern was already an ongoing issue for one of the larger growers in the group and they had invested in their own transport for up to 70% of their produce movements from the farm gate.

While this may be achievable for some larger growers, a greater level of communication and coordination needs to occur as an industry, particularly between the growers and the transport companies. This problem was identified once again by most growers in the survey.

Improving grower productivity, profitability and preparedness

As a result of the survey and trial, vegetables growers in the Wide Bay Burnett region are better prepared to implement stronger policies and procedures to counteract issues within the cold chain.

Many temperature "knockbacks" have occurred during the trial, with growers forced to redirect produce to other markets at a degraded price, as well as two occurrences of product destruction and forced charge of disposal. These instances were linked to the grower not chilling the produce to the required temperature prior to loading for transport at the farm gate.

This project identified that growers can be more profitable due to less cold chain wastage and liability. The growers who participated in the trial were more competitive than others because they had reduced the risks and liabilities of the shipped produce.

"We have had a few issues of produce arriving frozen to the markets in the past. Having a live tracker allows us to monitor our produce after it leaves the farm gate," a grower participant said.

Almost half of the grower participants indicated that they have ongoing compensation claims with transport companies – ranging from $20,000 to $110,000 – for temperature knockbacks, damaged produce (dropped off docks), or lost/late shipments. While all participants find it hard to "prove their case" for insurance claims, a tracking device included in their shipments would provide additional information to lodge their claims. In some cases, transport insurance could be reduced if a tracking device is shipped with the consignment.

Next steps

At the conclusion of the trial, a workshop will be held for the tracker company, Escavox, and the grower group to analyse the tracker data. They will provide on-the-ground feedback on ways that growers can use the project findings to improve the likelihood of their fresh produce making its way to consumer shopping baskets rather than landfill.

Escavox tracker in a zucchini box ready for shipment.

Further information and resources

Contact VegNET Queensland Wide Bay Burnett Regional Development Officer Andrew Halpin at vegnet@bfvg.com.au or 0407 366 797.

- **Vegetable Industry Development Program – Post Harvest Management for Vegetables | Hort Innovation**
- **Keeping food fresher: How Hologram, Escavox and Purfresh are improving the global supply chain**
- **Quantifying post harvest loss and the implication of market-based decisions: A case study of two commercial based tomato supply chains in Queensland, Australia | Research Gate**

Soil and water testing shakes up salinity issues in north Queensland

Case Study September 2022

National Vegetable Extension Network
BOWEN, GUMLU & FNQ

Introduction

Salinity issues can appear in all major vegetable production areas naturally or due to management practices. Salinity can also fluctuate with changes in the weather and water quality.

VegNET North Queensland recently visited a grower in the Bowen region who was facing significant challenges in producing enough vegetables to make his operation viable. A large area of his existing property had salt inundation which made the ground unusable, with soil testing indicating the soil salinity was so high that vegetable crops were not viable.

The grower had been forced to acquire a second block of land to grow vegetables which is some distance from the initial farm. This incurs considerable cost and time transporting produce to the packing shed located on the primary block of land that has salt inundation.

As soil health is a key focus area for VegNET North Queensland, the project can assist growers producing vegetables in heavy saline soils.

After consulting several industry agronomists, it became apparent that remediating the soil with a mixture of salt-loving cover crops and gypsum would be the best approach. As soil and water analysis on the affected block of land had not been completed in over four years, new testing was conducted to produce an updated baseline for soil remediation.

Connection with expert advice

Gatton-based soil scientist David Hall was engaged to take soil and water samples to better understand the impact of the salt inundation on the property and develop a remediation program based on the results. During David's visit to Bowen, he was able to conduct soil samples on several grower farms and produced a soil masterclass video for Bowen Gumlu Growers Association.

The soil samples were collected over 3 depths (0-10 cm, 10-30 cm and 30-60 cm) on 24 March 2022. The samples were taken with the view of monitoring nutrient levels for crop production and preventing nutrient rundown.

Soil scientist David Hall (right) discussing soil chemistry with local agronomist jessica Volker.

Key messages

- **Significant salt inundation at a property in north Queensland had made the ground unusable for vegetable production and threatened the viability of the business.**
- **VegNET North Queensland connected the vegetable grower with industry experts who conducted new soil and water analysis on the affected block of land to produce an updated baseline for soil remediation.**
- **The results showed that through careful management, application of soil amendments and ongoing monitoring of nutrient and water levels, the grower will be able to use the land previously considered unviable.**

Hort Innovation Strategic levy investment | VEGETABLE FUND

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

AUSVEG

BOWEN GUMLU GROWERS ASSOCIATION

Soil and water testing shakes up salinity issues in north Queensland

Water samples from the bore were also identified as being heavily saline. Samples of the soil and water were collected and sent for further analysis at Southern Cross University.

Table 1: Summary of soil analysis

	SOIL LEVEL		
Parameter	0-10cm	10-30cm	30-60cm
Nitrate nitrogen (mg/kg N)	7.5	2.0	0.1
Weighted nitrogen (kg N/ha)	8.2	4.8	0.5
pH	7.04	7.43	8.60
Chloride (mg/kg)	13	<1	37
Estimated organic matter (% OM)	1.1	0.58	0.16
Organic carbon (%)	0.60	..	..
Total carbon (%)	0.60	0.33	0.09
Total nitrogen (%)	<0.02	0.09	0.09
Carbon/nitrogen ratio	..	3.6	1.0
Sulfur (mg/kg S)	2.9	..	..
Effective Cation Exchange (ECEC) (cmol+/kg)	7.5	6.6	14
Calcium (%)	54	54	52
Magnesium (%)	41	42	40
Potassium (%)	4.6	1.9	1.1

Note: Results in yellow require remedial action.

The soil results showed that soil surface pH was within optimum levels for plant growth. The pH does increase in alkalinity at depth due to the chlorides. The chlorides at the surface are satisfactory but increased at depth due to the loam soil. Careful management of the chlorides will be required as they are mobile and will move up and down the soil profile with rainfall events and irrigation.

Overall, the soil analysis determined three limiting factors in the soil profile: low soil nitrogen; low potassium; and the ratio of calcium to magnesium was poor. However, these factors can all be corrected in time with good management practices.

Bore water analysis

The water sample from the bore showed high salt levels and total dissolved salts which could explain some of the salinity issues in the soil from irrigating with heavy saline water. There was also a very high-water hardness typical of north Queensland bores, which can result in scale on hoses and pumping equipment.

Although the results of the bore water were not optimal, it could be diluted through rain events and mixing the water with pond water on the property before irrigating crops.

The application of the bore water will, over time, cause some imbalances and crop yield reduction as nutrient accumulation occurs in the soil. The application of calcium products like gypsum will assist in improving soil drainage and therefore leaching salts down through the soil profile.

Table 2: Bore water analysis

PARAMETER	RESULT
pH	6.94
Conductivity (EC) (dS/m)	5.24
Bicarbonate (Alkalinity) mg/L	428
Water Hardness mg/L	1,597
Langelier Saturation Index	0.40
Phosphate (mg/L P)	0.043
Nitrate (mg/L N)	4.050
Ammonia (mg/L N)	0.064
Sodium (mg/L)	574
Potassium (mg/L)	2.80
Calcium (mg/L)	295
Magnesium (mg/L)	209
Sodium Adsorption Ratio (SAR)	6.2
Chloride (mg/L)	1419
Sulphate mg/L	186
Silver (mg/L)	<0.001
Aluminium (mg/L)	<0.001
Arsenic (mg/L)	<0.001
Cadmium (mg/L)	<0.001
Chromium (mg/L)	<0.001
Copper (mg/L)	0.001
Iron (mg/L)	0.030
Manganese (mg/L)	0.021
Nickel (mg/L)	0.001
Lead (mg/L)	0.001
Selenium (mg/L)	0.002
Zinc (mg/L)	0.001
Mercury (mg/L)	<0.0005
Boron (mg/L)	0.080

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AUSVEG

BOWEN GUMLU GROWERS ASSOCIATION

Soil and water testing shakes up salinity issues in north Queensland

Improving grower productivity, profitability and preparedness

As a result of the latest soil and water analysis it is clear that – through careful management – the grower will be able to use the land previously considered unviable. He will still need to closely manage his nutrient and water levels from the bore to ensure he doesn't increase the salt levels too much.

The grower was very excited to see the results of the soil and water analysis and realise his dream of being able to use his entire property again for vegetable production. The grower acknowledged subpar management of water and nutrients were a factor in the salt inundation on the farm and would like to ensure that this does not happen again.

The grower advised that he didn't fully understand the impacts of using the heavy saline bore water on the sugar cane he was growing at the time and only now realises that better management of his inputs are required for him to have a long-term sustainable farming business.

