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



Editorial

As the world heads towards a predicted population of 10 billion people by the year 2050, there is no question more important than 'how are we going to feed so many people?'

The importance of maintaining a healthy diet is well-supported by research, yet the statistics around malnutrition, due to both under-nourishment and over-nourishment, tell a stark story. According to the World Health Organization:

- 1.9 billion adults are overweight or obese, while 462 million are underweight.
- 52 million children under five years of age are 'wasted', 17 million are 'severely wasted' and 155 million are 'stunted', while 41 million are overweight or obese.
- Around 45 per cent of deaths among children under five years of age are linked to under-nutrition. These mostly occur in low- and middle-income

countries. At the same time, in these same countries, rates of childhood overweight and obesity are rising.

Ensuring people eat their vegetables is a struggle now in Australia, with the 2018 Australian Institute of Health and Welfare report stating that only seven per cent of adults and five per cent of children meet required intake of vegetables recommended for a healthy diet.

As an industry, are we in a position to increase our production capability to meet the levels required for every Australian child and adult to meet their dietary needs? What will our contribution be to address the global need for fresh vegetables by 2050?

Interest in high quality Australian fresh vegetables from global markets is strong, but can we ensure that interest in Australian fresh vegetables remains strong in the domestic market?

These serious questions were tackled head-on at the latest Hort Connections

conference, where more than 40 industry organisations in the vegetable, fruit, nut, cut flower and nursery sectors came together in Melbourne to discuss how we can *Grow our Food Future*.

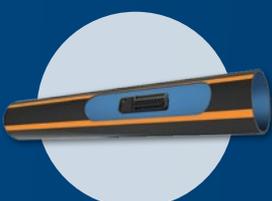
In the pages ahead, you will find an overview of the speaker presentations, networking events and National Awards for Excellence from the three-day event, which was attended by approximately 3,500 people from Australia and around the world.

You will also see that, in a first for *Vegetables Australia*, we have opted to forego the traditional Grower and Young Grower Profiles, and instead profile all the finalists for the Grower, Young Grower and Women in Horticulture awards. Each of the 28 finalists were very worthy to be recognised for their achievements in their respective fields, so it is important that we highlight their contributions to the industry in this way.

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Message from the CEO

Hort Connections 2019, Australian horticulture's premier networking and knowledge transfer event, has drawn to a close for another year, with 3,500 delegates gathering at the Melbourne Convention and Exhibition Centre from 24-26 June.

I would like to thank all those who attended the conference and trade show, as well as AUSVEG's event partner, the Produce Marketing Association Australia-New Zealand (PMA A-NZ), our major sponsors and industry co-hosts, strategic partners, exhibitors and speakers for helping us to deliver a world-class horticultural event.

We were also fortunate to have newly-appointed Agriculture Minister Bridget McKenzie address delegates during the National Awards for Excellence Gala Dinner. I would like to thank her, as well as Anne Ruston, Damian Drum, Rex Patrick, Jaclyn Symes, Peter Walsh, Tony Perrett and other political representatives who attended the conference for their support of our industry.

Once again Hort Connections produced many highlights across the three days and at the centre of the action was the trade show, which featured over 200 leading agribusinesses from all areas of the supply chain.

Growers also had the opportunity to attend many speaker and networking sessions, as well as celebrate the achievements of the industry's leading growers, marketers, researchers and contributors at the Gala Dinner. I would like to congratulate all award winners and nominees for the recognition of their hard work and dedication to the industry.

I would like to extend a special congratulations to Ian Muir, who was recognised for his diligent and extraordinary services to the horticulture industry with the AUSVEG Lifetime Achievement Award. Ian has been a tireless supporter of the industry for many years. His strong business ethics, enormous optimism and his business and personal relationships with so many people in the horticulture industry make him a very worthy winner of the AUSVEG Lifetime Achievement Award.

We are excited to announce that AUSVEG and PMA A-NZ will once again work together to bring you Hort Connections 2020, which will be held from 15-17 June at the Brisbane Convention and Exhibition Centre. I hope to see you all there.

James Whiteside
CEO
AUSVEG

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HORT CONNECTIONS

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GROWING OUR FOOD FUTURE



Award Winners

The Hort Connections 2019 National Awards for Excellence Gala Dinner, sponsored by OneHarvest, celebrated the outstanding achievements and contributions made to the Australian horticulture industry by growers, marketers, researchers and supply chain members.



Syngenta Grower of the Year
Jason Shields and Syngenta Territory Head – ANZ Paul Luxton.



Corteva Young Grower of the Year
Corteva Agriscience Marketing Manager Nick Koch and Daniel Hoffmann.



PMA-Produce Plus Marketer of the Year
Produce Plus Editor Matthew Jones, Hort Innovation Marketing Manager Olivia Grey and PMA A-NZ CEO Darren Keating.

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 Dr Cherie Gambley and Bayer CropScience
 Head of Sales Warren Inwood.



Butler Market Gardens Environmental Award
 Michael Evans and
 Butler Market Gardens CEO Rick Butler.



Innovation Partner Award
 AUSVEG CEO James Whiteside and Renee Pye
 (accepting the award on behalf of Mark Pye).



E.E. Muir & Sons Community Stewardship Award
 Foodbank National Program Manager –
 Agriculture Jacqui Payne and
 E.E. Muir & Sons Managing Director Ian Muir.



Visy Industry Impact Award
 Visy Sales Manager Kym Ziersch (accepting the
 award on behalf of Darren and Mark Schreurs).



FMA Col Johnson Young Achievers' Award
Michael Granieri and FMA Chairman Shane Schnitzler.



FMA Meritorious Service Award
Brett Collins and FMA Chairman Shane Schnitzler.



Exporter of the Year Award
AUSVEG CEO James Whiteside and
Harvest Moon Agricultural Director Mark Kable.



Boomaroo Nurseries Women in Horticulture Award
Boomaroo Nurseries Director Nick Jacometti
and Carmel Ingram.



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Plenary speakers tackle the big issues at Hort Connections

There was an action-packed morning of thought-provoking discussions when the plenary sessions took place at Hort Connections 2019. Delegates heard from a range of speakers, including a former Masterchef winner and well-respected medical doctor, as well as horticulture industry leaders, who covered a range of topics currently influencing the sector.

The Hort Connections 2019 plenary sessions, sponsored by Hort Innovation, treated delegates to eye-opening presentations that discussed how the industry can overcome the challenges it faces to *Growing our Food Future*.

A selection of inspirational speakers and industry leaders took to the stage to highlight the barriers to feeding the world's population and how the industry can work together to overcome them.

State of the horticulture industry

Hort Innovation CEO Matt Brand started the plenary sessions highlighting horticulture's importance in the Australian food industry and the ingenuity of the industry's growers in providing high quality horticultural produce to local and international consumers. Matt discussed Hort Innovation's new strategy, which was published following extensive consultation with growers across the country. The new strategy includes an increased focus on adoption and extension of research to improve practice change on-farm, and increasing investment in more multi-industry, transformational projects that will deliver greater outcomes for growers.

AUSVEG CEO James Whiteside took the stage to highlight the tremendous potential of the Australian fruit and vegetable industry and the need to overcome the hurdles that may impede the industry's growth trajectory, including the cost and supply of labour and water, and the need for a more cohesive biosecurity framework. James thanked

the industry for its support of the Hort Connections conference and highlighted the need to continue to work more collaboratively to deliver better quality outcomes for growers across all fruit and vegetable commodities.

Produce Marketing Association Australia – New Zealand (PMA A-NZ) CEO Darren Keating presented findings the organisation's recent *State of the Industry* report, saying the report's aim was to capture the whole supply chain. Darren highlighted three "mega-trends" that are transforming and disrupting the industry; globalisation, demographics and technology, which are driven by factors such as artificial intelligence, robotics, urbanisation, the ageing population, millennial workforce and social media.

Growing our Food Future

Dr Sandro Demaio, co-host of the ABC's *Ask the Doctor*, took to the stage to discuss the findings in the latest EAT-Lancet Commission report on food, planet and health, and about the challenges of feeding the world by 2050. Dr Demaio discussed the factors that will influence the future of our food systems, including the causes behind some of the biggest issues facing the world, including global hunger and poverty, and the possible solutions to these problems.

The next speaker was former Masterchef winner Adam Liaw, who shared his thoughts and experiences in the food industry and provided some insight into how the industry should

meet the future needs of its consumers. Adam explained that promoting the health benefits of fruit and vegetables is not enough to encourage people to buy and eat them, with highlighting the multi-sensory experiences of taste, texture, smell, feel and look of fruits and vegetables the key to enticing consumers to want to buy them.

Going the distance

The final speaker for the plenary session was endurance athlete and inspirational speaker Samantha Gash, who provided a thought-provoking and evocative account of her journey to becoming an ultra-marathon runner and ambassador for World Vision and the Royal Flying Doctor Service. Samantha's inspirational presentation resonated with the audience and provided the perfect platform for event delegates to confront the rest of the busy conference with inspiration and strength – if she could run 250km ultra marathons across the driest, windiest, hottest and coldest deserts on earth, surely delegates could survive the next two days at Hort Connections.

Find out more

Presentations at the Hort Connections 2019 plenary sessions will soon be available to watch at youtube.com/user/AUSVEG.

Bridget McKenzie addresses delegates at the Hort Connections Gala Dinner

Newly-appointed Federal Agriculture Minister Senator, the Hon. Bridget McKenzie addressed attendees at the Hort Connections Awards for Excellence Gala Dinner on Wednesday 26 June at Crown Palladium, celebrating the strong turnout of growers and industry members across the three-day conference.

Minister McKenzie emphasised the Morrison Government's commitment to growers in the sector to find a solution to the industry's labour shortage, as well as ensuring that growers have access to the latest research, innovations and technologies through Australia's world-leading research and development system.

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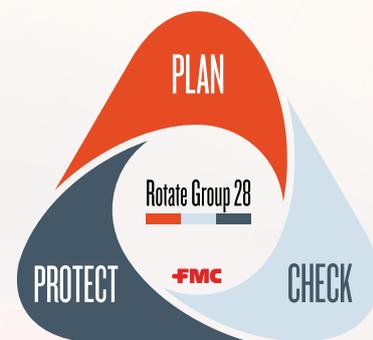
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First-class speakers address vegetable industry issues

Delegates who took part in the AUSVEG stream at Hort Connections 2019 heard from a host of first-class speakers addressing a host of issues affecting the vegetable industry today and into the future. Jenny Gilbert reports.



AUSVEG Deputy Chair Belinda Adams. Photography by Andrew Beveridge.

The AUSVEG Speaker sessions at Hort Connections saw the launch of Australia's first Fair Farms Standard and included insights into the potential for energy savings on-farm and export developments in Asia and the Middle East.

The stream was sponsored by Boomaroo Nurseries and chaired by AUSVEG Deputy Chair and Queensland vegetable grower, **Belinda Adams**.

Fair Farms

Thomas Hertel, Growcom program manager for the Fair Farms Initiative, kicked off the session by launching the Fair Farms training and certification program, which enables horticultural growers to demonstrate their commitment to fair employment practices.

Designed specifically for the horticulture industry, the new training and certification program has been developed by Growcom over the past 18 months following intense consultations with key stakeholders and industry experts. Financial support has been provided by AUSVEG, the Fair Work Ombudsman and the Department of Agriculture and Water Resources.

During the stream, Thomas announced that Queensland herb growers, Mary Jane and Cam Turner from Riverdale Herbs, were the first producers in Australia to be certified under the new program.

