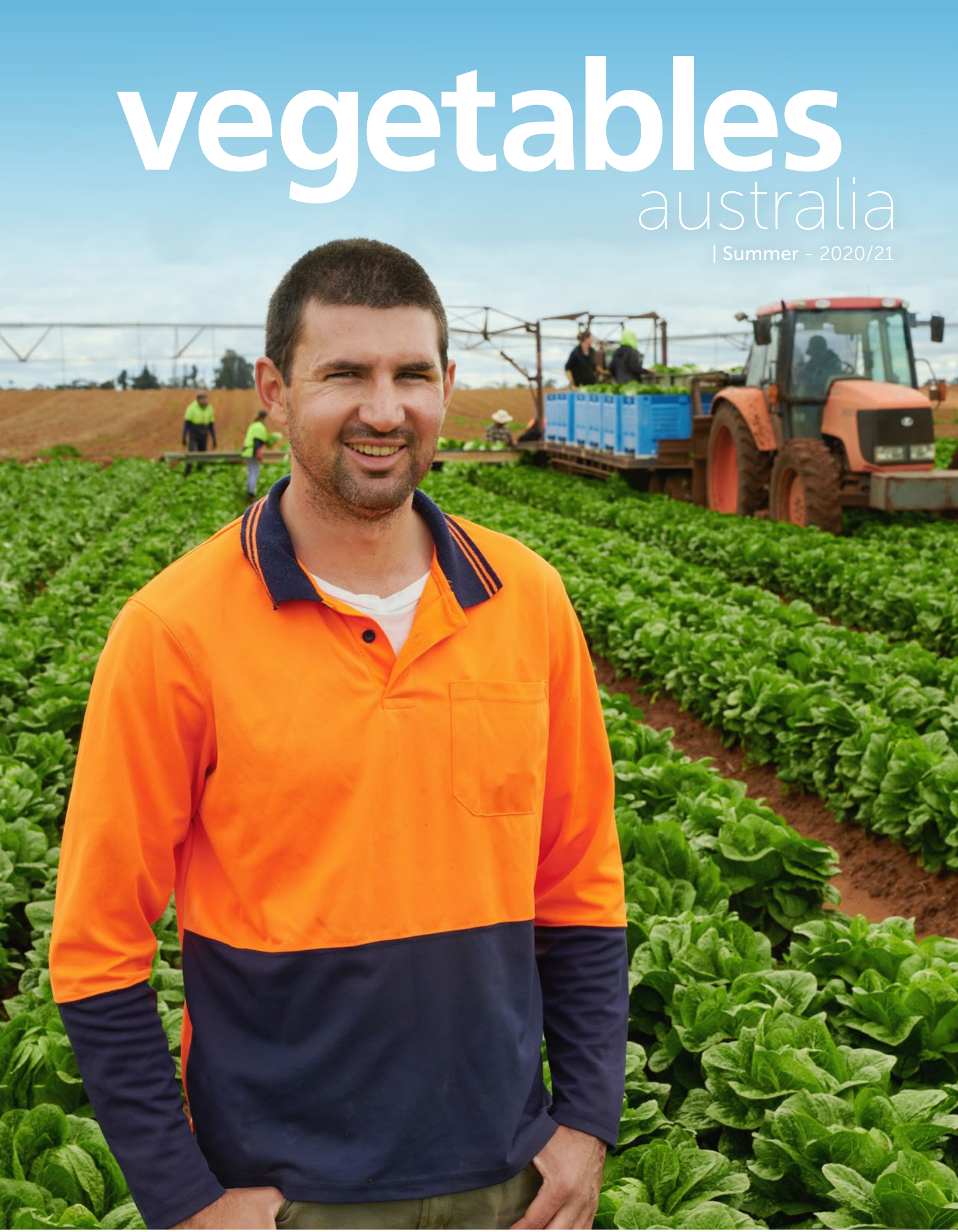
vegetables australia

| Summer - 2020/21



COVER STORY | REDGOLD: A BUSINESS ON THE MOVE

SPECIAL REPORT | SEASONAL HORTICULTURE LABOUR SHORTAGES PREDICTED

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

ISSN 1834-2493

Audited Media Association of Australia
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Editorial

Have you ever wondered where your contributions to the vegetable levy end up?

Hort Innovation has recently released its *Vegetable Fund Annual Report 2019/20*, and this sheds light on a range of the levy's functions. Among the information provided in the report is a snapshot of the amount invested in R&D; how many R&D projects have been funded during the last financial year; and key vegetable industry statistics.

It also mentions key activities that have been undertaken during the 2019/20 financial year, including the new industry communications program facilitated by AUSVEG (under which this publication falls under).

There has also been a new iteration of the nationwide VegNET program to support growers in accessing information and adopting best practice on-farm. Each edition of *Vegetables Australia* now has a dedicated VegNET section, where each Regional Development Officer provides an update on activities occurring in their region along with reporting any issues that are affecting their region, and how growers are being assisted in facing these challenges.

The COVID-19 pandemic has had a far-reaching effect on all facets of the horticulture industry. In 2020, Hort Innovation has invested in information and data to assist through COVID-19 including the new Hort Innovation Insights podcast and regular consumer attitude and behaviour information.

The Good Mood Food across-horticulture marketing campaign was also established to support industries through the effects of recent times, while the consumer focus continues with the Taste & Learn Program – a new vegetable education program for primary school children. Additionally, vegetable Harvest to Home dashboards, facilitated by Nielsen, continue to provide regular household purchase data and insight reporting on over 25 commodities.

Meanwhile, on-farm support is being provided to growers who are faced with the challenges of fall armyworm. Emergency minor use permits have been issued during 2019/20, and an educational podcast series recorded to assist with the incursion.

These activities are only a small sample of what is happening in the vegetable industry. If you are still unsure about the levy and its function, *Vegetables Australia* has a page dedicated to 'The vegetable R&D levy at work' in each edition (turn to page 58) and further details about the *Vegetable Fund Annual Report 2019/20* can be found on page 68.

On a final note, *Vegetables Australia* would like to thank all of those who have contributed and supported the publication throughout 2020, and we look forward to continuing to deliver the latest vegetable industry news and R&D articles in 2021.

Message from the CEO

Industry has long advocated for solutions to what was a looming labour crisis, which has now become a reality.

The Australian horticulture industry is predicted to be up to 26,000 workers short over the coming months to pick and pack fruits and vegetables for consumers, and more needs to be done to support the vegetable growing industry and horticulture businesses that supply high-quality vegetables and fruits to local and international consumers.

The *Seasonal horticulture labour demand and workforce study*, completed by Ernst & Young (EY) to assess the shortage of workers across the fruit and vegetable industries in light of the COVID-19 pandemic, predicted the casual labour gap in Australian horticulture will increase from November 2020 and reach a peak in March 2021.

Backpacker numbers remaining in the country are now at just 60,000, well down on the 141,000 backpackers on January 1 this year, while Seasonal Worker Programme workers are at just 6,500.

Industry requires urgent action from government to get more harvest workers into the system, or face more growers walking away from crops or ploughing them into the ground.

Industry has delivered key sets of data – led by the EY report – and continued to advocate for solutions via the 10-point plan agreed by the Horticulture Council, yet more needs to be done urgently to support growers.

AUSVEG has continued to work with State and Federal Governments and its state members to support access to the Pacific Island workers via the Seasonal Worker Programme. While there has been limited success with flights coming into the Northern Territory and Queensland, there remains a significant shortfall in harvest labour.

Federal Government also announced measures recently in the Federal Budget to incentivise domestic workers from metro centres into the regions to work in horticulture and agriculture. Those incentives came into effect on November 1. At the time of writing, it is unclear as to the impact that has had on the sector; however, we are yet to hear a significant increase in inquiry or applications as a result of the announcements.

In the meantime, AUSVEG encourages growers to lodge their labour requirements using the Harvest Trail Information Service (HTIS) and for locals looking for farm work to also use the service.

AUSVEG will continue to monitor the labour situation, and work with the Government on further interventions that attract the required local and international workers our industry needs to get crops off the farm and to consumers.

James Whiteside

James Whiteside
CEO
AUSVEG

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Seasonal horticulture labour shortages predicted to reach 26,000

Hort Innovation commissioned consultancy firm Ernst & Young (EY) to calculate the predicted seasonal worker shortage in the Australian horticulture industry in light of the COVID-19 pandemic. AUSVEG National Manager – Communications Shaun Lindhe discusses the report and the implications of the pandemic on the labour demands of the Australian horticulture industry.

The COVID-19 pandemic and the cessation of seasonal workers and backpackers arriving in Australia has resulted in a devastating labour shortage for Australian horticulture growers. The horticulture labour market relies heavily on casual and seasonal labour, which represents the majority of the workforce in Australian horticulture.

As of November 2020, Working Holiday Maker numbers remaining in the country were just 60,000, well down on the 141,000 backpackers that were in the country at the start of the year. Workers under the Seasonal Worker Programme were also just 6,500 at the same time, well short of the numbers required to fill the shortage from backpackers.

There is an opportunity for domestic workers to fill the labour demand, but attracting and keeping local workers on-farm has proven difficult despite multiple attempts by government and industry to get more local workers into the industry.

Labour demand study

In response to the need to provide government with robust and accurate data on the industry's labour demands, Hort Innovation commissioned consultancy firm Ernst & Young (EY) to conduct extensive stakeholder consultation across the sector and help build a foundational understanding of the horticulture labour market to inform discussions and potential actions to proactively support growers in a changing landscape.

The result was the *Seasonal Horticulture Labour Demand and Workforce Study*, which provided an 18-month outlook on the casual labour demand across different regions and commodities to support industry discussion on longer term COVID-19 response.

The study predicted the casual labour gap in Australian horticulture to reach a peak in March 2021, with up to 26,000 workers required in different regions across Australia.

Labour supply and supply gap

Scenario projections indicate that the casual labour gap will increase from November 2020 and reach a peak in March 2021, likely to represent a gap ranging between 20,000 and 26,000 roles. This would represent a 36 to 59 per cent labour supply shortage between November 2020 and June 2021; this translates to a net gap of 20 to 33 per cent over the next 18 months, meaning only 67 to 80 out of every 100 casual roles can be filled.

The labour shortage is likely to be most acutely felt in Victoria and Tasmania, which exhibit two characteristics likely to make them more vulnerable:

- large producer of high volumes of very labour-intensive products (e.g. table grapes, berries).
- locations where internal border closures could restrict mobility.

The deficit could be even greater if international border reopening is deferred past the report's assumption of the borders opening by March 2021, which was the best estimate at the completion of the report.

Major regions and commodities

The study forecasts high fluctuations in monthly national casual labour demand across states, driven by the seasonality of the major fruits and vegetables that each state produces. While horticulture products are grown throughout Australia, the study highlights the following seven production regions constitute the majority of the total casual labour demand:

- Queensland – Cairns, Wide Bay
- Victoria – north-west, Shepparton
- New South Wales – Coffs Harbour – Grafton, Murray
- South Australia – south-east

When annualising casual labour demand over a full year to account for differences in seasonality, the study shows that:

- Fruit commodities are forecast to make up approx. 85 per cent of demand, driven on average by a higher labour intensity and a higher reliance on casual labour.
- Victoria, Queensland and New South Wales are forecasted to represent approx. 80 per cent of demand, driven by the combined effect of several labour-intensive fruits and vegetables produced in these states.
- Two major peaks are forecast to occur over the next 18 months: from January to April 2021 and between October and December 2021, which reflects simultaneous peak harvest times in Victoria, Queensland and New South Wales.

A more detailed breakdown of the labour shortages by states, including the major affected crops and the anticipated peaks in labour shortages, can be seen in Image 1.

Additional concerns raised by industry stakeholders:

Labour impacts and challenges

Labour productivity impacted by worker fatigue
As growers try to retain workers in future months, there is a potential loss of productivity if the workers are not replaced with new workers due to fatigue.

New workforce safety protocols
Growers are required to meet the updated health guidelines to ensure compliance with social distancing protocols.

Restricted transport and movements
Ongoing challenge is the impact of international and domestic border restrictions as international workers cannot enter the country and movements of workers around different states is restricted.

Labour cost
As the available labour pool decreases, growers face competition from other industries to employ workers which could lead to increased labour costs.

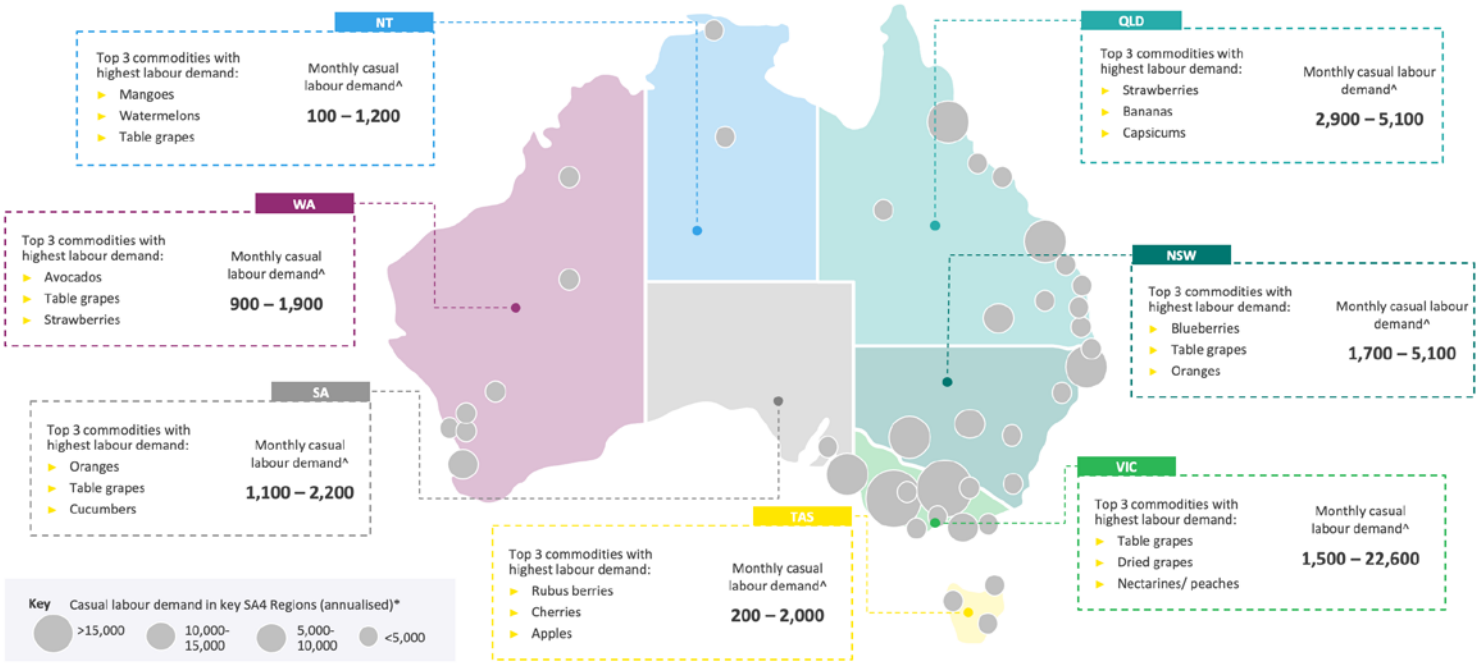

Image 1: Monthly casual labour demand

Other impacts and challenges

Social impacts to casual workers
Loss of income from casual work due to border restrictions, with no feasible alternatives, could cause serious social impacts for entire communities, such as mental health issues, famine, lower education levels and increased crime.

Price increase for horticulture commodities
A gap of supply in casual labour and resulting loss in production could restrict supply and cause upward pressure on prices for consumers.

Negative impacts on growers' businesses
Loss of production could lead to significant cashflow issues for growers and jeopardise growers' financial situation.

Impacts on regional and rural communities
Horticulture is a key source of income for many regional and rural communities and provides add-on benefits to their local economy.

About the study

This study aimed to build an understanding of expected casual labour demand across the horticulture sector over the next 18 months. The study relied on 'bottom-up' and 'top-down' analyses to provide casual labour demand forecasts across commodities and SA4 regions.

The bottom-up analysis was based on actual grower estimates captured through the survey and represented 23 per cent of total production volume. It suggested a monthly national demand for casual labour headcount varying from 6.4k to 10.2k over the next 18 months.

The top-down analysis extrapolated labour demand using a reference dataset on production volumes and applied the productivity ratios (tonnes per headcount) captured from a national survey for each commodity. It suggested a national monthly demand for casual labour varying from 11.4k to 36.8k headcount over the next 18 months.

The study did not include a detailed quantitative review of casual labour supply. The high-level analysis of casual labour →

Australian horticulture casual workforce

	Characteristics	%of the casual labour market
Seasonal Worker Programme (SWP) and Pacific Labour Scheme (PLS)	Recognised as the most productive workers with approx. 20% higher productivity ratios compared to WHMs	22
Working Holiday Makers (WHM)	Considered less productive and less reliable as they are not motivated to continue employment. Typically work for shorter periods with most workers motivated by satisfying their 88 regional days, therefore high turnover.	72
Australians and permanent residents (PR)	Unskilled or low-skilled local residents seeking local jobs. Perceived lack of motivation to work in the industry due to lucrative Australian Government welfare and support.	6

Overview of study's major findings

1. The horticulture sector relies heavily on casual workers, comprised primarily of Working Holiday Makers who are mainly sourced by word of mouth.
2. Due to COVID-19, most respondents foresee a significant labour gap in the next 6-12 months, largely attributed to border closures and visa restrictions.
3. Over 60 per cent of respondents are expecting that workers from overseas will be primarily missing in the next 18 months and are concerned about what this means for their business.
4. Labour availability is identified as the top factor likely to impact production over the next 18 months, while previous experience is considered as the first driver of labour productivity.
5. Complying with COVID-19 regulations and border restrictions has been challenging for growers, with many calling for targeted support in the next 18 months.
6. Productivity ratios (in tonnes per headcount) in horticulture tend to vary significantly with the grower's size (in production volume) across all commodities.
7. Growers indicated that they employed an average of 8,200 casual workers per month last year and expect an increase in their labour requirements over the next 18 months.
8. Growers producing fruit commodities are expected to make up over 70 per cent of casual labour demand over the next 18 months.
9. Growers anticipate significant fluctuations in casual labour demand over the next 18 months, reflecting the seasonality of the commodities they produce.

supply and subsequent labour gaps provided aimed to give a high-level estimate of the magnitude of labour gaps as a result of COVID-19, which will help inform discussions around labour shortages that will support the industry.

Previous work

While capturing data on the labour requirements of the industry is challenging, AUSVEG worked with EY and the Australian Fresh Produce Alliance (AFPA) to assess the immediate labour shortage in the fruit and vegetable industry once the consequences of the international travel ban became clear.

This focused on ensuring there were enough workers to get vegetables from the farm to the consumer. AUSVEG worked with AFPA to map the labour requirements for the horticulture industry over the short-, medium- and long-term, including identifying how many workers are required in specific regions.

This work was important for temporarily extending vital foreign agriculture and food processing workers in early April.

The *Seasonal horticulture Labour Demand and Workforce Study*, commissioned by Hort Innovation, followed this initial piece of work.

Find out more R&D

To find out more about the report, please email Hort Innovation General Manager – Data and Extension Anthony Kachenko at anthony.kachenko@horticulture.com.au.

Hort Innovation Strategic levy investment | VEGETABLE FUND

Source Certain analyses the physical product itself independent of labelling claims and chain of custody data.

Source Certain uses advanced technology, like this Inductively Coupled Plasma Mass Spectrometer (ICP-MS), to deliver provenance services.

Scientifically safeguarding the value of premium produce

When a product is commercialised and enters the supply chain, provenance verification technology provides the vital ability to prove a product's origin claims, through the scientific analysis of the product itself. This is especially important for products carrying value-based claims or certifications, such as 'organic' or 'sustainably farmed', which are delivered at the site of production. *Vegetables Australia* reports on the benefits of connecting products to their original source.

The uptake of new technologies to provide traceability within the fruit and vegetable industry has increased in recent years. This is partially in response to the recent food tampering and contamination crises, but also through an industry-wide recognition that good traceability systems offer many benefits to producers.

Digital traceability systems offer specific information about the movement of produce within supply chains, data about consumer purchasing habits, increased production and logistical efficiencies, opportunities for longer shelf life and the reduction of product waste. These systems rely on chain of custody data to record the movement of stock within supply chains and the record of this data begins at the place where produce is allocated a scannable label or code, which typically occurs at the packhouse. What remains is a traceability gap between the source of production (provenance) and packhouse, where produce is still unmarked or unlabelled. This is where scientific traceability comes in.

Tracing technology

There are two key reasons why it is critical to have the ability to connect a product to its true provenance, or source of production. These are **protecting premium products** and **protecting producers.**

Source Certain uses its forensic provenance verification technology, TSW Trace®, which identifies the composition (chemical, molecular, elemental and isotopic) of food and non-food products that enables the verification of provenance.

The technology is very sensitive, so provenance can be determined to a high level of specificity (e.g. individual ponds, or sheds on an egg farm). It tests the physical product itself, independent of associated data labels and packaging. This capability supports existing traceability systems building confidence in the supply chains that carry products and their associated promises to consumers. In addition to initial sampling of produce, Source Certain carries out covert sampling of product within the market. The communication of this in-market surveillance to supply chain partners acts as deterrent to bad behaviour, such as product substitution and false labelling, within the supply chain.

Source Certain Chief Scientist, Dr John Watling pioneered TSW Trace®, with its first application in linking stolen or smuggled gold back to its mine of origin. Over 40 years, their scientists have been developing and using this technology to assess forensic evidence in criminal investigations globally, as it is also an accepted forensic method by international courts of law.

This provenance verification technology is adopted by producers as a scientific layer of security to verify product provenance, authenticity and chain of custody data.

Source Certain designs provenance verification programs using TSW Trace® for industry bodies or individual producers of all sizes.

Its technology can be integrated with complementing traceability systems, whether they are digital or paper-based, to provide more visibility over a product's journey from the producer to the consumer.

When working with fruit and vegetable producers, one objective is to provide a solution to bridging the traceability gap between farm and packhouse. By doing this, it allows for visibility to a product's provenance and increased transparency within a critical stage in the supply chain.

Key points: The science behind provenance technology

- Source Certain's technology and analysis is independent to labelling claims, certifications and chain of custody data.
- It acts as a scientific check on digital or paper-based data by testing the physical properties of the product itself to verify the integrity of data captured by traceability systems.
- Growing demand from downstream suppliers to verify the integrity/ authenticity of premium produce; boutique or licenced varieties, sustainability or organic production claims and other provenance-based claims.
- The science offers enhanced traceability to combat food safety issues (such as contamination outbreaks) by linking produce at the packhouse stage to the farm of origin. There are biosecurity benefits, with a tighter quarantine and continuation of operations that comes with the ability to trace a contaminated vegetable back to a farm or paddock.

Find out more

Please call 1300 TRACED (1300 872 233) or email info@sourcecertain.com. Further details can be found on the Source Certain website: sourcecertain.com.

Meet the AUSVEG Board

The AUSVEG Board of Directors is made up of representatives from our state member organisations, as well as Board-appointed skills-based Directors.

Below is an introduction to each Board member, including Renee Pye from Zerella Fresh. Renee replaced Thorndon Park Produce's Danny De Ieso on the AUSVEG Board in November 2020.

Danny has been on the AUSVEG Board since September 2014. AUSVEG would like to thank Danny for his contribution to the industry during this time and congratulate Renee on her appointment to the Board.

For further details about the AUSVEG Board members, please email info@ausveg.com.au.

Position	Name	State
Board member (Chair)	Bill Bulmer	Victoria
Board member (Deputy Chair)	Belinda Adams	Queensland
Board member	Renee Pye	South Australia
Board member	Geoff Moar	New South Wales
Board member	Pennie Patane	Western Australia
Board member	Michael Radcliff	Tasmania
Board member	Mitchael Curtis	Northern Territory

Skills-based Board Members

Position	Name	State
Board member	Simon Bolles	Appointed
Board member	Mark Napper	Appointed

Belinda Adams

Belinda Adams was appointed to the AUSVEG Board in December 2015 and has been AUSVEG Deputy Chair since November 2016.

Belinda was born into a family of farmers. Her parents, grandparents and great-grandparents had all farmed the land, and her family has continued the tradition.

Coastal Hydroponics is a family-owned and operated business. It currently supplies Coles with bagged and loose salad ranges, bunched herbs and hydroponic lettuce. The business is expanding rapidly, taking on more farming land and doubling the size of its process facility. It has also increased its hydroponic infrastructure to cater for the growing demand for herbs.

Belinda is responsible for all production, staff, raw material purchasing, customer liaising, product development, marketing and sales. She received the AUSVEG Grower of the Year award in 2014 after taking home the Women in Horticulture award in 2013 (see page 14 for more).

Belinda has been a Growcom Director since 2015 and was named Growcom Chair in 2019. She is the Queensland Representative for the EnviroVeg Program, and former member of Hort Innovation's Vegetable Consumer Alignment Strategic Investment Advisory Panel. Belinda also completed the Women Executive Leadership Program in 2017.

Bill Bulmer

AUSVEG Chair Bill Bulmer was elected to the AUSVEG Board in November 2014 and was elected AUSVEG Chair in 2017.

Bill is a third-generation Victorian vegetable farmer with over forty years' experience in horticulture. He is a director of the family business, Bulmer Farms Pty Ltd, which supplies the processing industry in Bairnsdale, Melbourne and Sydney, Adelaide and Perth and the Fresh Markets throughout Australia.

Bill is currently serving on the AUSVEG VIC Executive Committee and the Victorian Farmers' Federation Horticulture Committee. He is also Chair of the Mitchell River Catchment Agricultural Business Association; Chair of the Lindenow Irrigators Advisory Committee; and Chairperson of the Lindenow Memorial Hall.

Bill is a Life Member of the East Gippsland Football and Netball League and the Lindenow Football and Netball Club.

Geoff Moar

Geoff Moar is the longest serving member on the AUSVEG Board. Geoff was elected to the Board in November 2004 and has served as Deputy Chair from 2011 to 2013 and as Chaor from 2013 until 2017.

Geoff has grown potatoes since the late 1960s and supplies fresh and processed potatoes to the French fry production, crisping and fresh markets. He is a member of the NSW Farmers Association Horticultural Committee and is also a long-term board member of West Corurgan Irrigation. Currently, Geoff is Chair of the Murray Regional Strategy Group, representing the irrigation organisations in the Southern Riverina (along the Murray River).

Mark Napper

Mark Napper has 30-plus years' experience in Australian agribusiness. Up until September 2020, Mark owned a fruit orchard in Bangalow, New South Wales where he grew peaches, nectarines and custard apples.

Previous positions within the horticulture industry have included:

- Managing Director of the Australian Horticultural Corporation 1998 to 2001;
- CEO and Director of Windsor Farm Foods Group Ltd from 2005 to 2011;
- Director of the Australian Mango Industry Association Ltd from 2008 to 2011;
- Independent Director of AUSVEG Ltd from 2009 to 2013;
- Director of the Summerfruit Australia Ltd from 2012 to 2013; and
- Deputy Chair Horticulture Innovation Australia Ltd from 2015 to 2018.

In addition to his farming interests, Mark owns and operates a business advisory firm specialising in food and agriculture. Mark was appointed to the AUSVEG Board as an Independent Director in May 2019.

Michael Radcliff

Michael Radcliff was elected to the AUSVEG Board in December 2019.

Michael and his wife Heidi own and run Rhebanvale, a family-farm based in Wesley Vale, Tasmania. The operation produces a variety of vegetable products, including potatoes, broccoli, peas, beans, carrots and onions.