Further information

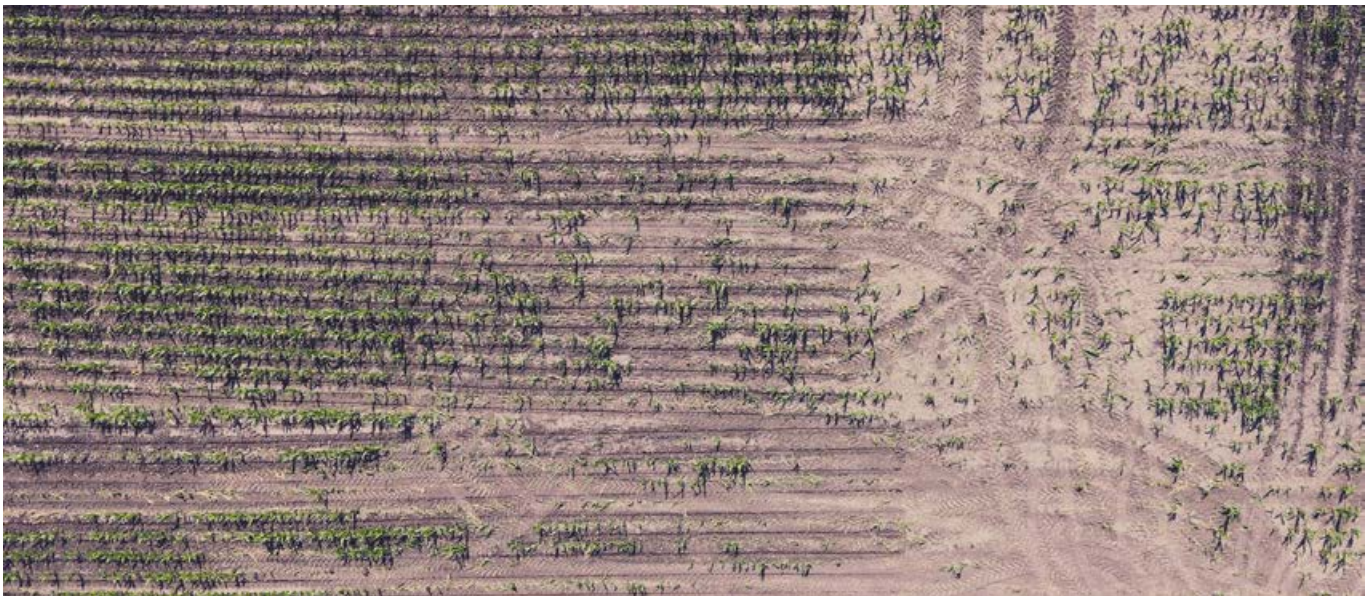
Contact VegNET North Queensland Regional Development Officer David Shorten at rdo@bowengumlugrowers.com.au or 0419 429 808.

Next steps

Through the VegNET North Queensland project, Bowen Gumlu Growers Association will conduct annual soil and water analysis on the farm over the next few years to assist with salinity management. David has also offered to assist the grower with management strategies to ensure the salt inundation does not return.

This approach will allow the grower to resume farming on his entire property under careful management. The grower will no longer need to travel long distances to farm and transport his crops to the packing shed, saving him money on transport, time and labour.

Soil scientist David Hall taking soil samples during a farm visit in north Queensland.



VegNET South Australia
Project Update

The past few months have brought with them unprecedented weather events in South Australia that have had an array of impacts on growers across the state, and especially in the Murray Riverlands area. Throughout November and December water levels in the River Murray rose dramatically and consistently threatening the homes, businesses and farms of people across the region.

Over 3,000 businesses and homes lost power, levees were broken, and people were displaced across the area for many weeks at a time. As the water levels have been steadily dropping, it will be a crucial season of recovery for growers, businesses, and the industry in South Australia.

The Federal Government and State Governments have collaboratively joined forces to put forward $126 million in funding for recovery including up to $75,000 for flood-affected primary producers. Impacted producers can apply for these grants if they have suffered direct loss or damage as a result of the 2022-23 River Murray Floods. More information for growers is available online at Primary Producer Recovery Grants SA.

Growers can also reach out to AUSVEG SA to assist in collecting the needed details to submit their application and navigate this process while working to rebuild their capacity and production schedules.

After a busy end to 2022, AUSVEG SA and the VegNet program look forward to bringing a wide range of opportunities to growers in 2023. This year VegNet will be hosting several capacity building Masterclasses for growers across SA addressing building skills within the business such as negotiation, marketing and product development. As in the past, we will be working with state partners at the Department of Primary Industries and Regions and Rural Business Solutions to provide ongoing financial planning and benchmarking for producers through the Future Drought Fund program.

As a region, we are excited to be the host city for several different agricultural and horticultural events including evokeAG this past February and the upcoming Hort Connections from 5-7 of June.

We look forward to reconnecting with our state and national growers and partners over the next year and encourage all our local producers to make time for these events. You can find more information about Hort Connections online here or reach out to AUSVEG SA for details on events, tickets and more. This will be a great opportunity to showcase the worldclass growing operations in the state and build relationships across borders. We can't wait to see you there!

FIND OUT MORE

Please contact Peta Coughlin
AUSVEG SA, M: 0409 029 745
E: **peta.coughlin@ausveg.com.au**

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

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

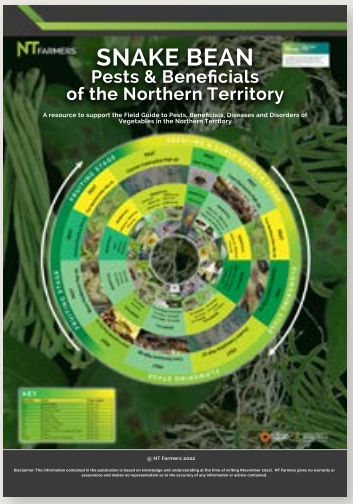
Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

NORTHERN TERRITORY

VegNET Northern Territory
Project Update

The Northern Territory is well and truly into the wet season with an early start to the season followed by some large rainfall events throughout the regions. This is the off-season for most horticultural growers which allows them to re-coup and prepare for the 2023 season.



The wet season is also the quieter time of year for the NT VegNET3.0 project, however it is just as important as the dry season as it's where the key planning behind the projects operations and outputs take place. It's also a time to produce valuable extension material to give to growers in the new season.