The Turners run a family operation at Yatala, south of Brisbane, and they played a leading role in testing the new training and certification program.

"While growers say that labour is one of their biggest challenges, those who achieve this certification are demonstrating that they are ethical employers who care about their employees and doing the right thing by them," Thomas said.

"In a spirit of transparency, those growers who invest in certification will also be rewarded by suppliers, retailers and consumers who want produce that is picked and packed ethically by people who are not exploited."

Energy savings

Charles Luo, from engineering and environmental consultancy pitt&sherry, gave insights into the potential for growers to improve on-farm energy productivity.

Charles said Australian farmers spend an estimated \$3.5 billion a year on energy, of which \$3 billion is spent on diesel fuel and \$380 million on electricity.

"Our work shows that for every dollar spent by Australian farmers on energy,

they need to earn an additional \$17 in revenue," he said.

The company has partnered with AUSVEG VIC over the past four years to help vegetable growers address energy productivity.

In one specific program, pitt&sherry has been working at 12 large vegetable farms in Victoria to understand their existing energy use, identify what's needed and come up with more effective solutions.

"These 12 growers employed 1,245 people and spent \$2.2 million a year on energy," Charles said.

"But we found ways for those growers to save more than \$400,000 a year or \$34,000/farm by adopting simple energy-saving solutions such as monitoring software, pipework insulation and solar PV, with a payback period of 3.9 years."

He recommended simple steps such as optimising refrigeration by replacing old seals and using high speed roller doors on cool rooms.

"Growers should also be calling their energy retailers every year to ask for better deals."

Challenges in feeding a growing population

A timely reminder about the global challenge of feeding the world and protecting the planet came from **Elizabeth Hernandez**, Corteva Agriscience Head of Government and Industry Affairs.

"The defining challenge for our industry is that we need to feed 10 billion people by 2050, requiring a 70 per cent increase in farm output," she said.

"Asia will make up 60 per cent of the world's population and as incomes rise, so too will the demand for high quality produce.

"While horticulture totalled 18 per cent of Australia's total agricultural exports in 2018, Australia supplied only 1.2 per cent of global fruit exports and 0.3 per cent of global vegetable exports."

Elizabeth said Corteva Agriscience sees climate positive agriculture as the solution to the rapidly changing climate, increasing volatility and production and income lags.

"We define this as the food system for providing sufficient healthy food while removing greenhouse gases from the atmosphere and it will require new levels of collaboration and partnership between government, producers and the value chain," she said.

Export panel

Export perspectives came under the spotlight in a fascinating panel discussion moderated by Hort Innovation Trade Lead **Dianne Phan**.

Dianne said 80 per cent of Australia's \$2.1 billion fresh produce exports go to Asia and this has doubled in the past five years.

Trent De Paoli described Austchilli Group in Bundaberg as a vertically integrated growing and distribution business supplying local and export customers with a range of chilli products and others such as Avofresh avocado in a tube.

Trent said that 10-15 per cent of the company's revenue comes from exports in what he described as a risk management strategy to diversify the company's income and investment stream.

"Our export activities give us a global perspective," he said.

Trent summed the keys to export success as investing time to develop long-term, trusting relationships with customers, following up and following through, and taking a solutions-based approach to addressing customer problems.

"Being Australian opens the door overseas, but the rest is up to you," he said.

AUSVEG National Manager - Export Development **Michael Coote** emphasised the importance of capturing export opportunities for Australian vegetables, with 60 per cent of the world's population in Asia, on Australia's doorstep and just a few hours away by air.

Trends such as smaller families, snacking

and convenience were evident among Malaysian consumers, according to **Kelly Lim**, trading manager with Tesco in Malaysia.

Tesco has over 60 stores in the country, selling a wide range of Australian produce.

Kelly said Tesco's annual surveys showed that Malaysian consumers recognise the high quality of Australian produce but they need more time to accept the high prices, compared with produce from China, South Africa and Spain.

Daniel Cabral from Kibsons International, Dubai, buys Australian vegetables and fruits such as mangoes and strawberries for his customers in the United Arab Emirates.

"I'm looking for good quality, affordable produce at a fair price," he said.

Daniel urged growers to understand who they are supplying and what's happening in their markets, recognising that the market in the United Arab Emirates is highly competitive, with buyers having access to an enormous variety of produce from all over the globe.

"Remember that the Middle East is not one single market and customers in the UAE have very different requirements from those in Saudi Arabia and Kuwait, or elsewhere like China and Singapore," Daniel said.

"While there is always an alternative, Australia has built a name for consistency, premium quality and ethical practices.

"This reputation will continue to strengthen as long as growers take a long-term approach to relationship building and don't take their foot off the pedal."



Fair Farms Program Manager
Thomas Hertel

Vegetable Industry Seminar provides insights on innovations and technologies

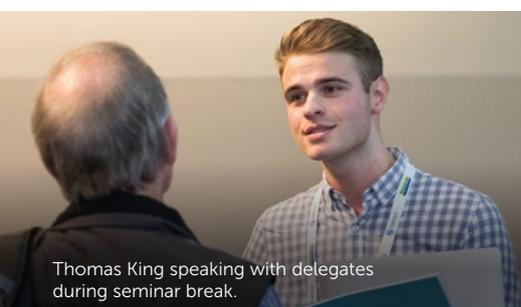
Australian vegetable growers gathered at the Melbourne Convention and Exhibition Centre to learn how they can rise to meet the needs of local and global consumers and use innovative technologies to develop vegetable products that consumers want. AUSVEG provides an overview of the seminar.



L-R Bryn McFadden and Harrison Enright of iTradeNetwork. Photography by Andrew Beveridge.



Dennis Lin from BDO Australia.



Thomas King speaking with delegates during seminar break.

Australian vegetable growers were treated to presentations from eight researchers and experts from around the world at the Annual Vegetable Industry Seminar, combining the Global Innovation in Horticulture and Export Seminars from previous years.

A packed room of 250 vegetable growers converged on the Melbourne Convention and Exhibition Centre to learn from the industry's leading thinkers and network with their fellow peers. The seminar's core aim was to share knowledge and up-to-date information that could help the Australian horticulture industry better understand and overcome current and future challenges to productivity.

The new, larger event format meant that all growers interested in learning the latest scientific, technological and export-related content relevant to their businesses could do so. The Seminar's topics covered a range of areas, including blockchain and vertical integration, controlled and sustainable growing environments, vegetable seed infringement and even the future of plant-based meats and what that means for Australian agriculture.

The *Annual Vegetable Industry Seminar* (VG18001) is coordinated by AUSVEG and was a strategic levy investment under the Hort Innovation Vegetable Fund.

Blockchain and vertical integration

The Seminar was moderated by Greg Fraser, Chief Executive Officer of Plant Health Australia, who facilitated Q&A sessions with each speaker following their presentation. The first presentations for the Seminar were from **Bryn McFadden and Harrison Enright of iTradeNetwork**, a global provider of supply chain management solutions for the food and beverage industry based in California. They discussed the complexities of capturing data for food and beverage blockchains, promoting innovation in the perishables supply-chain and educating participants on how to adopt technology to solve real problems.

Dennis Lin from BDO Australia addressed vertical integration for branded food businesses. Dennis, using his expertise in the field, discussed the benefits that food businesses could gain from vertically integrating their operations and the ideal scenarios when you would choose to (or not to) vertically integrate your business, as well as ways to understand the market when

you have made the decision to adopt vertical integration.

Technology and the future of food production

The next speaker who addressed the vegetable growers in attendance was **Marcus Van Heijst from technology company Priva**, which develops hardware for climate control, energy saving and optimal reuse of water for horticulture. Marcus discussed controlled growing environments and how they are being used to transform food production in the fresh produce industry.

Attendees then heard from **Thomas King, CEO of Food Frontier**, a not-for-profit think tank and industry accelerator creating the ecosystem for a more healthy and sustainable food future, particularly through plant-based and cell-based meat. Thomas focused on the opportunities that could exist with the increasing popularity of plant-based meats and how vegetable growers could benefit. Thomas explained that as a food source, plant-based meats are becoming increasingly popular among consumers who have concerns about the ethics and environmental impact of the agriculture industry.

Food for thought

Roger Tripathi, CEO of Global BioAg Linkages, presented on bio-agriculture's role in sustainable food and fibre production. Roger's core focus was how farmers could make a return on their investment by incorporating bio-agricultural farming practices and their role in establishing 'grower to consumer' and 'soil to shelf' connections through the supply chain.

2018 Young Grower of the Year **Chris McLoughlin from Escavox and Mycelia Organics** addressed attendees on ways that innovation in production and supply-chain can be used to capture market share.

The final presentation for the day was from **Casper Van Kempen from the Anti-Infringement Bureau for Intellectual Property Rights on Plant Material (AIB)** in Belgium, who discussed why vegetable seeds are protected by Intellectual Property Rights, and why this is important for sustainable horticulture. Casper covered a number of important aspects to this complex topic, including the AIB's role, an overview of Plant Breeders' Rights, the main piracy issues and consequences with vegetable seeds and examples of successful initiatives from chain partners to combat piracy.

Find out more R&D

Presentations at the 2019 Annual Vegetable Industry Seminar will be available to watch at youtube.com.au/AUSVEG.

The 2019 *Annual Vegetable Industry Seminar* was funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government.

Project Number: VG18001



Josie Thomson. Photography by Andrew Beveridge.



Tammie Matson.

Women in horticulture encouraged to share their stories

The annual Women in Horticulture event at Hort Connections encourages all sectors of the horticulture industry to come together and celebrate the crucial role that women play in the industry. Tiahn Wright takes a look back at this year's event, which successfully raised funds and sanitary products for women who are doing it tough.

Developing resilience and maintaining wellness to live a truly happy, meaningful and fulfilling life were the key takeaway messages for attendees at the Women in Horticulture event at Hort Connections 2019.

A sea of pink lit up the Melbourne Convention and Exhibition Centre on Wednesday 26 June as delegates came together to celebrate the essential work of women in Australia's horticulture industry and simultaneously raise much-needed funds and awareness for those doing it tough.

This year's annual Women in Horticulture event, sponsored by Boomaroo Nurseries, encouraged everyone to support Share the Dignity, a charity that facilitates the donation of sanitary products to allow women who are in a crisis, or homeless, with a sense of dignity at a time when they need it most. Delegates were asked to raise money or bring sanitary products to support the charity and were treated to the return

of pink Boomaroo caps and cakes with flower-shaped frosting.

The event also provided an opportunity to formally acknowledge the Boomaroo Women in Horticulture Award finalists.

Sending a strong message

During the event, delegates heard from a number of inspirational speakers. Boomaroo Nurseries Head of Marketing, Strategy and New Business Development Emily White kicked off proceedings by calling on all women in Australian horticulture to share their stories and show their support for others in the industry. Emily also called on the audience to get involved using the hashtag #WIH1000reasons, to share the 1,000 (or more) reasons why women are so vital to the horticulture sector and celebrate some of the amazing women in our lives.

Next was Australian zoologist Tammie Matson, who shared her experiences working in southern Africa and her passion for African wildlife, particularly elephants, as well as her work as the head of World Wildlife Fund Australia's species program. Through Tammie's extraordinary story and her observations of the animal kingdom, the audience was inspired to overcome their own fears and hurdles to achieve their personal and professional goals.