Michael has been involved in the vegetable and potato industries for many years, having served on a range of industry committees and associations.

He currently serves on the Pre-farm gate Strategic Investment Advisory Panel, one of two Hort Innovation strategic investment advisory committees for the vegetable industry.

Mitchael Curtis

Mitchael Curtis is the owner-operator of Kings Farms, a third-generation family farm based just south of Katherine in the Northern Territory. Established as the first commercial mango plantation in the Venn area, Mitchael now runs the farm with his family after taking over operations from his father. Under Mitchael's management, the farm has seen significant growth and expansion, now harvesting pumpkins, eggplants, watermelons, cassava, bush honey and over five million mangoes each year.

Mitchael is a past board member of the Northern Territory Mango Industry Association. He is passionate about education and training as well as philanthropy projects in countries such as India, Papua New Guinea and Vanuatu.

Pennie Patane

Elected to the AUSVEG Board in January 2020, Pennie has a background in banking, and she married into the horticulture sector. Pennie and her husband Michael established their vegetable growing business in 1999, commencing with potatoes and moving into carrots, onions and broccoli. Their vertically integrated business supplies the retail sector, export markets and their own wholesale market floor.

Pennie has been a past committee member of the Potato Growers Association of Western Australia, and she is currently a member of the Hort Innovation Potato Strategic Investment Advisory Panel, as well as Chair of the Myalup Coast Growers. Additionally, she is a member of the Harvey Agricultural College Advisory Panel.

Pennie's key interest is how we can get more youth interested in horticulture as a career.

Renee Pye

Renee Pye is Marketing Manager for leading potato, carrot and onion packhouse Zerella Fresh.

Renee is involved in a number of key areas of the business, including new product development and marketing, and is an emerging leader in the South Australian industry. She has overseen the development of Zerella Fresh's Spud Lite range, which has contributed significantly to the company's recent growth.

Renee is a committed industry representative, sitting on a number of Boards, including AUSVEG SA, the Murraylands Food Alliance and Hort Innovation potato marketing consultation committees.

She regularly works with politicians at the state level and has been the spokesperson for a number of key AUSVEG SA campaigns in labour attraction and securing key infrastructure investments for industry.

Simon Bolles

Simon Bolles was appointed to the AUSVEG Board in November 2014. He is a member of the Audit Committee and has been Chair of the Audit Committee since December 2017.

Simon has been a Non-Executive Director and Independent Committee Member/Chair for over a decade, serving and having served on a variety of companies. These include The University of Melbourne FBE Alumni Council (Deputy Chair); Road Trauma Support Services Victoria Board member and Audit Committee Chair; and Australian Dairy Farmers Chair Audit Risk and Compliance Board Committee.

Simon was also a member of the Salvation Army State Social Command Victoria Board and committee and the CPA/Victorian Government Problem Gambling Advisory Board, as well as an Independent Member of Travellers Aid Australia, among other organisations.

Most recently, Simon was Interim CFO for Australian Red Cross. He is also a Prequalified Audit and Risk Committee Member for the NSW Government and registered Director of the Tasmanian Government Department of Treasury and Finance.

Celebrating women in horticulture

Over the last decade, AUSVEG has recognised the leading female members of the Australian horticulture industry who have demonstrated outstanding ability and success in their chosen fields.

Those who have received the Women in Horticulture award continue to inspire and influence the industry, and it recognises the key role that women play in ensuring Australian horticulture continues to be a strong contributor to the country's agricultural sector.

In this edition, Michelle De'Lisle speaks to four horticulture industry members who received one of the industry's highest accolades from the National Awards for Excellence, which is held each year at Hort Connections (formerly known as the National Horticulture Convention).

Belinda Adams, Deborah Corrigan, Rachel Mackenzie and Sharron Windolf share what has changed since they received their awards as well as what they're doing today, and their plans for the future. Keep your eye out for next edition of the magazine, with more profiles to come.

Belinda Adams, QLD, 2013

Tucked away in the Gold Coast hinterland is Coastal Hydroponics, a producer of a variety of salad mixes, including rocket, 4 leaf and spinach.

Belinda Adams is the face of the business – as General Manager, her responsibilities include purchasing, sales, processing, human resourcing and regulatory controls. The 2013 Women in Horticulture winner is also currently the AUSVEG Deputy Chair and Chair of Growcom, Queensland's peak body for horticulture.

Belinda reflects on receiving the Women in Horticulture award more than seven years ago.

"I was quite new to industry involvement at the time, so to be recognised for my contribution was so fabulous," Belinda says.

"I had been working so hard on the business and needed to expand my knowledge of the industry. I also desired to be involved and implement change. The award was a catalyst to continue with this journey and explore what I could achieve."

Belinda has certainly achieved that. Since 2013, she has stepped into a numbers of leadership roles within the industry and significantly broadened her involvement.

"I have learnt that by saying 'yes' to opportunities as they come your way expose you to greater learnings, and a wide array of people and content. I have been involved in so many amazing projects and achieved so much within the past seven years," Belinda says.

The industry activities and initiatives Belinda has engaged in vary. She attended the 2018 Women's Industry Leadership and Development Mission – a strategic levy investment under the Hort Innovation Vegetable Fund – and has been a Hort Innovation's Consumer Alignment and Tender Advisory panel member. Belinda is on the steering committee for the EnviroVeg Program, as well as many other peak industry committees.

Raising a voice

Belinda relishes her role as AUSVEG Deputy Chair. She joined the AUSVEG Board after recognising the significant role that the peak body plays nationally.

"AUSVEG has represented the industry in advocacy and project delivery for a long time. I align with the values of the business and recognise the ongoing role it must play to deliver long-term results for growers," Belinda says.

"My goal is to enhance the branding of AUSVEG – connecting growers, consumers and stakeholders to improve the return to growers through strong advocacy and consumer connection. Hence the launch of our brand, eat more AUSVEG: A simple message that connects our purpose."

As Growcom Chair, Belinda aims to drive continual change and explore opportunities to improve the outcomes for Queensland growers.

"We also have national coverage for Fair Farms, which is a significant achievement

for an industry-owned program," she says.

"I intend to see Growcom prosper, managing the delivery of significant projects as well as delivering strong messages to Government to protect and serve the needs of growers. As well as driving that same connection between our end users, consumers, and growers."

A highlight of Belinda's career to date is announcing the roll-out of Growcom's Fair Farms Initiative on national television alongside Prime Minister Scott Morrison. Fair Farms is an industry-led initiative aimed at fostering fair and responsible employment practices in Australian horticulture.

However, Belinda's passion for the horticulture industry extends well beyond advocacy and policy decisionmaking.

"I absolutely love the people I get to meet and work with. Everyone has amazing stories to tell and we are all so humble in our achievements," Belinda says.

"There is so much support for me to achieve in my roles, and networking is my favourite thing to do."

Deborah Corrigan, VIC, 2011

It was humble beginnings for Clyde vegetable grower Deborah Corrigan, the 2011 Women in Horticulture award winner.

Deborah casts her mind back to the early days of her horticulture career, which she says were not glamorous.

"Women weren't allowed on the farm when I was growing up. I sat in my gender appropriate position as a beauty therapist, while my brothers learnt farming alongside my father," Deborah recalls.

"I was always proud of my father and wanted to be included in the family business in any way possible. My initial workload involved answering phones and general office duties that I completed in my state-of-the-art office facilities – a caravan!

"I was motivated to prove myself useful and become involved in the agronomic and production areas. I engaged in as many courses as I could and soaked in information from my peers, the internet, and my family. I am grateful that my father changed his stance – that the farm was no place for women – and accepted all the effort I had put in over the years. When he retired, my brother Darren Corrigan and I took over as Managing Directors. It was goodbye G.C Corrigan & Sons, and hello Corrigan's Produce Farms."

Pride of place

Deborah's proudest achievement is being accepted as a vegetable grower and paving the way for future generations, including her children, to work on the farm.

"I was a late-comer to the industry. I wasn't really involved until my 30s, and from there had to work my way up from the bottom. I take pride in seeing my two daughters, Stephanie and Daria, and son Tate grow to love the farm as much as I do," Deborah says.

"I spent a greater part of my working life fighting my way to show my worth in an industry that was hesitant to let me in. I was the first woman employed at Corrigan's and now approximately 40 per cent of our staff are women. There are also a lot more women involved in the industry across the board now."

Thirty years later, Deborah says she feels a sense of responsibility to nurture the next generation.

"My role is no longer about building myself up, it is about utilising everything I have gained in my 30 years in the industry and using it to build up others around me," she says.

A large focus of Deborah's position involves actively engaging with customers, suppliers, Corrigan's employees, and industry associations. She believes receiving the Women in Horticulture award strengthened her stance in the industry.

"Acknowledgements like this act as a confidence booster and a reminder of my personal achievements. This confidence alongside a formal recognition assists in fostering respect from my community and strengthening these relationships that are crucial for successful business operation," Deborah says.

"When I won the Women in Horticulture award, it was a truly satisfying accomplishment for what it represented. It acknowledged all those years I endured at the bottom of the ladder and recognised that women had to work that little bit harder to be taken seriously. It was rewarding to tell my story, and I truly hope I inspired someone else to keep reaching for their goals."

→

Rachel Mackenzie, QLD, 2018

Rachel Mackenzie's career has taken a 'berry' different turn since receiving the Boomaroo Nurseries Women in Horticulture award a couple of years ago.

Back then, Rachel was Growcom Chief Advocate – holding that role with Queensland peak horticulture body for almost a decade. While at Growcom, Rachel led the establishment of the Fair Farms Initiative, a program that supports ethical employment practices in the Australian horticulture industry and aims to lift employment standards across the sector nationally.

This is Rachel's proudest achievement to date, and it was spearheading this initiative – along with her commitment to the horticulture industry on both a state and national level – that saw Rachel receive the Boomaroo Nurseries Women in Horticulture Award at Hort Connections 2018.

Nowadays, you'll find Rachel bringing her experience to the national stage as Berries Australia Executive Director.

Pathway to horticulture

Originally a science and journalism student, Rachel joined the public service working in fisheries. That role led to a role at the Coastal CRC as national projects manager.

"Many of the projects I worked on looked at the role farmers can play in delivering environmental outcomes, provided they are properly engaged," Rachel says.

"When the Coastal CRC wound up, I ended up at Growcom as the manager of the land and water team. While at Growcom, I was given the opportunity to take on the Operations Manager role and then the Chief Advocate position."

Since taking on the Executive Director post at Australia's peak body for berries, Rachel's knowledge and networks have expanded.

"Moving from a purely advocacy role focused across all of horticulture in one state to a berry-specific national executive role has been a learning curve," Rachel says.

"I have learnt not to underestimate the power of networks as I have had to establish new ones in this current role. It has also been exciting to get a deeper understanding of the berry industry and the challenges and opportunities in the export space."

Casting her mind back a couple of years, Rachel is grateful for her award.

"I really appreciated the recognition, not only for myself but for the contribution that those of us working in advocacy can make. There are so many amazing women in horticulture, so it was humbling to be selected," she says.

"I think winning the award has raised my profile and is useful in terms of quickly establishing my credibility in new situations."

Rachel's passion for horticulture is as strong as ever. Looking ahead five years, she hopes to be still making a meaningful contribution to the berry industry.

"I'm a farm girl at heart, so I enjoy getting out on farm and talking to the growers. I am consistently blown away by the level of sophistication of many horticultural enterprises," she says.

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Sharron Windolf, QLD, 2016

Sharron Windolf is another familiar face of Queensland horticulture, and in 2016 she was recognised for her contribution to the industry at a business and personal level.

Sharron – alongside her husband Paul and other family members – run Windolf Farms, a vegetable growing operation in Queensland's Lockyer Valley region. Windolf Farms produce lettuce, broccoli, washed potatoes, parsnips, pumpkins and seedless watermelons.

Over four years ago, Sharron took home the Women in Horticulture accolade at the National Horticulture Convention.

"It was nice to be recognised by the industry as being actively involved in not only our business but community as well," Sharron says.

Industry contribution

Since winning the award, Sharron has continued to be involved in a range of industry bodies, which she says is a rewarding experience. Currently Sharron is on Hort Innovation's Vegetable Pre-farmgate Strategic Investment Advisory Panel and is a Grower Director of Queensland's peak horticulture body Growcom; locally, there also are strong ties to Lockyer Valley Growers Inc.

"I'm still pretty actively involved in our local grower group, which provides a great source to learn, network and give back to the industry," Sharron says.

A highlight of Sharron's horticulture career occurred in 2018, when she participated in the AUSVEG-led Women's Industry Leadership and Development Mission.

"To say I learnt a lot would be an understatement. The tour was a wonderful learning experience, and I built knowledge and friendship networks that I will continue to draw on," Sharron says.

"I am very thankful that the levies we all pay go to help fund growers to participate in these amazing international grower tours."

Sharron continues to be passionate about the vegetable industry and ensuring it, along with Windolf Farms, remains sustainable into the future.

"It is vital that growers have the mechanism to engage with other growers and industry, as well as networks to enable further knowledge around the research and development occurring," she says.

"Right now, we need to ensure that there are enough people in the industry. It is a fantastic industry with some wonderful people involved.

"I have met some lifelong friends through involvement in the industry. Being involved in such a fundamentally essential business that provides food is extremely rewarding."

Sharron shares what she has learnt about the vegetable industry since winning the Women in Horticulture award.

"Nothing in life can be expected to stay the same and you can't ever say 'never'," she says.

"Always be open to change. This year especially has shown us the effect of change. You just have to face the challenges and embrace opportunities that change may bring, and base decisions on what is best for your business."

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Extension project supporting South Australia's veg growers

AUSVEG SA is the state-wide representative body for South Australia's $700 million vegetable industry. The VegNET – South Australia project allows AUSVEG SA to support the continuation of extension services, and provides an important link between growers and levy-funded R&D. It also allows AUSVEG SA to better support industry by applying research findings to real-life situations. VegNET Regional Development Officer Yanyu Liang provides a project update.

LEAN Efficiency program

Review and identify opportunities for automation

This program aims to utilise a "LEAN" manufacturing approach with horticultural and vegetable producers that involves reviewing current business efficiency and automation. This program extends the trial opportunities on the Northern Adelaide Plains to the Murraylands and Riverland regions. It also provides vegetable and horticultural growers in those regions with the opportunity to access specialist and expertise.

There are three program objectives:

- Assist selected participants to review their current business efficiency, and identify opportunities for automation in the field and packhouse production.
- Assist eligible clients to identify achievable productivity improvements.
- Develop a series of actionable improvements to business process and infrastructure in a form that the project participant can implement.

Up to 10 places in the pilot program will be competitively awarded via a selection process. Once growers are selected, they will then participate in an introductory workshop.

Waste assessments

AUSVEG SA conducting waste assessments with Rawtec

AUSVEG SA and Green Industries SA (GISA) have partnered to deliver the Advanced Horticulture Waste Management Program for South Australian horticultural growers.

As part of the program, AUSVEG SA and waste and resource management consultancy Rawtec will conduct a series of site assessments with growers to identify ways to improve efficiency (better use of inputs) and to avoid, reduce and recycle waste for economic and environmental benefits.

This program offers a significant opportunity to participating growers to review their current waste management procedures, better manage the costs and usage of materials inputs – such as packaging – and assess their current performance to put in place improvements over time.

Modern horticultural businesses are facing increasing attention from local governments, regulators and supermarkets to demonstrate sustainable practices in their business. This program offers an opportunity for interested growers to receive information and business support to assess their current performance and identify improvements across the business.

Planning activities

Upcoming R&D events

AUSVEG SA has already engaged with a number of research projects and plans to hold a number of R&D extension events as a result. These include workshops on value-added waste management and engagement with the Harvest to Home project (MT17017), which is delivered by Nielsen. AUSVEG SA will roll out these events and opportunities for growers over the coming year.

Progress update: Regional extension plan

Following grower discussions and input, AUSVEG SA has established the Regional Extension Advisory Group. This now means that project foundational activities have been completed.

The five-year regional extension plan and project plans have been developed and approved. This was achieved with input from Regional Extension Advisory Group and Hort Innovation. The next stage of the project will involve delivering against the annual work plan, and successful delivery of extension activities and events.

Find out more R&D

Please contact AUSVEG SA CEO Jordan Brooke-Barnett at jordan.brooke-barnett@ausveg.com.au or VegNET SA RDO Yanyu Liang at yanyu.liang@ausveg.com.au.

VegNET – South Australia 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: VG19015

Hort Innovation Strategic levy investment | VEGETABLE FUND

Gippsland grower groups looking forward to a collaborative future

Facilitated by Food & Fibre Gippsland, VegNET – Gippsland has been actively engaging vegetable growers in the region to develop a five-year strategy. Four focus areas have been identified, and VegNET – Gippsland plans to work with local and national programs to deliver accessible grower resources. Regional Development Officer Bonnie Dawson reports.

The focus for VegNET – Gippsland over the past six months has been the development of a five-year Regional Extension Strategy. Despite the challenge of in-person engagement due to COVID-19, the project has given growers across the region opportunity to shape the focus of vegetable extension activities over the coming five years.

All growers have been invited to contribute at various stages, and a Regional Extension Advisory Group (REAG) has been established to guide development and implementation of the plan, comprised of four growers from across the Gippsland, two agronomists and the project team.

This phase has also given VegNET – Gippsland the opportunity to seek and plan collaboration activities with other Food & Fibre Gippsland projects as well as external projects, particularly other levy-funded projects.

So far, there are four projects that VegNET plans to deliver to meet the needs of vegetable growers which focus on:

- On-farm Biosecurity.
- Minimising Vegetable Industry Impact on Gippsland's Waterways.
- Smarter Growing with Ag Tech (precision agriculture and other digital technologies).
- Building Business Capacity and a Sustainable Workforce.

Over the coming few months, as growers are busy harvesting their crops, the focus of VegNET will be on locally relevant and accessible resources.

Grower resources

To stay on-theme for 2020, there will be a series of 'bite-sized videos' on local biosecurity concerns produced with support from AUSVEG biosecurity team and other subject matter experts.

By the time this article goes to print, Gippsland's vegetable growers will hopefully be better prepared for potential fall armyworm incursions over summer, as well as other priority pests and diseases.

Although Gippsland growers recognise biosecurity as a top priority, many also report they can always 'do better' with their biosecurity awareness and planning. VegNET – Gippsland is inviting interested growers and service providers to join a local discussion group to develop shared knowledge of the most prevalent pests, weeds or diseases across Gippsland, and share ideas for preventative actions and skills at a farm and regional level.

Cross-industry engagement

By collaborating with the industry-led EnviroVeg Program and supporting more growers through the framework, VegNET – Gippsland aims to gain a better understanding of the efforts growers are already making across the region in environmental stewardship, and develop our capacity to tell the story of Gippsland's clean, green, and trusted produce. Pride in the produce of our region will be further supported and promoted through Food & Fibre Gippsland's development of a 'Trusted Provenance' token.

A pilot workshop was delivered in September that focused on taking a small group through the soils and nutrition components of the EnviroVeg self-assessment and discussing some of the practices.

It is hoped by supporting growers to complete these self-assessments in advance, the EnviroVeg framework will paint a picture of practice across the region, ensuring future training and workshops are relevant, timely and useful to growers.

The EnviroVeg Program 2017-2022 is a strategic levy investment under the Hort Innovation Vegetable Fund.

Supporting local industry

Growing conditions are a remarkable improvement on last year and crops are growing bountifully; however, the region has not been immune to the challenges that COVID-19 has exposed.

There is building apprehension toward sourcing sufficient harvest and packhouse workers for the impending season. Again, VegNET – Gippsland is fortunate to be closely connected with other regional projects through Food & Fibre Gippsland, such as the Gippsland Regional Agrifood Employment Programme (GRAEP). GRAEP provides support to both employers and unemployed workers interested in entering the industry.

Going forward, VegNET Gippsland will have an ongoing focus on supporting growers to attract and retain new workers, contributing to industry-wide efforts in developing a more sustainable workforce.

Find out more R&D

Please contact VegNET Regional Development Officer Bonnie Dawson from Food and Fibre Gippsland on 0407 683 938 or email bonnie.dawson@foodandfibregippsland.com.au.

VegNET – Gippsland 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.

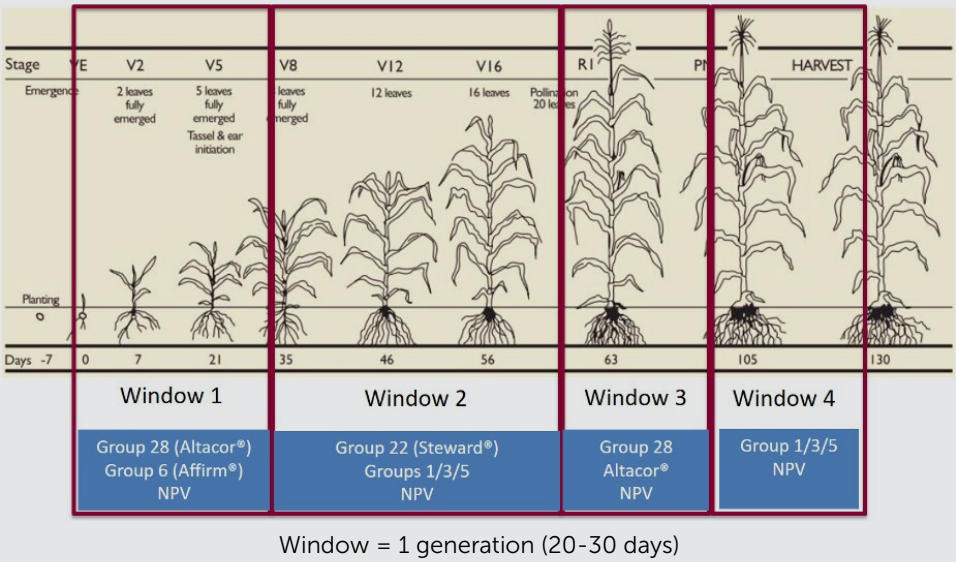
Project Number: VG19001

Hort Innovation Strategic levy investment | VEGETABLE FUND

Undertaking fall armyworm preparedness training

In 2020, Lockyer Valley Growers Inc. hosted a series of workshops with producers and industry in conjunction with entomologists from the Department of Agriculture and Fisheries, Queensland. These were aimed at preparing industry for fall armyworm's expected dispersal into more southern regions. VegNET Regional Development Officer Zara Hall reports.

How might resistance management look in maize? Manage FAW and helicoverpa together NVP, Vivus Max® has no efficacy against FAW – for Helicoverpa only.



Window = 1 generation (20-30 days)

Figure 1: An example of a combined fall armyworm and *Helicoverpa* resistance management strategy in maize. NPV does not pose a resistance risk for *Helicoverpa*, so it can be used in any window if treating only *Helicoverpa*. Figure supplied by Department of Agriculture and Fisheries QLD.

Four vegetable industry preparedness workshops have been undertaken in southern Queensland that focused on identification, biology and management of fall armyworm. Sessions were held at Rugby and Mulgowie farms in the Lockyer Valley and Kalfresh in the Fassifern Valley, with a focus on fall armyworm management in sweet corn. A fourth session was hosted with agronomists based in the southern Queensland region.

Department of Agriculture and Fisheries, Queensland (DAF QLD) entomologist Adam Quade provided workshop attendees with fall armyworm specimens of various development stages including egg masses, larvae ranging from first instar through to sixth instar, as well as male and female adult moths.

Other species of moths – commonly confused with fall armyworm – were also provided as a comparison. Workshop attendees used macro lens attachments on their smart phones. These were supplied by DAF QLD entomologists for the sessions, enabling participants to zoom in on important diagnostic features more easily viewed under magnification.

"Many leaf eating caterpillars share similar visual characteristics and damage symptoms," Mr Quade said.

"Fall armyworm larvae are most distinctive when fully grown, while distinguishing younger larvae can be more difficult. It is important not to rely on a single characteristic when identifying larvae.

"Larger larvae can range in colours but are generally brown to grey with a dark head. There are four dark spots forming a square on the second last segment. Large larvae have a pale inverted 'Y' shape between the eyes."

Overcoming resistance

A major focus of the workshops was the need for a resistance management strategy in crops affected by fall armyworm, as growers are already dealing with an insecticide-resistant pest.

"In sweet corn, the challenge is managing damage and resistance in *Helicoverpa armigera* and fall armyworm simultaneously," DAF QLD Principal Entomologist Melina Miles said.

"Resistance management will be an issue for crops where products used for fall armyworm are already used to manage pests with resistance to that product, or when fall armyworm is controlled with a product that is still effective against another pest. The risk of developing resistance is high."

The fall armyworm-specific virus, Fawligen® (*Spodoptera frugiperda multiple nucleopolyhedrovirus*) was identified by workshop participants as a desirable option. However, because the fall armyworm virus is a novel virus – and potentially poses a risk to native caterpillar species – it must undergo a rigorous review process by Australian Quarantine and Inspection Service before being considered for registration in Australia. This review process is currently underway.

Effective pesticide rotation was identified as a management strategy needing improvement.

"Rotating chemicals on a weekly basis is not an effective resistance management strategy; in fact, it actually increases the risk of resistance developing because every generation is exposed to the same chemicals," Dr Miles said.

"To minimise selection pressure on pest populations, chemicals must be rotated in such a way that two consecutive generations are not exposed to the same mode of action. To minimise selection for resistance in a crop, a strategy like that illustrated for maize (see Figure 1), could be devised for other crops."

Find out more R&D

Please contact John Duff from DAF QLD on 0418 726 597 or at john.duff@daf.qld.gov.au, or VegNET Lockyer Valley RDO Zara Hall on 0456 956 340 or at ido@lockyervalleygrowers.com.au.

VegNET – Lockyer Valley 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: VG19010

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A drone hovers over vegetable crops in North Queensland. Drones are being used to release parasitic wasps to control silverleaf whitefly populations in tomatoes and pumpkins.

Drone takes farming practices into the future

Growers are continually finding innovative solutions to reduce their impact on the environment. Situated on the Great Barrier Reef's doorstep, North Queensland's Bowen and Gumlu district is home to the largest winter vegetable growing region in Australia. Brooke Dobe from Bowen Gumlu Growers Association reports on the latest trials being conducted in the region.

Recently a project funded by the Department of Agriculture, Water and the Environment showcased the use of a drone to release parasitic wasps (*Eretmocerus hayati*) to control silverleaf whitefly populations in tomatoes and pumpkins. The project's main objective was to provide an alternative method to manage silverleaf whitefly, as well as educate growers on the advantages of releasing beneficial insects via drone.

Silverleaf whitefly is a serious pest that affects crops productivity and growth. The whitefly hosts itself in many crops ranging from tomatoes and cucurbits to eggplant and beans, all of which are grown in the Bowen and Gumlu area. The pest is difficult to control as it can develop a resistance to standard insecticides.

Traditionally, growers and agronomists work together to control pests with insecticides and beneficial insect releases. Spraying insecticides on crops has the potential to run-off into catchments. Traditional methods of releasing beneficial insects on foot and by hand leads to a large proportion of the crop not being exposed to the beneficial insects.

Taking to the skies

Coming from a farming family in Bowen, Luke Jurgens identified a gap in the market and believed a drone could be best used to evenly distribute and expose a complete crop to beneficial insects. This process allows farming practices to become more environmentally friendly, effective and sustainable. Luke acquired and modified a drone and took to the skies under his newly established business, NQ Aerovation.

Bowen-based agronomist Jess Volker has been heavily involved in the project. Jess performed bug checks pre- and post-parasitic wasp release and noted a great decrease in the population of silverleaf whitefly. The growers that participated in the trial found they administered less pest management sprays. Performing less sprays reduces the risk of insecticide run-off into Great Barrier Reef catchments and decreases the likelihood of the silverleaf whitefly developing a resistance to insecticides.