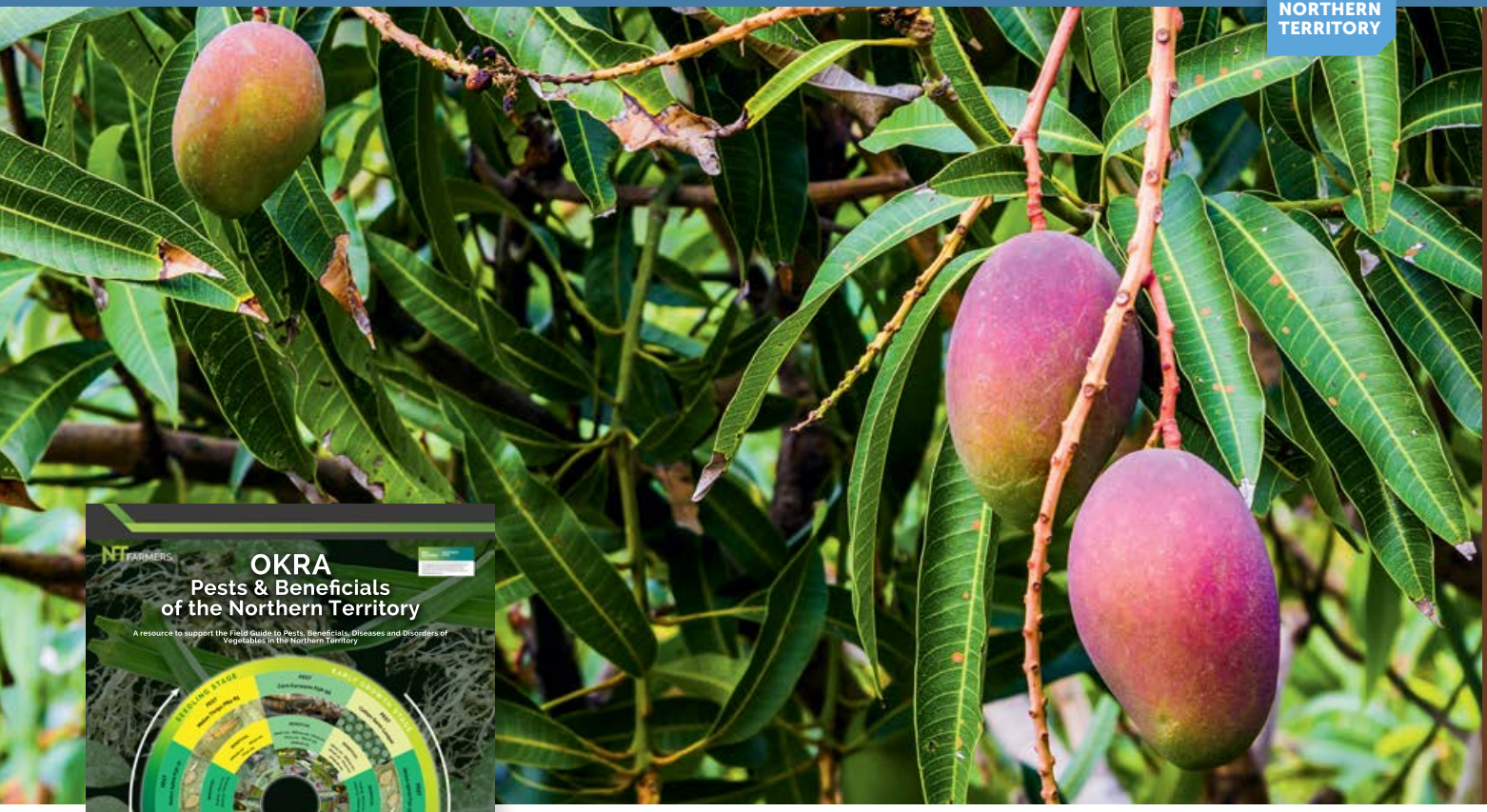
IPM Resources for growers

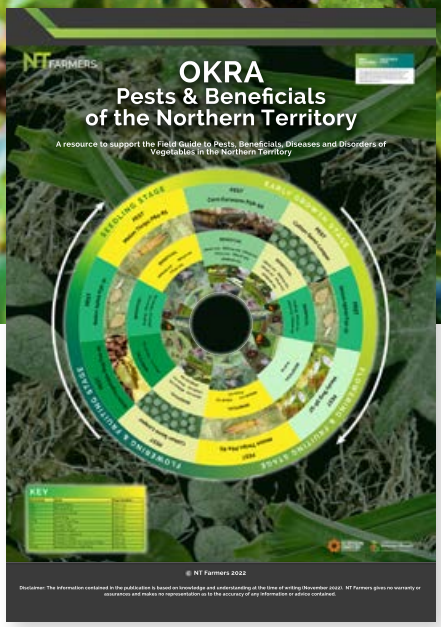
NT VegNET3.0 will be heading into the 2023 season with a handful of Integrated Pest Management extension materials to provide its growers. Pest 'wheels' were created, for okra, snake bean, eggplant, and Asian melons. These wheels go through each growth stage and identify the common pests and the common beneficials for that pest. The wheels are a resource to support the existing valuable resource: Field Guide to Pests, Beneficials, Diseases and Disorders of Vegetables in the Northern Territory with page references for each pest and beneficial noted on the wheels.

2023 Field trials

The NT VegNET3.0 project has lots in store for this 2023 season. A soil compost trial has commenced with two growers in the outer Darwin region. This entails taking soil samples prior to compost and after compost over time see if we can measure some of the benefits of compost to the soil and production. Another field trial that will take place in 2023 is a hydroponic trial with a vegetable grower in the outer Darwin region. Here will be running a hydroponics system of common vegetables and potential varieties to gain some key information about hydroponics in the NT. Hydroponics is a reasonably new production system for vegetable producers in the NT and the NT VegNET3.0 project aims to take some of the risks out of investing in this system by trialing the system through the project. The focus will then be on sharing this information with industry in as many ways possible.

NORTHERN TERRITORY





What NT Farmers have in store for 2023

On a broader lens, NT Farmers is facilitating an international industry tour to Thailand in April 2023. Eight vegetable and tropical fruit producers in the NT will go on a 5-day industry tour to 3 regions of Thailand to gain an insight into their vegetable and tropical fruit production systems. The tour is focused on knowledge exchange between the Thai and Australian growers in the tropical fruit and vegetables sector in areas of productivity, profitability, and sustainability.

NT Farmers is also preparing for their biennial w on the 22-25th May 2023. NAFF is Australia's leading conference on agricultural development in the North. The conference is integral in driving expansion in the north and places northern agriculture on the national agenda. Investors, politicians, industry, and community stakeholders from around Australia and the world attend the Conference to explore agricultural opportunities in the north.

NORTHERN AUSTRALIA FOOD FUTURES CONFERENCE 2023

The NAFF is now in its 5th year and receives strong support from the governments of the Northern Territory, Western Australia and Queensland, the National Farmers Federation, Hort Innovation, Cotton Australia, and the private sector.

NT Farmers and the NT VegNET3.0 project look forward to a productive year ahead with workshops, industry tours, local conferences and more, in store for industry.

FIND OUT MORE

Please contact NT Farmers VegNET Officer Mariah Maughan at **ido@ntfarmers.org.au**, or 0417 618 468.

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Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

NORTHERN TERRITORY

We buried undies in topsoil for 8 weeks - this is what happened...

MARIAH MAUGHAN, DEVELOPMENT OFFICER, NT FARMERS

Soils in the NT

In general, the soils of the Northern Territory (NT) often lack sufficient plant nutrients and soil structure. The NT sees high rainfall over a few months in the wet season, often resulting in high water run-off. During the dry season, fires are not uncommon which can destroy all grass and leaf litter which then is blown away or washed away in the next wet. Over a long period of time, this cycle has resulted in soil which is low in plant nutrients and extremely low in organic matter.

Organic matter is key in assisting soil to hold nutrients and moisture as well as to maintain a suitable environment for soil organisms and micro-organisms which are essential for healthy plant development.

After some inspiration from a soil symposium held in Darwin and Katherine by Territory Natural Resource Management in 2022, I purchased two pairs of white cotton underwear and made the awkward phone call to local farmers to see if I could bury them in their paddocks for 8 weeks.

The aim of the activity was to see how the underwear decomposed over the 8-week period in the hope that this would tell us something about the soil and the life within it.

The underwear above was buried on an organic vegetable growers farm in the outer Darwin region. The land in which we buried the undies had had compost applied several times over several years. On the 8-week mark when we pulled out the undies, they were predominantly de-composed. Ideally you would just see the elastic band and any synthetic stitching. The grower was concerned that he had seen another organic grower's 'soiled undies' a week prior that only had the elastics and stitching for remains, however I assured him, he wasn't far off, this result was a win for soil life.

So, what can the rate at which cotton underwear decomposes in soil tell us about the health of the soil? Essentially, it's all about soil life and biological activity. If the undies have decomposed significantly, there is good biological activity which is linked to good soil health!

What are soil organisms?

Soil organisms are soil life. These include living organisms you can see such as earth worms and insects and soil organisms that are too small to see called micro-organisms. These include types of bacteria and fungi.

Top. Rich soil. *Image by Peta Burton.* **Below.** Undies after 8 weeks.

CASE STUDY

The above image shows underwear buried for the same duration in different soil, in different farming enterprises. The pair on the left suggest a greater soil life then underwear on the right. Another factor that may have played a factor in the different in breakdown is soil moisture. The under wear on the right had less access to soil moisture. Soil organisms rely on water for growth, without this they will go dormant.

How do soil organisms improve soil health?

Soil Aeration - Soil organisms such as insects and earthworms assist in soil drainage and aeration as they move in the soil. They can create space for roots to grow and oxygen and carbon dioxide to transfer though the soil.

Nitrogen Fixation - Microorganisms (mainly bacteria) assist processing atmospheric nitrogen to ammonia so it is available for plants to use.

Organic matter decomposition - A variety of soil organisms and microorganisms can break down organic matter in a similar way they broke down the cotton underwear. By breaking down the organic matter they are returning the nutrients to the soil for plant roots to absorb.

Soil structure and stability - Soil organisms help to develop stable aggregates by producing a range of sticky compounds that help bind clay, silt, and sand particles. Fungi (and roots) help to then bind these into larger aggregates. Good soil structure is important for aeration, better drainage, and root proliferation (to access water and nutrients).

How to increase your soil life?

Maximise soil cover - Essentially, bare ground is prone to moisture loss, high temperatures and low supply of organic matter to feed soil organisms. By using mulch or leaf litter in the dry season and a cover crop in the wet season, you are promoting soil microbial activity.

Minimise disturbance - Consider using reduced tillage or no-tillage (where possible) to minimise destruction of the soil organisms and habitat. Another physical disturbance is compaction caused by machinery. Compaction not only makes the ground incredibly hard for the grower to work with, but it also minimises the space in the soil for air and water to move. A way to minimise compaction is to have designated rows and wheel spacing for machinery to drive on.

Maximise Biodiversity - Plant diverse cover crops where possible and use diverse crop rotations. Increasing diversity across your operation can break disease cycles and stimulate plant growth by providing a habitat for soil organisms.

Rotate crops - Soil organisms thrive on different root types to maintain a diverse range of organisms. The better diversity, the better equipped they are to resist disease, cycle nutrients, decompose residues and more.

Reduce chemical use where possible – Insecticides and fungicides can also affect the insects and microbes within the soil and can eliminate certain species that are benefitting your soil with regular use.

Inoculate legume seeds (wet season cover crop) with the correct Rhizobium bacteria- Rhizobia are a group of soil bacteria that form small growths (nodules) on the roots of legumes. The convert nitrogen gas from the atmosphere into a form that can be absorbed by the plant as mentioned earlier under the heading *Nitrogen Fixation*. By inoculating (coating) the seeds (with the correct inoculum!) you are ensuring the right bacteria is present to fix nitrogen for the plant. This is particularly important if you are planting a particular crop for the first time or you haven't used an inoculum with that crop previously.