The group then heard from Josie Thomson, CEO of Wise Advocate Enterprise and a two-time cancer survivor. Josie presented practical ways to break through barriers of limited thinking or perceived blocks to living a truly happy, meaningful, resilient and fulfilling life, as well as diving into the neuroscience behind how we respond to challenges we may be faced with.

Finally, Belinda Adams, AUSVEG Deputy Chair and former winner of the Women in Horticulture and Grower of the Year Awards, acknowledged the finalists of the Boomaroo Nurseries Women in

Horticulture Award for 2019 and presented them with a gift. Belinda acknowledged the contributions of each finalist in their chosen field and encouraged all women in the audience to continue to challenge themselves and share their stories with their industry. The winner was announced at the National Awards for Excellence Gala Dinner later that evening, with Victorian grower Carmel Ingram, from Bonaccord Ingram, receiving the honour.

The Women in Horticulture event is a fantastic way to recognise the contributions of dedicated women within the horticulture industry. These women often get left in the shadows, and it is the role of the entire industry to ensure their work is acknowledged and appreciated every day.

AUSVEG would like to thank Boomaroo Nurseries and all those who supported efforts to generously donate items and raise funds and awareness for Share the Dignity.

A fresh perspective on diversity and inclusion

The Produce Marketing Association Australia-New Zealand (PMA A-NZ)'s Fresh Perspectives: Diversity and Inclusion Awareness workshop was also held on Wednesday 26 June at Hort Connections 2019. The workshop featured a workshop held by Fiona Krautil, one of Australia's leading gender equity, diversity & inclusion specialists.

Attendees were involved in a peer-to-peer discussion on diversity, inclusion and leadership and were provided with tangible tools to help effect change in the workplace.



A tour of Arahura Farms. Photography by Anna Osetroff.

Australian growers leave their mark on foreign buyers during Reverse Trade Mission

The 2019 Reverse Trade Mission and Taste Australia Fresh Produce Showcase continues to be a highlight for the Australian horticulture industry, after a diverse delegation of international buyers from key export markets visited Victorian fruit and vegetable farms, met export-ready growers and learnt more about Australia's high quality fresh produce. Shaun Lindhe reports.

As the Australian horticulture industry prepared for Hort Connections 2019, the annual AUSVEG Reverse Trade Mission (RTM) was in full swing, seeing importers, wholesalers and retailers from seven export markets in Asia visit Victoria to witness the quality of Australia's fruit and vegetable industries.

From 20-25 June, a group of 40 delegates from Indonesia, Thailand, Taiwan, South Korea, the Philippines, Japan and Hong Kong attended the mission, which was based in Victoria to coincide with Hort Connections 2019. Around half of the group were first-time delegates, with the other half returning for the second time, highlighting the benefits that the program offers for international produce buyers and the esteem in which the program is held across Asia.

The RTM is an annual exercise to inform international buyers about the Australian vegetable industry and highlight

the quality, safety and integrity of local produce. For the first time this year other fruit and vegetable industries were formally involved in the program, providing more benefits to buyers and providing a bigger platform to demonstrate Australia's reputation for high quality horticultural produce.

Throughout the week, delegates explored new business opportunities with potential Australian suppliers, while export-ready growers were exposed to a wider range of buyers from high prospect export markets. The mission plays an important role in the Australian vegetable industry's efforts to boost the value of its export sector by 40 per cent, to \$315 million by 2020.

The 2019 RTM is part of a strategic levy investment under the Hort Innovation Vegetable Fund and was supported by Global Victoria, the Victorian Government's Trade Unit.



Day 1/2: North-West Victoria

The RTM delegation visited seven leading vegetable and fruit farms in Victoria, stopped by Hort Connections 2019 and met with a range of export-ready fruit and vegetable growers at the Taste Australia Fresh Produce Showcase (see page 20 for more information).

The RTM commenced with a Welcome Reception hosted by AUSVEG and Global Victoria, with AUSVEG National Manager – Export Development Michael Coote and Acting Senior Trade Manager, Food and Fibre from Global Victoria Brendan Larkin welcoming delegates and highlighting the high quality of horticultural produce that will be on display during the mission.

The second day of the RTM began with the group travelling to Swan Hill and Weman in the state's north, with delegates visiting two of the biggest vegetable producers in the region. The first stop on the itinerary was Arahura Farms, where Sales and Marketing Manager Sean Croft and the team provided a tour of the organic farm's facilities and discussed how the business is able to provide year-round supply of organic produce to the domestic and export markets.

The second farm in the region was Rocky Lamattina and Sons, where the group was given a tour of the site's new state-of-the-art packing facility and taken to fields where some of company's premium quality carrots are grown.

Day 3: Peri-Urban vegetable farm tours

Once the group returned from the state's north, a number of vegetable farm tours a little closer to Melbourne were arranged. Kicking off the third day of the RTM was Riverside Produce, which packs vegetables for Harvest Moon, one of the country's largest producers and exporters. During the visit, the group was provided a tour of the Werribee site's fields and value-add packing facilities.

The next stop for the day was Fresh Select, one of Australia's largest producers of broccoli, cauliflower, leafy vegetables and other vegetable varieties. Fresh Select CEO John Said provided an overview of the business to the buyers, as well as showcasing the product that the company has to offer buyers in their respective markets.

The final farm tour for the day was Corrigan's Produce Farms, which supplies celery, leeks and a variety of leafy vegetables to domestic and export markets. Farm owner Deborah Corrigan provided an overview of the business and took the group on a guided tour through the field to showcase the company's high-quality products on offer.

Day 4: LaManna and Ky-D Pak

The next day of the RTM focused on some of the state's biggest fruit producers. The first of two farm tours for the day was LaManna Premier Group's (LPG) tomato glasshouse at its Lancaster Farms site. Frank Frappa, General Manager International Sales for LPG delivered a presentation to the group outlining the breadth of the LPG business. The international buyers then toured the state-of-the-art facilities at the site and the process that the business undertakes to get tomatoes from the glasshouse to consumers.

The second tour for the group for the day was Ky-D Pak, a leading cherry and stonefruit producer based in Kyabram run by the DePasquale family. Ky-D Pak has invested in rain covers for its entire cherry production, making the company one of the largest covered cherry producers in the Southern Hemisphere.

Positive trade outcomes

The mission received strong feedback from delegates, who appreciated the opportunity to meet growers and visit farms in key horticulture production areas of Victoria. A number of delegates indicated they expect to do significant trade as a result of their participation on the mission and would welcome the opportunity to attend similar initiatives in the future.

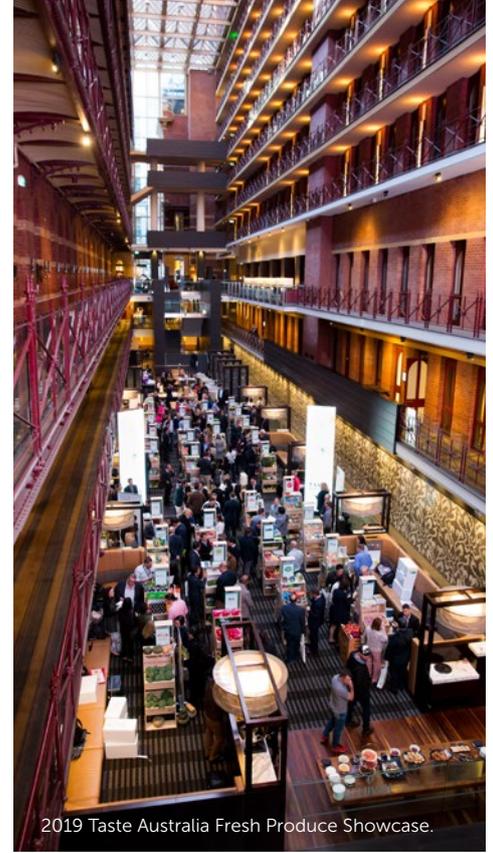
Find out more R&D

The 2019 Reverse Trade Mission is an initiative of the *Vegetable Export Development Program* and is funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. It was also supported by Global Victoria.

Project Number: VG16061



Photography by Anna Osetroff.



2019 Taste Australia Fresh Produce Showcase.

Foreign buyers 'Taste Australia' at Fresh Produce Showcase

The 2019 Reverse Trade Mission culminated with the Taste Australia Fresh Produce Showcase, which once again was the capstone event for foreign buyers who participated in the week-long program. Growers from the vegetable, apple, onion, melon and banana industries showcased their products to important international buyers and significant business interest was generated as a result of the event. Shaun Lindhe reports.

The 2019 Taste Australia Fresh Produce Showcase was held on Monday 24 June, with 41 exporting vegetable and fruit growers displaying their fresh produce and value-added products to international buyers who participated on the Reverse Trade Mission (RTM).

Developed by AUSVEG and Hort Innovation and supported by Global Victoria, this year's Taste Australia Fresh Produce Showcase benefited from the inclusion of businesses in the apple, onion, melon and banana industries. The Showcase generated significant interest as a result of the involvement of a more diverse range of exhibitors, including 17 growers who participated in the Showcase for the first time.

"The Taste Australia Fresh Produce Showcase is a great platform for growers to meet directly with buyers who are interested in sourcing Australian product in the one location," AUSVEG National Manager – Export Development Michael Coote said.

"Growers were also able to talk with other exporting businesses and learn from their peers about their successes and challenges, which will go a long way to build the exporting capabilities of growers in the industry and foster a collaborative exporting culture in Australian horticulture."

Hort Innovation General Manager for Marketing and Trade, Justine Coates, said the event was a strong example of the benefits of collaboration across the horticulture industry, and provided access to a broader range of horticultural produce for international buyers.

"The Taste Australia brand, and events such as the Fresh Produce Showcase delivered by AUSVEG through their reverse trade mission provide invaluable exposure for Australian producers in key export markets," she said.

"These engagements with key stakeholders will become more important as we involve more buyers into the program to meet and conduct business with more growers across a broader cross-section of the Australian horticulture industry."

Find out more R&D

The 2019 Taste Australia Fresh Produce Showcase is an initiative of the *Vegetable Export Development Program* and is funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. Participation from onion, melon and banana industries was supported by the onion, melon and banana research and development levies and contributions from the Australian Government. The event was also supported by Global Victoria, the Victorian Government's Trade Unit.

Project Number: VG16061

A tale of two tours: Horticulture field day brings delegates to Melbourne's western and eastern growing regions

On Monday 24 June, 79 participants gathered for the annual Horticulture Field Day at Hort Connections 2019. This was the first year AUSVEG had organised two concurrent farm tours, with half of the group travelling east of Melbourne, while the rest travelled to the state's west.



The buyer's walk at Melbourne Markets, Epping.

Melbourne Market, Epping

Melbourne Market is a purpose-built facility and central marketplace for wholesale fruit, vegetables and cut flowers, used by more than 5,000 businesses.

At the market, participants received a tour of the marketplace, from the fruit and vegetables trading floor to the fresh cut flower market. Everyone learnt about the history of the facility and the daily operations of buyers and sellers.

East

AgriBio, Bundoora

The group was treated to a presentation by Research Director – Microbial Sciences, Pests & Diseases, Brendan Rodoni, and was given a tour of the facility. Participants caught a glimpse of the research glasshouses, microscopy labs and high-tech DNA sequencing labs, with each section being explained in detail along the way.



Participants on the eastern field day received a tour of Ball Australia's glasshouse.

Butler Market Gardens, Lyndhurst

At its Lyndhurst site, Butler Market Gardens produces basil, chives, parsley, coriander, dill, mint among other herbs. Participants were provided a tour of the site and were very impressed with the quality of the products grown at the facility and the 'Butler Gourmet Pantry' retail ready range of gourmet quality herbs.