Jess also educated growers on how to manage parasitic wasp populations in the off-season by maintaining cover crops as well as grass and bushland. These habitats reduce the risk of erosion and act as a barrier to prevent agricultural run-off. This allows growers to reduce their impact on the environment as well as maintain parasitic wasp and silverleaf whitefly populations in the off-season.

A positive reception

There has been a buzz around Luke's new business venture, with the growers involved in the trial committing to continue releasing parasitic wasps via drone. Many more growers in the region are signing on to use Luke's drone service in the future. Luke and Jess are looking into releasing other species of beneficial insects to target other pests.

Bowen Gumlu Growers Association would like to thank our partners, participating growers, Bugs for Bugs, Jess Volker and Luke Jurgens for their involvement in the project. This was an exciting project and we are eager to see where the future of ag tech takes us.

Bowen Gumlu Growers Association has been fortunate enough to gain funding from the Australian Government, Department of Agriculture, Water and the Environment, through the Communities Environment Program. This program helps conserve, protect and manage our local environmental priorities.

Find out more R&D

For more information about parasitic wasp releases via a drone, please contact us on 07 4785 2860 or email idm@bowengumlugrowers.com.au.

VegNET – North Queensland 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: VG19008

Hort Innovation Strategic levy investment | VEGETABLE FUND

Image courtesy of Austchilli.

Understanding the Wide Bay-Burnett region

VegNET Regional Development Officer Bree Grima provides a snapshot of the Wide Bay-Burnett region, and explains the reasons behind the project's four key focus areas that are helping to shape its five-year vegetable extension strategy.

Bundaberg Fruit and Vegetable Growers (BFVG) represents fruit, vegetable, herb and nut producers in Queensland's Wide Bay Burnett region, which enjoys a sub-tropical climate and rainfalls between 850mm to 1,150mm across the 48,598 km^2 region. It encompasses five local government areas: Bundaberg, North Burnett, South Burnett, Gympie and Fraser Coast.

Population for the Wide Bay Area in 2018/19 was 299,465, with the region's gross regional product estimated at $13.30 billion and representing 3.78 per cent of the state's gross state product. Agriculture, forestry and fishing employed 8,990 full-time equivalent people in 2018/19, with 8,025 in agriculture alone, representing eight per cent of employment in the region. The state average is just 2.71 per cent for agriculture, highlighting the importance of the sector to the Wide Bay region.

Even with a slight transition for some producers from ground crops to macadamia and avocado plantations, the vegetable Industry in *Bundaberg alone* is valued in excess of $237 million. It covers approximately 6,000 hectares and produces a diverse range of vegetable crops including capsicum, corn, beans, pumpkin, zucchini, Brussels sprouts and chilli, by more than 100 growers across the region.

The Wide Bay is one of the few cropping regions in Australia that provides year-round growing conditions. Experiencing fewer cyclones and summer storms than northern Queensland, higher rainfall than southern Queensland and fewer damaging frosts than western Queensland, the Wide Bay provides opportunities for producers to expand their cropping and agribusiness portfolio.

Value-adding is common practice, and several large producers provide a range of products and ingredients that support national and international consumers. Utilising a combination of ground and surface water allocations that are highly regulated, our producers generally experience medium- to high-reliability-ensuring consistent cropping results.

Bridging the gap

The opportunities for the region are endless – and with such a diverse range of commodities, the VegNET Wide Bay-Burnett project was interested in understanding the gaps in knowledge and support to ensure the program provides value to producers as they work towards more productive and profitable operations.

While there can be many key focus areas for a region, they cannot all be addressed. Following extensive consultation with producers and industry, the VegNET Regional Development Officer worked with a Regional Extension Advisory Group to establish four key focus areas to develop a five-year vegetable extension strategy.

Key areas identified include management of plastic waste in addition to organic waste management; developing a coordinated approach to pest management; and options for addressing uptake of AgTech products on vegetable farms in the Wide Bay Burnett. We are excited to commence delivery of a program with a focus on these key areas as well as continuing to connect with the wider VegNET project.

Find out more R&D

Please contact Bree Grima at bree.grima@bfvg.com.au or phone the BFVG office on 07 4153 3007.

VegNET – Wide Bay-Burnett 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: VG19009

Hort Innovation Strategic levy investment | VEGETABLE FUND

VegNET- Northern Territory update: RDO on the road

Despite the challenges faced, 2020 has seen the Northern Territory vegetable industry continuing to commit to providing fresh and valuable produce to Australia's southern markets during winter. *Vegetables Australia* has been provided with an update on the activities that have been undertaken across the Top End and Central Australia.

The Northern Territory's Dry season is typically the busiest production time of the year, with all vegetable and horticultural producers in full swing. This season has been no different, as a significant number of a variety of vegetables have been hitting the local and national markets.

NT producers have navigated the challenges of shortfalls in availability of seasonal workers that typically assist with production and the harvesting of produce, all the while with the 'never give up' NT attitude and resilient mindset.

This season has seen large volumes of okra, snake bean, cucumber, Asian greens and melons, pumpkins, zucchinis, eggplants, chilli, lettuce, asparagus and tomatoes roll out onto our supermarket shelves. The intensity of the dedicated growing season keeps VegNET NT Regional Development Officer Simone Cameron busy, and many hundreds of kilometres have been travelled over the last couple of months to support and engage with our wonderful NT producers.

Hitting the road

In early September, the Northern Australia Food Futures Roadshow was held in Katherine. These regional roadshows are an opportunity to share outcomes from R&D in local communities throughout the region and provide an opportunity for landholders to engage with developing agriculture in their communities. Among the topics discussed were water and its opportunities and outlook, potential avocado options for the NT, and general horticultural developments in the region.

The event culminated with a bus tour around the Katherine region showcasing the vibrant pursuits of local producers, their farms and industry.

Now in its fourth year, the biennial Northern Australia Food Futures Conference focuses on developing cropping across northern Australia and the role of plant industries in the Developing Northern Australia agenda. The next conference will be held in March 2021, and is set to include horticulture, grains, cotton, forestry and fodder industries in the Northern Territory, the Kimberley and northern parts of Western Australia, and the Gulf and Cape regions of Queensland.

The theme for Food Futures 2021 will be *Development and the Environment*. Please visit foodfuturesntfarmers.org.au for more.

Putting waste on the agenda

In October, the annual Local Government Association of the NT (LGANT) held its annual Waste Symposium in Darwin. This year's theme was *Exposing the sexy in waste management*. NT Farmers Association hold the current contract for the DrumMUSTER program and oversees the collection of AgVet recyclable containers in the NT and Kununurra.

With the operation of a new small transportable auto-baler, the NT program has been reinvigorated. In the short space of two months, over 4,500 drums in the Katherine region alone have been collected through this DrumMUSTER program.

Discussions at the symposium were had around the value of being able to adequately service our more remote regions of the NT, with a targeted aim to collect 30,000 drums annually. This is an achievable and more realistic aim now that the auto-baling unit is operational. More producers and regional councils can engage in the program as the recycling and baling of drums is now more accessible making the logistics of transporting of the agvet drums to a recycle depot more viable. One of the key objectives of this baler is for NT Farmers is to service our northern members and encourage territory-wide stewardship.

Visiting central Australia

In mid-October, Simone visited central Australia to meet and connect with our valuable desert producers. This trip was filled with adventure and engagement. It was amazing to see recent rainfall had awakened the outback, with vibrant greens and stunning wildflowers mixed among the vivid ochre reds and blue horizons.

Visits included a stopover at Desert Springs Farm at Ali Curung, before heading to Oolloo Grape Farm at Ti Tree and then Territory Lettuce Farm in Alice Springs. Here, there was discussion around current market environments; workforce and labour concerns; seasonal environmental pressures on production; and the recently developed Vegetable Regional Extension Plan. Rounding out the trip was the B2B Expo, which was being held as part of the Northern Territory's October Business Month.

Find out more R&D

Please contact Simone Cameron at bio@ntfarmers.org.au.

VegNET – Northern Territory 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: VG19017

Hort Innovation Strategic levy investment | VEGETABLE FUND

Improving water and fertiliser use efficiency

Water and fertiliser are the two biggest input costs in vegetable production in Western Australia. Rising costs of fertiliser and significant reductions in water allocations have the capacity to severely impact the profitability of WA's vegetable producers. VegNET Regional Development Officer Truyen Vo reports on some of the latest findings from *Vegetable business benchmarking* (VG17000), a strategic levy investment under the Hort Innovation Vegetable Fund.

A financial and production benchmark report, produced by vegetablesWA in partnership with PlanFarm, shows the Western Australian grower's average fertiliser, irrigation and power costs are $3,999, $218 and $1,530 respectively; with a large portion being used for irrigation pumping. A 10 per cent reduction of fertiliser and irrigation costs would result in a benefit of $570/ha/crop. This is a significant improvement to grower profits, since the average profit before tax of the WA vegetables industry is $6,200/ha/year.

While the initial investment of upgrading your irrigation system's hardware or technology may be seen as a barrier for innovation adoption, an inefficient irrigation/fertigation system presents its own suite of productivity limitations.

In 2019, vegetablesWA assisted the Department of Primary Industries and Regional Development (DPIRD) with a North Wanneroo irrigation efficiency assessment. The assessment demonstrated that with a proactive water management strategy, acceptable levels of efficiency were achievable. It stands to reason that the improvement of irrigation and fertiliser application practices and technology could bring significantly positive outcomes to growers.

Planning ahead

Environmental resource sustainability is a priority issue throughout horticulture. With a drying climate, growing population and increased demands on horticultural production, a proactive approach is recommended. As growers in North Wanneroo are facing a 10 per cent water allocation cut by 2028, the WA Regional Development Officers (RDOs) have identified this issue as a central industry objective.

In establishing a Regional Strategic Plan, as part of phase two of the VegNET project (VG19016), an enhanced focus on productivity improvement, environmental sustainability and business profitability through the productive use of water and fertiliser was identified. A water use efficiency project outline was further developed as part of the Regional Strategic Plan.

A collaborative field day – supported by DPIRD, the Department of Water and Environmental Regulation, Irrigation Australia and vegetablesWA – was held on 1 October 2020 (see breakout box).

Gaining soil knowledge

The water use efficiency project aims to enhance growers' understanding of soil characteristics; the regional soil map; how water filters through the soil profile; the nutritional demands of different crop types and growth stages; and irrigation techniques.

The goal of the Western Australian RDOs is to support the grower in taking the necessary steps to initiate practice change. A result of a 10 per cent reduction in net fertiliser costs and a 10 to 25 per cent reduction in irrigation volumes would be considered a key indicator of success and adoption.

Whether through written literature, assessment of trial site data or holding on-farm demonstrations, the ultimate intention is for wider adoption of on-farm best practice.

With a solid mix of growers and industry, the Water Use Efficiency Field Day was a success. There were multiple company displays showcasing the latest in irrigation technologies and an address by the Hon. Alannah MacTiernan MLC, Minister for Agriculture and Food, assuring continued support for the adoption of water use efficiency best practice.

The field day activities included:

- Drip irrigation dye demonstration (in field).
- Overhead irrigation distribution uniformity demonstrations (in field).
- Presentation on the benefits of incorporating soil moisture sensors to assist with water management.
- A regional irrigation system assessment overview.

The event ended as all good grower events should, with a chance to network while enjoying a barbecued sausage in a bun.

Find out more R&D

For more information on the water use efficiency project, please contact Regional Development Officer Truyen Vo on truyen.vo@vegetableswa.com.au.

VegNET – Western Australia 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: VG19016

Hort Innovation Strategic levy investment | VEGETABLE FUND

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Adoption of soil moisture monitoring in sweet corn

VegNET – New South Wales, in partnership with Simplot, engaged with growers to hold a Farm Technology Field Day in Bathurst and Geurie in September 2018. The focus of the day was soil moisture monitoring in sweet corn crops and its benefits for vegetable growers. The VegNET-NSW team reports on the outcomes and previous research into this irrigation technology.

Through the adoption of soil moisture probes, growers can set clear irrigation targets based on soil moisture and monitor remotely to see if they are being met. Alerts can be set for low line irrigation system pressure. Irrigation schedules can be adjusted easily as well as checking run times – and these can be done remotely.

This technology monitors irrigation performance and prevents needless irrigation on saturated soils. It also takes into consideration any variation of soil type within the crop and ensures sufficient deep watering at critical crop intervals. Growers can see how much water makes it to the root zone and it saves pumping and fertiliser costs as well as preventing unnecessary over-irrigation.

After the recent drought across eastern Australia, water shortages and water use efficiencies are even more important. Profit margins per ML of irrigation water are a big driver for large scale sweet corn cropping.

Grower outcomes

Brendan Booth is a sweet corn grower using centre pivot irrigation from Geurie in Central West New South Wales. He was introduced to moisture monitoring through *Review of current irrigation technologies* (VG14048), a strategic levy investment under the Hort Innovation Vegetable Fund.

Brendan urges other growers to learn to 'push out water further', with a focus on increasing returns per ML of water used.

After using the Wildeye Soil Moisture Monitoring probes, Brendan says he now uses more water but grows more crop, so the margin per hectare is greater.

Scott Stevenson from Ponto, near Dubbo, is a sweet corn, adzuki bean and wheat farmer who has also trialled Wildeye Soil Moisture Monitoring probes. Even though Scott was watering more because of the moisture probes, he was watering more accurately – and the result was a better sweet corn crop.

Another sweet corn grower near Dubbo is Mark Carter, who has used soil moisture probes on all of his crops.

"Testing them out gives you confidence with water use and is a good back up tool," Mark said.

Matthew Plunkett is the Senior Land Services Officer Irrigation with Local Land Services, and he said soil moisture probes are another tool to aid decision-making.

"They allow growers to drive returns per ML of water further. This is particularly important when water availability is an issue as we have seen in recent years," Matthew said.

"Based on discussions with growers and feedback from Simplot, it was clear that many growers were not applying enough water early in the crop cycle. Failing to do so has a significant impact on yields, and this is where soil moisture monitoring tools pay dividends in addition to deciding when to restart irrigation after rainfall events."

Previous research

Many irrigation systems that have been assessed in the past, particularly centre pivot and lateral move systems, have not been applying water evenly and/or at the correct pressure. This leads to under, and over-watering in some areas.

Growers can undertake simple checks on their systems. These include ensuring the nozzle size matches the supplier specifications, pressure gauges are fitted to machines, and putting out some buckets in the path of the irrigators to measure sprinkler output.

Work undertaken by Applied Horticultural Research at Cowra has shown that using satellite imagery in conjunction with soil moisture monitoring in sweet corn can improve crop yields and quality. This study can be found on the Soil Wealth website: soilwealth.com.au/resources.

The bottom line

The critical take home messages from this study is ensuring that growers use these tools to apply enough water early in the crop cycle, particularly from crop growth stages 3-5 (days 42-66 – 12 leaves stage to tasselling/silking).

Crop water use can increase up to 400 per cent during this time and if the irrigation system cannot keep up with crop water use, significant reductions in yields will occur.

Monitoring soil moisture improves crop productivity per ML and allows for critical crop periods to be monitored. Water stressing plants at critical times, such as flowering, reduces yields and crop quality.

Find out more R&D

Please contact NSW Regional Development Officer Sylvia Jelinek from Greater Sydney Local Land Services on 0427 086 724 or sylvia.jelinek@lls.nsw.gov.au, or Matthew Plunkett on 0428 978 390 or matthew.plunkett@lls.nsw.gov.au.

VegNET – New South Wales 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: VG19011

Hort Innovation Strategic levy investment | VEGETABLE FUND

Certified compost can be used throughout your farm and will not affect Freshcare certification.

Continuing to address grower needs: Focus on awareness, connectivity and confidence

Since the beginning of VegNET Phase 2, the VegNET – Victoria (South-East, West and North) team has undertaken extensive analysis to understand what exactly the Victorian vegetable industry is missing, in terms of Research, Development & Extension, and what it should be delivering to ensure the greatest benefit to growers. VegNET Regional Development Officer Hugh Wardle reports.

The VegNET- Victoria (South-East, West and North) team has developed a new five-year Regional Extension Strategy to address the priority issues of Victorian growers, which include water, profitability, pests and diseases, soil and nutrition management, and precision agriculture.

The strategy will:

- Raise awareness and improve knowledge.
- Improve connectivity and broker partnerships.
- Increase confidence and decision-making ability.

The strategy will be focusing on the following three areas over the next 12 months: water – soil moisture monitoring and retention; profitability – resource use optimisation; and pest and disease management – native vegetation insectaries.

Managing soils for summer crops

Healthy soils are important to manage more actively as summer crops go in the ground. One way to do that is to use organic amendments or compost. The benefits of applying compost to farming systems are well-documented in scientific literature. The VegNET team has disseminated some of this information to make it practical and relevant for growers.

Compost application can have a range of benefits to vegetable production; however, there can be a number of risks, especially with compost quality and food standards. The following is a brief overview of the things to keep in mind when considering composts for your farm:

- Compost application has the potential to influence a number of soil functions and can improve the overall fertility of soils.
- Ongoing applications can result in better nutrient cycling, increased microbial activity, and a range of improvements to soil structure.
- To avoid major risks associated with compost application (including consistency and quality) ensure your product is sourced from reputable suppliers who are certified (AS 4454-2012).

The full resource entitled *The 'breakdown' on composts* can be found on the AUSVEG VIC website: ausvegvic.com.au.

On-farm insight

To demonstrate exactly how compost benefits farming systems – and the problems it's likely to alleviate – the VegNET team has collaborated with the Soil Wealth and Integrated Crop Protection Werribee demonstration site.

To gain a better understanding of what's happening within the soil, precision agriculture (PA) technologies have been used to show exactly where specific issues are within the site.

The use of EM38 mapping and gridded soil sampling identified the areas of concern in relation to sodicity and salinity, and enabled the targeted use of appropriate ameliorants to address variations within the soil.

Information relating to the use of PA technologies in soil management, and how best to interpret the results, have emerged from a case study entitled *Translating precision agriculture (PA) data*.

Details about the study can also be found on the AUSVEG VIC website.

Upcoming events

Understanding the specific nutrient composition of the variety of organic amendments on the market is difficult, with little information currently available.

A research project led through La Trobe University and Queensland University of Technology aims to bring clarity to this, through the development of a compost nutrient calculator app.

As part of the project, several trial sites have been set up throughout the country. The team will keep you up-to-date with the progress of the project through upcoming virtual vegetable trial site visits, a webinar with the researchers, and a follow-up industry article.

Find out more R&D

For further details – including information relating to the five-year Regional Extension Strategy – please contact VegNET Victoria Regional Development Officer Hugh Wardle on 0427 109 057 or hughw@rmcg.com.au.

VegNET – Victoria (South-East, West and Northern) 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: VG19012

Hort Innovation Strategic levy investment | VEGETABLE FUND

Tasmanian farmer Nick Eyles. Images courtesy of Ossie Lang.

Nick Eyles: Eyeing off a sustainable future in Tasmania

In this column, VegNET – Tasmania Regional Development Officer Ossie Lang provides a case study involving Tasmanian Farmers and Graziers Association (TFGA) Bean Committee Chair – and Tas Community Ag award finalist – Nick Eyles. Nick sat down with Ossie to discuss what he and the family are doing on-farm to implement sustainable practices in their pea crops.

Nick Eyles and his family farm 400 hectares at Selbourne in northern Tasmania. They run a mixed operation with around 200 hectares cropped each year, a further 20-30 with fodder crops, and the remainder under pasture. The fodder crops and pasture are utilised in the fat lamb operation which turns off around 2,000-2,200 lambs per annum from their 1,800 breeding ewes.

The Eyles family has a varied cropping rotation with cereals, grass, clover and canola seed crops along with poppies, shallots, potatoes, peas and beans. The peas, beans and potatoes are all grown for Simplot. Peas and potatoes have been grown by the family for over 60 years and over 40 years respectively.

Long-term planning

In recent years, Nick and his family have developed and implemented a whole farm plan. Reducing labour as an input and sustainability were front of mind when putting this plan together. In Nick's words, they want to "maintain and improve the assets for the next generation".

This has involved updating irrigation assets moving from reliance on gun irrigation to the installation of two variable rate centre pivots. The family has also been installing sub-surface grid drainage, with 60-65 hectares already installed and a further 15 hectares going in this season. This focus on sustainability and reducing labour inputs led to their interest in direct drilling their green pea crops, an idea they saw first in the New Zealand green pea industry.

They have now been direct drilling peas for four years and, for the first time, will be sowing 100 per cent of their crop using this method. The main benefits come from the reduction in ground preparation work for the crop, with direct drilling taking the required passes down from four to five passes to one or two passes. The second pass is rolling the soil to ensure good soil contact with the drilled seed.

Early results

The first year Nick and the Eyles family trialled this method, there was no significant difference in return compared to the conventional tillage. The yield was slightly below their other plantings but was made up for in the cost-savings from utilising the direct drill method.

These savings were more of a bonus than expected, and were in addition to the soil health and environmental benefits this method achieved, including improved microbial and worm activity, better moisture retention and improved soil structure.

The Eyles family is now seeing yields closer to on par with the conventional plantings, but the cost savings equate to nearly an extra two tonnes per hectare in returns. Nick has also observed better performance in direct-drilled paddocks with subsequent crops, while not entirely attributable to the prior pea crops. The family has also seen some large potato yields, which are – in part – due to the retention of soil health from the previously drilled pea crop.

Overcoming challenges

The move to direct drilling has not been without its challenges and has taken some work to get right. Paddock selection has been an important piece of the puzzle, with Nick and the Eyles family identifying their paddocks 12 months out. They have been targeting ex-grass seed paddocks for direct drilling, as the ground is more even than ground coming out of potatoes and other crops.

They have also found that a good evenly wet seed bed from a pivot irrigator has helped the crop fare better than when under gun irrigation, where the water distribution is less consistent. Spring 2020 has been quite wet, however Nick is confident that they will be able to get on to the paddocks to drill peas earlier than those who are working the ground and so will be able to meet their planting window.

Looking forward

As a VegNET Regional Development Officer, I was keen to find out Nick's thoughts on agriculture and its direction across the next decade. Nick is optimistic about the future, but tempers that with an awareness of challenges on the horizon.

These largely stem from a decreasing understanding of food production in the general public and increasing regulatory requirements that can result from this lack of knowledge. Current markets and contracts aren't always geared

to incentivise those growers who are acting in a more sustainable way, which can make it more challenging for those looking to pursue this path.

When asked what advice he had for someone looking at implementing more sustainable practices on-farm, Nick advised the following:

- Look at what you want to achieve. There are a lot of directions you can take with this process, but you will need to determine what fits your operation.
- Consider the long-term. These changes won't take effect straight away, so don't be disheartened when things take a while.
- Build a plan. This may need to be split across several aspects (soils, irrigation resources, crop rotations).
- Work through the obstacles. Things will arise that change the direction of your plans, and you just need to work through these challenges. There will always be a path forward.

Pea crops growing on the Eyles' family farm.

Find out more R&D

Please contact Ossie Lang on ossiel@rmcg.com.au or 0430 380 414.

Follow us on social media: Facebook: @VegNET.Tas and Twitter: @VegNET_Tas

VegNET – Tasmania 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: VG19014

Hort Innovation Strategic levy investment | VEGETABLE FUND

Understanding industrial instruments

In this article, the Growcom Fair Farms Initiative team discusses Australia's industrial relations system and its key component, the industrial instrument. Furthermore, the team delves into the three types of industrial instruments and what these mean for horticultural businesses.

Our industrial relations system is uniquely Australian. The eight-hour workday and the minimum wage were introduced more than 100 years ago. Since then, the system has been evolving to strike the best balance between the interests of employees and employers.

A key component of the Australian industrial relations system is the **industrial instrument**. 'Industrial instrument' is a catch-all term that includes any legally enforceable document that states the employment terms and conditions of workers in an industry or business.

While not the most exciting concept, industrial instruments hold a lot of important information that businesses should follow in their day-to-day operations and when making decisions that affect workers.

The Fair Farms Standard promotes that businesses should have a working knowledge of the contents and application of the industrial instruments that apply to their workers, including those provided through Labour Hire Providers (LHP).

What are industrial instruments?

There are three types:

- The National Employment Standards (NES).
- Modern Awards.
- Enterprise Agreements.

The *NES* are the 10 minimum employment entitlements that cover **all** employees in Australia, regardless of what Award or Enterprise Agreement they are employed under. The NES is also the primary industrial instrument for Award-free employees. The NES overrides any lesser entitlement in an Award or Enterprise Agreement.

Modern Awards are industrial instruments covering the minimum conditions of employment for an industry or occupation. They work in conjunction with the NES and cover entitlements such as:

- Rates of pay.
- Shift allowances.
- Rest and meal breaks.
- Redundancy payments.

In the horticulture industry, the most common Awards are the Horticulture Award for manual workers and the Clerks – Private Sector Award for administration workers.

Enterprise Agreements are basically Awards for individual businesses. They cover the same entitlements; however, they are negotiated between employers and employees. Many businesses in the horticulture industry created Enterprise Agreements in 2009, which may still apply today. If you have a valid Enterprise Agreement, it substitutes the relevant Award as your industrial instrument.

How to use your industrial instrument

Industrial instruments can be very long and legalistic. The good news is you don't need to know them off by heart! You just need to know where to look for information when you need it. If your packing shed has an unusually long day you should be able to quickly pull up your Award or Enterprise Agreement, find what your obligations are and implement them easily.

Labour Hire Providers

Labour Hire Providers (LHPs) are commonplace in the horticulture industry, so it is important to understand how industrial instruments operate. Industrial instruments are specific to the **direct** employer of workers. If your business has an Enterprise Agreement, it cannot be applied to any LHP workers on your site.

When you engage a LHP, you should understand what industrial instruments apply to their workers. This will give you more confidence that your payments can reasonably cover wages, entitlements and a profit margin.

Educating workers

The issues covered by industrial instruments can affect the daily lives of workers, such as their pay rates, break times and rostering. It is important that workers are aware of, and understand, the industrial instruments that apply to them. Having your industrial instrument as a source of truth for both you and your workers means you can proactively work together to solve any issues instead of letting them snowball.

Therefore, you should keep copies of your industrial instruments in common areas for workers. Update these copies when new versions are released, highlighting the changes. You should also include access to the industrial instruments in their induction package. Remember, empowered workers are productive workers!

Find out more R&D

Please visit the Fair Farms website at fairfarms.com.au.

Visit fairwork.gov.au and growcom.com.au for more information regarding your obligations as an employer.

Fair Farms is developed and delivered by Growcom with support from the Fair Work Ombudsman, the Federal Department of Agriculture and AUSVEG.

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Commodity Profile:

Beetroot

14,262 tonnes

of beetroot were produced at a value of $12.6 million, with 60 per cent sent for processing.
Source: Australian Horticulture Statistics Handbook 2018-19

26%

of Australian household purchased fresh beetroot, buying an average of 403 grams of beetroot per shopping trip, according to *Australian Horticulture Statistics Handbook 2018-19.*

The *Australian Horticulture Statistics Handbook 2018-19* reports that the volume of beetroot grown for processing has decreased in recent years; however, the majority of processed volume is tinned.

Looking at the dollar share of trade for the year ending 12 July 2020, major supermarkets comprised 59.1 per cent of all beetroot dollar sales. Non-supermarkets make up 28.6 per cent of dollar share of trade. *Source: Harvest to Home*

Veggycation® explains that a primary cause of beetroot postharvest deterioration is a loss of water causing softening and loss of weight. It should be stored at 95 per cent relative humidity.