This industry event is proudly brought to you by:

AUSVEG VIC | BUTLER MARKET GARDENS | Stuart Grigg Ag-Hort Consulting | National Vegetable Extension Network | Elders | Hort Innovation

VICTORIAN VEGETABLE INNOVATION DAYS

2023

HOSTED BY BUTLER MARKET GARDENS
200 McDONALDS RD CATANI VIC 3981

THURSDAY APRIL 27TH 9AM – 4PM

FRIDAY APRIL 28TH 9AM – 2PM

ELDERS VEGETABLE INDUSTRY NETWORKING EVENT
THURSDAY EVENING 6.30PM, BUNYIP TOWN HALL
www.trybooking.com/CFTKK

Featuring:

- Stunning Demonstration Sites from 10 Leading Seed Companies
- 8 Chemical/Fertiliser Companies
- Live Demonstrations and lots more
- All Growers Enter at No Charge
- Live Spinach Master Class
- Over 25 Exhibitors from across the supply chain

VegNET Victoria Gippsland
Gippsland hosts US visitors and International Spinach Conference

The past few months have brought with them unprecedented weather events in South Australia that have had an array of impacts on growers across the state, and especially in the Murray Riverlands area. Throughout November and December water levels in the River Murray rose dramatically and consistently threatening the homes, businesses and farms of people across the region.

A busy four-day itinerary illustrated just how impressive and varied the industry is across the region. There were 16 members in the group, more than half were under 30, and they were mostly from the Willamette Valley in Oregon. All growers were from family farms, with a couple attending from national processing companies or resellers.

The group was pulled together by Associated Professor Ed Peachey of the Oregon State University, who specialises in weed management and extension across the vegetable industry in Oregon. He was accompanied by friend and colleague Professor Doug Doohan from Ohio State University, also a weed management and extension specialist.

The tour commenced driving through the south-eastern suburbs of Melbourne to South Gippsland, up through the Macalister Irrigation District, through the Lindenow Valley and out further east to Orbost. The array of businesses visited showed off seed breeding and production, vegetable growing for fresh produce, processing and packing.

While many aboard the tour remarked that the most significant learning was that both Australians and Americans are experiencing similar challenges in accessing labour and coping with the increasing cost-price squeeze, hearing of the ways in which businesses collaborate in the States highlighted the impact that Australia's excessive production has to increase competitiveness and decrease cooperation between growers.

Top. US Group 23 February 2023.
Above. US Protected Growing

Other growers and industry members from Gippsland were invited to join one of two networking evenings with the visitors, in Inverloch and Bairnsdale. These evenings highlighted the importance of informal gatherings as an extension activity to facilitate knowledge sharing and a sense of belonging to the somewhat disparate vegetable industry across Gippsland. It is hoped that more networking opportunities such as these will lead to greater retention of 'Fresh Faces' in the industry.

Following the Gippsland leg of their trip, the group headed over the hills to Shepparton to meet up with VegNET Victoria counterpart Danielle Park and will finish the tour at Melbourne Markets.

VicVID and Spinach Conference

The VegNET Gippsland project has also been keeping busy through involvement in planning the Victorian Vegetable Innovation Days which will be held on 27-28 April, followed by the International Spinach Conference on the 1-2 May.

With all exhibitor spots now allocated, the VegNET Victoria projects are turning their attention to integrating additional extension opportunities into the VicVID program. These will include demonstrating biosecurity best practice, cover cropping, soil moisture monitoring technology, and further agtech which will be on display.

Distinguished Professor Jim Correll and Doctor Lindsey du Toit will also be providing a preview of the jam-packed program they are curating for the International Spinach Conference.

Entry to VicVID23 will be free for all growers, and all are encouraged to register for the Elders Industry Networking Event on the Thursday evening.

Entertainment will be provided by renowned comedian Dave O'Neil and local musician Emily Murdica. Tickets are selling fast! **trybooking.com/events/landing/1014946**

Registrations for the International Spinach Conference are also open at: **events.hortconnections.com.au/spinach-2023/registration/Site/Register**

Top. US Group 23 February 2023.
Left. Melbourne Wholesale Market visit.

FIND OUT MORE

Gippsland growers who are interested in participating in the project are invited to contact Bonnie Dawson. Phone: 0407 683 938 or email: **bonnie.dawson@foodandfibregippsland.com.au**

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Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

VegNET Wide Bay Burnett Regional Update

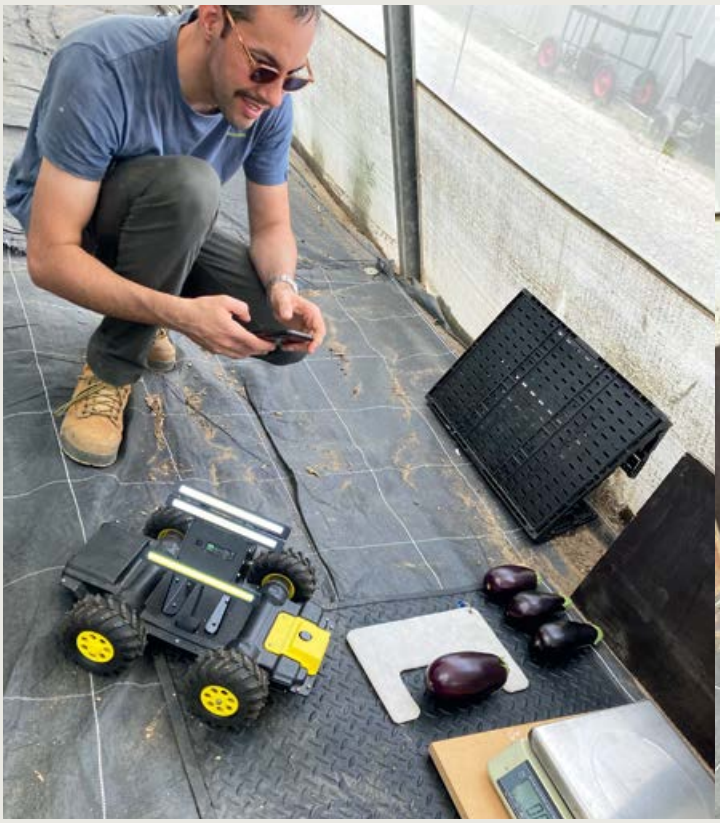
The Wide Bay Burnett was fortunate to be selected as the first trial site outside of Melbourne for the AMBIT Robotics crop forecasting trial. Two trials have been established, with eggplant and continental cucumber crops being monitored for the first time.

These trials are taking place at Carter & Spencer's 3ha protected cropping eggplant facility at Moore Park and at United Wholesale Growers 4ha protected cropping Cravo installation monitoring continental cucumbers. Both growers manage sales and marketing divisions within Metro Fruit & Vegetable markets around Australia making them ideal participants.

The aim of the trials is to utilise Ag technologies to forecast crop production to support crop management inputs like labour scheduling and to increase the efficiency of pre-selling and market predictions with clearer indications of crop forecast volumes. The trial will continue through to August this year on both sites and it is anticipated that the VegNet Wide Bay Burnett program, together with AMBIT Robotics will work on delivering great resources to the region's growers for potential adoption in the future. The AMBIT team have already highlighted potential secondary functions with the robot including crop monitoring for pest and disease identification and well as the potential ability to apply "spot specific" applications of treatments to help reduce cropping inputs rather than a 'blanket coverage' application.

Andrew together with Peter Hockings who is working with the Hinkler Agtech Initiative was approached by the team at RapidAIM to identify eight growers in the region covering a variety of crops with the vision to create a Fruit Fly Forecast network using their Autonomous – Realtime Fruit Fly Tracking & Monitoring Traps. Working with Ron Yariv and Nat Clarke from RapidAIM, Peter and Andrew identified eight growers to establish a network of 30 traps in an attempt to deliver an accurate monitoring &

Above. RapidAIM Trap Installs.



forecasting network for the region. The participants include four vegetable growers throughout the Bundaberg, Childers, Wallaville and surrounding areas.

RapidAIM have publicly released deidentified data collected from these growers for all for growers in the Wide Bay Burnett with the hope of encouraging more growers to purchase their product and increase the overall accuracy of the program. RapidAIM also provided the eight growers with 12 months free trial of their product to thank them for participating. Several growers involved in the trial have indicated how simple, easy and up-to-date the Application is to use.

As a result of this information the growers have been able to time their sprays and bait programs more efficiently. It has reduced their labour hours through no longer manually counting their traps or a weekly basis as the trap devices log every fruit fly that enters and is trapped with this information being shared to the growers mobile app, every 15mins, 24hrs a day, 7 days a week providing real-time data. The program will run until November 2023.