Ball Australia, Skye

Ball Australia develops seed and vegetative lines for flowers, vegetables, herbs, cut flowers and tissue culture for a range of customers. Its high-tech glasshouses are environmentally controlled in order to maximise growth and quality.

Participants on the eastern tour were provided with presentations from, the Department of Agriculture's Rowan Alden and Stuart Watt, who discussed market access and export on the bus throughout the day.

West

John Deere, Derrimut

The group was provided with a presentation from John Deere staff about the company and the services it offers farmers across the world. The tour was then split into three smaller groups and provided with a facilitated tour of the warehouse, where participants witnessed first-hand John Deere's transport amenities, operations and customer service facilities.

CSIRO Food Innovation Centre, Werribee

CSIRO researchers presented some of the facility's work explaining the mechanism behind PEF (Pulse Electric Field), extrusion and fermentation to the group. Participants also visited the food processing centre to sample PEF juice and extruded snacks made from carrot and broccoli.



A selection of produce on display at Fresh Select.

Fresh Select, Werribee

Fresh Select is a major producer of vegetables in Australia that grows a wide range of product including broccoli, cauliflower and leafy vegetables. Fresh Select CEO John Said provided a presentation to the group about the company's history and showcased its line of brassicas and lettuce. Participants continued to discuss the products over a fully catered lunch.

The group was split into two and provided tours of the farm and the warehouse, including their packing and storing facilities.

Participants on the western tour were provided with presentations from the Department of Agriculture's Douglas Kerruish, who discussed biosecurity and imports, and Velisha Farms Managing Director Catherine Velisha, who gave an overview of the Werribee region on the bus throughout the day.

All participants regrouped at Hort Connections at the conclusion of the day

Syngenta Grower of the Year

Finalists



Jason Shields and Syngenta Territory Head – ANZ Paul Luxton. Photography by Andrew Beveridge.



Jason Shields (VIC) – Winner

Jason has been one of the leaders in the APAL's Future Orchards program in the Goulburn Valley, as well as the Community Orchard Group.

Jason has turned Plunkett Orchards into one of the most innovative and successful orchards in Australia. He has outstanding tree and orchard management and is a standout in terms of managing his business' profitability and productivity. Jason's focus on matching profitability to tree management, and his ability to share and communicate these complex considerations, is outstanding.

Jason's research and purchase of the harvest platforms for the orchard is a huge step towards improvements in harvest management. He also recently took the lead in implementing integrated pest management techniques by changing the cultural and chemical practices used on the orchard.

Jason encourages his staff to attend all grower events and APAL's Future Orchards walks and is an advocate for exploring international technologies and practices after taking part in a study tour of Europe 13 years ago and recently attending an APAL study tour to Europe in 2018. His willingness to talk to anybody and share his knowledge makes him a standout as a major contributor to the Australian apple and pear industry and a worthy winner of the Syngenta Grower of the Year award.



Flick & Dave Photography.

Anthony De Ieso (SA)

Anthony De Ieso demonstrates an incredible interest in education – not only for himself, but also his staff. With the knowledge he gains from workshops and other educational opportunities, Anthony takes it away and applies it on-farm and helps those around him to do the same. His involvement in strategic levy investments extends from being a committee member for VegPRO to completing Growing Leaders. Anthony is also currently completing a Masterclass in Horticultural Business. Anthony lives and breathes agriculture and has a strong passion for the future of the industry.

Jeremy Haw (VIC)

Winner of the 2019 AUSVEG VIC Grower of the Year award, Jeremy Haw is the Managing Director of Hussey and Co. Jeremy is currently running the most consistent salad operation in the country, and has aggressively expanded his footprint over the past five years into the Gippsland region of Victoria. He has also been a market leader for several years in the exporting of fresh salad into south-east Asia.

Jeremy has formed collaborative partnerships on the ground to expand his brand recognition and business footprint. He has invested heavily in the most recent farm equipment available and continues to build a loyal stable of people around him to drive his business forward.

Deon Gibson (TAS)

Deon Gibson has worked extremely hard to produce premium quality carrots on his Tasmanian property. He has been working with researchers on a three-year levy-funded project entitled *Optimising cover cropping for the Australian vegetable industry* (VG16068) and is willing to share his advice and results with others. Deon has established a four- or five-year paddock rotation, giving selected paddocks a 12-18 month rest with selected cover crops and is seeing promising signs such as weed suppression and improved protection of soil as a result.

Catherine Velisha (VIC)

Catherine Velisha has had a rapid rise in the vegetable industry, climbing the ranks to manage her business at just 34 years of age. Catherine is passionate about innovation, including investigating value-added meals and product development as well as identifying export markets as a major focus for the business. She also creates opportunities for her staff through evolving and adopting the growing operation to best reflect the external environment.

David Wallace (VIC)

While David Wallace is no longer the main person in charge of the farm, he still remains an active advocate for the vegetable industry. David sits on the AUSVEG VIC Executive Committee and has been a champion for the industry, including serving as President of AUSVEG VIC and the Vegetable Growers Association of Victoria for many years. David's extensive body of work over his career is celebrated among his peers, with David acknowledged as a fantastic contributor to industry.



Photography by Jane Wilson.

Mark Pye (SA)

Mark Pye received the 2019 AUSVEG SA Grower of the Year Award and as a result was nominated for the national honour. Since arriving in the Mallee region in 1990, Mark has implemented several transformational technologies and varieties that have positively impacted the business. Mark and his business also developed a low-carbohydrate potato variety Spud Lite, which has been an innovative addition to the potato industry.

Mark has also acted as a dedicated industry advocate and worked with researchers to measure the labour shortage in South Australia. Mark was awarded the Innovation Partner award at Hort Connections.

Ian MacLaughlin (QLD)

Ian MacLaughlin is a founding member of the Australian Coffee Growers Association and has greatly enhanced the awareness of high quality Australian-grown coffee across international and domestic markets. Ian and his wife Marion established Skybury Coffee in 1987 before diversifying into red papaya production in 1999. In 2006, Skybury further diversified into agri-tourism through the construction of the Skybury Cafe and Roastery, which allows visitors to learn more about the farm and experience local produce from the farm and broader region.

Skybury was the first coffee producer in Australia to export green coffee and has grown to become one of Australia's largest producers of red papaya.

Marco Mason (VIC)

Marco Mason is Director at Mason Bros Vegetable Farm, one of the leading and largest growers of fresh lettuce, broccoli and fennel in the Werribee region of Victoria. Mason Bros has been operating as a family business for over 50 years and the business prides itself on supplying the best quality product on the market.

Corteva Agriscience Young Grower of the Year

Finalists



Corteva Agriscience Marketing Manager Nick Koch and Daniel Hoffmann. Photography by Andrew Beveridge.

Daniel Hoffmann (SA) – Winner

After receiving the AUSVEG SA Young Grower of the Year award, Daniel Hoffmann has been named the Corteva Agriscience Young Grower of the Year for his commitment to supporting R&D and advocacy outcomes for local growers. He has been a strong advocate for growers seeking access to water on the Northern Adelaide Plains, often putting his foot forward and acting as a face of the campaign. Daniel puts in the hard yards on behalf of industry and has earned the respect and commendation of his peers for his hard work and dedication on key issues.

In addition to his advocacy work, Daniel has supported a number of key researchers in areas such as the AUSVEG SA IPM program and has hosted a number of field walks on his farm. He has also taken the time to act as a leader within the AUSVEG SA young growers' group and work with local growers to identify issues and solutions to regional problems such as waste management.

Daniel is a well-respected leader within the young grower community, and receiving this award has further cemented his place as a leader among his peers while continuing to produce high quality crops using latest practice.



Anthony De Ieso (SA)

Anthony De Ieso demonstrates an incredible interest in education – not only for himself, but also his staff. With the knowledge he gains from workshops and other educational opportunities, Anthony takes it away and applies it on-farm and helps those around him to do the same. His involvement in strategic levy investments extends from being a committee member for VegPRO to completing Growing Leaders. Anthony is also currently completing a Masterclass in Horticultural Business. Anthony lives and breathes agriculture and has a strong passion for the future of the industry.

Carl Young (VIC)

After a decade in the industry, Carl has completed Growing Leaders and, in 2018, joined an international grower study tour to Spain where he visited trial sites and attended the International Spinach Conference. Carl has also participated in young grower tours to China, Vietnam and Western Australia. Winner of the 2019 AUSVEG VIC Young Grower of the Year Award, Carl is a talented young grower with a very bright future.

Christopher Maisel (QLD)

Christopher Maisel's hard work and dedication to excellence has earned him a nomination in this category. After completing a double degree in agriculture and business in Gatton, Queensland, Christopher returned to the Atherton Tablelands where he purchased an old Papaya farm. In the last 18 months, Christopher has turned the farm around by increasing yields and fruit quality along with expanding the growing area.

Luke De Paoli (QLD)

A third-generation vegetable grower, Luke De Paoli is developing and expanding a successful small cropping business in Bundaberg, Queensland. Luke has a strong approach to improving soil health which he is willing to share with industry. Using an IPM-based program, Luke has greatly reduced the reliance on fungicides to the point where he is able to grow a specific variety of cherry tomato successfully without the pressures of leaf disease.

Josh Langmaid (TAS)

Josh Langmaid is a business owner who harvests a large amount of vegetable seed crops, hemp, canola and cereal crops across Tasmania. Josh has invested in technology that has seen him overcome on-farm obstacles as well as ensuring consistency in his crops. He has recently taken over his father's property where he is reaping the rewards of his investments by producing top quality fresh vegetables and processing crops.

Michael Evans (VIC)

Mulgowie Farming Company Farm Operations Manager Michael Evans has a strong focus on good agricultural practice. Since 2015, Mulgowie has undertaken over 50 large and small-scale trials, which include a mix of seed variety selection, chemical, fertiliser and farm management practice techniques. Through his leadership, Michael has been able to demonstrate the farm's direction with good agriculture practices that are mindful of the environment.

Michael was recognised for his achievements with the Butler Market Gardens Environmental Award at Hort Connections 2019.

Stephanie Tabone (QLD)

Stephanie is an impressive grower who has risen through the ranks at Kalfresh. She currently manages product quality, safety and hygiene at Kalfresh's facilities, as well as process and packing efficiencies, while also managing and supporting a team of 20 employees. Stephanie is continuously looking for new ways to improve the business and the industry and is a strong example of a leading young female vegetable grower.

Daniel Jackson (QLD)

Daniel Jackson entered the custard apple industry in 2017. Based in Queensland, Daniel and his wife Angela own one of the largest custard apple orchards in Australia. Daniel is an active member of the industry – he participates in regional roadshows and most recently, became President of Custard Apples Australia. He has shown a keen interest in learning from other growers and adapting that information to suit their farm practice.

John Hearman (WA)

John Hearman is the manager of Hearman Ag, a family-owned orchard producing apples, plums and yellow fleshed nectarines (all under netting). John's dedication and passion to the pome fruit industry is evident in his involvement with industry events. He is a supporter of Future Orchards and Pomewest events, taking the time to attend and host orchard walks, sharing his experiences and growing techniques.



Stephanie Corrigan (VIC)

Stephanie Corrigan has the philosophy to learn all aspects of farming, and has thrown herself into doing this by attending industry events such as the 2017 Women's Leadership and Development Mission to south east Asia. Stephanie is leading the way in innovation, marketing and technology; using social media to promote Corrigan's Produce Farm lines. Stephanie is always thinking of ways to improve the farm to make it sustainable and efficient.