Veggycation® states that one of the primary causes of beetroot loss after harvest is decay due to various rot-causing pathogens (for example soft bacterial rot, black rot, Rhizoctonia violacea and Sclerotinia sclerotiorum).

In 1998, a project entitled *Resistance of Brussels sprouts to root knot nematodes (Meloidogyne Spp.) And Verticillium Dahliae, September 1998* was completed. The findings of this project are published in the final report, which can be found by searching 'VG97054' on the InfoVeg database.

The Better Health Channel reports that in the 16th century, the Victorians used beetroot as a hair dye.

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Our provenance verification programs are designed to complement digital or paper traceability systems. TSW Trace® analysis is of the physical product itself making it independent of packaging and label claims.

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We work with you to combat food safety issues (such as contamination outbreaks) by linking produce at the packhouse stage to the farm of origin. This offers the benefit of a tighter quarantine and continuation of operations that comes with the ability to trace a contaminated vegetable back to a farm or paddock.

INDUSTRY APPLICATION

Our publicly known whole of industry solutions underpin the traceability, supply chain integrity and food safety systems of Australian Prawns, Australian Farmed Barramundi and Australian Pork Industries.

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www.sourcecertain.com

Juicy opportunities in New South Wales southern Riverina region

Name: Chris Taylor

Works: Kagome Farms Australia – General Manager Field Operations

Location: Echuca, Victoria

Products: Processing tomato, carrot and garlic.

Annually processes: 195,000 tonnes of tomato; 30,000 tonnes of carrot (grown both at Deniliquin and Barham in the Southern Riverina, New South Wales); 6,500 tonnes of beetroot; 6,500 tonnes of apple and 500 tonnes of pear.

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

I've been in agriculture all my life. I grew up on mainly broadacre and cattle properties in several places, spent a bit of time out in western NSW at Coonamble and finished up in Warwick, southern Queensland. My father was a manager similar to myself, so we didn't own any land – just managed them.

I've been involved in horticulture since completing a Bachelor of Farm Management in Orange, NSW, through the University of Sydney. I came down to Echuca when finishing university. I knew the Kagome Manager, who is now Kagome CEO – Jason Fritsch – and he needed a hand for a couple of weeks over the summer. So, I thought I'd come down and it's now 13 years later.

I'm married with a couple of kids. I met my wife, Ellie, who came with me to Echuca, where we still live now with our two boys Louis (6) and Ted (4). The boys love coming out on farm with me.

What are the opportunities are for juicing carrots?

Our current market is predominantly for Japan to be mixed into vegetable juices. We do sell a small volume domestically; however, we are looking to grow this market. The benefits of natural juices are fantastic.

We grow three main colours of carrot – orange, yellow and red. They all have unique benefits and taste profile for select juice mixes.

Can you talk us through the process the carrots go through?

We start with a seed and we plant a cover crop that grows up. This is usually a wheat or a triticale because we spray it out when the carrots are two true leaf. If we didn't do this, the wind would just knock them off.

We plant five rows of cover crop across the top of the bed and we let that grow for two weeks, then start to plant the carrots. We do that for wind and sandblasting protection, which really helps our establishment. All this is irrigated through overhead centre pivot irrigation using water from the Murray Irrigation Limited (MIL) system.

Producing high quality carrots is a long process. We target specific carrots that have high beta carotene, high brix and are vibrant in colour. The colour perception of our product from our consumer is very important and can be the difference of a top end market or lower end.

From planting in December to harvesting in June the following year, the seven-month process is managed extremely carefully from day one of planting to the final filling stage in or facility.

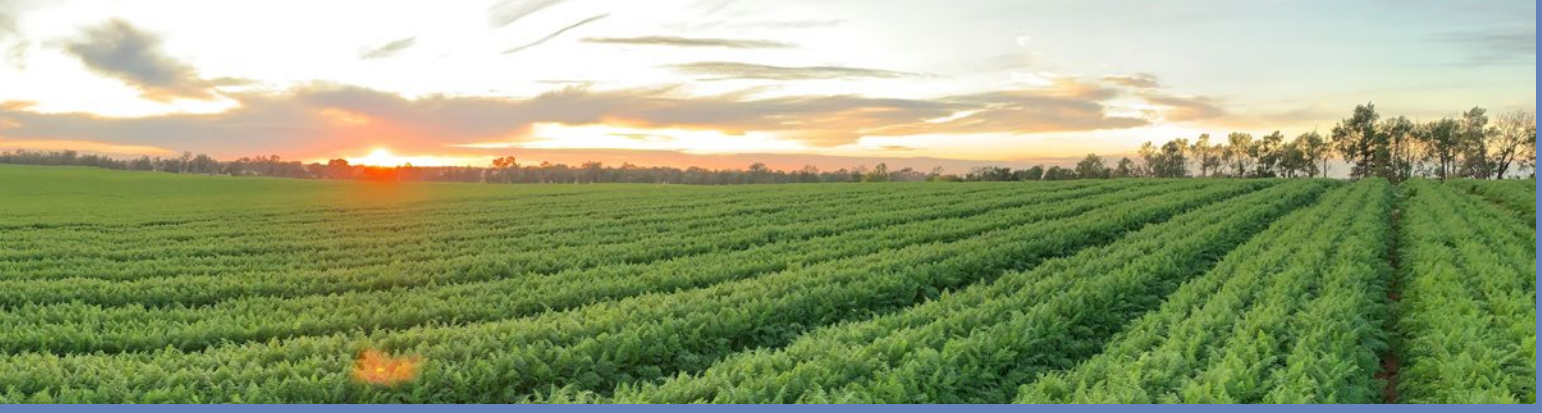
The key to a great crop is in the first six weeks, as this is when the carrot determines is length of root and size. Water and fertiliser management is crucial over this period– if you are too lean or over irrigate, the carrot will stop growing and become out of balance resulting in yield penalties.

Once they leave the farm, we truck them back to Echuca and from there they get washed out in the factory and go through a scrubbing and grading process. When the carrots start the processing stage, they are washed, scrubbed, peeled, chopped and squeezed multiple times to extract the juice before the fibre and juice being separated.

How many people do you employ, and how has COVID impacted your operation this year?

Kagome (factory and farms) employs 85 full-time staff and more than 150 casuals for peak periods of processing, planting and harvesting. Out in the field, we have roughly 35 full-time staff.

COVID has impacted our ability to source seasonal labour, especially in the field for tomato planting. Even though we had great plans in place and staff isolating prior to starting, the quick changes in



agricultural labour demand saw us falling short of obtaining enough skilled workers.

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

We have a strong rotation strategy that helps with diseases and adding organic matter back to the soils. It is also stringent, and needs a lot of rotational ground to grow multiple crops on and do a lot of green manure cropping and manures.

We use garlic as a good rotation with carrot as it is a natural biofumigant for soil-borne diseases. Throughout the growing seasons, we use cover crops. Sustainable practices are at the forefront of our program as the land and its health is what makes a crop (and business) sustainable.

How do you manage your irrigation systems – you incorporate variable rate irrigation (VRI)?

As part of our irrigation system over the past couple of years, we've been adapting variable rate technology. What that does it gives us full control over the centre pivot down to each individual sprinkler, and that can allow us to manage our water and nutrient very precisely but also stop the heavy areas on the ground getting too wet and the sand being too light. This has helped to ensure more uniformity in our crops and ultimately gained yield, while managing our water in the most efficient way.

What do you enjoy most about working in agriculture?

Agriculture is a passion. It's not something you do just to have a job – it's your life. The joy and satisfaction of producing a great crop and the challenge of producing a better one next year is what drives you.

People are what makes any business/industry. Agriculture is alive with people and their stories, and all those stories come with passion.

Agriculture is also about family. Yes, it is a very demanding industry with long hours and stressful times away from family. However, the joy of touring the farms with my wife and young boys knowing that we help create what we see before us is satisfying.

What is your proudest achievement as a farmer to date?

My proudest achievement is probably where we stand today. The dream of us growing carrots six years ago was that – a dream. We started off with a small four-hectare trial and now we've got 280-plus hectares of carrots that we grow annually.

I'm very proud to have a sustainable carrot business that is fit for the future.

Chris and Ellie with sons Louis and Ted Taylor.

Syngenta Technical Services Lead – Horticulture and Viticulture Dr Belinda (Brandy) Rawnsley.

Disease prevention essential as wetter conditions predicted

Downy mildew can cause wide-ranging destruction to horticultural crops, and this fungal disease flourishes in cooler, wet conditions. In this column, Syngenta Technical Services Lead – Horticulture and Viticulture Dr Belinda (Brandy) Rawnsley discusses preventative measures growers can implement to limit the development of downy mildew in their crops.

The forecast of above average rainfall events has increased the likelihood of diseases in onion crops across Australia.

Wet, cool weather can increase the risk of downy mildew infection. This disease can occur relatively quickly and spread rapidly. Spores are easily dispersed by wind and splashed by rain or irrigation.

Downy mildew disease symptoms will initially show as pale, oval shaped spots. Masses of grey fungi are easily visible and cause the leaf to yellow and die.

This disease can cause devastating yield loss from leaf death, poor quality bulbs and reduced bulb development.

There are cultural practices growers can implement, such as timing of irrigation and weed control, to reduce the risk of downy mildew. For example, onions should not be watered early in the morning when fungal spores are released. This is particularly the case for low lying sections of paddocks and on plants wounded by hail, wind or herbicides where environmental and physical conditions are conducive to fungal infection.

Management advice

Preventative fungicide programs can stop development of downy mildew, particularly when wet weather is forecast.

To achieve good preventative control of downy mildew, application timing is critical. Spray prior to a rain event to protect the leaves from infection and prior to the first signs of disease. Schedule sprays at 7-14 days intervals (always follow label directions), using the shorter spray timing if rain persists.

For onions, using angled nozzles that spray forward and backwards can improve coverage on upright leaves. This ensures both sides of the leaf are protected.

Systemic fungicides, such as ORONDIS® FLEXI, penetrate the plant to protect old and new leaf growth. In comparison, contact fungicides (e.g. mancozeb) do not enter plant tissue. For this reason, coverage when using contact fungicides is critical to obtain good disease control.

Managing downy mildew in onion crops requires specific strategies to minimise fungicide resistance developing. When wet conditions do favour disease, it is important to use fungicides preventatively and rotate fungicide groups. ORONDIS FLEXI is formulated with two modes of action (Group 49 and Group 11) for built-in resistance management.

Other products may require tank mixing to ensure the fungus is killed by several modes of action. Having activity on other key diseases, ORONDIS FLEXI also provides suppression of white rot in bulb vegetables, including onions.

Plants infected by downy mildew can be more susceptible to secondary fungal infections, such as *Stemphylium* and *Alternaria* (purple blotch). As they are weak pathogens, these fungi occur on damaged leaves, and can further reduce yield and quality.

Curative fungicides are available for downy mildew control. They are best used immediately after an infection period and their efficacy can be reduced if application is delayed

To best minimise the risk of downy mildew this season, implement a good preventative fungicide program and use the weather forecast to get your sprays on your crop in good time.

Find out more R&D

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

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

Potassium nitrate benefits on top dressing application in potato

Prilled potassium nitrate (12% N - 38.2% K) is a potassium source that provides rapidly absorbed nitrate-nitrogen, plant's preferred nitrogen source, with 2-4 mm prill size.

Prilled potassium nitrate (12% N - 38.2% K)

Prilled potassium nitrate provides the ideal N:K ratio for potato

After tuberization, potatoes start to accumulate starch in tubers, this process requires large amounts of potassium and nitrogen in comparison with the other nutrients:

CHARACTERISTICS	N	P	K	Ca	Mg	S	Mn	B	Zn
SIZE OF TUBERS	+	+	+		+		+	+	
NUMBER OF TUBERS		+	+						
STARCH			+		+			+	
SKIN QUALITY				+	+	+	+	+	+
STORAGE			+	+				+	

Nutrient	Removal of nutrients in kg/mt of fresh numbers fresh tubers
N	3,0 - 5,3
P	0,6 - 1,1
K	7,4 - 9,8
Ca	0,10 - 1,5
Mg	0,25 - 0,45
Zn	0,002 - 0,003

Nutrient removal by potato tubers and foliage, per ton of tuber produced

Prilled potassium nitrate contains exclusively nitrate nitrogen

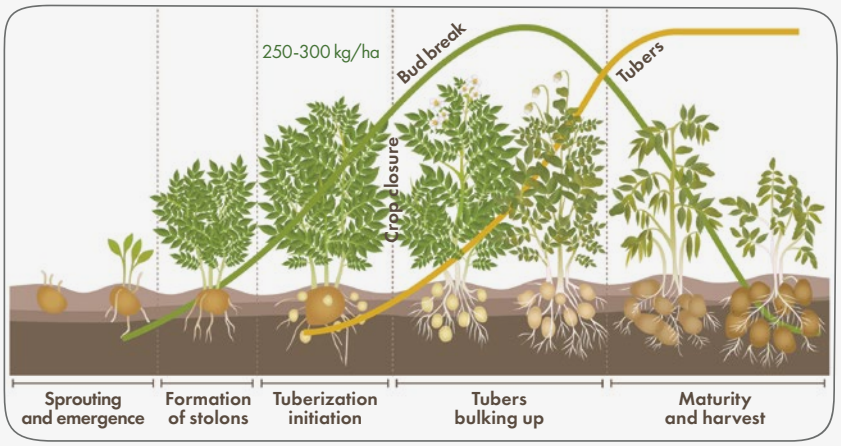
- Fast acting and readily soluble source of nitrogen, directly available for uptake by the roots, independent of the activity of nitrifying bacteria, resulting in faster uptake and greater efficiency for the plant.
- Promotes the uptake of potassium (K), calcium (Ca), magnesium (Mg), copper (Cu), iron (Fe), manganese (Mn) and zinc (Zn).

Prilled potassium nitrate is virtually free of chloride

- Increases dry matter and starch content, specific gravity of tubers and improve quality in processing and chipping potatoes.
- Yield and quality are negatively affected by chloride. Nitrate nitrogen (NO_3^-) acts antagonistically to chlorides (Cl^-) present in the soil or water.

Recommendation of use

- Apply prilled potassium nitrate at 250 to 300 kg / ha, as top dressing, at the beginning of tuberization period:



Proven benefits of prilled potassium nitrate in potato

- Total yield increase (tuber size and weight)
- Uniform % of commercial tubers (desirable size)
- Decrease darkening, hollow heart, scabies, blight and bruising
- Less reductive sugars in tubers = less coloration during frying
- Higher dry matter content
- Reduced weight loss during storage

Exporting vegetable growers continue to trade through COVID

Australian vegetable grower-exporters have demonstrated strong resilience in their businesses and supply chains to continue to export during the first three quarters of 2020 and their hard work is reflected in the latest trade data from January to September 2020. AUSVEG National Manager – Export Development Michael Coote reports.

Australia's export of fresh vegetables recorded an average dip of 7.9 per cent across export value and volume. With less planes in the air and emerging issues with seafreight, the industry has managed to achieve export value of $199 million and 175,036 tonnes during the first nine months of 2020. Some markets and export crops have seen increases in trade during COVID, with others experiencing fluctuating demand during the year.

Exports from January to September 2020

Australia is now nine months into the global pandemic and total vegetable exports have seen a moderate decline compared to the same period in 2019. Based on data from the Global Trade Atlas, there was a 6.3 per cent decrease in vegetable export value, from $212.1 million to $198.8 million. Total vegetable export volumes also declined by 9.5 per cent, from 193,432 tonnes to 175,036 tonnes over the same period.

The top four markets for fresh vegetable exports – Singapore, The United Arab Emirates (UAE), Malaysia and Hong Kong – have all seen an increase in trade value during 2020.

Demand in Singapore remained strong for Australian fresh vegetables and is the only trading partner that has recorded a positive increase in both export value and volume in this period. There is a positive uptick in export value by 6.6 per cent from January to September 2020, from $36.6 million to $38.9 million; export volume improved by 2.5 per cent from 21,524 tonnes to 22,053 tonnes. The UAE saw growth of 2.9 per cent in value but a significant decline in volume of 19.6 per cent. Malaysia recorded a 4.0 per cent rise in export value and a slight dip of 0.9 per cent in tonnage.

Thailand and South Korea have seen a decline in trade with an average drop of 27.3 per cent in both value and volume for Thailand and an average drop of 21.6 per cent in South Korea (refer to Table 1).

Table 1 – Change in vegetable exports by destination market January to September 2019-2020.

Trade Partner	2019		2020		▲ 19/20	
	AUD	Tonnes	AUD	Tonnes	AUD	Tonnes
World	212,146,514	193,432	198,799,711	175,036	▼ -6.3%	▼ -9.5%
Singapore	36,572,223	21,524	38,988,760	22,053	▲ 6.6%	▲ 2.5%
United Arab Emirates	24,293,426	33,122	24,989,845	26,623	▲ 2.9%	▼ -19.6%
Malaysia	19,662,164	19,003	20,451,334	18,838	▲ 4.0%	▼ -0.9%
Hong Kong	14,304,049	7,973	14,347,687	7,802	▲ 0.3%	▼ -2.1%
Saudi Arabia	15,616,373	16,211	13,183,646	14,621	▼ -15.6%	▼ -9.8%
Qatar	8,979,469	9,574	9,505,615	9,494	▲ 5.9%	▼ -0.8%
Thailand	13,571,924	13,202	9,441,539	9,999	▼ -30.4%	▼ -24.3%
Japan	8,625,982	5,354	8,972,737	2,733	▲ 4.0%	▼ -49.0%
Korea, South	11,093,020	17,204	8,782,722	13,340	▼ -20.8%	▼ -22.5%
Taiwan	7,422,200	7,184	6,887,836	8,037	▼ -7.2%	▲ 11.9%
New Zealand	9,945,232	2,500	6,648,072	1,445	▼ -33.2%	▼ -42.2%

Exports by crop

Volumes of root vegetable exports, such as carrots and potatoes, remained stable. Carrot export value increased by 0.9 per cent from $71.8 million to $72.5 million and potato export value increased from $33.3 million to $33.9 million, 1.9 per cent up on the same period last year. Asparagus started its export season strongly with a jump of 36.9 per cent in export value from $5 million to $6.9 million. Pumpkin exports continue to grow with a substantial increase of 29.8 per cent in export value and 15.6 per cent increase in export volume (refer to Table 2).

Nine months into the global pandemic environment, sea freighted root vegetables have performed better than exports of more perishable vegetables. However, carrots, potatoes and onions also experienced fluctuating trade from month to month in various markets.

Table 2– Vegetable exports by crop January to September 2019-2020.

Description	2019		2020		▲ 19/20	
	AUD	Tonnes	AUD	Tonnes	AUD	Tonnes
Carrots	71,781,250	81,571	72,459,637	79,781	▲ 0.9%	▼ -2.2%
Potatoes	33,291,156	45,911	33,909,771	40,495	▲ 1.9%	▼ -11.8%
Onions	39,073,528	45,727	30,639,567	38,598	▼ -21.6%	▼ -15.6%
Brassicas	20,491,644	6,535	17,103,098	4,520	▼ -16.5%	▼ -30.8%
Lettuce	9,654,950	1,496	7,142,327	1,129	▼ -26.0%	▼ -24.5%
Asparagus	5,027,534	548	6,884,825	367	▲ 36.9%	▼ -33.0%
Celery	7,017,960	3,930	6,503,749	3,773	▼ -7.3%	▼ -4.0%
Beans	6,130,783	1,158	4,806,907	979	▼ -21.6%	▼ -15.5%
Pumpkins	3,645,977	2,201	4,731,819	2,544	▲ 29.8%	▲ 15.6%

Export Readiness Program

AUSVEG, in partnership with ECA, launched *Export Fundamentals for Australian Fruit & Vegetable Growers: From Farmgate to International Markets* in September 2020. This course is customised to the Australian vegetable industry to provide foundational training for growers to understand a broad range of topics relating to international trade for fresh produce.

Building on the successes, learnings and findings from previous Export Readiness Training Workshops, AUSVEG identified the need to transition the workshop program to an online format. The online format ensures growers from around the country can access this export development content without having to attend a scheduled workshop.

There is a total of 11 modules in the training course covering topics such as Export Readiness, Market Access and Market Research, International Market Entry, Export Documentation, and Freight and Logistics. For more information on how to access this new online course, please visit the AUSVEG's website at ausveg.com.au/export.

Cultural Business Etiquette Program

Funded by Package Assisting Small Exporters – an Australian Government initiative through the Department of Agriculture, Water and the Environment – AUSVEG has partnered with Bisnis Asia to create the *Build Your Business Overseas – Like A Local* cultural business etiquette online training course, which launched in November 2020.

This course aims to improve vegetable grower-exporters export capability by developing engagement skills that will make a difference with existing and potential customers in Asia and the Middle East. The course is suitable for existing vegetable grower-exporters who already have experience in international markets and want to optimise growth opportunities through stronger engagement with customers.

For national vegetable levy paying grower-exporters with an interest in building cultural awareness in Japan, South Korea, Indonesia and the Middle East, please register via the export page of the AUSVEG website.

International Freight Assistance Mechanism Extension

As most exporting growers will be aware, the government has committed $317.1 million to extend the International Freight Assistance Mechanism (IFAM) until the middle of 2021. This is positive news →

Table 3 – International trade event calendar.

Trade show	Date	Vegetable Industry Participation
Asia Fruit Logistica, Singapore	18 -20 November 2020	Online format with seven vegetable exporters and AUSVEG exhibiting in the revised digital format.
Gulfood, Dubai	21-25 February 2021	Industry participation in 2021: International trade events are dependent on international travel restrictions and the latest official government health and travel advice.
Food & Hotel Asia, Singapore	TBC Q2 2021	
Foodex, Tokyo	9-12 March 2021	
ThaiFEX, Bangkok	25-29 May 2021	
Reverse Trade Mission (inbound)	June 2021	Event to be confirmed pending international travel restrictions.

and growers are strongly encouraged to continue to engage with their Freight Forwarder to secure space on IFAM flights.

International Trade Events

Through the *Vegetable Industry Export Program* (VG16061), a strategic levy investment under the Hort Innovation Vegetable Fund, AUSVEG coordinates grower participation in several international trade missions aligned with major tradeshows.

Many of these events have been postponed or deferred until 2021 and industry participation will be subject to health advice and travel restrictions at the time (refer to Table 3).

Find out more R&D

Any growers interested in any export events or discussing export opportunities can contact the AUSVEG Export Development team on 03 9882 0277 or export@ausveg.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: VG16061

Hort Innovation Strategic levy investment | VEGETABLE FUND

Frais Farms Director Kim Martin.

Adding to the clean, green sustainability landscape

In October 2020, an organic-certified crop protection product was released on to the Australian market. With registration for over 80 different crops, this naturally derived insecticide is a sustainable option for effectively managing pests in a range of horticultural growing enterprises.

In a commitment to the sustainability of Australian growers, a new organic insecticide has been launched on the local market.

Released by Corteva Agriscience, Entrust® Organic is a naturally derived insecticide based on metabolites produced by the fermentation of naturally occurring soil organisms. Its favourable environmental and end-user safety profile offers many benefits to growers wanting effective control of damaging pests.

Corteva Agriscience Marketing Manager for Horticulture and Insecticides, Nick Koch, said the product has long been anticipated by the Australian agriculture market. This is not only for its organic certification, but also for its favourable environmental profile and selectivity to key beneficial insects.

"Entrust® Organic is a biological solution that restores balance to your crop protection program, having minimal impact on key beneficial insects it is ideally suited to integrated pest management (IPM) programs," Mr Koch said.

"It's a product that Corteva is proud to offer because we know that growers will benefit. Its proven efficacy and organic certification offer farmers a sustainable alterative to help them thrive."

The product offers selective control of various Lepidopteran species, including caterpillar pests, leafminer, cherry and pear slug and thrips. Registered in over 80 different crops, it also offers versatility for growers with mixed farming enterprises. Registrations include cucurbits, culinary herbs, vegetables (brassica, fruiting, leafy, root, tuber, stalk and stem), legumes, avocados, berries, citrus, grapes, pomefruit, stone fruit, and tropical fruit crops.

Grower insight

Kim Martin – who manages Frais Farms, a leafy vegetable and brassica operation in East Gippsland, Victoria – said the introduction of Entrust® Organic to Australia will be a game changer for the local horticultural sector.

"To date, there haven't been a lot of tools available to growers to combat insect pressures in an organic operation," Mr Martin said.

"We're really thrilled that Corteva is bringing Entrust to the marketplace as it's a good, clean product. With the certification from the organic industry, it offers us the opportunity to further boost our brand as a credible supplier of a superior product that is insect and defect-free."

Mr Martin said the safety aspect of the product was also a huge bonus to industry.

"It is a very soft product which means not only does it not harm the environment, it also doesn't harm the farmer applying it," he said.

"In an agricultural environment, chemicals can often be quite risky to handle or require a lot of protective wear, but a product like this puts your mind at ease. I think growers are going to love using this and also have peace of mind when asking their employees to handle it too."

Nick Koch said Corteva is committed to working with Australian growers like Kim Martin to enable them to maximise yield and profitability with quality new products.

"Being able to offer new selective crop protection products with improved environmental and safety profiles is something we're really proud of," Mr Koch said.

"Producers are demanding softer, more sustainable chemistry and that's good news for Australian agriculture."

"When farmers win, everyone wins – and investing in the products our customers want and need makes good sense. We are a company with clear sustainability objectives, striving to enrich the lives of those who produce and those who consume."

Find out more

To register your interest, please visit entrust-organic.corteva.com.au or call Corteva Agriscience toll free on 1800 700 096.

Practising good environmental stewardship

Paul Gazzola is a third-generation vegetable grower, with his main operation located at Somerville on Victoria's Mornington Peninsula. AUSVEG EnviroVeg Coordinator Danielle Park speaks to Paul about the challenges faced in 2020 and his long-time involvement in ensuring environmental best-practice in the vegetable industry.

The challenges facing vegetable producing businesses throughout 2020 have been immense.

The ramifications of changing levels of COVID restrictions and large fluctuations in the demand for vegetables – along with a simultaneous spike in interest among consumers about the importance of fresh, nutritious vegetables – have made the year a test for everyone.

Changing operating requirements, and the challenge of accessing labour, have resulted in an increased workload for many producers. This has made the task of looking at the bigger picture of on-farm environmental sustainability moved down the list of grower priorities.

In response to the time constraints facing growers, the EnviroVeg Program has begun to test facilitated group sessions in some locations. The use of a group session to support vegetable producers complete their EnviroVeg self-assessment is available upon request (see breakout box for further details).

The EnviroVeg Program 2017-2022 is a strategic levy investment under the Hort Innovation Vegetable Fund.

Case study: Paul Gazzola – Gazzola Farms, VIC

Victorian vegetable grower Paul Gazzola produces broccoli, celery, lettuce, bok choy, choy sum and Chinese broccoli at his Mornington Peninsula operation.

Paul has a long history with programs looking to understand the environmental impacts of vegetable production.

Paul was involved with the Vegetable Growers Association of Victoria (now AUSVEG VIC) when it helped to develop a precursor to the EnviroVeg Program. This ensured the program was developed by the vegetable industry for the vegetable industry.

Paul is currently AUSVEG VIC President, and his operation has been involved in various environmentally sustainable programs – such as EnviroVeg – for a long time. Paul's years of experience in this space has provided him with a depth of experience and insight on the topic.

"Being environmentally sustainable is not something you actively live and breathe every day, it's more something you do subconsciously," he says.

"It needs to be more than a tick-a-box exercise. Environmental sustainability is a little like integrated pest management – it's a way of farming."

This is where EnviroVeg comes in.