The VegNet program has been enlisted by the organisers of the Bundaberg Agtech Showcase to host and deliver the field trip for Day 1 of the upcoming program. The Showcase will be held over two days in April with the VegNet program highlighting several trials that have taken place or are currently underway in the area. Agtech companies including RapidAIM, AMBIT Robotics and AgLeader and the AusVeg IMAP Sentinel 6, as well as several other companies will be on display at United Wholesale Growers property in North Gregory, South of Bundaberg. The field day aims to provide attendees a first-hand glimpse of Agtech working on farm, as well as having the companies on hand to answer questions. If you would like to attend the Agtech Showcase event, please head to **bundabergagtechhub.com.au/agtech-showcase** for more information.

Above L-R. PV Ambit Setup. RDO Ambit Setup.

FIND OUT MORE

Contact your Regional Development Officer: If you would like to take part in one of the Wide Bay Burnett VegNet trials, or have an issue you would like to discuss with your VegNet RDO, please contact Andrew Halpin on 0407 366 797 or email **vegnet@bfvg.com.au**

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Project Number: **VG21000**

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VegNET Bowen Gumlu Project Update

Japanese students living and working the North Queesnland way

Eleven Japanese trainees arrived in Australia in April last year as part of the Bowen Gumlu Growers Association's Japanese Agricultural Exchange Program and have gained valuable skills and knowledge while working on North Queensland fruit and vegetable farms.

Upon arriving in Bowen, the group familiarised themselves with the area and enjoyed an Aussie beach BBQ and tour of the region's tourist spots before commencing a four-week English and farm-ready course at TAFE before embarking on their work placements.

In April 2022, Bowen Gumlu Growers Association (BGGA) hosted a welcome event at the Larrikin Hotel in Bowen where the trainees were able to meet participating growers. Two trainees represented the program at BGGA's annual industry Gala Dinner. The students enjoyed the region's events and tourist spots, including the Whitsundays' iconic Whitehaven Beach, Billabong Sanctuary and Airlie Beach Running Festival.

The group was invited to attend a networking evening with Japanese Consul-General, Masuo Ono, at the Grand View Hotel and while visiting North Queensland's fruit and vegetable growing region, Mr Ono was provided with a tour of the growers' farms that have been participating in the Japanese Agricultural Exchange Program, including Marto's Mangoes, Eden Lassie Agave Farm and Koorelah Farms.

The Japanese Consulate's trip provided a great opportunity for Mr Ono to see where the trainees have been living and working and for BGGA to initiate conversations about creating new agricultural export and trade opportunities for local growers with Japan.

BGGA Chief Executive Officer, Ry Collins, said the association had been working closely with the Japanese Consulate and exchanging information and updates about the program since the trainees arrived in Australia in April 2022.

"The Japanese Consulate's visit provided a great opportunity for Mr. Ono to meet the growers and trainees and see first-hand where they have been living and working," he said.

Mr Collins said the Japanese Agricultural Exchange Program was an important international education, trade and regional promotion initiative for the region and local horticulture industry.

Top. Eleven Japanese trainees.

Top L-R. A field day to the Big Mango. Visit to billabong sanctuary.

Most of the trainees have now finished working on horticulture farms and are helping local mango growers with their harvest. Following this, the students will spend some time learning about the fresh produce export supply chain and how processes such as phytosanitary irradiation can be used to support the pathway for products such as Australian mangoes into Japan. BGGA will host a farewell event before the trainees return home to Japan in March 2023.

About the Program

The Japanese Agricultural Exchange Program utilises the Working Holiday Maker 417 visa with full pay and accommodation as part of the employment on farm. Typically, the students are from a farming background or rural regions.

The exchange is an opportunity for young adults from Japan to experience different farm methodology and assist to develop their farming practices as a lot will be involved with the farming industry on their return to Japan. The project also supports improved trade relations for export to Japan.

FIND OUT MORE

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

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

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

Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

VegNET New South Wales
Project Update

The Australian Cambodian growers of NSW have been undertaking a soil health improvement journey over the last six months with their champion grower Kim Ngov testing and demonstrating soil health improvement practices over the last few years. Sylvia Jelinek the NSW VegNET RDO, in collaboration with Dr Kelvin Montagu and Stephanie Tabone from Applied Horticultural Research (AHR) and the Soil Wealth and Integrated Crop Protection (ICP) project (Hort Innovation funded project VG16078) have been guiding and supporting the growers.

First steps in building soil health Community of Practice

In August 2022, 12 growers had their soil sampled to gain a baseline analysis of their soil composition. This was followed by a VegNET NSW Soil Health and Cover Crops workshop with the participating growers, led by Kelvin with the help of Steph. It was a great day of learning and included discussions on soil biology, cover cropping, tillage, nutrition and soil test interpretation using their own soil test results from their farm. Growers received some cover crop seed, as many were keen to try cover crops on their farms.

The growers have been eager to learn about improved soil health management, as they are on heavy clay loam and low nutrient soils but are hesitant to change farming practices. Their farms are not large enough to set aside a demonstration plot to trial alternative soil management practices. Changing farm practices can be daunting, however the use of a demonstration site can help to alleviate the stress and see change firsthand while learning best practice. Plastic mulch is used by many field vegetable growers as a means for controlling weeds, reducing herbicide use, and retaining soil moisture. However, the use of plastic mulch limits accessibility to the soil to apply compost or to sow cover crops, so alternative growing practices need to be considered.

Top. Grower Sopha Heng with Dr Kelvin Montaguy.
Above. Root system hard pan, *Image courtesy of Stephanie Tabone (AHR).*

NEW SOUTH WALES

The work of Kim Ngov in the trial of cover crops has been ongoing for many years, when cover crops were to build soil health and control weeds, as well as eliminating single-use plastic mulch.

Read more about Kim's work: NSW grower trials cover crops to eliminate single-use plastic mulch and control weeds AUSVEG here: **ausveg.com.au/articles/nsw-grower-trials-cover-crops-to-eliminate-single-use-plastic-mulch-and-control-weeds.**

Top L-R. Dr Kelvin Montagu presenting on soil health in the September workshop. In field discussion on soil conditions with Dr Kelvin Montagu, Stephanie Tabone (AHR), Kim Ngov (grower) and Julie Heng (grower/farm owner).

What's next for the journey of soil improvement?

Growers Julie and Sopha Heng of Kemps Creek in Southwest Sydney have decided to trial a year of alternative soil management on their farm under the guidance of Kelvin and Steph. A soil management action plan was developed in December, with the objective to improve soil health by:

- Improving soil structure
- Reducing compaction of subsoil (>15 cm depth), eliminating the hard pan
- Reducing surface capping
- Improving drainage

These improvements may help to reduce disease, improve yields and reduce costs. Diseases known at the site include Clubroot (*Plasmodiophora brassicae*) which has developed from ongoing cropping of brassica vegetables (bok choy, Chinese cabbage, mustard plant) and white rot (*Sclerotium cepivorum*) seen in spring onion crops.

There are eight 1m wide experimental beds that will undergo improved practice for comparison to a control that represents normal practice. The structure of the topsoil (0-15 cm) is porous and friable, while the subsoil (>15 cm) is compacted. The treatment plots will have compost applied to increase organic matter levels and then the soil deep ripped to 35 cm to overcome the compaction at depth. A Japanese millet cover crop will be planted on the beds in February and incorporated through rotary hoeing at a shallow depth to promote germination. Annual ryegrass will also be planted in the inter-row space to suppress weeds and improve soil structure. The control beds will be prepared using the growers' normal practice and will not have a cover crop sown.

The cover crop will be grown for approximately six to eight weeks, then terminated using herbicide. The area will then be rotary hoed, then planted with spring onions in early April across the treatment and control areas. The spring onions will be inoculated with the Wilchem product Recruit Hort WP, containing endophytic *Trichoderma*, a biological for the control of white rot.

Support through change

VegNET NSW supported by AHR and the Soil Wealth ICP project make it possible to extended best practice and foster change by advising and demonstrating to build confidence in making changes on farm easier for growers.

FIND OUT MORE

Please contact Sylvia Jelinek on 0427 086 724 or email **sylvia.jelinek@lls.nsw.gov.au**

VG21000 VegNET 3.0 is a strategic levy investment under the Hort Innovation Vegetable Fund.

VG16078 Soil Wealth and Integrated Crop Protection 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, VG16078**

Hort Innovation Strategic levy investment | VEGETABLE FUND

VegNET WA Update

Magic Microbes: Grower's share their success stories with the Biomineral System

Regional Development Officer, Michael Bartholomew, interviews a set of growers in Western Australia who have seen great success in their production following the switch to the Biomineral system.