Boomaroo Nurseries Women in Horticulture Award

Finalists



L-R: Catherine Velisha, Neena Mitter, Claire McClelland, Bec Whittaker, Stephanie Tabone and Karen George. Photography by Andrew Beveridge.

Carmel Ingram (VIC) – Winner

For the past 40 years, Carmel Ingram has worked alongside her husband Keith and managed the pack house operation at one of Victoria's largest growing operations, Bonaccord Ingram. Over these 40 years, Carmel has raised three children and has contributed to her local community. Carmel has gone about her work in the background and has been a consistent contributor to our industry without seeking any of the limelight.

Carmel was recently recognised with the 2019 AUSVEG VIC Women in Horticulture award during the AUSVEG VIC awards dinner and is a deserving winner of the Boomaroo Nurseries Women in Horticulture Award.

Bec Whittaker (WA)

Bec Whittaker is the Orchard Manager of Ladycroft Orchard in Manjimup. It is her passion for growing and empowering her staff (seven of her 10 full-time staff are women) that makes her a worthy candidate for the Women in Horticulture award. Bec's programs, ideas and support for industry projects is always well-received and valued among her peers and she is a keen participant in many industry events.

Bianca Marrone (SA)

Bianca Marrone is a strong contributor to the industry and was recognised with the AUSVEG SA 2019 Women in Horticulture award. She has involved herself in a number of initiatives, including export development opportunities, as well as focusing on learning and development. She is emerging as an industry leader and has become involved in advocacy on behalf of other growers in her area to address infrastructure issues with government departments.



Photography by Emily Keogh.

Camilleri Farms (NSW)

Deborah, Monica, Jennifer and Christine Camilleri are all taking an active role working at Camilleri Farms in Bathurst. All aged under 21, they are keen to continue running the family business well into the future. These ladies are a strong example of the bright future ahead for young women in the vegetable industry. They have played a pivotal role in helping to grow the business so far.

Claire McClelland (VIC)

Claire McClelland has over five years' experience delivering strong outcomes for Australia's vegetable growers and the wider industry. Claire has worked for a peak industry body, a leading Victorian vegetable grower and was, until recently, Market Development Manager for vegetablesWA. She also successfully completed the 2016 Growing Leaders course. Through these roles, Claire has made many positive contributions to the vegetable and broader horticulture industry. Claire has continued her journey in the horticulture industry moving back to Victoria to work for the Australian Fresh Produce Alliance.

Karen George (QLD)

A passionate member of her local community, Karen George works tirelessly to promote employment in the horticulture and agriculture industries. Karen is always seeking new initiatives to allow employers and employees to access training and employment subsidies, alongside promoting Seasonal Worker Programme successes and working across multiple government agencies to try and highlight current industry issues and trends.

Cecilia Diaz-Petersen (QLD)

Cecilia Diaz-Petersen (better known as CC) and her husband Greg are commercial rosella growers in Queensland. CC spends up to 70 hours a week cooking in a purpose-built commercial kitchen on her farm, as well as helping to run a farm and juggle other business activities. CC's achievements reflect her passion not only for her business, but also for connecting people with the horticulture industry by telling the "grower and cook" story.

Neena Mitter (QLD)

Working for the University of Queensland (UQ), Professor Neena Mitter has worked on many ground-breaking platform technologies impacting agricultural production, environmental sustainability and socio-economic dynamics of the farming community. She is at the forefront of increasing UQ's international presence and, with increased scrutiny on the use of chemicals as crop and animal disease control agents, Neena is focused on developing clean technologies for the horticulture of tomorrow.



Photography by LJM Photography

Catherine Velisha (VIC)

Catherine Velisha has had a rapid rise in the vegetable industry, climbing the ranks to manage her business at just 34 years of age. Catherine is passionate about innovation, including investigating value-added meals and product development and as identifying export markets as a major focus for the business. She also creates opportunities for her staff through evolving and adopting the growing operation to best reflect the external environment.

Sharon Coutts (VIC)

Australian Fresh Leaf Herbs HR Manager Sharon Coutts is a bright example of what is possible when you work hard and find something you are passionate about. Sharon has been a strong force behind implementing a positive business culture and continues to adopt mentoring as a practice in her daily duties. She currently coordinates 120 staff across unique businesses in both Victoria and Queensland.

Stephanie Corrigan (VIC)

Stephanie Corrigan has the philosophy to learn all aspects of farming, and has thrown herself into doing this by attending industry events such as the 2017 Women's Leadership and Development Mission to south east Asia. Stephanie is leading the way in innovation, marketing and technology; using social media to promote Corrigan's Produce Farm lines. Stephanie is always thinking of ways to improve the farm to make it sustainable and efficient.



Photography by Anna Osetroff.

Stephanie Tabone (QLD)

Stephanie is an impressive grower who has risen through the ranks at Kalfresh. She currently manages product quality, safety and hygiene at Kalfresh's facilities, as well as process and packing efficiencies, while also managing and supporting a team of 20 employees. Stephanie is continuously looking for new ways to improve the business and the industry and is a strong example of a leading young female vegetable grower.



Striped and distorted zucchini fruit caused by infection with potyvirus.

The Australian vegetable industry is currently being supported by a strategic levy investment valued at over \$15 million to improve the protection of Australia's vegetable industry through increasing its capacity to diagnose and manage viral and bacterial diseases.

The project has been underway for 12 months and has delivered new information on vegetable diseases and their management. Notably, the vegetable industry now has access to a prioritised list of both diseases already present in Australia and those considered to be biosecurity threats. A fact sheet has been published on the principles of area wide management and how it applies to bacterial and viral diseases of vegetable crops. Project team members have also engaged directly with industry stakeholders at a number of events across various districts throughout Australia. Where possible, this engagement was undertaken in collaboration with the local VegNET representatives and with AUSVEG Biosecurity Officers.

Area Wide Management of Vegetable Diseases: viruses and bacteria (VG16086) is a strategic levy investment under the Hort Innovation Vegetable Fund. This 4.5-year project includes co-investment from the Department of Agriculture and Fisheries, Queensland; Victorian Department of Economic Development, Jobs, Transport and Resources; the Northern Territory Department of Primary Industry and Resources; the Western Australian Department of Primary Industries and Regional Development; and the University of Tasmania, as well as contributions from the Australian Government.

The project is supported by another specifically-focused project led by the New South Wales Department of Primary Industries and similarly funded by Hort Innovation.

Area wide management project continuing across the nation

In February 2018, a multi-million-dollar research project was established to address high-priority viral and bacterial diseases affecting vegetable crops. Project lead Dr Cherie Gambley from the Department of Agriculture and Fisheries, Queensland, provides an overview of results recorded over the past 12 months.

Survey results from around Australia

Results from national surveys of commercial crops have been used to develop the priority list of diseases present in Australia. The most commonly-detected bacterial diseases listed in surveys or reported through diagnostic services were leaf blights and spots, typically caused by *Pseudomonads* and *Xanthomonads*, although disease by soft-rotting bacteria was also reported. Bacterial wilt is also a concern in some crops. Crops mostly affected by bacterial diseases were brassicas, cucurbits and lettuce.

The viruses of most concern were those spread by aphids, whitefly and thrips. Viruses spread by people and equipment, such as cucumber green mild mottle virus (CGMMV), were also of concern for some crops.

The national surveys also highlighted that disease distribution can vary, with some diseases affecting only specific regions and others having national impact. Examples of regionally-specific diseases include lettuce necrotic yellows virus affecting lettuce crops in the Werribee region in Victoria, cucumber mosaic virus affecting capsicum crops in the Gascoyne area of Western Australia and capsicum chlorosis virus affecting capsicum crops in the dry tropics of Queensland.

Tomato spotted wilt virus (TSWV) is spread by thrips and has affected a range of crops in many growing districts, including capsicum crops in Queensland, South Australia, Victoria and Western Australia, and lettuce in New South Wales and Victoria. Aphid-transmitted viruses were also detected nationally, affecting many commodities including cucurbits, capsicums, legume vegetables, brassicas and carrots. Bacterial disease outbreaks are sporadic and often linked to extended periods of wet weather.

Six of the highest priority exotic diseases have been chosen for preparedness work to be developed and completed during the project. This includes begomoviruses (spread by whitefly), tospoviruses

(spread by thrips), tobamoviruses (spread mechanically and in seed), bacterial wilt of corn (*Pantoea stewartii*), bacterial wilt of cucumber (*Erwinia tracheiphila*) and bacterial blight of onion (*Xanthomonas axonopodis* pv. *allii* affects all alliums).

Insect vector monitoring and management trials are showing promising early results. Methods to collect data on thrips and aphids, and the viruses they spread, were optimised and will be used to inform on seasonal activity and how this drives disease outbreaks from the viruses they spread. Evaluation of weeds as hosts for both the insects and the viruses will also be undertaken to identify high risk species to allow improved targeting of weed control. Field trial evaluation of zucchinis has identified several varieties with good tolerance to mosaic disease and will be trialled in other locations to further evaluate this tolerance. Other management trials for aphid-transmitted viruses include comparing mulch (white- and UV-reflective), chemical control (mineral oil, Versys insecticide) and plants (external sorghum barriers, intercropping beans) to the current best practice to reduce impacts in capsicum crops.



Cucumber leaf showing symptoms of cucumber green mild mottle virus.

Further research

Investigations for new methods to manage bacterial diseases continues. Preliminary *in vitro* assays have shown some essential oils have potential to control a range of bacterial blight and spot diseases in vegetable crops. Selected oils were further evaluated in pot trials and show promise to control bacterial leaf spot in capsicum. Later in the year, a field trial will be undertaken to evaluate management of soft rot bacterial diseases of brassicas and will include investigation of timing and methods of irrigation and spacing of plants to allow better airflow. Hot water treatment is a traditional method used to help mitigate risk of seed-borne pathogens such as bacteria – field trials of capsicum and broccoli clearly demonstrated that there are no adverse effects to yield if seed is hot water treated.

The project has recently enrolled three PhD students, with a fourth student expected to commence within the next few months. These students will build knowledge in the areas of bacteriology, virology and phytoplasma research. A key focus of all the studies will be to understand the diversity of pathogen

populations and their distribution, survival and spread within the environment to allow the diseases they cause to be better managed. Additionally, this investment in students and their research will result in improved capacity and capability of industry-related research, which will provide ongoing benefits to the vegetable industry.

Visits to growing districts by team members will continue throughout the project to collect survey data, monitor sites and conduct field trials. During these visits, growers, consultants, agricultural companies and others are encouraged to speak with the project team.

Specific workshops on disease and insect identifications are planned for the next 12 months. These will commence in Queensland and be rolled out nationally. If you would like further information on the workshops, please contact Clinton McGrath from the Department of Agriculture and Fisheries, Queensland at clinton.mcgrath@daf.qld.gov.au.



Muhammad Umar, Fiona Giblin, Cherie Gambley and Tim Walker inspecting beetroot in Devonport, Tasmania.

Find out more R&D

For further information on upcoming visits, please contact the project representative in your state or territory: Cherie Gambley, QLD (cherie.gambley@daf.qld.gov.au); Fiona Constable, VIC and SA (fiona.constable@ecodev.vic.gov.au); Brenda Coutts, WA (brenda.coutts@dpird.wa.gov.au); Maxine Piggott, NT (Maxine.Piggott@nt.gov.au); Calum Wilson, TAS (calum.wilson@utas.edu.au); and Len Tesoriero, NSW (len.tesoriero@dpi.nsw.gov.au).