"EnviroVeg is a tool that I have used to look at my system to find where the next improvement is going to be made," Paul says.

COVID-19 impact

For this article, Paul reflects on the time management challenge and being a good environmental steward in the middle of a pandemic.

"Everyone – including our business – has been impacted by COVID-19. During this time, the workload for our quality assurance has increased," Paul says.

The current EnviroVeg Program was able to provide benchmarking information that can work out where to begin and where to focus time to reduce a business' environmental risk.

The program allows growers like Paul to benchmark their business against environmental best management practice.

As Paul says, growers must ask themselves several questions when undertaking the benchmarking exercise, including:

- "What am I doing?"
- "What is the industry standard and what are the expectations?"
- "What do I need to get upskilled in or improve?"

The answers to these questions can help direct the next steps on the path to improvement.

Developing solutions

The EnviroVeg Program is ideal for those looking to start a vegetable growing business or develop a new site for production. It allows growers to look at the longer-term implications of farm design and operation.

However, most vegetable production occurs on established farms; each with its own established challenges to manage. Opportunities to make improvements do exist and they may result in longer term changes.

A key challenge for the Gazzola property has been the management of run-off and the resulting sediment loss.

"It took time to get the system right," Paul says.

EnviroVeg stepped in to assist. An initial solution was able to keep sediment on the property, managing water through a drainage system terminating in a catchment area contained within the property.

Over time, the decision was made to invest in a more permanent solution where topsoil was captured and returned to growing blocks. The solution included a concrete-lined catchment pit.

"There's only so much topsoil and we cannot afford to lose any," Paul says.

Although a solution was found to address this issue, there is always further work to be done.

"You're never finished. There is always something new or a better idea or new innovations. It is an ongoing exercise," Paul concludes.

Find out more R&D

Please visit enviroveg.com.au.

For help with accessing the EnviroVeg self-assessment, please contact AUSVEG EnviroVeg Coordinator Danielle Park on 0432 324 822 or at danielle.park@ausveg.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: VG16063

Hort Innovation Strategic levy investment | VEGETABLE FUND

Group sessions offered for growers

During spring 2020, the EnviroVeg Program conducted a short facilitated group session to assist growers with completing their self-assessments. Participants of this session were from Victoria's Gippsland region.

Together with Doris Blaesing from RMCG and VegNET – Gippsland Regional Development Officer Bonnie Dawson, the group reviewed its practices of two elements from the EnviroVeg self-assessment.

This focused on soil management practices along with nutrition and fertiliser management. The group investigated relevant research and discussed opportunities for future improvement.

The EnviroVeg program has been able to offer this 'group learning' option to assist interested growers get started. Similar sessions are available to support vegetable producers complete their EnviroVeg self-assessment upon request.

Please contact EnviroVeg Coordinator Danielle Park to express your interest.

Paul Gazzola from Gazzola Farms.

Life beyond COVID-19: The opportunity for fresh produce

The COVID-19 pandemic has significantly impacted the way consumers buy fresh produce. The 'homebody economy' looks set to stay. Our new normal means many of us are working from home some or all of the time; we are eating more food at home and eating out less often. Nielsen Associate Director Melanie Norris reports.

During the COVID-19 pandemic, we have seen a surge in vegetable sales; an increase in the number of consumers, both here and around the world, engage in online shopping; and a notable shift toward pre-packed produce options.

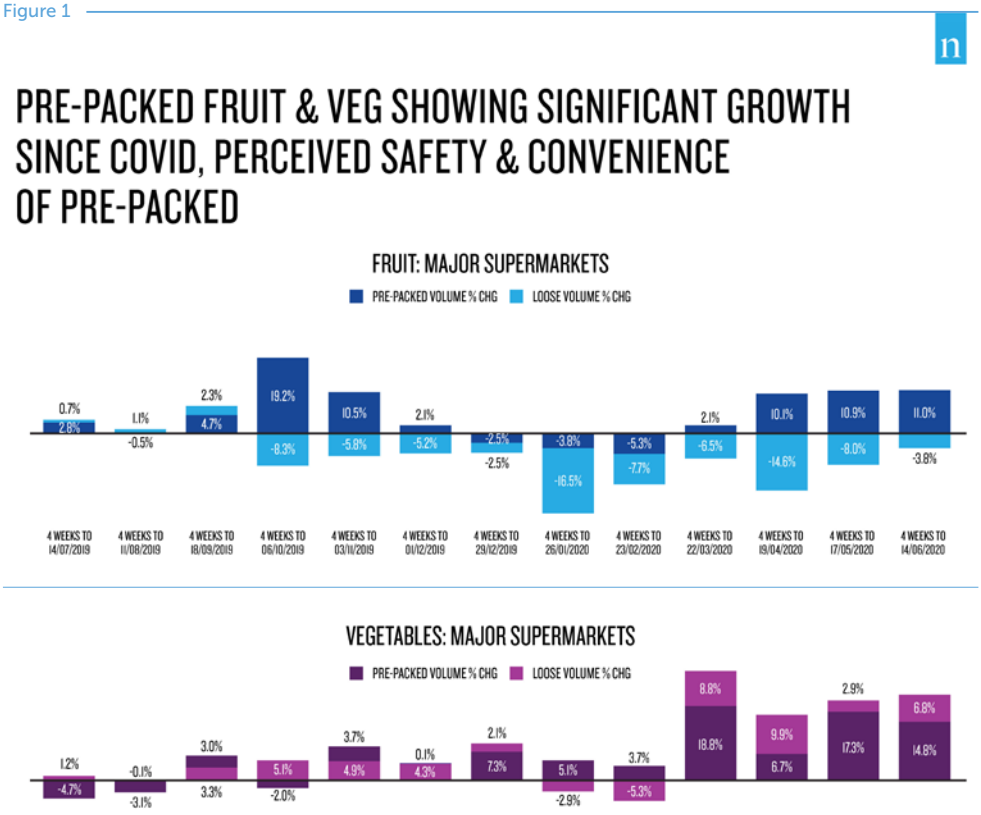
The move to pre-packed produce

A year ago, pre-packed fruit and vegetables made up 42 per cent of the volume sold in major supermarkets. Post the onset of COVID-19, volume share has increased to 45 per cent. This trend was more than likely driven by the need to limit time in the supermarket, food safety, convenience, or a combination of all three. This trend is set to continue, making it critical that consumers always have access to the right offer.

In the coming months, as economic uncertainty becomes a reality for many households, we need to consider the probable shift toward value-for-money products. On the one hand, large multi-packs may offer the best value, but they may be out of reach for people short on cash. Cash-strapped consumers may be forced to buy smaller pack sizes, bearing in mind that 43 per cent of households are 1-2 person and having an offer to satisfy both types of consumer is important.

The issue of sustainability should also be considered when it comes to pre-packs. While we know that sustainable benefits are not as preferred right now by consumers, this isn't to say that they won't be again in the future. How can we innovate in this space to satisfy consumer demand and sustainability requirements?

Figure 1



Source: Nielsen Homescan: Major Supermarkets are Coles + Woolworths + ALDI

The rise of local

Since the start of COVID-19, many households have begun shopping in new channels. Driven initially by out-of-stocks and people working from home some or all of the time, households are now choosing to prioritise convenience for where they do their shopping.

Greengrocers and markets have picked up sales with the emergence of this trend; and shopping locally, from both a product and a retailer perspective, is a trend we're seeing globally.

Over the past 12 weeks, greengrocers and markets have gained 1.2 share points of fresh produce, while other independent supermarkets grew 1.8 share points. In the United Kingdom, 25 per cent of shoppers are shopping at their closest store more often. This is similar to Australia.

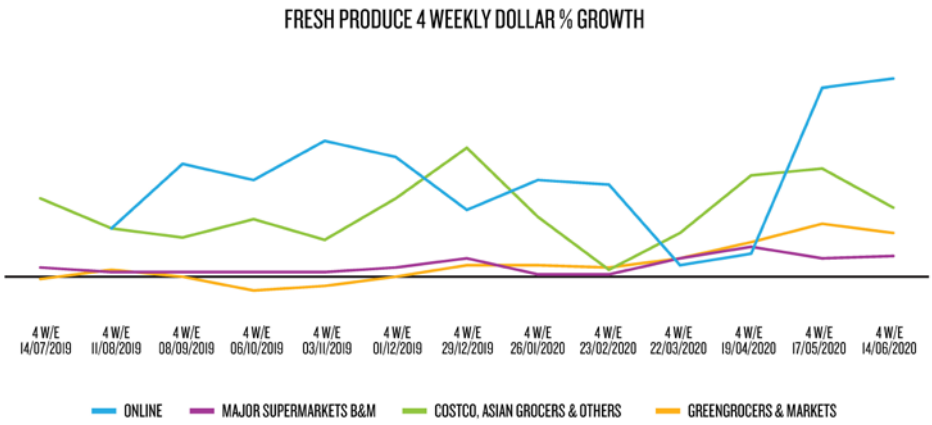
The rise of online fresh produce shopping

COVID-19 has accelerated online adoption faster than what has been recorded in recent years, with shoppers wanting to reduce contact with other shoppers. During the last 12 weeks, online represented eight per cent of total grocery sales in Australia, up from five per cent this time a year ago. Online represented six per cent of fresh produce sales in Australia, up from four per cent a year ago. The oldest and youngest demographic groups are leading the growth in online spending.

Consumer behaviour must be repeated to become habitual, and during the months of March to June 2020, nearly two-thirds of households were repeat purchasers of fresh produce online – suggesting that this has become their new normal. Sales data from other countries, such as the United States and China, show that this channel continues to grow as the pandemic progresses.

In Australia, Woolworths and Coles are nearly three-quarters of online fresh produce sales; however, as these retailers struggled to meet demand during March and April, smaller online outlets such as

Figure 2



Source: Nielsen Homescan. Copyright © 2020 The Nielsen Company (US), LLC. All Rights Reserved.

fruit and veg box providers and specialty stores gained some share. In the UK, produce farms are thriving during the crisis as more people shift to fruit and veg box deliveries.

For fresh produce to take advantage of online growth, we need to address some of the reasons why shoppers prefer to buy in-store. Having a technology strategy to move quickly i.e. scheduled/same day delivery, ability to choose ripeness and size are essential to succeeding in this space.

Find out more R&D

Please contact Melanie Norris at melanie.norris@nielsen.com.

These data and insights were produced independently by Nielsen and shared through the Harvest to Home platform, supported through the Hort Innovation vegetable, sweetpotato and onion research and development levies. For more insights, visit harvesttohome.net.au.

The Harvest to Home dashboard is an initiative of the Vegetable Cluster Consumer Insights Program and is funded by Hort Innovation using the vegetable, sweetpotato and onion research and development levies and contributions from the Australian Government.

Project Number: MT17017

Hort Innovation

A look back on the year of soil biology and integrated weed management

The Soil Wealth and Integrated Crop Protection (ICP) project works with growers nationally to put soil management and plant health research into practice. As the year finally draws to a close, this column looks back on the project's focus topics for 2020 – soil biology and integrated weed management– and highlights a collection of useful resources developed for growers during the year.

The year 2020 was undoubtedly challenging, but for the vegetable and potato growers of Australia it was also a time to focus on the benefits of soil biology and integrated weed management (IWM) in their production systems.

This year, the Soil Wealth ICP project put soil biology and IWM research into action to benefit the Australian vegetable and potato industry. This approach allowed growers to access a range of useful articles and practical resources to better understand soil biology and IWM, and how they could be applied on-farm to maximise productivity and profitability.

This article outlines three of the top soil biology and IWM resources produced as part of the Soil Wealth ICP project in 2020. Stay tuned for the announcement of the project's focus topics for 2021 in the coming weeks.

Soil biology

1. An introduction to soil biology

Soil biology is a complex, dynamic and broad field. This 30-minute podcast introduced growers to the concept of why biology is important to soil fertility and maximising crop production, as well as the complexities, risks and potential of biological crop products.

The podcast aimed to provide growers with a better understanding of the role of soil biology in vegetable production and share insights from a grower, a manufacturer and a scientist with experience in soil biology.

Listen to the podcast here: soilwealth.com.au/resources/podcasts/soil-biology-and-biological-products-an-introduction-podcast-30-minute-listen

2. Cover crops and soil biology in vegetable soils

As mentioned in the Spring 2020 edition of *Vegetables Australia*, a recent webinar recording from the Soil Wealth ICP team delved into the impact of cover crops on soil biology using DNA sequencing technology. This technology provides information on soil bacteria, fungi and eukaryote communities to see what changes occur in vegetable soils following cover crops.

Dr Kelvin Montagu from the Soil Wealth ICP team and microbial ecologist Dr Shane Powell from the University of Tasmania also discussed the diversity of biological communities in vegetable soils and how cover crops and biofumigants impact soil microbial communities.

Watch the webinar recording here: soilwealth.com.au/resources/webinar-recordings/cover-crops-and-soil-biology-in-vegetable-soils

3. Biological Products Database

The Soil Wealth ICP team continues to receive great feedback on the Biological Products Database, a popular tool to help growers navigate the array of 'biological' products currently available to their farming business.

Biological products, also known as biologicals, are defined as those that are derived from living organisms such as plants, animals, microorganisms and fungi. This includes products used as soil biology stimulants as well as those to improve nutrient availability.

The database is available in two formats for ease of use:

- Biological products sorted by trade name.
- Biological products sorted by primary use and trade name.

As the database is a work in progress, it is continually updated to include relevant information on the range of biological products available to growers.

If you know of any products or trial information that should be included in the database, or details that are inaccurate or incomplete, please use the supplied Excel spreadsheet on the Soil Wealth ICP website and send your suggestions back to the team.

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

1. IWM using cover crops and strip-till

In this short podcast, Soil Wealth ICP agronomists, Dr Pieter Van Nieuwenhuyse and Marc Hinderager, discussed the outcomes from a case study carried out on a pumpkin farm in Bathurst, New South Wales.

The trial highlighted how inter-row ground cover can assist in suppressing weeds and how a more integrated approach to weed management, using cover crops and strip-till, might help to reduce the use of herbicides.

Listen to the podcast here: soilwealth.com.au/resources/podcasts/integrated-weed-management-using-cover-crops-and-striptill-6-minutes

Read a case study on the trial here: soilwealth.com.au/resources/case-studies/iwm-on-a-bathurst-pumpkin-farm-advantages-drawbacks-of-ground-cover-use-tillage-and-residual-herbicides

2. Using remote sensing for vegetable weed control

The integration of remote sensing in daily farm management is a hot topic driven by the evolving range of applications through the Internet of Things (IoT). According to British start-up company Hummingbird Technologies, remote sensing technologies can be used to help vegetable growers make the right decisions for weed control and harvest prediction.

Read the article here: soilwealth.com.au/resources/articles-and-publications/use-of-remote-sensing-technology-in-vegetable-weed-control-and-yield-prediction

3. Technology for controlling weeds in vegetable production

Most new technology for controlling weeds will be a positive step forward for soil health and the environment, and will play an important role in our fight against herbicide resistant weeds.

Watch this interactive session to hear from leading industry experts on some of the most interesting and practical advances in weed management. This webinar covered non-selective fallow paddock weed control, as well as selective in-crop weed control, and delivery technology.

Watch the webinar recording here: soilwealth.com.au/resources/webinar-recordings/technology-for-controlling-weeds-in-vegetable-production

Find out more R&D

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

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

This project has been funded by Hort Innovation using the vegetable, fresh potato and processing potato research and development levies and contributions from the Australian Government.

Project Number: VG16078

Hort Innovation

HORT HEROES

Alice Zaslavsky on set with her crew at Scotties Point Farms.

Educating children around the food and mood phenomenom

In 2020, the digital toolkit 'Phenomenom' has continued to expand its reach and relevance in Australian classrooms. The program includes a suite of springboard webisodes, audio and PDF lesson plans, and this year it has introduced a new special resources pack designed specifically to talk to children about food and mood – the benefits of eating fresh produce for improving wellbeing and general outlook on life. *Vegetables Australia* reports.

In response to the impact of the COVID-19 pandemic on fruit, vegetable and nut consumption and the corresponding effect on mental health and well-being, Hort Innovation launched the Good Mood Food initiative in May 2020.

This direct-to-consumer marketing initiative played out across the country and used a range of channels, including TV, newspapers, radio, online, social media and retail partnerships.

The Good Mood Food campaign was not only marketed through media, but also incorporated existing platforms such as Phenomenom. Led by ABC Culinary Correspondent and cookbook author Alice Zaslavsky, the Phenomenom project was established in 2016 and branched out over the past four years through R&D funding from Hort Innovation commodities – vegetables, mushrooms and onions.

This time – funded through Hort Innovation's risk management reserves – the project developed a special resources pack to educate children about the correlation between food and mood.

"It's been a really tough year for everybody, but kids in particular don't have the language and experience at their disposal that we build up within ourselves around resilience and coping mechanisms," Alice explains.

"Through these resources, we're prompting them to think about getting active; moving their bodies, doing some mindfulness and meditation; being outside in nature; and eating plenty of nuts, fresh fruit and vegetables.

"This was something that had been identified as an area of interest from teachers and parents in our research, and it was a perfect opportunity to get it out into the world at a time when children and families need it the most."

Encouraging movement

The new resources pack contains three new *Nomcast* podcast episodes, which now contain visual prompts.

"What we identified in our last data set is that it's beneficial to have visual prompts as well as audio," Alice says.

"We've created animatics that go along with the podcast for students who may have difficulties with auditory processing or simply prefer visual learning. It's a nice little prompt that's fun and watchable."

There is also a brand-new webisode, lesson plans, student prompt cards as well as the digital Good Mood Moves Wheel.

"One of the things that we identified is that children don't recognise the connection between movement and boosting your feel-good hormones –

your endorphins, and also boosting your focus in class," Alice says.

"We've created this Good Mood Moves Wheel, which gamifies the notion of doing some little stretches, getting up every now and then, prompting teachers to integrate this on a daily basis."

"All of the movements correlate to fruits, vegetables, seeds and nuts that kids can also become familiar with and as we know, familiarity breeds likelihood to try and enjoy. So, it's another opportunity for us to create an exposure point for fresh produce to children."

A bonus is that these are all free resources, and parents are encouraged to get involved.

"If there's one thing that we've learnt this year, it's that remote learning can happen anytime, and families can take control of their learning," Alice says.

Producing Hort Heroes

In November 2019, Alice and the Phenomenom team travelled to Swan Hill in northern Victoria to visit Jake Shadbolt and his sister Hope from Scotties Point Farms. The pair featured in the second instalment of the *Hort Heroes* video series, which focuses on opening the world of horticulture up to older secondary students to show them the opportunities that exist within the sector. In this video, Jake and Hope educated the crew about the intricacies of growing onions.

"My aim with the *Hort Heroes* careers series is to create stories that older students can really resonate with, and to show them the youth of the industry on-screen so that they can imagine themselves in a career in horticulture," Alice says.

The Shadbolt feature followed Jessica Toth from Costa Mushrooms, who spoke about her passion for growing.

According to Alice, the videos are engaging with schools and industry. They are also gaining traction online through social media channels, and the team hopes to film more of these videos.

Looking ahead

Alice's vision is for Phenomenom to be funded on a continuous basis.

"I think what makes Phenomenom great is that it is evergreen content for schools. The resource tool kit that we're building will live on and have relevance for at least the next decade. It's a legacy piece for the industry," Alice says.

"What we need to do is to continue to amplify the project and to do that, we need to continue to create content and resources, and to incorporate it into a broader program for schools. This in turn drives more audience and it's a self-perpetuating cycle of relevance and usefulness."

In a boost for the project, ABC Education will begin showing Phenomenom videos from early 2021.

"ABC Education is the most trusted and most used education platform in the country," Alice said.

"We're already on ClickView, which is also very trusted in the video space, but to be on ABC Education is going to be a boost to the visibility for even more teachers and students to access the resource."

New recipe book making vegetables the hero of your plate

Alice Zaslavsky is, in her words, "a veg girl from way back."

Alice's passion for all things vegetables has led to the publishing of the book In *Praise of Veg: A Modern Kitchen Companion*, which is out now.

"I like to call it a book for the 'vegetarian and the veg curious', so it's not fully vegetarian or vegan. It has still got bits of flavour additions such as smoked fish, bacon or mince, but vegetables are very much the hero," Alice explains.

"It's targeted at someone who's starting out in the kitchen all the way through to the avid home cook, and it's particularly geared towards families. There are a lot of parents, who are wondering 'how can I get my kids to eat more veg?', and this is giving them the delicious tools to do that."

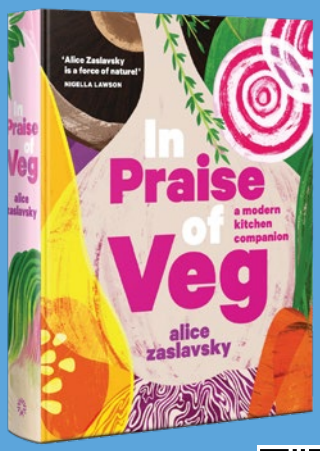
The book is close to 500 pages with over 150 recipes, and it includes a 'Vegetable Matrix' that demonstrates exactly how long to cook vegetables, and how to get the best out of them quickly.

"This book is about meeting people where they are and nudging them towards adding more and more vegetables to every meal," Alice says.

"I want people to see vegetables differently. For too long, consumers have thought that vegetables were something that they *had* to eat; I want people to think that vegetables are something that they *want* to eat, because they now have the tools to make them taste great."

For more details or to purchase *In Praise of Veg: A Modern Kitchen Companion*, please visit inpraiseofveg.com.

Alternatively, use the camera on your smartphone or tablet to scan the QR code below.



Find out more R&D

For more information and to access Phenomenom's interactive resources, please visit phenomenom.com.au.

The Phenomenom program has been funded by Hort Innovation using the mushroom, onion and vegetable research and development levies and contribution from the Australian Government under projects VG16018, MT18015 and ST19041.

Hort Innovation



Images 1, 2 and 3: Cabbage virus symptoms. Courtesy of Andrew Daly from NSW DPI.


Images 4 and 5: Cauliflower virus symptoms. Courtesy of Len Tesoriero from NSW DPI.

Myzus persicae. Courtesy of Scott Bauer, USDA.

Triple threat to your vegetable brassica crops

Growers in New South Wales' Sydney Basin are being warned about the impact that viruses are having on brassica crops. In this article, a team from the Plant Health Diagnostic Service at the Elizabeth Macarthur Agricultural Institute provides an overview of these viruses and how they can be managed in the crop.

Viruses are currently circulating among vegetable brassica crops in the Sydney Basin. Recently, three of the most important – Turnip mosaic virus (TuMV), Cauliflower mosaic virus (CaMV) and Turnip yellows virus (TuYV) – were identified in a single cabbage crop. Besides cabbage, brassica crops affected include cauliflower, broccoli, Chinese cabbage cultivars and canola.

Symptoms

These viruses cause a variety of symptoms that can be highly variable according to host species/cultivar, environmental conditions and the number of viruses present in the plant. However, they commonly include patterns of light and dark areas (mosaic), chlorotic (yellow) vein banding, purple, red or yellow leaf discoloration and distortion of leaves. TuMV can also cause chlorotic and brown to necrotic (dead) ringspots and necrotic flecks, streaks, and patches.

Additionally, stunting of plants is common with early infection, leading to variable growth across a crop or shift. These effects lead to significant yield reduction and unmarketable product.

Of the three viruses, TuMV is the most important and widespread brassica virus. However, infection with two or more of these viruses at the same time can magnify the impact; for instance, CaMV symptoms are usually worse in a plant also infected with TuMV.

Transmission

Although these viruses are unrelated to each other, all three are transmitted by multiple aphid species – primarily the 'green peach aphid', but also the 'cabbage aphid', 'mustard aphid' 'foxglove aphid' and 'cotton aphid'.

The type of host plant, mode of transmission and behaviour of the aphids can affect how efficiently and rapidly viruses spread through a crop. For instance, CaMV can infect a plant even when an aphid carrying the virus doesn't settle and feed but simply tests the plants feeding suitability, only making a quick exploratory puncture of the outer cells in doing so.

Fortunately, these viruses are not seed-borne. However, CaMV and TuMV may also be transmitted by virus-containing sap on hands and tools.

Weed hosts

Naturally, volunteer/self-sown brassica weed species such as *wild radish* and *turnip weed* are hosts of these viruses.

Some perennial weed species commonly seen on farms and other crops may host these viruses, as well as harbour their aphid vector species. For example, TuYV can infect clovers and mallow, while TuMV may also infect lettuce and spinach. The viruses can 'over-summer' in these 'alternative' hosts, maintaining a reservoir of virus ready to infect your next brassica crop.

Wild radish. Image courtesy of Alan Clemson from NSW DPI.

Disease management

So, what management practices are most effective at mitigating the risk to your vegetable brassica crops from viruses?

Seasonally, autumn appears to be the most crucial period for infection and the overall potential impact of a virus on a crop will be greatest when infection occurs in seedlings or early sown crops. Seedlings should be sourced from nurseries or production areas with good weed control, crop monitoring and rogueing practices, and should be checked for aphids as they are delivered. If possible, they should be treated with an insecticide before planting.

Additional and important management practices include:

1. **Separation:** avoid planting new crops near to and down-wind from older virus and aphid-affected crops.
2. **Weed management:** remove weed hosts so that aphids don't transfer virus from them to your crop.
3. **Crop monitoring:** careful and regular monitoring for aphid and natural enemy numbers at the beginning of the season is crucial.
4. **Pesticide application^:** insecticides can be used to control aphids if they are getting high in number.

Planting varieties with resistance to the viruses may also be an option, however there are multiple strains of each virus and no variety will be resistant to all of them.

^Due to the risks associated with developing resistance and killing off natural enemies, avoid this option if possible. Also, disturbance by spraying tends to stir aphids up, potentially leading to many more plant visits before they die and faster virus transmission than might otherwise be the case.

Find out more R&D

For more information about the project and submitting samples, please contact the Elizabeth Macarthur Agricultural Institute Customer Service on 1800 675 623 and ask to speak with Andrew Daly or Toni Chapman at the Plant Health Diagnostic Service Laboratory.

These activities are being funded as part of *Area wide management of vegetable diseases: viruses and bacteria*, 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: VG16086

Hort Innovation Strategic levy investment | VEGETABLE FUND

Redgold: A business on the move

The Young family has been growing vegetables in northern Victoria for over 60 years. In this edition, Michelle De'Lisle speaks to Carl Young about the Redgold growing operation, the challenges that are being faced, and the steps the business is taking to ensure it remains sustainable and profitable for generations to come.

Based in Wemen in Victoria's Mallee region, the Young family has been growing produce since the 1950s.

It had humble beginnings, with newlyweds Allan and Audrey Young farming 50 acres of various crops being grown for the Melbourne market. Their couple's son Andrew and his wife Eleanor joined the business in the late 1970s and took over the running of it in the 1990s. More recently, Andrew and Eleanor's sons – Tim and Carl – joined the fold on a permanent basis in 2017.

The farm has evolved across the three generations. A range of crops have been grown over the past 60-plus years, including lettuce, carrots, melons, potatoes, broccoli, cucumbers, pumpkins, and sweet corn.

Redgold now specialises in the winter supply of leafy green baby salads, along with head iceberg and cos lettuce. It has developed long-standing relationships with processing companies and supplies them on a contract basis. During summertime, the operation grows cover crops to prepare for the next season and give its staff a well-deserved break.

Facing challenges

An immediate concern for the horticulture industry is labour, and Redgold is addressing this as the COVID-19 pandemic continues.

"The potential lack of manual laborers due to the pandemic is concerning as we begin to look towards next year's harvest season," Carl says.