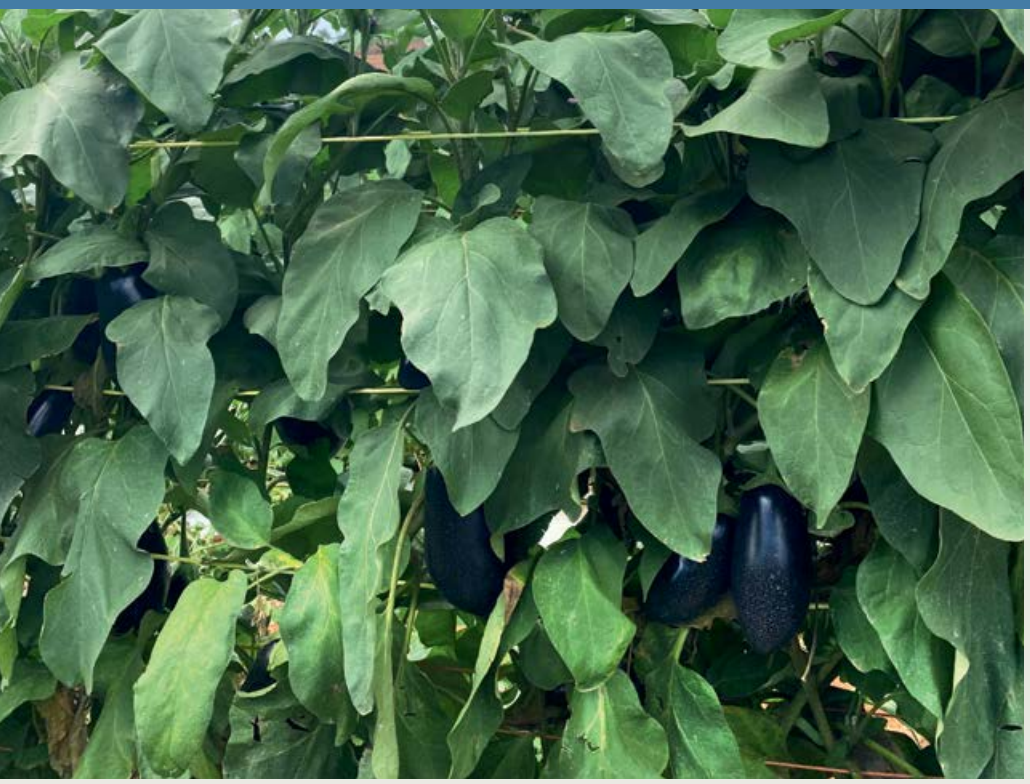
In the last edition of *Vegetables Australia*, I discussed the Biomineral system broadly as a system of production that can bolt-on to existing production systems to increase their efficiency and sustainability. It's nothing magic, just a specific blend of microbes and altered agronomic practises that make a large difference to the quality and costs associated with growing the produce. By adding microbes to the soil and instead of feeding just the plants with fertiliser, but the microbes too, the soil becomes more than just a substrate or growing medium. It becomes a complex (and helpful) ecosystem in its own right. Some of the microbes work to extend the plant's root system, some work to fix nitrogen from the atmosphere and some work to break down inaccessible nutrients into plant-available forms. The end result is vastly increased fertiliser and water use efficiency and a consistently higher-quality crop. Given the current cost-price squeeze impacting horticultural production, the Biomineral system is increasing in popularity for a range of plants from vegetables through to turf.

Grower's Thoughts

But it's not just better-quality produce; everyone that I have spoken to in WA who has used this system has had a different reason to like it. I interviewed five growers to find out more about their experiences with the Biomineral system and asked them to share their thoughts.

Above. Carnarvon Agronomist, Scott Brain walks through a Biomineral banana plantation, taking soil samples to monitor the soil health of the crop.

Right. An eggplant grown under the biomineral system.



The growers interviewed were located as far north as Carnarvon and as far south as Donnybrook and grew a variety of crops, not just vegetables. Crops ranged from tomatoes to bananas, from apples to nectarines and pumpkins to eggplants. The soil types ranged from hungry sand to cracking clay and all the loams in between.

On average, each grower had more than 20 years of growing experience, however their time using the biomineral system was rather varied. I asked these growers:

What made you begin this system of growing?

- Issues with failing soils following decades of conventional tillage and chemical applications.
- Expensive fertiliser inputs not being held within the soil.
- Worked well in the veggie patch so wanted to expand it to bigger crops.
- Their neighbour began using it on their lawn and it was the best they've seen it.
- Other growers spoke highly of it, and they started out of curiosity.

What I like about this question was how varied the responses were. Some growers wanted to use it as a last effort to increase productivity and some liked what they saw over the fence. When asked if they had any teething issues when moving to the Biomineral production system, all growers agreed that it was an easy experience. Some growers indicated that they had to pay extra attention to the chemicals they used because they didn't want to kill the microbes and other growers even wanted to instinctively apply more fertiliser than required due to the stark differences in fertiliser requirements.

Plants have better vigour and are able to withstand pests and disease better than before.

When asked the difference between the Biomineral system and conventional farming from a management perspective, most growers agreed that the biomineral system was easier, with a few tweaks. Some growers highlighted that they needed to fertilise less, therefore store less fertiliser and that the ideal fertiliser application method has changed and it is a more hands-off process.

What benefits have you noticed and which are more important to you?

- Fruit quality dramatically increased, more higher-grade product, better taste, higher water and brix.
- Better shelf life. Fruit stores for far longer than that produced with conventional fertiliser.
- Soil health has dramatically improved, soils are more friable and hold water far better.
- Plants have better vigour and are able to withstand pests and disease better than before.
- Cost savings by using dramatically less fertiliser.
- Increased return per hectare resulting in needing to plant less and having more spare time.

All growers began using the system on a small scale first before expanding to their entire farm and generally began using the system as a result of seeing the success of other growers. From the responses above, the reasons for adopting the system are wide and varied, however the most recurring feedback was the shelf-life of the fruit being far better than that of conventionally grown produce. Additionally, the growers added that the first six months of using the system felt strange as they didn't need to apply nearly as much fertiliser as they're used to. Fortunately, most of the growers knew of somebody who had already made the switch and they were able to reassure them that it was going to work, as initially it sounds rather unconventional.

With the right support, adopting the biomineral system has shown to improve many aspects of production and will be a continual focus area for VegNET in WA.

FIND OUT MORE

Please contact Katrina Hill at vegetablesWA on 0427 373 037 or email **katrina.hill@vegetableswa.com.au**

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Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

VegNET Lockyer Valley

Roslyn Pennings, Barden Farms

The VegNET Regional Officer for the Lockyer Valley region interviewed Roslyn Pennings, who is the logistics manager for Barden Farms.

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

My role at Barden Farms involves the coordination and distribution of all produce we grow at this location. I am responsible for all post harvest applications to ensure our customer specifications are met or exceeded. We supply retail supermarkets direct and ship goods all over the country. We grow many varieties of vegetables and our farm is part of a much larger farm network owned by the Drummond family.

During the peak of the season we pack and ship up to five semitrailers per day. I am proud of my team and the volume of produce we ship each day.

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

Although my story did not start as an interesting one, I simply answered an ad. It became the best decision I ever made.

Since starting at Barden I have worked briefly in the packing shed, this gave me a greater insight of what we do and how we market our produce.

During my time, I was fortunate to have led the Sales and Marketing team managing the supply of produce nationally and I also managed the packaging procurement.

I have been fortunate to move throughout the company during the past eight years, giving me a greater understanding of our company and the industry we are a part of.

I love this industry!

What do you enjoy most about being involved in the vegetable industry?

I really enjoy meeting people from other farms. I have been fortunate enough to be able to represent Barden at several Hort Connections and Lockyer Valley Grower (LVG) local events. We are surrounded by great people throughout our industry at all levels. I enjoy meeting and talking to representatives of farms from all over the country.

With such a diverse workforce in our industry, we work alongside so many different nationalities and cultures every day. Although verbal communication can be an issue at times it shows the willingness to overcome challenges and unite as a single team with a single goal.

What is your proudest achievement?

In 2017 I was selected to be a part of the 'Growing Leaders' program. The Growing Leaders program brought together people from all areas of the vegetable industry and different advancements of careers. I met so many amazing people through the program and it ignited a passion for learning more of the industry and its members. After the Growing Leaders I started attending the LVG meetings. Not all the meetings are aimed at me, but I am interested to take back anything that might be relevant to others. I attended a meeting a couple of years ago and I was talking to a colleague about something similar, I was able to share who he should talk to for further information.

What challenges do you face as a vegetable grower?

Farmers in Australia have just experienced the worst climate conditions in history. Stock losses have been at record levels. While global conditions have driven fertiliser and input costs to record levels, long term sustainability is being threatened more than ever before.

Here and now however, the most pressing issue is labour. Staff shortages nationally are having a negative impact on farm production at every level.

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

The vegetable industry bodies in Australia such as AUSVEG, Growcom that support the industry are critical. Advocacy through these bodies, local and federal government are a big part of what we do to help solve the problem and work together with fellow farmers. The horticultural family is very strong.

Closer to home, we have embraced and are very happy with the Pacific Islander program and many of our staff are now from that program.

Prices need to remain stable and gluts must be avoided so we can continually review what volumes we are planting in the ground to manage achievable margins to the best of our abilities.

The challenge is not going away.

Above. Members of VegNET Gippsland's REAG at a climate projection workshop led by the University of Melbourne and Deakin University.
Right. AvaGrow Farms sandy hill country and their first crop of baby cos. Matt and Katie Zagami at Wairewa.