For further information on the project please, contact Cherie Gambley.

This project has been funded by Hort Innovation using the vegetable research and development levy, co-investment from the Department of Agriculture and Fisheries, Queensland; Victorian Department of Economic Development, Jobs, Transport and Resources; the Northern Territory Department of Primary Industry and Resources; the Western Australia Department of Primary Industries and Regional Development; and the University of Tasmania, as well as contributions from the Australian Government.

Project Number: VG16086



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Vegetable leafminer under the microscope in far north Queensland

In May 2019, Cesar and AUSVEG travelled to Torres Strait and Cape York Peninsula to undertake research and extension activities focusing on control, eradication and preparedness for the vegetable leafminer. AUSVEG Biosecurity Officer Madeleine Quirk provides an overview of the surveillance activities undertaken so far, and emphasises the role that the Northern Australia Quarantine Strategy plays in the project and in biosecurity.

Research, Development and Extension program for control, eradication and preparedness for vegetable leafminer (2017-2020) (MT16004) is a strategic levy investment under the Hort Innovation Vegetable, Nursery and Melon Funds. It brings together Cesar, Plant Health Australia, the Department of Agriculture's Northern Australia Quarantine Strategy (NAQS), the University of Melbourne and AUSVEG to undertake activities to prepare for vegetable leafminer (*Liriomyza sativae*; VLM).

Since 2008, the VLM has been moving down the Torres Strait islands and in 2015, the pest was detected on Cape York Peninsula in northern Queensland. The project was developed in recognition of the impact that VLM could have on the vegetable, nursery and melon industries were it to move into production regions.

NAQS plays a key role within the VLM project by providing extensive knowledge, technical and practical advice and data resources to Cesar, the University of Melbourne and AUSVEG, as well as logistics assistance during our visits to Torres Strait and Cape York Peninsula.

NAQS combatting biosecurity threats in Australia's north

In support of the Department of Agriculture's broader objectives, NAQS conducts monitoring and surveillance for exotic plant and animal diseases across the north of Australia from Cairns to Broome, including Torres Strait.

The biosecurity strategy's key responsibility is to provide early detection of target exotic plant pests, diseases and weeds that may affect Australia's national plant and animal health status and trade in agricultural products and environmental amenity. In doing this work, NAQS delivers a range of services and operations, including:

- Onshore scientific surveys.
- Offshore scientific surveys under direction from the department's Plant Division.

- Community awareness activities on how to report evidence of exotic target species and comply with applicable biosecurity regulations.
- Engagement activities with Indigenous Ranger groups under contract to assist surveys, collect data, and perform trapping services under direction from NAQS scientists and Community Liaison Officers.
- Contribution of expertise to national policies, industry measures and research relating to plant health surveillance.

In addition to this work, specific activities in Torres Strait include performing biosecurity functions to manage risks in accordance with applicable biosecurity regulations and deliver surveillance and response measures under the Exotic Fruit Fly in Torres Strait Response Plan.

NAQS collaborates with horticulture industries in other parts of Australia by periodically having industry representatives participate in NAQS surveys, for example citrus canker; providing data to industry groups to assist their biosecurity preparedness and planning; and contributing expertise to research projects upon request and where they align with NAQS surveillance objectives.

Research up north supporting horticulture industries further south

Through MT16004, NAQS has been instrumental in working with Cesar and the University of Melbourne to develop survey guidelines and rapid genetic diagnostics for VLM, which will assist industry in preparation for this horticultural pest.

It is important to quickly detect VLM if it spreads to a new area. Our research team is measuring survey efforts for VLM in Torres Strait so that we can provide advice to growers about management strategies.

At the Frog Gully Community Garden on Thursday Island in 2018, NAQS staff were tasked with searching for real leafminer damage on garden plants, while Cesar

recorded how long before surveillance officers detected VLM damage, and what percent of damage they spotted.

Harold Matthew, one of NAQS' local biosecurity officers, was involved in the experiments in 2018 and 2019.

"The research team and I learned a lot from this project that occurred on Thursday Island," Mr Matthew said.

"It is a reminder to NAQS biosecurity officers of how to identify that particular leafminer, and how important our job is to be mindful when we carry out our daily operations."

The 2018 NAQS survey on Thursday Island validated the approach taken by Cesar last year in the Victorian vegetable production regions of Werribee and Tyabb, where growers surveyed for 'fake' VLM damage painted onto crops. Together, these trials allowed the research team to calculate the amount of time that must be spent per area to ensure a high chance of spotting low abundance leafminer damage in agricultural systems, forming part of the VLM survey guidelines that are being developed.

This year, Cesar returned to Thursday Island to test whether the guidelines developed from the 2018 trials would improve detection success. During an annual training activity, biosecurity staff from NAQS and rangers from the Torres Strait Regional Authority were divided in two groups, half surveying without instruction and half surveying according to the guideline, at the pace of approximately two metres per minute. While the data still requires analysis, preliminary results suggest survey success improved when participants followed our guidelines.

"The leafminer training received this year will assist in supporting the work we carry out in Torres Strait in our role in the frontline of biosecurity surveillance," Mr Matthew said.

"I encourage all NAQS staff to be able to identify and manage the process of doing these activities and contact the correct authorities if they find any leafminer activity."

In addition to this surveillance work, NAQS has been providing valuable support to Cesar in developing rapid diagnostic tests that will be able to determine whether suspicious damage was caused by VLM or by one of Australia's many native leafminers. Specifically, Cesar is developing a molecular test that will be capable of determining if VLM DNA is present in a seemingly empty leafmine.

Cesar ran an experiment in the Frog Gully Community Garden on Thursday Island in 2018, which looked at the persistence of DNA in 'empty' leafmines – or those mines from which a fly has already emerged, but has left behind traces of itself. The experiment required freshly vacated leafmines to be tagged and then left to age before collection. With Harold Matthew leading these leafmine collections after Cesar staff returned home, Cesar was able to determine that VLM DNA can be detected, even in empty leafmines that were one month old, with a success rate of approximately 75 per cent. This is exciting news for surveillance, as this test will make it possible to identify whether VLM is causing damage to a crop or if it is one of Australia's native leafminers.

Benefits for industry

The research undertaken in Torres Strait will significantly assist vegetable, nursery and melon growers in preparation for VLM as it will give them guidelines for surveillance and new options for diagnostics. The surveillance and DNA diagnostics work is forming the core of surveillance toolkits supporting industry, government, and gardeners, which are currently under development. They will bring together statistically-based recommendations for survey technique, guidelines for sample collection and minimum standards for data recording. These toolkits will be available to industry at the conclusion of the project in 2020, but you can view a draft of our VLM survey guide for growers at the AUSVEG webpage (ausveg.com.au/biosecurity-agricultural/biosecurity/mt16004/). We are very keen to hear your thoughts and feedback.

This project was made possible with support from the Australian Department of Agriculture, Torres Strait Regional Authority, Kaurareg Native Title Aboriginal Corporation, Torres Shire Council, myPathways, Apudthama Land Trust, Seisia Enterprises and NPA Regional Council.



Vegetable leafminer damage to siratro leaf on Thursday Island, QLD.

Find out more

Please contact AUSVEG Biosecurity Officer Madeleine Quirk on 03 9882 0277 or at madeleine.quirk@ausveg.com.au.

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

Project Number: MT16004

**Hort
Innovation**

Extension highlights from Victoria and north Queensland

Three years ago, the National Vegetable Extension Network (VegNET) was established to extend vitally-important R&D information to growers. Vegetable Industry Development Officer (IDO) for Victoria (Northern, Western and South Eastern) Clinton Muller discusses the latest activities and other achievements, while North Queensland IDO Cherry Emerick reports on her personal highlights, as well as the strategic levy investments that are assisting vegetable growing businesses.

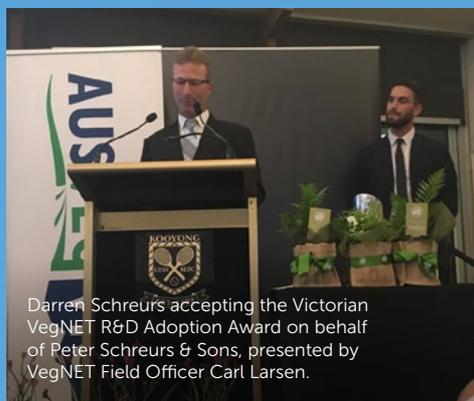
Clinton Muller

As the current iteration of VegNET regional delivery in the Northern, Western and South Eastern regions of Victoria draws to a close, we've reflected on some of the key achievements of the program over the past three years. Delivery of the project in this region has continued to be guided by the top priorities that Victorian growers have repeatedly shared with us, which include water management, profitability, pest and disease management, cost of production and soil management. To reflect on what has been produced throughout the project, we've put together a summary snapshot of resources on the AUSVEG VIC website at ausvegvic.com.au/resources.

Victoria R&D Adoption Award

Darren and Mark Schreurs from Peter Schreurs & Sons recently won the 2019 R&D Adoption Award, sponsored by the Victorian VegNET project and presented during the AUSVEG VIC Awards for Excellence in May.

Darren and Mark were awarded the honour for their diligence in implementing a range of innovative practices that benefit their farm production and the environment. These have included the adoption of cover crops and a variety of integrated crop protection methods including composting. These practices have allowed them to improve their soil quality, resulting in better crop yields and quality, and also reduce the amount of chemical used to control pests and diseases.



Darren Schreurs accepting the Victorian VegNET R&D Adoption Award on behalf of Peter Schreurs & Sons, presented by VegNET Field Officer Carl Larsen.

Keep an eye out for an upcoming video case study highlighting the work of the team at Peter Schreurs & Sons.

Area wide management of viral and bacterial diseases

VegNET officers were in the field recently with a research team from Agriculture Victoria collecting samples as part of the Hort Innovation-funded area wide management of bacterial and viral diseases project. This project, led by the Queensland Department of Agriculture and Fisheries, supports vegetable growers to deal with the vast array of viral and bacterial diseases that impact production (see page 28). Growers who detect any unusual viral or bacterial diseases in their crop are able to send plant samples to Agriculture Victoria through the Crop Health Services program for diagnosis. For further information, please visit agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/diagnostic-services.

Some initial findings from this project have already been shared through the VegNET project, including a grower forum in Werribee South in late January following an outbreak of lettuce necrotic yellows virus (LNYV). The timely discussion focused on the practical identification and biology of the LNYV infection, treatment options for LNYV and other viral infections, and strategies to minimise on-farm disease risk profiles.

Cherry Emerick

As the VegNET Industry Development Officer for North Queensland for the past two years, I look at the evolution in adoption, skills and knowledge by our growers, stakeholders and myself, and how it has kept on flourishing throughout the project. I look forward to further evolving that in the future.

The introduction to my role was Tropical Cyclone Debbie so there was no easing into it at a nice gradual pace. Since then, we have experienced other weather events, which has accentuated the need

for strong collaboration across industry organisations to work with the unforeseen issues experienced in the aftermath. Growers have been resilient in getting back out and working on their land but we all know that recuperating the costs of these high-impact weather events takes around five years and is yet another challenge in an already challenging business.

As an Industry Development Officer working to deliver the adoption of best management practices and R&D, it drives me harder to work with growers to support them to achieve their goals while working towards/maintaining a sustainable and profitable farm.