"However, we have been fortunate this season given the interstate travel restrictions as there have been good numbers of backpackers remain within rural Victoria looking for work. We employed separation tactics between staff with harvest, transport and accommodation, which worked quite well – no doubt there was some luck involved too though. We hope other farmers are able to source employees this summer."

Redgold also recognises that the water market is becoming more competitive due to catchments yielding less run-off. Simultaneously, new tree and vine plantations are booming throughout the region and these are both factors driving water prices higher.

"We think that wider and more opportune soil rotation and alternate irrigation methods will be important factors in the future regarding managing potential water supply issues and maximising yield on a water usage basis," Carl says.

Another challenge identified by Redgold is the increasing reliance the vegetable industry has on plastic.

"Consumers are becoming increasingly aware of the issue, and unfortunately Australia's recycling system currently does not amount to not much more than a token gesture," Carl says.

"Food safety, shelf life and contamination management are imperative, however we do not want to be over investing in unsavoury systems that may soon become shunned by consumers. There are always ways to manage issues, but this one is going to take some imagination and persistence.

"As seasonal producers, growing through increasingly severe heat, heavy frosts and Mallee dust storms makes the task of producing fast-growing vegetables with the uniform quality and volumes that our customers demand a challenge, but that is all a part of the fun of farming," Carl adds.

Adapting for the future

Redgold acknowledges that the global economic environment is changing and recognises the need to reduce greenhouse gas emissions.

"We feel pretty confident that a price on carbon will be applied to our industry in the future, whether it's via a tax or another mechanism. For that reason, Redgold is in the process of becoming Climate Active-certified, meaning our business's operations will be carbon neutral," Carl says.

"We think understanding where our emissions are coming from now will prove to be a good business decision. It will mean we can stem the emissions from those sources in the most economical way possible, before the cost of emitting becomes prohibitive. It will also offer insight into which direction our industry needs to head, and how we might get there."

Carl encourages other businesses in the industry to plan ahead and act now to reduce their greenhouse gas emissions.

"There will be winners and losers with a changing climate and economy, so the more we internalise and digest the reality of what needs to be achieved, the better our odds of continuing the Australian legacy of delivering high-quality food and fibre," Carl says.

"While there is a void in the economic framework to support a healthy transition to a low-carbon future, it is essential that growers take steps now to ensure they can remain competitive in coming years."

The operation is also looking to reduce its reliance on pesticides by investing more time in improving and diversifying the genetics it uses.

"We are interested in some novel approaches in weed control, which is a major issue and hope they can add more options to our weed management tool kit," Carl says.

Despite its ongoing challenges, the Young family and the wider Redgold operation is passionate about vegetable growing and the results it produces.

"Vegetable growing is fast-paced and quite social; we cross paths with people from a wide range of backgrounds – from travelling workers to professionals in food, technology, science, agriculture and everyone in-between," Carl says.

Redgold employees at work in the paddock. Photography by Excitations.

"While some aspects of the job can make you want to pull your hair out, it's also very pleasing to see quality crops coming efficiently through the shed."

Striving to achieve

The Redgold operation aims to be consistent suppliers of quality products and Carl says to do that, "we need to learn from our mistakes".

"Often the difference between good and poor yield and quality comes down to subtle differences in growing conditions or management," he says.

"We are investing more time in developing metrics, collecting data and learning about critical timeframes, application rates, soil amendment products, methods, temperatures and varieties. This is becoming super important as product specifications and consistency of supply become increasingly stringent for leafy salads."

Technology that assists in understanding disease and nutrition management has made incredible progress over the years.

"We are fortunate to have access to some of these world-leading techniques to help guide our decision making around rotation, chemical, varietal and fertiliser use," Carl says.

Redgold has also travelled abroad for inspiration, with Carl attending the 2018 International Spinach Conference. This was part of *Vegetable knowledge transfer at the 2018 International Spinach Conference* (VG17004), a strategic levy investment under the Hort Innovation Vegetable Fund.

"Developing connections with people within the Australian vegetable industry, and establishing common issues and learning from others on the trip was invaluable," Carl says about the study tour.

"While on the tour, there were a few varieties we saw that we were able to request back in Australia. We also saw a harvesting aid that has played a role in current developmental plans."

Redgold is a family-owned growing operation based at Wemen in northern Victoria.

Meet the people behind the Redgold operation

Redgold employs 10 permanent staff and a seasonal backpacker workforce of around 30.

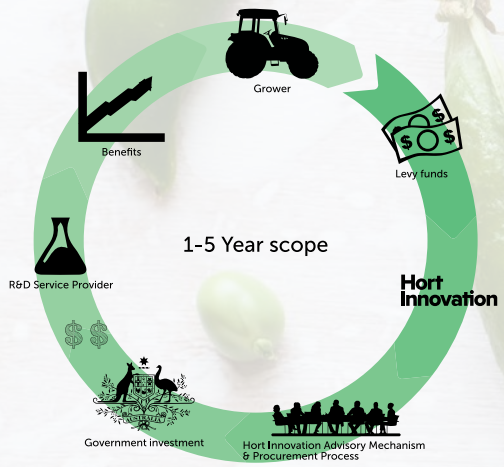
The current employees are:

- Eleanor Young – books, dispatch and director.
- Andrew Young – customer relations, staff and harvest management, director and has a keen interest in workshop projects.
- Tim Young – tech, data, research and development and system implementation.
- Carl Young – crop planning and field management.
- Josh McGown – pesticide and irrigation management.
- Dan Sandy – logistics, receivals and dispatch management.
- Sylvia McGown – management of harvest quality and forecasting.

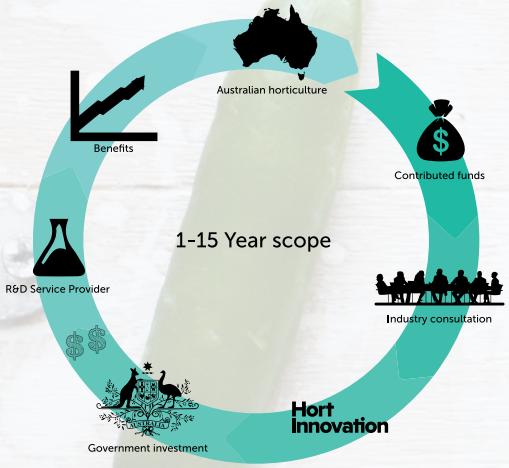
There are also three staff working in maintenance and fabrication, operators and visiting agronomists.

THE VEGETABLE R&D LEVY AT WORK

STRATEGIC LEVY INVESTMENT



HORT FRONTIERS



WHO PAYS THE VEGETABLE R&D LEVY?

The levy is paid by growers who produce and sell vegetables in Australia. The charge is set at 0.51 per cent at the first point of sale. The Federal Government also provides funding in addition to grower levy payments. Once paid, the research and development levy funds are managed by Hort Innovation.

HOW IS LEVY MONEY INVESTED?

Hort Innovation has two funding models for investment in research and development. The industry's levy is invested with Australian Government contributions through the Hort Innovation Vegetable Fund, which is part of the organisation's strategic levy investment activities.

All investments through the Vegetable Fund are made with advice from the industry's Strategic Investment Advisory Panels (SIAPs) – skills-based panels made of panellists from across the vegetable industry, the majority of whom are levy-paying growers.

Strategic levy investments have a one- to five-year scope and the R&D is designed to directly benefit growers in the vegetable industry. Project topics range from pest and disease management to biosecurity matters, with findings communicated through a variety of channels, including *Vegetables Australia*.

You can find information on all current strategic levy investments, and details of the SIAP, on Hort Innovation's Vegetable Fund page at **horticulture.com.au/growers/vegetable-fund/**.

The second Hort Innovation funding model is the strategic partnership initiative known as Hort Frontiers. Hort Frontiers projects do not involve levy dollars, unless an industry chooses to become a co-investor in them, through advice of the SIAP. Instead, Hort Frontiers facilitates collaborative across-horticulture projects involving funding from a range of co-investors. These projects have a long-term focus and are designed to solve major and often complex challenges to secure the future of Australian horticulture.

You can read more about Hort Frontiers and the seven funds within it at **hortfrontiers.com.au.**

HOW CAN GROWERS GET INVOLVED?

All vegetable growers are encouraged to share their thoughts and ideas for the research they want to see, both within the levy-specific Vegetable Fund, and within the wider Hort Frontiers strategic partnership initiative.

Ideas can be submitted directly to Hort Innovation through the online Concept Proposal Form at **horticulture.com.au/about/investing-is-our-business/concept-proposal-form/.** Growers are also encouraged to reach out to the SIAP panellists for the industry (available from the Vegetable Fund page).

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

Efficiency the key to new planting style

The latest in bed planting technology has arrived in Australia, enabling certified potato seed growers to produce a more uniform crop while conserving water and increasing nutrient uptake. In this article, South Australian certified seed potato grower Clint Muster speaks about his experiences with the new bed planter and how implementing this technology has benefited his business.

A new nine-row bed planter has proven just the trick to producing the smaller, uniform-shaped tubers preferred by certified seed producers and crisp processors.

Still a relatively new concept in Australia, bed planting increases planting density by up to 20 per cent to improve water conservation and nutrient uptake, which in turn restricts tuber size.

Certified potato seed grower Clint Muster took delivery of a SPUDNIK 8069 nine-row bed planter in February 2020. One of only three such units in Australia, it has a 5.46 metre operating width.

Whereas a conventional cup planter places two rows per bed, this one plants three rows 45 centimetres apart while maintaining a 182-centimetre wide bed.

Clint and Aimee Muster – together with Clint's parents, David ('Joe') and Julianne – grow about 7,000 tonnes of certified seed each year on two irrigated properties about 30 kilometres south of Pinnaroo in South Australia.

The Musters supply about 20 different varieties to major packing sheds and crisp processors throughout South Australia and Victoria. They adopted bed planting about 10 years ago, primarily as a means of conserving moisture in the region's non-wetting sandy soils.

"It was pretty simple – we used a six-row GRIMME planter and then went over each bed with a homemade planter to put in a third row in each bed," Clint says.

"We were getting a lot of misses and doubles, resulting in over- and undersized seed. When we started growing certified seed, customers wanted 35 to 70-millimetre tubers. Now they want seed that is 45 to 55 millimetres, and perfectly round.

"We found out about the SPUDNIK bed planter on the internet and approached Landpower to see if they'd be interested in bringing one into Australia for us."

Positive results

Clint says the new planter has significantly improved the efficiency of his business.

"We've eliminated the misses and doubles, and better placement means we're getting higher yields of the smaller and even-sized tubers we're after," he says.

"That means we can produce more seed off the same area, which has big implications for our crop rotation program. Plus, it's just a whole lot easier – before we were running two tractors and two drivers, now we can do everything in a single pass."

The Musters' planter is fitted with an eight-tonne hopper and two 700 litre Goldacres spray tanks used to apply in-furrow insecticide and fungicide treatments. It is towed by a Case Magnum 340 Rowtrac, which provides ample traction in the sandy soil.

The optional touch-screen terminal and nine-channel video input enables the operator to monitor and adjust the machine's settings while on the go.

"The cameras on each hopper show you if there's any misses so you can adjust your speed," Clint says.

Key features

SPUDNIK markets a range of bed planters in 5-10 row semi-mounted or trailed configurations and hopper capacities ranging from 3.6-9 tonnes. All models share a simple, robust design for accurate planting and low maintenance.

They incorporate the same row units found in GRIMME models but have a unique chain-fed feeder belt that delivers seed consistently to the seed bowl, which helps to reduce bridging in the hopper.

A hydraulic shaker and adjustable seed-bowl level ensures optimal singulation, while a large-diameter top pulley ensures smooth delivery of the seed piece into the planting element, regardless of ground speed.

The planting shoe opens the furrow and 'floats' independently of the row unit, ensuring consistent seed piece depth. A smaller bottom pulley releases the seed piece from the cup into the furrow, where it is captured by soil flow round the shoe. The shoe has a replaceable bottom that is available with a high-chromium rod for better wear resistance.

The covering discs then covers the seed piece with soil and forms the hill, and the planting belt can be tensioned or released quickly without tools.

Find out more

Please contact Landpower GRIMME Product Specialist Haydon Martin on 0447 184 250.

Investigating the relationship between compost and soil moisture

In this article, Virginia Brunton and Solomon Wadani from MRA Consulting Group discuss a project focusing on the impact that compost can have on water retention in vegetable crops, using a Western Sydney-based vegetable trial site as an example.

Vegetable production is highly water intensive as crops always require adequate water resources. Maintaining soil moisture under an increasingly variable and extreme climate is predicted to become even more difficult than it is at present. After the recent drought in many parts of Australia, growers are looking for more water security. This project investigates the ability of compost to increase the amount of water available to vegetable crops and retain it for longer.

Compost applications have been shown to increase soil water retention, and therefore can be used as effective drought amelioration by increasing the amount of water held in a soil.

Over the course of two growing seasons (winter and summer), Agnov8 trialled the effect that compost had on soil water retention. This was undertaken in partnership with MRA Consulting Group and the New South Wales-based Greater Sydney Local Lands Services (GS LLS), and took place on the GS LLS demonstration farm in Richmond Lowlands, Western Sydney. It used compost made from kerbside garden organics.

Collecting data

Using Agnov8's innovative remote irrigation monitoring technology, this project aimed to demonstrate to vegetable growers that compost can improve soil-plant-water relations and build awareness about compost as a means of retaining water in soils.

The Agnov8 Omne environmental sensors (see Figure 1) are automatous wireless units powered by solar panels, which communicate to a cloud by utilising an aggregation unit. With a range of up to three kilometres, this technology is applicable for use in broadacre properties. The sensors recorded continuous data on soil growing properties such as volumetric water content (VWC), electrical conductivity (EC) and soil temperature. The data, accessible on a live dashboard, also incorporated weather station readings including rainfall, temperature, humidity, and solar radiation.

Figure 1: The Omne environmental sensor, solar powered remote field monitoring device.

The trial was established using five winter crops; three cabbage varieties, cauliflower and broccoli and a second series using four summer crops; two eggplant varieties, capsicum, and sweet corn.

There were three treatments tested in the trial; a Control with no compost, Treatment 1 – compost applied at 10 wet tonnes per hectare (wt/ha), and Treatment 2 – 20wt/ha applied. Soil monitoring occurred at 10cm, 20cm and 30cm depths.

Yield data at harvest was obtained and observational pest and disease monitoring was also conducted.

Daily average Volumetric Water Content (VWC) at 100mm soil depth

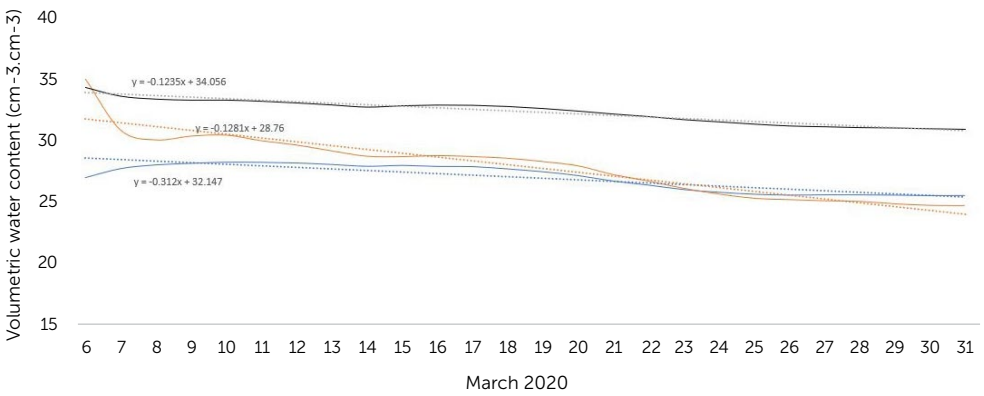


Figure 2: A comparison of compost treatments in the top 100mm of the soil profile. This region in the soil profile is highly volatile to environmental effects.

Figure 3: These images show the contrast in the crop reaction to extreme heat and UV radiation. They were taken on the same day. Treatment 2 – 20t/ha (left) shows an eggplant crop that is holding turgidity compared to the control – no compost crop (right), which is wilting significantly.

Trial results

Analysis of the VWC data indicates a correlation between compost rate and soil water retention. Treatment 2 (20wt/ha) retained more soil water than the control plot, which had no compost (see Figure 2).

There was no significant difference between treatments for crop yields, except for the midnight eggplant variety, which yielded a 60 per cent gain in average fruit weight for Treatment 2 when compared to Control.

Visual inspection for pests and diseases showed no significant difference between treatments. Figure 3 shows clear differences in crop condition in the peak of summer. These pictures were taken in mid-January on one of the hottest days of summer (>350C). There is a clear difference in the plant response to extreme environmental conditions, with compost ameliorated crops wilting less under these conditions.

This trial demonstrated that compost applied to land at 20wt/ha can improve soil water retention, and therefore improve the growing conditions of a soil. This allows growers to save on water use without impacting crop yield.

Under a changing climate, it is expected that growing conditions for vegetable production will become increasingly more variable. Improving the soil water holding capacity can help to alleviate uncertainties with water security. Adopting compost made from recycled kerbside organics as a soil amendment can prove economically beneficial to farmers, while ensuring crop success.

The project team is hoping to continue the trial to further demonstrate the impact of compost and consolidate the current findings.

Find out more R&D

Please contact Virginia Brunton at organics@mraconsulting.com.au.

This project was funded by the NSW Department of Planning, Industry and Environment as part of its Organics Market Development Program.

Masterclass in Horticultural Business returns in 2021

The Masterclass in Horticultural Business was launched in 2017 by The University of Tasmania, in partnership with some of the world's leading names in horticulture, including New Zealand's Lincoln University, the Wageningen Research Academy in the Netherlands and Hort Innovation. Applications for the 2021 course are opening in February, and those interested in participating are encouraged to get in touch.

Offered through flexible online delivery and face to face workshops, the Masterclass in Horticultural Business is taught by the University of Tasmania, where students will learn from some of the best horticulture educators in Australia.

The course is designed for people who are working in the horticultural industry to increase their agribusiness skills and gain a formal qualification. It has been developed with the input from many of Australia's current industry leaders, providing participants with knowledge and skills to grow their horticulture career. Successful completion of this course will provide participants with a Graduate Diploma in Agribusiness, specialisation in Horticultural Business.

What will students learn?

The Masterclass focuses on the development of a personal business plan. Each unit in the course will provide students with knowledge and skills across a wide range of study areas including Financial Management and Law, Horticulture Management, People and Culture, Value Chain Management and Logistics, Horticulture Marketing and Communication, Global Trends and International Business, Innovation and Entrepreneurship, and Business Development and Strategy.

Flexible study options

The course can be completed full-time in one year or part-time through flexible study options. Meaning participants can learn where they want, when they want, so that they can maintain their professional life while completing the course. It is delivered predominantly online by some of Australia's best horticulture educators via a range of engaging and interactive learning methods. There are also three face-to-face workshops where students can learn from some of the very best in the business.

Scholarships

Those interested can apply for one of the industry-supported scholarships worth up to $10,000 each. These are designed to support students working in industries such as nursery, fruit and vegetables.

If a business is paying the course fees and/or travel costs associated with attending the face-to-face sessions, there are possible tax-deductible options for those who meet the requirements. To find out more, please visit the Australia Taxation Office website.

Who is the masterclass for?

Students come from a variety of horticulture industries, with a range of education backgrounds and are working at different professional levels. Successful applications are granted based on professional experience and aptitude.

To see if the Masterclass is right for you, we encourage potential applicants to talk directly to us.

Applications are opening soon for February 2021 enrolments. To find out more or to express interest, please email hort.bus@utas.edu.au or visit utas.edu.au/horticulture.

Find out more R&D

More information about the Masterclass in Horticultural Business can be found at utas.edu.au/horticulture.

Masterclass in Horticultural Business is funded by the Hort Frontiers Leadership Fund, part of the Hort Frontiers strategic partnership initiative developed by Hort Innovation, with co-investment from the University of Tasmania and contributions from the Australian Government.

Project Number: LP15001

Launch of gourmet herb brand paying off

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

After launching 'Butler Gourmet Pantry' two years ago, Butler Market Gardens (Aust) Pty Ltd® is reporting continued growth and expansion of its sales and customer base. In 2019, it recorded moderate growth of 83 per cent (coming off a small base). However, 2020 has reached a new level of growth, tracking 188 per cent up on 2019 – and demand is continuing to grow.

The growing operation attributes the success to a number of factors, as outlined below.

1. A focus on product quality and sustainability.

Traditionally, most herb supply for Melbourne is trucked down from Queensland during winter.

Issues such as dehydration and temperature injury during transport cause on-going quality problems. Consumers buying Queensland-grown herbs in Victoria would often be purchasing a product that is up to a week old – not a good result for the category.

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

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

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

In keeping with the business' sustainability focus, the facility features a 2.95-megawatt biomass boiler. It operates by burning renewable organic materials such as wood chips, shavings and off-cuts to produce heat – materials that would otherwise go to waste. The heat is transferred into the protected cropping environment to assist plant growth when the outside temperature falls below optimum growing conditions. The result is the replacement of natural gas with a more environmentally friendly alternative, and a reduced heating cost of up to 60 per cent.

2. Consolidation and investment into Melbourne market operation.

The main distribution point for the range is the Butler Market Gardens grower stands 733-737, located in the Melbourne Market, Epping. Recent investments that have been made to improve the team and its resources, meaning it is operating efficiently and easily able to take on new customers and volume. The team is led by the business' Market Manager, Frank Attana. Frank is an experienced herb and leafy vegetable wholesaler.

3. An increase in marketing and social media activity.

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

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

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

Find out more

Please visit butlergourmetpantry.com.au.

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

Sales inquiries can be made to Market Manager Frank Attana on 0402 562 052 or at market@butlermarketgardens.com.au or General Manager – Sales and Marketing Andrew Smith 0402 273 330 or at andrew@butlermarketgardens.com.au.

Vegetable Crop Nutrition Masterclass reaps online rewards

Due to the changing levels of COVID-19 restrictions around the country, the Vegetable Crop Nutrition Masterclass made the move online in 2020.

The change to online resulted in an oversubscription to the program, with vegetable growers, agronomists, and other industry representatives attending from every state in Australia for sessions held on 12 and 13 August. The highlight was the breakout sessions on day two, with six groups developing and presenting nutrient management plans.

Mastering crop nutrition

Digging into the detail of vegetable crop nutrition, the training covered the knowledge and principles necessary to develop and manage crop nutrition programs on vegetable farms.

Beginning with a deeper understanding of soil functions and underlying soil conditions, the program also outlined the importance of soil structure for vegetable crop growth. It highlighted the role organic matter plays in this, and in nutrient cycling and soil biology. Opportunities for more efficient use of crop nutrition and the role that cover crops can play in both storing and releasing nutrients were also flagged.

Leading the Vegetable Crop Nutrition Masterclass was Doris Blaesing from RM Consulting Group (RMCG).

"The presenters were impressed with participants' overall contribution and how they tackled the nutrient management planning, given all groups had to work on a vegetable crop that was not familiar to them," Dr Blaesing said.

"It was also great to see people from all corners of the country getting involved."

In this edition, two Masterclass participants share what they learnt from across the two days. *Vegetables Australia* spoke to agronomists Bhargav Rayeni from Mulgowie Farming Company and Joel Davis-Ward from Bejo Australia about their experience.

Bhargav Rayeni

You have an agronomy/farm manager role at Mulgowie Farming Company. What does this involve?
I'm involved in season planning and agronomy. This includes working with growers to conduct crop checks, quality/yield forecasting and soil health management.

You attended the Vegetable Crop Nutrition Masterclass in 2020. What were the reasons behind your participation?
I participated in last year's Masterclass and found it quite useful to reaffirm the approach to soil test interpretation. I was also interested to see if anything new had happened since last year's event.

Was there anything new from last year's event? If so, what?
I felt this time it was much better. Sap testing versus leaf testing, and phosphorous conversations.

What did you take away from the Masterclass that you can apply to your role at Mulgowie?
A holistic approach to soil test interpretation and including cover crops to nurture the soil biology.

A holistic approach involves feeding the soil rather than the plants alone, while keeping the nutrient interactions in mind. Cover crops are included as part of improving soil health and maximising nutrient availability. E.g. We are using buckwheat as a cover crop, which can make phosphorous more available to the next crop.

Were there any key learnings that you have been able to – or will be able to – pass on to the growers who you work with?
Cover cropping and soil amendments. I can discuss the importance of lime and gypsum to counter act pH and high magnesium issues, as well as outline how compost and cover crops can be used to improve soil's nutrient/water holding capacities.

What were the highlights of the Masterclass?
Highlights included interaction with other participants and solving real-world soil testing and cropping problems.

The Masterclass helped to bring our internal agronomy onto the same page as our approach to soil test interpretation.

Do you have any suggestions for the Soil Wealth team should another Masterclass be offered in 2021? What topics would you like to see on the agenda?
I would like to see more emphasis on soil health and trace elements such as silicon. Also, a focus on pathogen and nutrient interactions.

There has been an ongoing emphasis on sustainability – it may not be a choice anymore as customers are looking to buy sustainably-grown produce.

Calcium silicates counteracting powdery mildew in an organic situation is a great example.

It will be great to see the pest and nutrient interaction, so we may be able to expand the scope of nutrition for growing and protecting the crop. Also, it reduces the dependency on chemical and cultural controls.

Joel Davis-Ward

Hi Joel, can you please give me a brief introduction of yourself and how you became involved in the vegetable industry?
I'm 32, married, and have a 10-month-old son. I became passionate about the vegetable industry in my early teens when I started cooking, which I later turned into a profession. As a professional cook, I became even more passionate about good food and starting with the best produce, so I started growing my own. I didn't particularly like working in kitchens, and dreamed of being the one producing the ingredients I was cooking with, which led to my wife and I studying Agricultural Sciences at The University of Adelaide, moving to Tasmania (where the soil is great and the land relatively cheap), and working in agriculture while we save for our own farm.

You're a Research Technician at Bejo Australia. What does this involve?
Bejo Australia produces a reasonably wide range of vegetable and herb seed, and we're constantly trialing new ways to improve productivity, efficiency, safety, reliability, and quality, while reducing our environmental impact. My role is to help maintain and manage those trials – everything from planning, planting, spraying, weeding, and applying treatments to assessing the effects of those treatments and extending those results to our field officers.

You attended the Vegetable Crop Nutrition Masterclass in 2020. Why did you decide to participate? Have you been involved before?
It was recommended to me by my supervisor (who also attended) as a way to improve my agronomic knowledge in regards to crop nutrition. I hadn't been involved in training like this before (other than at uni), so the idea was that at the very least it would be a good refresher.

What did you take away from the Masterclass? Was there anything new that you learnt?
I realised that my understanding of crop nutrition was far less than I had anticipated and that I had a lot more to learn, especially in terms of all the different products available. During the Masterclass, we worked on a case study involving carrot nutrition, which gave me a heap of information about nutrient removal rates, fertiliser timing, and nutrition management practices for a crop that I'm heavily involved in. Some of the products that were brought up in the group discussion I had never even heard of before, so I learned quite a bit!

What was the most useful information, and was there anything that you learnt that you could apply to your day-to-day work?
The most useful information for me definitely came from the group task, which was developing a crop nutrition plan for a carrot crop in Penola, South Australia. We were lucky enough to have Doris Blaesing supervising our group, and she has an enormous amount of knowledge that we only just scratched the surface of. While I can say that the discussions around calcium cyanamide, the nutrient concentration of composts, or mycorrhiza were particularly useful to me, it was actually being exposed to Doris and her work with the Soil Wealth and Integrated Crop Protection (SWICP) project that provided *the most* useful information that's applicable to my day-to-day work. I've since downloaded and printed every SWICP report that is applicable to the crops we grow, so I ended up with *a lot* more relevant information than I expected!