FIND OUT MORE

Please email
ido@lockeryvalleygrowers.com.au

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Project Number: **VG21000**

Hort Innovation Strategic levy investment | VEGETABLE FUND

VegNET Tasmania Update
Biosecurity preparedness workshop and Tas Ag Innovation Day

VegNET Tasmania has been busy over summer. Amongst other activities in key focus areas, VegNet delivered a Biosecurity preparedness workshop in December and was heavily involved in preparations for the annual Tasmanian Ag Innovation Expo, which is a major industry event.

Biosecurity preparedness workshop

Last December, VegNET Tasmania hosted a workshop for growers and processors/packers looking at what would happen in Tasmania if an exotic pest was found and what industry can do to be prepared for this eventuality. It covered legal obligations such as the General Biosecurity Duty (GBD) and the importance of crop monitoring and record keeping as well as reporting unusual pests, weeds and diseases. With the diverse mix of enterprises that Tasmanian growers have on their property we included some discussion about potential threats to animal health and how they might impact vegetable production and trade. About 80% of Tasmania vegetable growers also run livestock.

Ahead of the workshop, VegNET Tasmania put together a flowchart (*Figure 1*) which shows what happens in Australia when an exotic pest is found and how government and industry respond to this pest under the Plant Health Deed. Individual State responses would follow a similar process. This flowchart demonstrates the complex decision making process that is undertaken by government and industry bodies when an exotic pest is identified. During the workshop the implications this would have for Tasmanian and Australian agricultural industries was discussed. Thanks to Biosecurity Adviser Kevin Clayton-Greene for his time and assistance in pulling this information together.

The workshop was kicked off with a presentation that Darryl Smith gave at an industry meeting at the Tasmanian Institute of Agriculture's Forthside Research Station some years ago where he discussed what happened when tomato potato psyllid (TPP) was identified on his property in WA. His main message for growers was: The federal government protect Australian Borders, state governments protect state borders, farmers protect their farm.

Above. The Innovation day is always a great chance to see some of the technology and innovations available. *Image courtesy of Ossie Lang.*

The discussion on the day also looked at the Tasmanian General Biosecurity Duty and how this supports shared responsibility in keeping Tasmania free from exotic pests and diseases. Other important points were how diverse our vegetable producing farms are in Tasmania and how a response effort in one industry will likely have a far broader impact in Tasmania with knock on impacts to most other industries (even when not directly impacted by the pest in question).

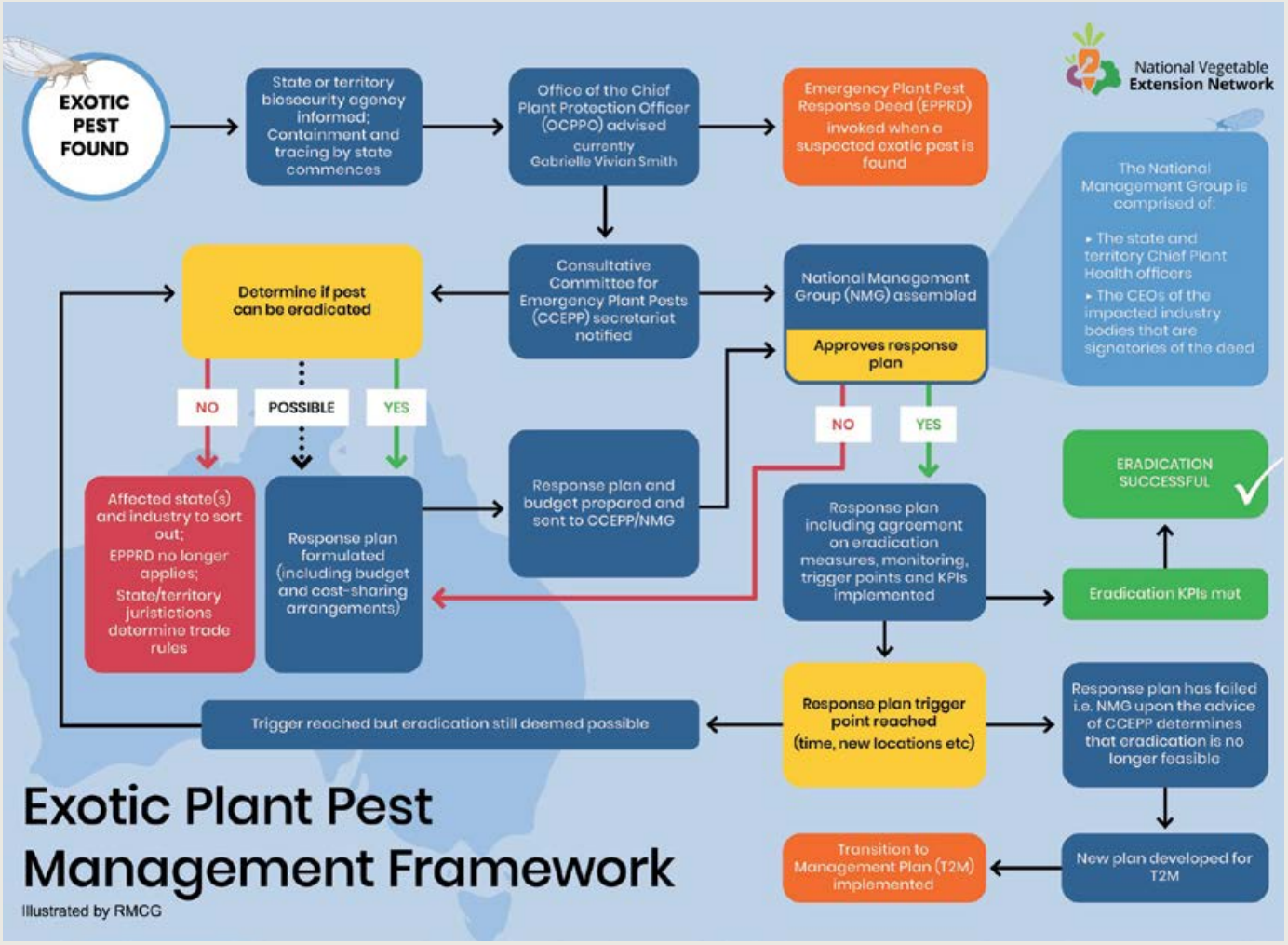
We thank Biosecurity Tasmanian staff Andrew Bishop, Harri Osborne, Deb Grull, Pip Sims and Lynn Broos for giving their time and providing important insights on the day.

Important Outcomes

There were some important outcomes from the day:

- There is now a greater understanding from both industry and government about how a new pest could impact agriculture across the state. For instance, biosecurity officers were unaware of the high proportion of vegetable farms that are running livestock. Participants were not aware of the general biosecurity duty and how they can benefit from working with Biosecurity Tasmania to prevent incursions and especially spread of exotic pests.
- The vast majority of the industry is undertaking some biosecurity activity they may not consider as such. These farm hygiene and monitoring activities are usually undertaken to keep pests and diseases out of a property to preserve production levels but are still biosecurity measures.
- Keeping good records is key to be able to demonstrate what you are doing on farm to reduce your risks and to have evidence of absence of biosecurity pests that could impact on trade.
- Good biosecurity practices are a continuum of measures not an on/off switch, the more growers can do to reduce risks the better. Just because you can't afford a brand new wash down area doesn't mean you can't do anything to reduce the risk impacts to your property by keeping strict farm hygiene as well as visitor and monitoring records.

FIGURE 1. THE DIAGRAM ILLUSTRATES THE EXOTIC PLANT PEST MANAGEMENT FRAMEWORK.



The Tasmanian Grown website provides a one-stop shop for buyers looking for our fantastic Tasmanian horticultural products.

Ag Innovation Day

The 2023 Ag Innovation Day will be held on the 20 April at the Hagley Primary school. The day will be presented by the Tasmanian Agricultural Productivity Group (TAPG), the Tasmanian Farmers and Graziers Association (TFGA) and Fruit Growers Tasmania. VegNET supports the organising committee as a part of is precision ag focus area.

The keynote presentation will be from Fruit Growers Tasmania CEO Peter Cornish. Peter will be presenting the 'Tasmanian Grown' project and website. This project, supported by both the state and federal governments, provides a single point for international and domestic buyers who want to know more about Tasmanian horticultural products and who grows them.

"The Tasmanian Grown website provides a one-stop shop for buyers looking for our fantastic Tasmanian horticultural products. The website not only showcases the fresh, vibrant taste experience that our produce has to offer, but will also provide a connection point between buyers and Tasmanian producers" says Peter. "We initially launched the showcase at Asia Fruit Logistica in late 2022 and I'm looking forward to sharing this to the Tasmanian industry more broadly."

Spray Application

The organising committee has decided focus on a key theme for the day. This year's expo will revolve around spray application and associated innovations. With spraying a critical part of many farming operations and farm biosecurity we wanted to highlight some of the emerging technology that will help growers get the results they want," says Tasmanian Agricultural Productivity Group (TAPG) chairman Mark Kable.

Along with this focus from the exhibitors on spraying technologies the day will also feature presentations from industry experts.