Transport challenges

More than a million dollars annually is being lost due to issues relating to temperature from the coldroom dispatch, transportation and final destination, contributing to the percentage of vegetables produced being wasted before they reach the consumer. Strategic levy investments such as *Identifying and sharing postharvest best practice on farm and online* (VG13083) have not only been successfully adopted by growers, but throughout the supply chain. Regional and national logistic transport companies in our regions have met with me and are aware of the risks to the quality of your produce when it's loaded and in transit. They have responded positively and offered copies of the *Postharvest management of vegetables: Australian supply chain handbook* to further educate their employees and reinforce to growers the consequences of loading hot product, as well as the possibility of including sections of the handbook resource in their inductions.

Educating workers

VegWHS training resources (VG16031) and the VegWHS Carrot USB stick have been widely adopted by growers. These resources have greatly assisted growers

and have somewhat lightened the load of what we all know is a very demanding job in these aspects of the business.

Local backpackers who provide services for growers are starting to utilise the VegWHS – Inductions which is of a high standard, with 10 modules educating future workers of the expectations and standards on-farm and on-site. This can be supported by a brief induction explicitly for your business on arrival. You'll find a standard format induction on the VegWHS Carrot USB stick that allows you to personalise the form to your business.

Gala celebrations

Bowen Gumlu Growers Association held its annual gala dinner on 7 June. Among the attendees were the State and Federal Agriculture Ministers and the Japanese and New Zealand Consulates General as well as other local and regional government dignitaries. It was great to see our growers looking glamorous and enjoying an evening of fine entertainment, food and drink. Local produce was a stand-out with guests getting on board with our state's new campaign of #eatqld.



Jess Volker from Prospect Ag and VegNET Industry Development Officer – North Queensland
Cherry Emerick.

Photography by Gill Jurgens, Zesty Studio.



The 2019 Bowen Gumlu Gala Growers Association Dinner, held on 7 June.

Find out more

Please contact Clinton Muller on 03 9882 2670 or clinton@armcg.com.au or on 0428 978 390 or Cherry Emerick on 07 4785 2860 or edm@bowengumlugrowers.com.au.

Regional capacity building to grow vegetable businesses – national coordination and linkage project has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government.

Project Number: VG15049

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Export funding available for Australian veg growers

The Export Market Development Grant (EMDG) program has been in existence for over 40 years and continues to be supported by both sides of Federal Government. It is a prescriptive grant program, which means if your business is eligible for the program and has eligible costs, you can access the grant. It is not a competitive grant program, so politics and industry do not influence which grant applicants are successful.

For a company's overseas marketing efforts, eligible businesses can access a total of eight grants worth up to a maximum of \$1.2 million of total grant funding, or up to \$150,000 per grant.

The program operates on a cash basis and reimburses 50 per cent of eligible expenditure above the first \$5,000 of expenses. Eligible overseas marketing expenditure is limited to the following categories of costs:

- Overseas marketing trips – including airfares and a \$350 daily allowance to cover food, accommodation and ground transport.
- Overseas trade fairs and seminars – attendance as well as booth costs. Australian tradeshow costs are also eligible to the extent potential overseas buyers attended.
- Advertising and promotional literature.
- Free samples provided to potential overseas buyers.
- Maintaining a long term overseas representative or sales agent.
- Overseas market research.
- Bringing a potential overseas buyer to Australia.
- Overseas patent and trademark costs.

There is a grant program available for Australian businesses exporting, or for those who are considering taking a step into the export space. The Australian Government's Export Market Development Grant program seeks to reimburse businesses for up to 50 per cent of overseas marketing expenses. Claire McDowall reports.

At least \$15,000 of these expenses need to have been paid in the grant period to be eligible for the program. The grant period usually follows the Australian financial year, except for first time applicants who are able to capture eligible expenses paid over the previous two financial years.

For each applicant's first two grant applications, it is not necessary for overseas marketing efforts to have resulted in export sales. However, you must be an Australian business with an ABN and with income not exceeding \$50 million annually. Overseas marketing efforts include all territories outside of Australia, excluding only New Zealand and North Korea.

Further options for Australian growers

The R&D Tax Incentive is another non-competitive, entitlement-based program designed to encourage businesses in all industries to innovate and improve productivity. For the year ended June 2018, the program offers two streams – a 43.5 per cent refundable tax offset and a 38.5 per cent non-refundable tax offset. If you are in a tax loss position (typical for early stage companies), the benefit available can be as high as 43.5 cents cash back for every dollar spent on R&D.

As well as the EMDG and R&D programs, competitive grants are available through federal, state, and sometimes local governments. For instance, a number of grants are available through the Federal Government's Department of Agriculture and Water Resources. These are

temporary grant programs which, as the name would suggest, are well-subscribed and highly competitive. They are also impacted by changes in governments and government policies. We have deep experience assisting businesses with the preparation of such grant applications and offer a range of fee options.

A helping hand

Glasshouse Advisory is a unique consulting firm offering specialised services such as commercialisation strategies; facilitation of grant and tax incentive programs; and valuations of businesses. It has a multi-disciplinary team that draws on a wealth of experience across finance, law, science and engineering to provide growers with assistance to help grow their business.

Find out more

Please visit glasshouseadvisory.com.



Dr Shaun Hood.



Diamondback moth.

Plan for the likelihood of a warmer winter

Farmers are likely to face a couple of significant challenges this winter, based on the Bureau of Meteorology's climate outlook. Released in May, the outlook anticipates a drier than average winter for much of the east and parts of southern Australia. To top it off, daytime temperatures are very likely to be warmer than average.

Insects, both good and bad, will take advantage of these warmer winter conditions. Plenty of studies highlight just how important temperature is in speeding up the insect life cycle.

Knowing this, it's time for vegetable producers across Australia to sit down with their agronomic adviser and build a well-considered insect management plan. Many will have the situation where an insecticide they have used for a long period of time has lost its effectiveness. Going forward, avoiding insect resistance needs to be a critical part of every grower's strategy.

Find out more

For more specific 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.

In this edition of *Vegetables Australia*, Syngenta Technical Services Lead Dr Shaun Hood discusses the importance of an insect management plan, especially in the event of a drier and warmer than usual winter, and how this can help in the fight against insecticide resistance.

Key focus: Mode of action

When using insecticides, it's important to understand their mode of action (MOA). Insecticides can work in many different ways, i.e. have different MOAs. They are grouped by their MOA and the grouping is based on the site of action within an insect.

Repeated use of any MOA can lead to insects developing resistance to that group and growers need to alternate MOA groups within the growing season to combat resistance.

Brassica growers will be well-aware of the risk associated with resistance and the decision they have to make when controlling diamondback moth. Here, growers can use multiple applications of the same MOA for a defined period of time before switching to another group. This is called a window or block strategy.

To facilitate planning the use of each MOA, insecticide products clearly display the MOA code on the label. In Australia, the group is displayed as a number, sometimes followed by a letter. To prevent resistance, products with different numbers should be alternated.

Letters that follow the MOA number represent structural differences between insecticides that have the same MOA. These should only be used for resistance management if no other insecticides with different modes of action are available.

As with many seasons, labels can be updated and manufacturers may change additives within the formulation so growers need to update themselves with the current label every season.

Users of the popular insecticide PROCLAIM® will notice a transition in the coming months as PROCLAIM® OPTI takes over the mantle. The new product contains the same active ingredient (emamectin), and hence retains its Group 6 Insecticide status. However, users will benefit from the new technology formulation and an expanded label, which includes more crops and control of more lepidopteran (caterpillar) species.

With label registration in more crops, PROCLAIM OPTI® becomes a more versatile option for resistance management. It should be used in rotation with other insecticide MOA groups, including Group 28 Insecticides.



Mary Jane and Cam Turner from Riverdale Herbs, the first producers in Australia to be certified under Fair Farms.

Industry-led workplace training and certification program launched

Fair Farms, the industry-developed workplace training and certification program for employers in the Australian horticulture industry, was officially launched in June at Hort Connections 2019. The program team explains what this means for horticultural businesses that are looking to become certified under this initiative.

Developed by Growcom, the peak representative body for Queensland horticulture, Fair Farms is the industry's proactive response to identified problems around workplace compliance.

For too long the horticulture industry has been plagued by rogue operators who purposely exploit workers to undercut compliant growers and create an artificially-discounted cost of produce that good businesses have to compete with. These operators attract significant media coverage, tarnishing the industry's reputation.

Fair Farms has been developed by industry, for industry to address this issue. The program will support all members of the Australian horticultural supply chain with tools, information and training to implement employment practices that comply with the existing labour laws and ethical standards.

The program includes:

- An industry-owned standard benchmarked against Australian workplace laws and ethical standards.
- An online self-assessment against the standard that identifies any training needs.
- A coordinated system of individualised quality training to support growers and other horticultural suppliers.
- A pathway to certification, if required, including cost-effective third-party audits.
- A process for credible third-party audit and certification that enables ethical businesses to differentiate themselves from less reputable operators.

Horticultural businesses will benefit from being **Fair Farms-certified** in a number of ways:

- You will set yourself apart as an ethical employer. This will make more farm workers want to come and work for you. Labour hire firms are likely to send more workers your way. Overall, Fair Farms certification will help you to improve your supply of consistent labour.
- Being Fair Farms-certified will improve your ability to sell to the major Australian retailers. It is becoming apparent that Fair Farms certification (or an equivalent ethical audit program) will become a mandatory requirement for all businesses wanting to remain part of the big retailers' supply chain.
- You will demonstrate to regulatory bodies such as the Fair Work Ombudsman and the wider public that you are committed to complying with Australian employment laws and ethical standards.

The long-term goal of the program is to build a culture of compliance in which good operators are recognised and rewarded for doing the right thing by their workers. It has received in-principle support from supermarket chains Aldi and Woolworths, who accept suppliers choosing Fair Farms as their ethical audit program. The program is implemented with the support from the Fair Work Ombudsman, the Federal Department of Agriculture and AUSVEG.

The Fair Farms program is open to all businesses in the horticulture supply chain, including growers, packers, wholesalers, ripening houses and brokers. For more information, please visit fairfarms.com.au.

Find out more

Information regarding your obligations as an employer is available at fairwork.gov.au and growcom.com.au.

The Fair Farms Initiative is delivered by Growcom, in collaboration with industry and supply chain stakeholders. It is supported with seed funds from the Fair Work Ombudsman community engagement grants program.





Casper Van Kempen presented at the Annual Vegetable Industry Seminar.

Value of the seed and variety choice

Vegetable seed is an ever-evolving, critically-important component of growing all crops throughout the world. However, there can be threats to varieties that can derail the breeding process and ultimately lead to a reduction in high quality products. Plant Breeders' Rights can prevent this from occurring, which was a topic of discussion at the recent Annual Vegetable Industry Seminar.

By the time a vegetable seed arrives at a farm or nursery, it's already had an impressive journey. In many cases, development for the seed began a decade ago when breeders painstakingly drew on nature to craft a seed with better taste, improved resistances, higher yields and reliability, or traits to help reduce food waste. It's a long process and something the industry needs to protect to ensure sustainability and ethically-sourced food.

During a recent visit to Australia, Managing Director of the Anti-Infringement Bureau for IP Rights on Plant Material (AIB) Casper Van Kempen sat down with growers, retailers, seedling suppliers and industry stakeholders to educate them about Plant Breeders' Rights and why it's important for sustainable horticulture.