Would you recommend the Masterclass to other members of the vegetable industry, and why?
Absolutely! There's always something to learn from training that encourages peer-to-peer learning, no matter what your experience level is.

Would you consider undertaking any similar Masterclasses and if so, what would you like to see it focused on in terms of vegetable production?
I'm always keen to undertake more training. I'd be especially keen to learn more about soil microbiology and how to manage it; soil microscopy; developing disease-suppressive soils; factors that promote weed growth (i.e. what the present weeds tell you about the current conditions and how to manage them); and how different fertilisers and the timing of their application affects the growth, nutrient density, and health of various vegetable crops.

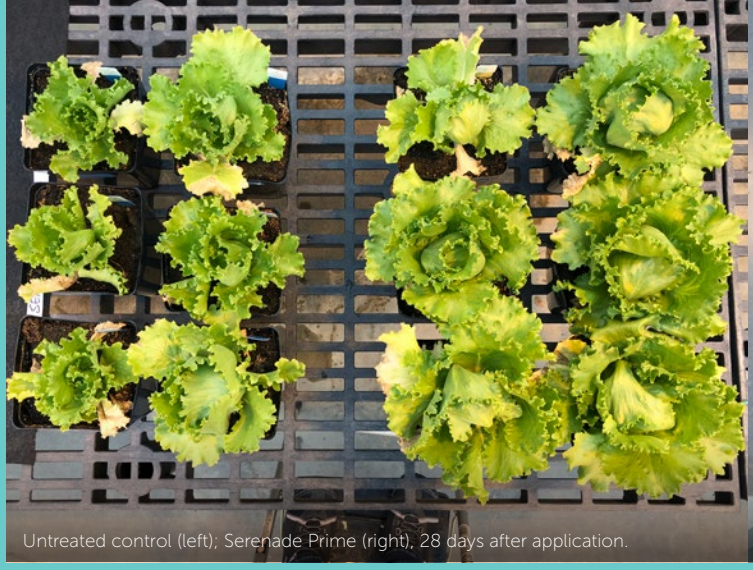
Find out more R&D

Please contact Doris Blaesing at dorisb@rmcg.com.au.

The Vegetable Crop Nutrition Masterclass has been made possible by *Soil Wealth and Integrated Crop Protection – Phase 2* (VG16078), delivered by RM Consulting Group and Applied Horticultural Research.

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

Hort Innovation Strategic levy investment | VEGETABLE FUND



Untreated control (left); Serenade Prime (right), 28 days after application.

Untreated control (top); Serenade Prime (bottom), 36 days after application.

Managing salt uptake in lettuce with biology

Studies in the United States have shown the important role soil biology plays in managing high sodium levels in lettuce crops. To assist growers with managing their salt, a biological product has been developed – and the benefits have been wide-ranging, including improved crop quality and higher yields.

Irrigation water quality can have a profound impact on lettuce production. Lettuce yields can decline by 10 per cent with levels as low as 1.4 dS/m, which is approximately 770 parts per million (ppm) depending on types of salts. This would be considered low by many lettuce producers who have experienced continued drought in many production regions.

Recent research from California has demonstrated the role that soil biology plays in managing high salt. Serenade® Prime from Bayer contains *Bacillus amyloliquefaciens* (strain QST 713), which forms a symbiotic relationship with the lettuce roots when used as directed. After colonisation on roots, the QST 713 bacteria releases compounds in the soil surrounding the roots to improve and regulate nutrient uptake. This can result in a much larger root surface area with which to explore the surrounding soil resources.

Research analysis

This greenhouse study demonstrated the effect on lettuce grown under drip irrigation with salinity of 1.5 dS/m. Lettuce plants treated with Serenade Prime at 7 L/ha, showed a dramatic increase in head weight (53 per cent) and root surface area (21 per cent) compared to the untreated. Leaf analysis showed improved nutrient uptake, especially calcium at 83 per cent, and several soil immobile micronutrients that can only be absorbed via direct root contact.

The results of this study are consistent with observations made in other crops around the world, where the use of this product as a soil ameliorant mitigates the uptake of sodium. Combined with careful irrigation practice and variety section, it would appear to offer a valuable addition in profitable lettuce production.

An organic approach

In addition, this product is organically certified. ACO Certification Ltd has certified it as an Allowed Input, meaning that it is also suitable to be used in certified organic production systems.

Bayer has produced many resources that are science-based and support the use of this product. A great example of one of these resources is a video featuring Paul Windolf from Windolf Farms.

Based in Queensland's Lockyer Valley region, Paul shares his experiences in improving soil health. Mixed species cover cropping, crop rotation, compost and the use of Serenade Prime are the combination Paul uses in his holistic approach to vegetable production.

Scan the QR code below to watch the video or visit crop.bayer.com.au/serenade-prime to download online resources.

Find out more

Please visit bayer.com.au.

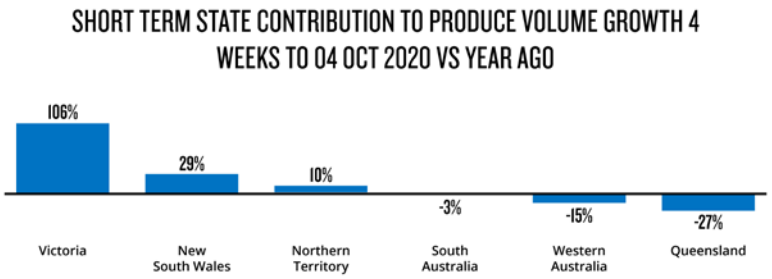
Harvest to Home COVID-19 Fresh Produce update

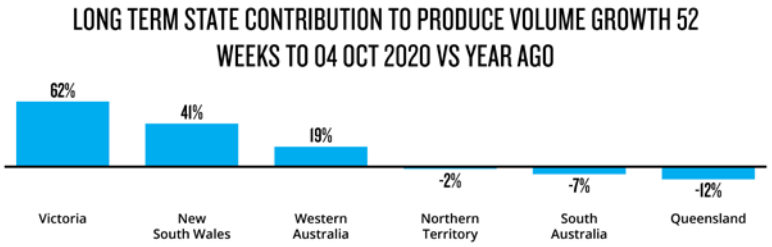
October 2020

As part of the Hort Innovation-funded Harvest to Home project, global information and measurement company Nielsen has produced a comprehensive review into the impacts on COVID-19 on the fresh produce industry. AUSVEG presents a summary of the report's top 10 findings.

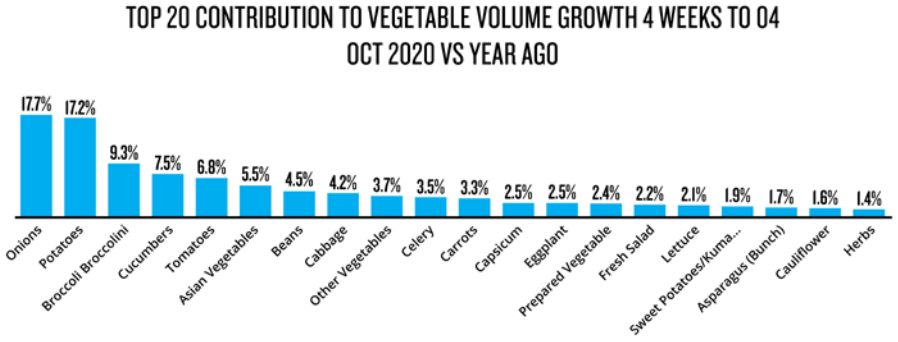
1. In the four weeks to 4 October 2020, total grocery sales continued to stabilise after the start of Victoria's lockdown in July.
   - Dollar sales in this period remained higher than same time year ago (+10.6%)
2. Produce volume growth 2.9% higher this month than same time year ago.
   - The average price per kg was 7.0% higher than same time year ago.
3. Victoria contributed the most in volume produce growth both in the short and long-term.
4. Homebody economy continuing to drive strong vegetable sales while fruit sales remain less than year ago, contributed to by higher pricing.
5. Pre-packed fruit and veg continues to show significant growth since COVID-19.
   - Attributed in-part to perceived safety and increased convenience of pre-packed products
6. Potatoes and onions continued to dominate the contribution to volume growth.
   - This was followed by broccoli/ Broccolini, cucumbers, tomatoes and Asian vegetable varieties
7. There was strong growth in bananas, strawberries and pears, which counteracted declines in avocados and melons leading to an overall negative fruit volume result of -4.4%.
8. The amount purchased per buying occasion stabilised for both fruit and vegetables.
   - However, households are spending more for the same amount of fruit and less for the same amount of vegetables
9. The major retailers have returned to February 2020 levels pre-COVID-19.
   - Other supermarkets rose in market share to the detriment of greengrocers and markets
10. Vegetable growth continues to grow online sales compared with online sales of just fruit and all fresh produce combined.
    - Online produce sales nearly double that of same time year ago

Short-term and long-term contribution to produce volume growth, four weeks to 4 October 2020 vs one year ago.





Contribution of different vegetables in volume growth, four weeks to 4 October 2020 vs one year ago.



Sources: Nielsen Homescan Data to 4 October versus Prior Year

Find out more R&D

Please visit harvesttohome.net.au to read the full report.

These data and insights were produced independently by Nielsen and shared through the Harvest to Home platform, supported through the Hort Innovation vegetable, sweetpotato and onion research and development levies. For more insights, visit harvesttohome.net.au.

The Harvest to Home dashboard is an initiative of the Vegetable Cluster Consumer Insights Program and is funded by Hort Innovation using the vegetable, sweetpotato and onion research and development levies and contributions from the Australian Government.

Project Number: MT17017

Hort Innovation

Hort Innovation Vegetable Fund Annual Report 2019/20 now available

Pay a levy? Then you won't want to miss everything your levy dollars got up to during the most recent financial year, with the release of Hort Innovation's 2019/20 Fund Annual Reports.

Hort Innovation has developed an online portal that hosts each of its 37 Fund Annual Reports for 2019/20, which detail the research, development, extension and marketing investments that Hort Innovation administers to increase growers' productivity, competitiveness and profitability.

Each industry-specific report includes key investment and project information from the year, and is available to download from horticulture.com.au/annual-report-portal.

From this link you can also access a copy of the Hort Innovation 2019/20 Company Annual Report, which details activities and highlights across the entire portfolio of Hort Innovation's work.

If you prefer to read a hard copy of your Fund Annual report, you can request one for free by emailing communications@horticulture.com.au with the report you'd like to receive, and your mailing address (available while stocks last).

2019/20 snapshot of Vegetable Fund investment:

- $17.17 million invested in research and development.
- 88 active research investments.
- $9.83 million in levies collected by the government and passed on to Hort Innovation for investment.
- A new industry communications program plus a new iteration of the nationwide VegNET program to support growers in accessing information and adopting best practice on-farm.

Keeping track of Vegetable Fund investments

During 2019/20, Hort Innovation continued to track investment expenditure against the Vegetable Strategic Investment Plan, while looking towards new developments in 2021. Access an at-a-glance copy of the current investment plan at bit.ly/vegetable-plan.

All investments under the Hort Innovation Vegetable Fund are detailed on the 'Your investments' page at horticulture.com.au/vegetable-fund. Hort Innovation also provides regular updates on news and alerts on its investments to its members. Anyone would like to receive these updates can sign up for free at horticulture.com.au/sign-up.
AUSVEG will also provide regular updates on the wide range of industry projects and investments through its communications program, including the quarterly *Vegetables Australia* magazine.

Do you have an idea for investment?

Great investments start with great ideas, so Hort Innovation encourages all growers, industry participants and the research community to share their thoughts and recommendations through the upcoming Strategic Investment Plan (SIP) consultation process that sets out the vegetable industry's investment priorities for the next five years.

During the year, issues may emerge that haven't been captured in the extensive SIP development process, so there will still be opportunities to submit ideas for investments.

If you're a grower, you can submit your idea any time through Hort Innovation's investment idea form (visit edms.horticulture.com.au/forms/ideas).

Other industry participants can contact a Hort Innovation employee directly (contact details can be found at horticulture.com.au/hort-innovation/get-in-touch/).

A snapshot of Hort Innovation Vegetable Fund investments

- A new industry communications program plus a new iteration of the nationwide VegNET program to support growers in accessing information and adopting best practice on-farm.
- Vegetable Harvest to Home dashboards, providing regular household purchase data and insight reporting on 25+ commodities at harvesttohome.net.au.
- Exciting new developments in BioClay research, which is being taken to the next level through a collaborative hub for sustainable crop protection.
- Improved soilborne disease diagnostic capacity for the Australian vegetable industry, with more information at bit.ly/vg15009.
- Practical tips on how vegetable farms can benefit from increased earthworm activity, with details available at bit.ly/vg15037.
- A new vegetable education program for primary school children, with the Taste & Learn program resources available at research.csiro.au/taste-and-learn.

Initiatives that were delivered outside of the Hort Innovation Vegetable Fund

- Information and data to assist through COVID-19, including the new Hort Innovation Insights podcast (horticulture.com.au/webinars) and regular consumer attitude and behaviour information (horticulture.com.au/impact-monitor).
- The Good Mood Food across-horticulture marketing campaign to support industries through the effects of recent times (horticulture.com.au/the-good-mood-food).
- Preparation support for fall armyworm, including emergency minor use permits and an educational podcast series, bit.ly/armyworm-podcast.
- Investments in the Hort Frontiers strategic partnership initiative to address longer-term and often complex issues and opportunities critical to the future of Australian horticulture – see horticulture.com.au/hort-frontiers.
- Projects supported by grants secured by Hort Innovation, ranging from cross-sector Rural R&D for Profit initiatives to horticulture-specific work to aid in access to crop protection products – see the Hort Innovation Annual Report 2019/20 for more.

The Good Mood Food campaign

In 2019/20, Hort Innovation created The Good Mood Food campaign to deliver an immediate and enduring behaviour-change message to motivate more Australians to eat more fruit, vegetables and nuts.

With the central message that these Aussie horticulture products are natural mood boosters, the campaign was developed to support the sector through the impacts of recent challenges including bushfires, drought, floods and of course COVID-19 – the effects of which continue to be felt in consumer spending and purchasing behaviour.

Initially running between May and November 2020, The Good Mood Food has been seen across the country on TV; in newspapers; on radio and music streaming services; online (including on YouTube and TV catch-up services); on social media; and via retail partnerships and advertising screens near supermarkets.

In July, 56 per cent of surveyed consumers said The Good Mood Food had positively influenced their shopping habits, and by the end of campaign's run, 98 per cent of all Australians were expected to be reached.

Learn more at horticulture.com.au/the-good-mood-food.

Find out more R&D

To read the 2019/20 Vegetable Fund Annual Report, please visit horticulture.com.au/annual-report-portal.

Hort Innovation Strategic levy investment | VEGETABLE FUND

Orange capsicums and peppers. Images courtesy of the Queensland Alliance for Agriculture and Food Innovation (QAAFI).

Orange capsicums on the menu for long-term eye health

A five-year cross-industry project, *Naturally Nutritious* is researching the development of innovative food products and varieties that are nutritious, delicious and visually appealing. Project Lead Dr Tim O'Hare provides an update, with the focus on developing orange capsicums.

First it was carrots; now capsicum has been identified as good for your eyes – and it is the nutrient linked to the orange colour that counts.

Just as carrots were found to promote night vision through a nutrient called beta-carotene, now another orange vegetable has been found to be pivotal for eye health.

Research by Dr Tim O'Hare from the University of Queensland has identified orange capsicums as the richest source of the orange pigment zeaxanthin, which is vital for central vision.

He is now helping to address the lack of zeaxanthin in our diets through research based at the Queensland Alliance for Agricultural and Food Innovation (QAAFI) and funded by Hort Innovation.

The findings are part of the *Naturally Nutritious* project, which is seeking to increase the level of nutrients in fruit, vegetables and nuts.

Nutrition you can see

Dr O'Hare explained that he and his project team are interested in products that can be visually identified by consumers as containing vital nutrients.

"A number of nutrients we are interested in for human health are actually pigmented. In most cases, it's the zeaxanthin itself that gives orange capsicums their vivid orange colour," Dr O'Hare said.

Another example of this is the purple pigment anthocyanin, found in purple sweet corn (more about purple sweet corn can be found on page 54 of *Vegetables Australia* – Spring 2019).

"With these nutrients, what you see is what you get – the more intensely coloured the product, the more nutrients it contains," Dr O'Hare said.

When it comes to orange zeaxanthin and health, Dr O'Hare said the compound accumulates in our macula, at the back of our eyes. It protects against blue light, which is particularly damaging as it can oxidise our photoreceptors and leads to macular degeneration.

As such, zeaxanthin deficiency leaves eyes susceptible to age-related macular degeneration, which in Australia affects one in seven people over 50 years of age and one in three over 80.

Too much blue light can damage the light receptors (called cones) in the retina that are responsible for high-resolution central vision and colour perception. The more zeaxanthin in your macula, the more blue light is naturally screened from hitting the back of the eye.

Dr O'Hare stressed that food is essential to achieve this protection.

"Our bodies can't make zeaxanthin, which means we rely exclusively on dietary sources or on artificial supplements," he said.

High zeaxanthin

A comparative analysis of different fruits and vegetables identified orange capsicums as the richest source of zeaxanthin by far. One capsicum (typically 450 grams) was found to contain zeaxanthin levels equivalent to 30 supplement tablets, with two milligrams of zeaxanthin the daily recommended dose.

"Each zeaxanthin tablet is roughly equivalent to 10 grams of orange capsicum flesh – that's how rich the capsicums are in this pigment," Dr O'Hare said.

"The trouble at the moment is that orange capsicums are not always available in shops. This is something we are looking to overcome."

In contrast, the 'traffic light' capsicums – coloured red, yellow and green – contain no zeaxanthin.

The analysis also compared zeaxanthin levels among the different orange capsicum varieties that are available in Australia.

A total of eight orange varieties of capsicum were analysed, with seven all

L-R: Dr Kent Fanning (ex-DAF QLD), Dr Tim O'Hare (UQ QAAFI) and Philippa Lyons (DAF-QLD). Dr O'Hare is pictured holding the Australian Innovation Challenge Award for developing supergold sweet corn (zeaxanthin-biofortified for eye-health), which occurred just prior to the Naturally Nutritious project starting in mid-2016.

proving to be rich sources of zeaxanthin. The eighth, however, owes its orange colouring to a mix of red and yellow pigment.

"Mix these two colours together and you get a dark orange fruit, but sadly no zeaxanthin," Dr O'Hare said.

Breeding program

At the University of Queensland's QAAFI institute, PhD candidate Rimjhim Agarwal is working to better understand how orange capsicums accumulate zeaxanthin, with the goal of producing genetic tools to help select and breed for higher zeaxanthin production.

Ultimately, the goal of the research is to make it agronomically viable and profitable for growers to produce more orange capsicums, and to alert consumers to their special health benefit of preserving eyesight – thereby creating demand.

The trick is to coordinate the increase in demand with supply, which includes ensuring that there are no constraints on Australian farms to growing orange capsicums.

Dr O'Hare has a tip for consumers who already include zeaxanthin-producing capsicums in their diets.

"Zeaxanthin is fat-soluble, so it's best served with a helping of olive oil or salad dressing to aid absorption," he said.

"Raw works well, although cooking the capsicum can also help by breaking down the cell walls to better release the zeaxanthin. But don't overcook them, as overcooking will cause some of the zeaxanthin to break down."

While zeaxanthin does occur in other vegetables, the levels tend to be quite low. However, Dr O'Hare is exploring ways to increase zeaxanthin production in other vegetables, and he has produced orange-coloured corn that contains 10 times more zeaxanthin than its yellow counterpart. Even so, it cannot rival the levels found in orange capsicums.

As capsicum and chilli belong to the same species, Dr O'Hare is also exploring opportunities to make and accumulate zeaxanthin into chillies. For those who like it hot, one high-zeaxanthin chilli a day could be enough to help stave off macular degeneration.

Find out more R&D

Please contact Dr Tim O'Hare, Senior Research Fellow, Queensland Alliance for Agriculture and Food Innovation (QAAFI), The University of Queensland at t.ohare@uq.edu.au or 0408 148 049.

More information about *Naturally Nutritious* can be found at hortfrontiers.com.au/project/naturally-nutritious.

Naturally Nutritious is funded by the Hort Frontiers Health, Nutrition and Food Safety Fund, part of the Hort Frontiers strategic partnership initiative developed by Hort Innovation, with co-investment from the University of Queensland and contributions from the Australian Government.

The Queensland Alliance for Agriculture and Food Innovation (QAAFI) is a research collaboration between University of Queensland and the Queensland Government through the Department of Agriculture and Fisheries.

Project Number: HN15001

hort frontiers | HEALTH, NUTRITION & FOOD SAFETY FUND

Orange capsicums and peppers. Images courtesy of QAAFI.

Minor use permits

Permit Number	Crop	Pesticide Group	Active	Pest/Plant disease/Target weed	Date Issued	Expiry Date	Permit Holder	States
PER84531 Version 2	Sweet corn	Insecticide	Methoxyfe-nozide	Lepidopteran pests (larval stages), including *Helicoverpa* spp.	25-Oct-17	31-Aug-25	Hort Innovation	All states & territories except VIC
PER89185	Bulb vegetables (onions, shallots, chives, leeks, fennel (bulb) and spring onions). Field grown only.	Insecticide	Flonicamid	Suppression of onion thrips and western flower thrips	06-Aug-20	31-Aug-23	Hort Innovation	All states & territories except VIC
PER84261 Version 2	Broccoli, Brussels sprouts, cabbage and cauliflower	N/A	Pyriproxyfen	Silverleaf whitefly	11-Oct-17	31-Aug-25	Hort Innovation	NSW, QLD, & NT only.
PER89216	Parsley	Fungicide	Cyazofamid	Phytophthora root rot	12-Aug-20	31-Aug-23	Hort Innovation	All states & territories except VIC
PER80717 Version 4	Eggplant, Thai eggplant, pepino and cape goose-berry	Insecticide	Trichlorfon	Queensland Fruit Fly & Mediterranean Fruit Fly	28-Oct-15	31-Aug-25	Hort Innovation	All states & territories except VIC
PER84757 Version 2	Fruiting vege-tables (except cucurbits or sweet corn), including peppers, tomatoes and eggplants; root and tuber vegetables	Insecticide	Spinetoram	Tomato-potato psyllid	28-Nov-17	31-Aug-25	Hort Innovation	All states & territories except VIC
PER87973	Brassica leafy veg-etables; Celeriac; chicory, endive, silverbeet and spinach; parsley	Fungicide	Difeno-conazole	Brassica leafy vegetables: ring spot & Alternaria leaf spot (field and protected cropping). Celeriac: Cercospora early blight and Septoria late blight (field). Chicory, endive, silverbeet and spinach: powdery mildew (field and protcted cropping). Parsley: Alternaria leaf blight and Cercospora leaf spot (field and protected cropping).	27-Aug-20	31-Aug-25	Hort Innovation	All states & territories except VIC
PER14142 Version 5	Spring onions, shallots and Welsh onions	Herbicide	Ioxynil	Broadleaf weeds	17-Oct-13	30-Sep-25	Hort Innovation	All states & territories except VIC
PER81271 Version 4	Leek and garlic	Herbicide	Ioxynil, Simazine, cyanazine, propachlor, ethofumesate, oxyfluorfen, pendimethalin	Various weeds	10-Nov-15	30-Sep-25	Hort Innovation	All states & territories except VIC
PER88558	Chilli peppers (field only)	Insecticide	Imidacloprid	Silverleaf whitefly (sub-surface trickle, furrow spray or plant hole drench)	04-Sep-20	30-Sep-23	Hort Innovation	All states & territories except VIC

Please note:

Permits are routinely approved and extended. For more up-to-date new permits and permit extensions, please refer to the AUSVEG Weekly Update or the APVMA website.

All efforts have been made to provide the most current, complete and accurate information on these permits, however we recommend that you confirm the details of these permits at the following APVMA website: portal.apvma.gov.au/permits.

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

Hort Innovation Strategic levy investment | VEGETABLE FUND

Wavertree Farms agronomist and manager, Diego Galindo.

Compost made from recycled organics a big winner for NSW vegetable growers

Three vegetable growing operations across New South Wales have participated in a trial that set out to investigate if recycled organics compost was an economically-viable option for their cropping input. Liam Southam-Rogers from Applied Horticultural Research reports on the trial findings and key messages for vegetable growers.

Compost made from recycled organics is a great new resource that is safe to use, and offers vegetable producers a cost-effective way to improve soil health and boost profits.

The compost is made from kerbside organic materials such as garden organics, grass clippings, leaves and tree prunings. It does not include manures or biosolids.

The organic materials are shredded, screened to remove any contaminants and then composted. The resulting compost is high in plant nutrients and beneficial bacteria, and the organic matter – at 60 per cent – is higher than conventional compost at around 45–50 per cent.

Applied Horticultural Research (AHR) received funding from the New South Wales Environment Protection Authority (NSW EPA), as part of its Organics Market Development program, to look at ways this rich resource could be used in the horticulture sector.

AHR set up three trials in NSW to discover whether it makes economic sense for vegetable producers to include the product as a cropping input.

Trial 1: Spinach grower in Maroota, near Sydney

Compost was applied at 5 tonnes per hectare (t/ha) and 10 t/ha pre-plant. Spinach yields increased by 33 per cent at the 5 t/ha rate and by 47 per cent with 10 t/ha. This impressive result was attributed to improved water holding in the sandy soil. The Portellis were so impressed with the outcome that they spread the compost across the entire farm.

Trial 2: Corn crop at Mulyan farms in Cowra, NSW

Compost applied at 4 t/ha and 9 t/ha resulted in yield increases of 17 per cent at the 4 t/ha rate and a 25 per cent increase with 9 t/ha. Grower James Fagan was very impressed with the results and recorded a testimonial, which is available on the AHR website.

A cost-benefit analysis showed that the lower rate of 4 t/ha was a profitable rate. However, 9 t/ha was not profitable within a single cropping cycle, because the cost of the recycled organics compost was not covered by the 25 per cent increase in yield and revenue in a single crop. This suggests more frequent, but lighter, applications of compost are preferrable to single, larger applications.

Trial 3: Greenhouse radish crop in Somersby, NSW

Radishes are grown in greenhouses in a very sandy soil, and there was an issue with inconsistent sizes. Compost was applied at 10 t/ha pre-planting.

Radishes from the compost-treated area were more uniform in size and, overall, very slightly larger, which improved pack out by three per cent compared to standard practice.

While this was a smaller response to compost applications than the other demonstration trials, this result was actually the most profitable due to the higher intensity greenhouse cropping and resulted in a net gain of $1,283 per hectare in a single crop.

Diego Galindo, the farm agronomist and manager, was happy with the outcome and has since incorporated the compost supplied by Australian Native Landscapes into his regular program.

A video of Diego talking about the trial is available on the AHR website.

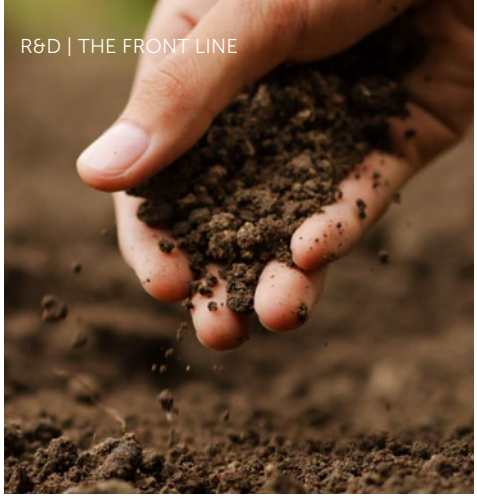
Take-home messages

- Compost made from recycled organics makes good economic sense and improves the health of your soil.
- It is safe to use and does not contain animal manures.
- Several light applications are better than one heavy application.