"While the newer spraying technology is fantastic for the industry, we also want to highlight any simple changes that growers can make at their own place to improve their spraying applications," says TAPG Executive Officer Terry Brient.

The Ag Innovation day will once again be a free ticketed event with tickets available for booking shortly. More information will be available on the TFGA, Fruit Growers Tasmania and VegNET social media and other channels.

"We're pleased to once again partner with TAPG to deliver the Ag Innovation Day," says TFGA CEO Hugh Christie.

"This year's theme will not only assist farmers look at new spraying technology but also allow them to ensure they are getting bang for buck with their current applications."

FIND OUT MORE

Please contact Ossie Lang on 0430 380 414 or email **ossiel@rmcg.com.au**

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AUSVEG
state update

AUSVEG State News

AUSVEG VIC

AUSVEG Vic would like to introduce our new Executive Officer Joy Pedersen. Joy comes from a power tool and event management background. She is extremely customer focused and aims to exceed internal and external stakeholders' expectations. Even though she is an Essendon supporter, she has managed to keep her bubbly nature and contagious laugh, and we welcome her to the Vegetable Industry.

We have two massive events coming up in April:

Victorian Vegetable Innovation Days

April 27 9am-5pm-28th 9am-2pm– Hosted at Butler Market Gardens 200 McDonald Road Catani VIC - Stunning Demonstration Sites from 10 Leading Seed Companies - 8 Chemical/Fertiliser Companies - Live Demonstrations and lots more - All Growers Enter at No Charge - Live Spinach Master Class - Over 25 Exhibitors from across the supply chain.

E.E. Muirs & Son AUSVEG Vic Annual Awards for Excellence

Sat 29th April 6.30pm: This year will be a massive event celebrating 100 years of serving Victorian Vegetable Growers. 6 Awards will be presented on the night and MC Des Dowling will keep you laughing. For nomination forms please go to **ausvegvic.com.au** and for ticket purchases please go to **trybooking.com/CFQXF**.

Joy Pedersen
AUSVEG VIC Executive Officer
Phone. 0413 760 776

Above L-R. VicVID organising committee Danielle Park, Connor Steel, Rick Butler, Joy Pedersen, Dale Creed and in front Bonnie Dawson and Stuart Grigg

QUEENSLAND – GROWCOM

Queensland fruit and veg peak body gets a makeover

Queensland's peak industry body representing fruit, vegetable and nut growers in February launched the new advocacy and engagement arm – Horticulture Queensland. The name will be the fourth name associated with the peak body since its inception in 1923.

Originally a statutory authority, the organisation went under the name of Committee of Direction of Fruit Marketing (also known as COD or COD Industry Services). In 1991, COD changed their name to Queensland Fruit & Vegetable Growers (QFVG) and then in 1999 also changed their status from a statutory body to a company limited by guarantee. The change being as a consequence of the general trend of all governments to minimise their regulatory role in industry. 2004 brought about the addition of the trading name 'Growcom', a name which the organisation has been known as ever since.

The change comes after feedback from QFVG members. Our members rightfully expect loud, strong, and brave advocacy which fundamentally requires a different structure to the delivery of projects and programs. Because of this feedback we have decided to run two unique divisions of QFVG to reflect its two distinct functions

The easiest way to think of the new structure is to think of QFVG as the head – it's the board, the employer of staff, and the legal entity. Horticulture Queensland is our new dedicated advocacy arm while Growcom will be retained to serve as the programs and projects delivery arm.

The strength in any member-based advocacy lies in numbers. The ability to say with confidence that you understand and represent the views of the entire industry and have the numbers to back that up is when government must listen. It's our mission to represent 100% of the industry in our 100th year.

Rachel Chambers
CEO Growcom
Phone. 07 3620 3844

QFVG | QUEENSLAND FRUIT & VEGETABLE GROWERS

NORTHERN TERRITORY

From the 22-25 May, 2023 Darwin will be hosting The Northern Australia Food Futures Conference (NAFF). NAFF is Australia's leading conference on agricultural development in the North.

The conference is integral in driving expansion in the north and places northern agriculture on the national agenda. Investors, politicians, industry and community stakeholders from around Australia and the world attend the Conference to explore agricultural opportunities in the north.

The three-day conference held in Darwin, Northern Territory will feature:

- Over 50 speakers from industry, research, government and private sector, including successful farmers from WA, NT and Qld as speakers
- Workshops, keynote, and plenary sessions
- AgTech Forum
- Exhibition and displays
- Incredible social program showcasing the very best of Darwin and surrounds

The biennial NT Farmers Association Food Futures Conference is now in its 5th year and receives strong support from the governments of the Northern Territory, Western Australia and Queensland, the National Farmers Federation, Hort Innovation, Cotton Australia and the private sector.

The Northern Territory hopes to see you there!

Mariah Maughan
Vegetable Industry Development Officer
Phone. 08 8983 3233

VEGETABLESWA

With 2023 well underway, we have a strong focus on our growers and meeting them on their farms and understanding the issues that they face. vegetablesWA has undergone some big changes in recent months with staff changes and renewed focus on engaging and delivering value to grower members.

The industry faces some ongoing challenges with costs, albeit we are starting to see some relief with international shipping costs easing, but certainly not back to pre-Covid levels.

Despite this, growers are reporting that prices they are receiving for produce have strengthened and demand is strong. Time will tell if this continues throughout 2023 as the inflationary and interest rate pressures continue to hit families.

The production and financial benchmark for 2021/22 from the Building Horticultural Business Capacity project has now been released soon which provides real insights into the performance of the vegetable and wider horticulture industry.

Outside of input costs, growers continue to face other costs and challenges especially those associated compliance and regulatory issues.

On a positive note, WA has seen a strong flow of backpacker and seasonal workers who have eased pressures on growers for staff although accommodation in regional areas is a major issue.

We also acknowledge and welcome the new WA Agriculture Minister Hon Jackie Jarvis MLC and look forward to a strong working relationship with her.

I look forward to catching up with growers and the wider industry at Hort Connections in Adelaide.

Stephen Brown
CEO vegetablesWA
Phone. 08 9486 7515

AUSVEG State News

TASMANIAN FARMERS AND GRAZIERS ASSOCIATION

Tasmanian Potato growers have battled successive challenging harvest, planting and growing seasons. It would never have been considered that supermarkets and take away shops would be out of chips, but that was the case in Tasmania these past few months.

Growers, and farmers in general are seeing a distinct change of attitude from key parts of the supply chain beyond the farm gate. What just couldn't be done for years due to every possible reason, namely better price and conditions, has seen the penny drop for many a procurement manager, that Australia needs farmers now more than ever and that their luxury of playing us against cheap subsidized imported product hasn't been as easy.

Couple to this the floods around the country and the pressure on logistical providers it confirms what our Ag industry leaders have been saying for years. "Australia's food security is at risk". In saying that, our industry leaders in Tasmania have never worked closer with the two processors to get this year's crop in the ground. A willingness like never before was required by both grower and processor and resulted in later than normal plantings, with assurances from the companies that farmers are not left behind. Growers are now needing ideal conditions to realize the crops remaining potential. Early reports are of good quality and yields one month into harvest.

More broadly though, our industry is being weighed down by huge increases in every input and a continual shortage of labour for key responsibilities within the farming business. 2023 will be another challenging year for Tasmanian Potato growers, but history shows we do all we can to get the crop in and we always look to next year as being better. Talking of next year, the World Potato Congress will be in Adelaide next June. As an attendee of previous events, I strongly encourage farmers to make plans to participate. The networking and experiences gained are long lasting and are of a huge benefit to our industry.

Nathan Richardson
Chair of the TFGA Vegetable Council
Phone. 03 6332 1800

KUBOTA IMPLEMENTS

DIAMONDS IN THE ROUGH

PRECISION PLANTING

Diamond pattern seeding with GEOSEED

"There's no other planter in Australia that can do what the Kubota does, and we are very happy with the results."

Brad Qualischefski, Qualipac

With his farms producing a wide variety of vegetables on a large scale, Brad Qualischefski of Qualipac Produce wanted to introduce new technology into his farming operations – with optimised best practice of both sustainable and economic farming.

Which is why he chose Kubota.

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

"We plant our seeds in the shape of a diamond from north to west in the paddock. The PP1450V allows us to drive 45 degrees in any direction with a cultivator in the ground to pull out the weeds without pulling out the pumpkin plant itself.

POWER HARROWS
2.5m - 6.0m Working Widths

PLOUGHS
3-8 Furrow Auto-Reset

PRECISION PLANTERS
3.0m - 6.0m Working Widths

VEGETABLE PLANTERS
2.5m - 6.5m Working Widths

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For Earth, For Life
Kubota

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When it comes to harvesting, ASA-LIFT brings you innovative, specialised crop solutions to drive production further.

Since 1936 ASA-LIFT has built a solid reputation for quality, innovation and constant evolution to meet market demands. Maximise your harvest with an ASA-LIFT mounted, trailed or self propelled vegetable harvester - now proudly available from LANDPOWER Vegetable Centre.

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