Find out more R&D

For more information on the trials, videos and fact sheets, please contact Liam Southam-Rogers on 0418 235 842 or liam@ahr.com.au, or visit the AHR website: ahr.com.au.

This is a Waste Less, Recycle More initiative funded under the waste levy.



Reducing the risk of on-farm pests and disease outbreaks

One of the best defences against pests and diseases on your farm is to implement on-farm hygiene practices. These may limit the entry, spread and establishment of pests and diseases, and help to protect your crops. AUSVEG Biosecurity Officer Madeleine Quirk reports.

Farm hygiene is the practice of implementing simple yet effective measures on-farm to reduce the risk of entry, spread and establishment of plant pests. Farm hygiene is the first step to helping growers protect their own businesses and the wider horticulture industry, while minimising production losses and unnecessary costs associated with pest outbreaks.

Every day, farm inputs such as planting material and packaging, bins and pellets are brought onto farms to be used in the production process. If they are not managed correctly, farm inputs can create significant biosecurity risks and may seriously affect a grower's bottom line. This is also the case for waste and weeds that are not managed appropriately. However, farm hygiene practices – if implemented correctly – have the potential to significantly reduce these risks.

Planting material

Planting materials such as seeds, seedlings, soil, compost and fertiliser can be a reservoir for plant pests. While these inputs are crucial elements of any farm business, there are steps that can be taken to mitigate the risk of spreading unwanted pests and diseases.

Using certified seed and purchasing clean seedlings from reputable suppliers is the first step to protecting your crops to safeguard your farm against pests. Maintaining a register of incoming seeds and seedlings, including where, when, and how many were received, will allow for the application of tracing activities should a new pest or disease be detected. When using certified seed, suppliers must provide information on the product's source and testing history, so maintaining a record of test results will help to provide further protection.

Upon planting, recording the field in which the seeds or seedlings were planted can further assist with traceback activities should they need to occur. Before planting, consider separating new nursery stock from production areas and undertake regular surveillance of this stock until you are confident that they are not carrying pests and diseases.

Similarly, fertiliser should always be examined for pests and diseases before being used on-farm. You can reduce your risk of purchasing contaminated fertiliser by ensuring that it meets industry standards, such as purchasing fertilisers certified by the Fertilizer Industry Federation of Australia (FIFA) Purchase Code of Practice or by other industry quality control programs. Organic fertilisers may also pose a risk to farm health so they should be monitored carefully and treated correctly before being used.

Packaging, bins and pellets

Packaging, bins and pellets may not come to mind when you think of pests and diseases, yet they are a key pathway for pests to hitch a ride into a new area. Packaging, bins and pellets are a core part of the supply chain but are often reused and recycled. It should never be assumed that they are clean on arrival, so immediately inspecting, disinfecting and disposing of any existing organic material is key, as it may be harboring insects or pathogens.

Beware waste and weeds

Waste and weeds pose a risk to your farm's biosecurity. Waste products that are stagnant, such as fallen crops and leaf material, can quickly become incubation hubs for pests and diseases. To reduce this risk, store waste away from nurseries, growing areas and water sources, and always dispose of waste quickly and in an appropriate manner, such as deep burial or burning.

Similarly, pests and diseases tend to harbour weeds while they await a more suitable host plant. Maintaining a weed-free buffer zone around the growing area will help stop the spread of pests and diseases in your crops. To ensure that you keep on top of weed management, consider developing an on-farm weed management plan.

Farm hygiene practices may be simple, yet they can significantly protect your business. For information on other farm hygiene practices, including advice on managing biosecurity risks associated with staff and visitors, please visit farmbiosecurity.com.au/essentials-toolkit.

Find out more R&D

Any unusual plant pest should be reported immediately to the relevant state or territory agriculture agency through the Exotic Plant Pest Hotline (1800 084 881).

For further information, contact AUSVEG Biosecurity Officer Madeleine Quirk on 03 9882 0277 or madeleine.quirk@ausveg.com.au. The Farm Biosecurity Program is funded by the Plant Health Levy.

Plant Health Australia Chief Executive Officer Sarah Corcoran.

Catching up with... Sarah Corcoran

In the AUSVEG Weekly Update, we are *Catching up with* a member from the vegetable industry. This is a profile section that showcases the different roles and areas within horticulture. In August, we spoke to Plant Health Australia (PHA) Chief Executive Officer Sarah Corcoran about the PHA and its function within Australian horticulture, as well as the importance of on-farm biosecurity.

Firstly, can you please tell us about Plant Health Australia. What is its role within the horticulture industry?

Plant Health Australia (PHA) brings industry and government together to protect plant health and promote good biosecurity practices to build sustainable agricultural industries. A not-for-profit company, PHA is funded by member subscriptions from all Australian Governments and major plant industry peak bodies. For over 20 years, PHA has been working to minimise plant pest impacts on Australia, boosting industry productivity and profitability and enhancing market access.

Horticulture is Australia's second largest and fastest growing industry in agriculture with a farm gate value of approximately $9 billion. Australia's horticulture industry has been traditionally built on small-scale family farms; however, the industry has grown with larger scale operations emerging to meet market demand. PHA assists growers to improve biosecurity preparedness by having an on-farm biosecurity plan.

The re-signing of the Plant Biosecurity Research Initiative Agreement will also ensure industry and government can continue to work collaboratively to support research efforts that benefit plant health and biosecurity systems.

What do you see as the biggest threat to Australia's plant biosecurity, particularly for vegetables?

Plant health is of global importance for sustainable agriculture, food security and protection of the natural environment. The biggest threat to vegetables and any other fruit and vegetable product is pests and diseases, and their introduction into farming systems directly or via urban and peri-urban environments where they can take hold and go undetected for many years.

We can't survive without plants. They need to be protected and nurtured as they feed us, shelter us, clothe us, and sustain all life on earth. They are our livelihoods and when the flag goes up that our plant industries or environment are under threat, we need to work together to achieve the best possible outcome. Whether it be through eradication, investment in science to develop better understandings or adapting and assisting in recovery.

How can our growers improve their overall biosecurity practices?

By implementing an on-farm biosecurity plan and making sure every step is followed by everyone on the farm, as well as visitors. And being aware of any changes that may occur to the product they are growing and acting swiftly when changes are found and reporting anything of concern.

The Australian vegetable industry is also committed to building its capacity to respond to potential biosecurity threats. A vegetable industry biosecurity advisor, two full-time farm biosecurity officers, and a potato pest surveillance project officer allow the industry to participate in a range of biosecurity initiatives.

What is Plant Health Australia's main objectives over the next 12 months?

Over the past 20 years, PHA has established exceptional standards for plant biosecurity, and these will continue to be delivered to our stakeholders over the next 12 months. We're also very mindful that the increasing biosecurity risks are being compounded by other threats such as COVID-19, as well as environmental challenges posed by drought, bushfires and floods. It is essential to ensure investment in plant biosecurity continues to increase and we will also be developing a five-year strategic plan in consultation with industry and government to face future challenges.

My vision is for PHA to be the repository of knowledge for everything plant health within Australia and its territories. With the goal of encompassing government, industry, peak bodies, and the growers themselves, to work together to achieve an integrated national plant biosecurity system.

The next strategic plan will be designed to deliver on priorities for plant health, manage transitions and change, and provide the foundation for long term agricultural, economic, and biosecurity outcomes for Australia.

Find out more R&D

Please visit the Plant Health Australia website at planthealthaustralia.com.au.

The full version of this column can be found online at ausveg.com.au/articles/catching-up-with-sarah-corcoran.

Anyone who would like to be involved in Catching up with..., please email Michelle De'Lisle at michelle.delisle@ausveg.com.au.

Hort Innovation vegetable fund investments (levy projects)

Current investments 2018/19

Project code	Delivery partner	Project title	Project lead contact details	Project description
VG19001	East Gippsland Vegetable Innovation Days	Digitisation of East Gippsland Vegetable Innovation Days	Stuart Grigg: stuart@sgaghortconsulting.com.au	This project is supporting the production of 25 videos of the trial sites and speaker presentations that were intended to be part of the program at this year's East Gippsland Vegetable Innovation Days. With the COVID-19 pandemic restricting travel movements and gatherings of people, this project is ensuring that vegetable growers still have access to the existing trial spots and insights from arranged speakers. These videos will be disseminated to vegetable growers via the levy-funded industry communications program delivered by AUSVEG.
MT19003	Victorian Department of Jobs, Precincts and Regions	Parasitoids for the management of fruit flies in Australia	Paul Cunningham: paul.cunningham@agriculture.vic.gov.au	This investment is delivering the knowledge needed to evaluate the use of parasitoid wasps as a potential strategy for fruit fly management. The use of natural enemies such as parasitoids against insect pests is regarded as a core component in sustainable pest control and will provide horticulture industries with another method to use for fruit fly management. This research is being conducted through two complementary components – firstly by improving current knowledge of fruit fly parasitoid distribution in Queensland and northern New South Wales, and secondly by trialling a new mass rearing and release strategy for the southern states.
VG16086	The Queensland Department of Agriculture and Fisheries	Area wide management for vegetable diseases: viruses and bacteria	Cherie Gambley: cherie.gambley@daf.qld.gov.au, 07 4681 6130, 0423 200 211	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. There is a sister component of the same name and code led by the NSW Department of Primary Industries, which is contributing to the development of an area wide management strategy for the New South Wales vegetable industry, complementing the strategies developed under the initial investment.
VG17003	Western Sydney University	National Vegetable Protected Cropping Centre	Ian Anderson: i.anderson@westernsydney.edu.au, 0404 081 120	In November 2017, the nation's first state-of-the-art vegetable glasshouse-production research centre was launched. This project continues to facilitate work at the facility, with the aim of manipulating inputs to create the optimum environment to drive maximum harvest windows and overall yield for a variety of vegetables, then share this information with Australia's growers. Through this facility, industry also aims to attract new entrants to horticulture careers by offering students access to some of the most advanced technology currently available.

MT16018	AUSVEG	National Tomato Potato Psyllid (TPP) Program Coordinator	Alan Nankivell: alan.nankivell@ausveg.com.au, 0428 260 430	This multi-industry project is responsible for coordinating the development and implementation of a national tomato potato psyllid (TPP) management strategy – essentially helping ensure research and development, engagement and other response efforts related to the pest across the various industries and areas it affects are coordinated, prioritised and strategic. In mid-October 2017, Alan Nankivell began in the role of national TPP program coordinator under the project. He acts as a point of contact between the various TPP-affected industries, government and service providers, to help implement TPP management in Western Australia and prepare eastern-state growers.
VG16085	vegetablesWA (lead)	Export facilitators	John Shannon: john.shannon@vegetableswa.com.au, 08 9486 7515	With sub-projects for different growing regions, this collaborative program aims to increase Australian vegetable exports by supporting growers to capitalise on commercial business opportunities. It is supporting the roles and activities of 'on the ground' export facilitators across Australia's vegetable growing regions, establishing a facilitator network across Australia. The facilitators will help create export plans in conjunction with vegetable growing businesses, promote collaboration within the industry, and provide linkages across the supply chain that will assist in achieving the overarching objective of the *Vegetable Industry Export Strategy* of growing the value of vegetable exports by 40 per cent by 2020.
VG16061	AUSVEG	Vegetable industry export program	Michael Coote: michael.coote@ausveg.com.au, 03 9882 0277	This project is intended to position the industry to achieve the target of growing exports by 40 per cent – to the value of $315 million – by 2020. This target was announced in 2017, with the release of the *Vegetable Industry Export Strategy*. Expanding on previous export development work, activities under the project will broadly include market development and market access work, plus export readiness, training and education for growers and other stakeholders, to prepare the industry to take advantage of export opportunities.
VG15068	University of South Australia	Improving safety of vegetable produce through on-farm sanitation, using electrolysed oxidising (EO) water	Enzo Lombi: enzo.lombi@unisa.edu.au, 08 8302 6267	This project is investigating whether 'electrolysed oxidising' or 'EO' water can be used to increase the quality of vegetable irrigation water. Specific project activities include comparing the efficiency of EO water with that of other options for treating irrigation water for relevant water-borne pathogens; discerning whether EO water treatment can prevent potential microbial contamination or fresh produce pre-harvest; assessing the ability of EO water to control soil pathogens, and any effect on important soil microorganisms; and ultimately developing protocols for EO water adoption by Australia's vegetable growers.
VG16005	UniQuest	ProbiSafe - development of biocontrol agents to inhibit pathogen growth	Mark Turner: m.turner2@uq.edu.au , 07 3365 7364	This project has a focus on keeping vegetables healthy and safe. It is developing, verifying and ultimately making available new biological control agents (new strains/blends of beneficial bacteria termed 'ProbiSafe') to inhibit the growth of harmful bacteria on vegetables. The result will be an additional level of safety in both fresh and processed produce.

Avatar® eVo has an expanded label offering for both new crops and new pests in existing crops, including corn earworm in sweet corn.

Protecting horticultural crops in a safe, efficient way

Australia's vegetable growers have a new option in crop protection with an insecticide developed to assist in controlling a range of destructive pests including Lepidopteran pests, as well as several species of weevils, European earwig and katydids, while minimising harm to beneficial insects.

A new weapon in the battle against a wide range of horticultural pests has been released onto the Australian market.

With a strong focus on innovation and significant investments to fully develop its range of products to best meet the needs of producers, agricultural sciences company FMC has developed a new formulation of Indoxacarb.

Avatar® Insecticide has been a staple for Australian fruit, vegetable and grape growers for almost two decades.

The newest formula, Avatar® eVo Insecticide, provides rapid activity with residual control of Lepidopteran pests, as well as several species of weevils, European earwig and Katydids. Control of this unusual spectrum of insect pests helps to make this product a valuable part of any insecticide rotation program in a wide range of specialty crops.

Its unique mode of action has a low impact on beneficial insects, with no cross-resistance to other insecticides, making it an excellent rotation partner for FMC's Group 28 insecticides Altacor®, Benevia® and Coragen®.

"Avatar® eVo has the same benefits as Avatar® Insecticide. It is tough on key pests as well as a range of other difficult to control secondary pests, while offering growers rapid control and residual activity," FMC Strategic Product Manager Angus Wilson said.

"It has the same application rates and spray timing as our current insecticide formulation, however we are pleased to announce some key upgrades for Australian producers."

Avatar® Insecticide has always been known to have good mixing qualities. However, the new formulation is an even better offering with excellent tank stability, product compatibility and favorable crop re-entry periods post spraying. In addition, it has an expanded label offering for new crops, and new pests in exiting crops.

Permit advice

Working closely with the Australian Pesticides and Veterinary Authority (APVMA), FMC is taking part in the 'permit-to-label program' to benefit Australian fruit and vegetable producers by including minor crop uses in established product labels.

Avatar® eVo includes a number of previous permit uses that have been added to the label by using additional local and overseas data. For example, growers of capsicum, eggplant, peppers and tomato in protected cropping systems can now add this product to their list of Integrated Pest Management (IPM)-compatible insecticide options.

"Valuable feedback from our grower customers through local and overseas trial work has enabled us to add some totally new crop uses to this label," Angus said.

"Cucurbit and sweet corn growers now have a new mode of action to add to their chemical rotation to help control key pests. This will assist in protecting the valuable insecticides already available on the Australian market – including our Coragen® insecticide – from potential insecticide resistance issues."

With the proven active ingredient indoxacarb, Avatar® eVo works to protect a broad mix of fruit and vegetables from a unique spectrum of pests, making it the right choice for growers who value strategic, reliable insect control.

A newly expanded label and enhanced mixability makes this method of insect control the right choice in your crop protection IPM program.

Find out more

Please contact your local FMC representative or visit fmccrop.com.au.

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AUSVEG SA

AUSVEG SA remains concerned about expected labour shortages and their impact on industry profitability and fresh produce prices. We have conducted key advocacy in the media and with governments of all levels in recent months. In coming months, we will be working with national groups to communicate supply constraints to supermarkets and other stakeholders to create an understanding around additional costs borne by growers this coming season.

AUSVEG SA has convened a business reference group of industry leaders to collate data and develop policy responses to government on an expected labour shortage later in the year. Industries in northern Queensland and the Northern Territory are already facing considerable difficulties attracting labour, and AUSVEG SA has presented a number of proactive solutions to the South Australian Government on how best to respond to this challenge.

Key policy platforms include development of targeted campaigns to better attract harvest workforces to the state; working with government to utilise the recent Seasonal Worker Programme re-start as an opportunity to address regional labour shortages; and working with local government to address transport and accommodation bottlenecks. AUSVEG SA continues to have strong dialogue with governments of all levels and national groups on this critical issue.

AUSVEG SA has also recently conducted considerable media activities pushing for an investment in flood mitigation activities for the Northern Adelaide Plains. In addition, we have met with state and local governments around breaking the investment deadlock on this critical infrastructure that, if completed, will unlock at least $50 million in investment on the Northern Adelaide Plains .

In project news, AUSVEG SA has recently developed two new projects focusing on LEAN manufacturing efficiency and waste efficiency. These two projects allow growers to access half-day site audits to review and update current practices. Interested growers can call the AUSVEG SA office for more information.

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VGA trading as AUSVEG VIC

AUSVEG VIC

AUSVEG VIC has decided to postpone its Annual General Meeting due to the COVID-19 lockdown that had been imposed on Metropolitan Melbourne. The meeting was originally scheduled to be held in November 2020; however, it has now been pushed back to December, with the possibility of an early 2021 meeting as Victorians continue to navigate their way out of varying restrictions.

In a more positive development, AUSVEG VIC is pleased to announce the recommencement of its Strategic Partnerships with Nufarm Australia and Choice Energy. These businesses are industry stalwarts of environmental sustainability and innovative advancements to farming, and AUSVEG VIC welcomes their ongoing support.

The future of labour in Victoria is currently on the agenda. At the time of writing, many Victorian vegetable industry members are reaching out to labour hire companies to try and organise their labour needs as early as possible.

AUSVEG VIC urges all Victorian growers to contact the Federal Government-funded National Harvest Labour Information Service with their labour requirements, and to look around at other relevant labour hire companies.

A number of growers from the Shepparton region have contacted AUSVEG VIC with their concerns about the post-January 2021 labour supply. It is currently unknown if crops will be able to be harvested to meet future demand. AUSVEG VIC will continue to work with AUSVEG at a national level to advise governments – at all levels – of the horticulture industry's future requirements, and the looming labour gap. AUSVEG VIC applauds the Victorian Government for opting into the Seasonal Worker Programme expansion, with future efforts to go into pushing incentives for local unemployed Australians to help growers harvest their horticultural crops.

Meanwhile, AUSVEG VIC continues to work closely with the Port Phillip & Westernport Catchment Authority to develop resources and educational material for the education department. These are aimed at teaching young Australians about our great agriculture industry, and where their food comes from. Catherine Velisha from Velisha Farms in Werribee South has been heavily involved in the program, conducting back-to-back Zoom sessions with schools in Victoria.

AUSVEG VIC is here for any Victorian growers who have concerns about any issues. Please contact Tim Withers to discuss these further.

Tasmanian Farmers and Graziers Association

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As the end of 2020 fast approaches, we look back on the year we have just lived through. There were summer bushfires and drought, leaving the ground arid and dry in many parts of Tasmania. During this time, TFGA collaborated with the State Government to operate a fodder register, which was designed to help the community feed and maintain their stock. Donations of fodder, transport and cash were collected and coordinated, deliveries were undertaken state-wide to those in need.

Then the world was struck by the COVID-19 pandemic. Trade and economics came to a screeching halt, and travel between states and visits abroad became a thing of the past. The TFGA's first challenge was to advocate to government for agriculture to be classed as an essential service, then we negotiated to have those essential services such as AI technicians allowed to enter the state. We battled shortages in the frozen vegetable markets and navigated the halt of our export markets, just to name a few of the many issues.

Next, we battled a wet autumn and spring that has left us with rutted paddocks, bogged harvesters, and a heavily reduced harvest of potatoes due to potato rot and now crops are now being sown late, including many vegetables.

But on a positive note, the TFGA potato, peas and beans committees have successfully negotiated prices for 2021, which favoured our producers. Thank you to all of the TFGA negotiating committees involved who worked so hard for this positive outcome. You are keeping our industry strong and buoyant in very challenging times.

2020 has tested all of us and has taught us that the most unexpected can happen. Years like this show us the importance of supporting local food and manufacturing. Simply purchasing Australian-grown and processed goods creates employment, resilience and prosperity in our rural communities and businesses. We have some of the best quality food resources in the world, and 2020 has shown us that even through a pandemic we can continue to supply top-quality produce.

NSW Farmers Association

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For NSW Farmers, it's been a year of trying new things. We're currently in the process of holding our Annual Conference, Annual General Meeting and Executive Council over a two-week period. Usually, these would happen within three days in Sydney, bringing farmers across the state together. This year, they're all logging on from their home offices or living rooms, and have really got the hang of Zoom.

James Jackson was re-elected as our President, and we have two new horticulture faces on our board – Peter Comensoli from the Central Coast and Chris Stillard from the Riverina. We farewell Paul Shoker from Coffs Harbour from the board and thank him for the work he has done.

Paul isn't going far though, as he will stay on our Horticulture Committee as Deputy Chair. Our Horticulture AGM was held in early October, and we had presentations from Tyson Cattle from AUSVEG/National Farmers' Federation Horticulture Council, Peter Angel from MADEC, and Mick Keogh from the ACCC. Guy Gaeta was returned as Horticulture committee Chair, and continues to represent horticulture on our Executive Council.

Guy and Paul are joined on the committee by Chris Stillard, Peter West (Orange), Om Jhorar (Woodburn), Sue Brighenti (Griffith), Jo Brighenti (Griffith), Brett Guthrey (Sydney), Warren Waddell (Sydney) and Geoff Moar (Oaklands). We were sad to lose Riverina vegetable grower Brendan Murray, who has moved to Queensland.

Christina Kelman, an organic vegetable grower from the Sydney basin, joins us as our Young Farmer Representative. Christina has been a fantastic representative for the vegetable sector and farmers in general as the face of the industry during the pandemic. She has appeared on NSW Farmers' social media, worked with Growcom on their 'Eat Yourself to Health' campaign with social media star Nat's What I Reckon, and is now one of the faces of the NFF's Back on Track campaign. Christina has also received a Nuffield Scholarship that will examine ways the horticulture industry can increase outputs, while reducing inputs and farming sustainably. She's one of the youngest farmers to ever receive this scholarship.

We're looking forward to working with our new committee members and familiar faces in 2021!

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Growcom

By the time this magazine goes to print, Queenslanders will have cast their vote on who they want to see form the next Queensland Government. Regardless of which side of politics wins the election the Queensland industry has one request – let the handbrake off horticulture.

Despite the disruption caused by COVID-19, horticulture remains resilient and possesses some of the most promising potential for a rebound of the Queensland economy.

Ensuring Queensland has a thriving and prosperous horticulture industry will be of critical importance – not only for creating new jobs, and to the regional communities that rely on agriculture to survive, but to all Queenslanders who want access to high-quality, nutritious food to maintain a healthy lifestyle.

Prior to the election the Queensland Horticulture Council (QHC) released its election platform, *A Green Spring in Queensland*, the launch pad from which the Queensland horticulture industry will propel itself to even greater long-term sustainability and profitability.

Among the commitments the QHC was seeking was a new deal with the next Queensland Government, encapsulated in a strategic plan. For an industry with so much promise here in Queensland, we lack a vision of where we want to be and a plan of action to get us there. There are state-wide strategies in place for the charter fishing and craft brewing industries but not for production horticulture.

The QHC was also seeking commitments from the next Queensland Government on improving water and energy affordability; and investing in drought and climate initiatives, sustainability, innovation, skills and training, biosecurity, transport, and export market development.

Politicians can no longer afford to overlook these critical issues that will support the continued growth and development of the horticulture industry in the years ahead.

Whichever side wins the election and forms the next Queensland Government, Growcom commits to working collaboratively with those in office as we lead the Queensland horticulture industry into the future.

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vegetablesWA

In mid-October we welcomed the State Government announcement to allow Seasonal Worker Programme (SWP) and Pacific Labour Scheme (PLS) workers back into Western Australia.

We were told the State Government was in discussions with the Northern Territory and Federal Governments to bring new SLP and PLS workers into the country, utilising quarantine facilities in the Northern Territory, before being allowed to enter Western Australia.

It is my understanding that a formal agreement is yet to be completed and the horticulture industry is unable to progress getting plane loads of workers into the state until this happens.

This agreement must officially state that seasonal workers from Vanuatu en route to WA can be quarantined at the Darwin Howard Springs facility, as indicated by the State Government.

We have called on the WA Government to finalise the agreement with the Northern Territory Government to quarantine 324 workers from Vanuatu.

These workers are urgently needed to fill critical labour gaps for the supply of fruit and vegetables for WA consumers.

Approved employers under the Seasonal Worker Program have completed restart application forms and submitted them to Department of Education, Skills and Employment (DESE).

These forms have since been sent to the WA Government for conditional approval but as far as we understand, they are still with the WA Government and have not been progressed.

Unless an agreement is reached – and workers can quarantine in the Howard Springs facility – it is unlikely that we will secure the workers needed in time to address the critical shortages, which are already impacting supply and prices.

vegetablesWA is committed to driving online learning and has recently delivered live webinars on farm safety, fatigue management and horticulture HR/IR. These webinars are available to watch on the vegetablesWA YouTube channel.

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NT Farmers Association

In late August 2020, the Federal Government announced that an agreement was made to resume recruitments under the Seasonal Worker Programme (SWP) and Pacific Labour Scheme (PLS). These initatives connect Pacific and Timorese workers with Australian businesses, and fill rural and regional workforce shortages when Australian workers are not available.

The Seasonal Worker Programme Pilot was a prompt and efficient collaborative effort between NT Farmers, employers, NT Government and Federal Government departmental staff and international stakeholders. The aim was to provide the pathway to access seasonal workers through the program for the 2020 mango harvest. Negotiations and approvals were sought, many hours were spent on phone and video conference calls to ensure all requirements were met and, most importantly, keeping everyone involved safe and healthy.

Employers had to pay for the seasonal workers from Vanuatu to fly here and undertake two weeks quarantine. This pilot was viewed nationally and internationally opening the pathway to access workers from overseas. NT Farmers Association is participating in the evaluation of the pilot and continuation of the SWP. The first plane of seasonal workers arrived in Darwin on 3 September with 162 patrons. They were successfully quarantined at the Howard Springs facility and integrated after their 14 days across several mango farms in the Darwin rural areas. The next plane arrived on the 13 October, and will undergo the same quarantine protocols with these workers integrated across the Darwin and Katherine rural area mango farms.

NT Farmers Association has recently appointed two new development officers. Anna Day is our new Education Development Officer (EDO), aiming to encourage young Australians to pursue a career in agriculture. Anna's role will support a more profitable, resilient and sustainable agricultural sector by increasing school students understanding of where our food and fibre comes from and the contribution farming makes to Australia.

It is part of the Educating Kids about Agriculture Project funded by the Department of Agriculture, Water and the Environment, and running until June 2022.

Dianna Renfree is our new Water Use Efficiency, Sustainability and Productivity Development Officer. Dianna's role is to develop and implement programs to monitor and benchmark efficient crop water use for optimum productivity on key horticultural crops, as well as developing broadacre crops across the NT. She will investigate current irrigation management practices for industry and generate recommendations for best practice irrigation management for the NT.

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