Casper was an international guest at the Annual Vegetable Industry Seminar, which demonstrated the importance of collaboration between vegetable producers, global researchers and key industry stakeholders. His presentation highlighted a vital part of the vegetable production process, which starts with the seed. Casper addressed the opportunities that could help the Australian horticulture industry to better understand and overcome current and future challenges to plant breeding.

Protecting vegetable varieties

Infringements on Plant Breeders' Rights can include illegal reproduction from seeds or tubers, illegal vegetative propagation from cuttings and other plant material, as well as theft of parental lines. Some other forms of piracy are the incorrect use of a registered variety name of a protected variety and packaging, and trade and distribution of illegally-propagated seeds and plant material.

The AIB is an international association representing breeding companies in the vegetable seed industry. Rijk Zwaan is a member of the AIB network and Managing Director Tim March said protecting Plant Breeders' Rights ensures seed companies can continue to innovate.

"To produce a new variety, it can take more than 10 years of research and development," he said.

"Through Plant Breeders' Rights, we have a means to secure a return on our investment in plant breeding so that we can continue to invest in developing new varieties to meet the future needs of the industry.

"For the industry to be sustainable long-term, we need access to new and improved varieties. That can only come about through seed companies being able to continually invest in R&D."

In addition to lost revenue, infringements can have a broad impact on the food chain and even reach consumers. Since seed companies' incentives for developing new varieties is compromised, consumer choice in the long-term will be limited due to fewer new varieties.

"As vegetable breeders, we are always thinking about the end consumer and it's not just about creating vegetables that are healthier and more appealing," Tim said.

"We know consumers want to have products that are from an ethically-motivated supply chain."

According to the AIB, practice shows that in other parts of the world, production and the use and trading of illegal products could be partly linked to organised crime and has had detrimental effects on employment and the business and social environment.

To learn more about the AIB, visit aib-seeds.com.

Find out more

Please visit rijkszwaan.com.au.

Caterpillar parasitoid.

Working with growers to secure a cleaner, greener future

In early 2018, a Hort Innovation-funded project involving research and horticultural industry groups was established with a focus on promoting beneficial insects in vegetable crops. *Vegetables Australia* spoke to project lead Professor Geoff Gurr from Charles Sturt University about the research being undertaken and its next steps.

Pests are a common concern among Australia's vegetable growers – they can be extremely destructive and can wipe out millions of dollars' worth of produce across all commodities. Adding to that is the growing use of insecticides which, over the years, has seen pests build resistance towards these crop protection products.

A national million-dollar project is aiming to deliver options to the vegetable industry for controlling insect pests in vegetable crops and reduce the use of insecticides through boosting beneficial insects. It is also considering the environmental impact that these products can have and consumers' desires to reduce insecticide use in the crops.

This project, by the Graham Centre for Agricultural Innovation and led by Geoff Gurr at Charles Sturt University, includes researchers from The University of Queensland, New South Wales Department of Primary Industries, IPM Technologies and Cesar. These researchers are developing equivalent approaches for Australian vegetable growers, focusing on carrot, sweet corn, capsicum, bean, lettuce and brassica growers across Australia for this levy-funded project to understand current level of beneficial insects.

The project *Field and landscape management to support beneficial arthropods for IPM on vegetable farms* (VG16062) is a strategic levy investment under the Hort Innovation Vegetable Fund.

Looking abroad

This project is focusing on vegetation patterns and advanced traditional companion planting, with trials conducted overseas that have piqued Australian researchers' interest. For example,

a project led by Professor Geoff Gurr in east Asia has implemented an approach to address pest outbreaks and insecticide resistance in rice.

"We were able to find some approaches that farmers found very easy and profitable to implement. The types of companion planting that we introduced increased the activity of beneficial insects, so the major pest species were controlled really well," Professor Gurr explained.

"With the on-farm trials that were conducted, the host farmers reduced their usage of insecticides by more than two-thirds, got increases in grain yield and received the benefit of a secondary income stream from the companion crop that was introduced.

"This has proven to be extremely popular, and it's a model for the types of advances that we're hoping to make in Australian vegetable production."

Professor Gurr added that researchers still need to look further abroad to conduct their research.

"Fortunately, there are a good number of studies from different parts of the world (some of which are similar to Australia) and these studies have proven successful in sweet corn and brassica production."

Field surveys

To date, the project team has conducted a survey of over 400 vegetable fields around Australia across a range of commodities, including sweet corn, brassicas, beans, capsicums, carrots and lettuce.

These surveys were investigating whether the density of pests and beneficial insects was uniform across a vegetable field or whether there were differences within a given field that relate to the nature of the adjacent vegetation.

"You might picture for example, a field

of carrots and on one side you've got a farm dam; another side you might have some eucalyptus forest; and another side you might have some perennial pasture," Professor Gurr said.

"So, what we know from the ecology of insects is that their distribution is heavily influenced by the patterns of vegetation. The teams who are out there sampling would look at the density of the insects in the middle of the field and the different edges of the field that were close to those different types of adjacent vegetation."

"We found strong differences in the distribution of natural enemies (beneficial insects). The particularly exciting thing is with some types of vegetation, the crop nearby had fewer pests and more beneficials," he said.

"Now that we know that the beneficials and the pests are influenced by the adjacent vegetation type, we're trying to work with growers to find ways that we can most conveniently manipulate the density of beneficial insects and thereby reduce the pests in the crop by having carefully-selected companion plants placed into the margin of our vegetable fields."

Next steps

The project team is currently meeting with growers and arranging further field trials based on the results. These trials will be rolled out as the farmers are planting their crops or sowing their crops. The team is focused on two commodities for the next phase of the project: sweet corn and brassica crops.

"As we move forward, we'll start to narrow down our work into the most effective types of interventions. Then we'll be working with growers to host field days on their properties so that other growers

from those regions can come along to hear first-hand about what has worked," Professor Gurr said.

Over the next 24 months, an information package will be released to guide growers on implementing the process known as 'ecological engineering'.

"To give you a picture of how one of the strategies might look: it might be that as you're establishing a crop of sweet corn or cabbages, then you'd allocate a one-metre wide strip around the edge of your field and you sow a secondary crop like buckwheat," Professor Gurr explained.

"The advantage of plants like buckwheat is that they're very quick to start flowering, and if they're managed appropriately, they provide flowers for many weeks. Those flowers provide fuel for beneficial insects in the form of nectar, and they also attract beneficial insects from adjacent areas.

"It can be as simple as this: a simple strip only about a metre wide of so around the margin of the field and this could often deliver very major benefits in terms of pest suppression."

The bottom line

While this project isn't set to deliver a magic technology that will result in growers no longer having to worry about pests in their vegetable crops, Professor Gurr said it will benefit both conventional and organic growers in some way.

"My vision is that growers across that full spectrum, from the more mainstream ones through to the more organic ones, will find these a useful addition to their toolbox."

Professor Gurr added that there is also potential to not just suppress pests, but also boost the numbers of bees and other pollinators in the region.

"Even if you're not growing a crop that requires pollination, many growers might have other crops on their property that do require pollination and are interested in promoting bees. Other growers could be interested in promoting wildlife conservation on their farms.

"Those are just two examples of the additional benefits that can often be delivered by having a little bit of diversity within vegetable fields."



Ladybeetle larvae.



Ladybeetle adults.

Find out more R&D

Sweet corn and brassica growers interested in participating in the next phase of the project can contact Professor Geoff Gurr at ggurr@csu.edu.au or 02 6365 7551.

This project has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. Project Number: VG16062

Hort Innovation
Strategic levy investment

VEGETABLE FUND

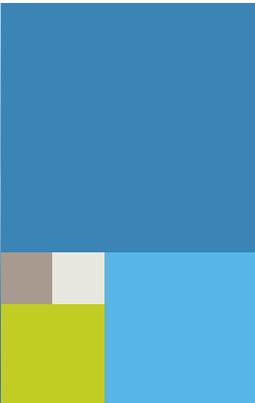


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Estimating the cost benefits of managing soilborne diseases

Soilborne diseases are one of the main challenges for vegetable producers. A *multifaceted approach to soilborne disease management* (VG15010) is a strategic levy investment under the Hort Innovation Vegetable Fund and is working with growers to trial practices that may reduce the economic impact of soilborne diseases. The project team reports on the latest findings.

Vegetable growers want to know what the economic benefits are from adopting trial practices in their crops and what is involved. Trials can include seed treatments, fungicide and biological soil drenches, biofumigants, cover cropping, soil amendments and using calcium cyanamide fertiliser. This article outlines some of the challenges in quantifying the benefits for any individual farm, based on findings from project VG15010.

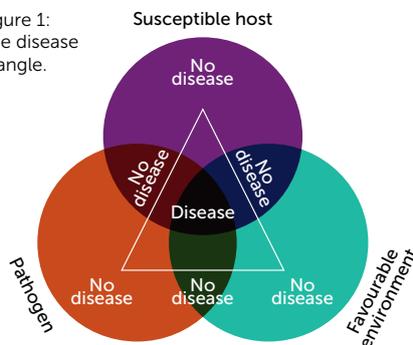
Key messages

1. Managing soilborne diseases is all about managing the risks of crop damage. At the same time, the practices or systems that help to manage these diseases come with their own risks. So, we need to manage these new risks in order to maximise the benefits. In addition, we need to consider the longer-term risk management benefits from adopting a practice or system.
2. The economics will depend on each situation. We need to consider each situation and the farming system, not just an individual practice in isolation. The economics depends on a range of factors including but not limited to current yields, potential yields and disease inoculum levels as well as how the practice fits with other practices in the farming system.
3. Consider the long-term benefits. While short-term benefits are easier to quantify, long-term benefits need to be considered when comparing practices or systems.

Understanding the disease triangle

The occurrence of soilborne disease requires a susceptible host plant; pathogen inoculum in the soil; and environmental conditions that favour disease development (e.g. temperature and moisture) (see Figure 1). For disease to develop, all three factors are required. If only one or two factors are present, no disease will develop. The severity of disease depends on the interaction between host, pathogen and environment.

Figure 1:
The disease triangle.



Management options

Generally, the main options include practices that improve soil health such as cover cropping, biofumigants, organic amendments and reduced tillage. Other options include a diverse rotation, tolerant or resistant cultivars, farm hygiene, paddock drainage, delayed/adjusted sowing/planting time, irrigation monitoring (avoiding under-watering and over-watering), crop protection products and soil fumigation. None of these options alone will manage soilborne diseases as an integrated approach is required. Sole reliance on chemical control may lead to fungicide resistance or enhanced breakdown of the active ingredient.

Improving soil health

One of the reasons that soilborne diseases are an increasing problem for vegetable growers is declining soil organic matter and declining soil health.

Maintaining soil health in vegetable production systems can be challenging due to the intensive nature of the systems, the requirement for tillage (to provide a good seed bed for small-seeded crops), high cost structures and supply chains that demand a daily supply of produce.

A healthy soil contains a diversity of beneficial organisms that help to suppress pathogens, has good structure that allows better nutrient and water holding capacity, and is not compacted.

Comparing management options

The economics will vary depending on each situation. In short, it depends on

costs, benefits and the risks involved. It also depends on the logistics of how the practices fit into your system. There is no one size fits all, which makes it difficult to provide a definitive answer about economics of a practice or system.

Results from one site will not necessarily be translatable to another site. Here are 11 factors that make it challenging to estimate the economic benefits for your situation based on results from another site:

- **Diversity of vegetable farming systems.** Farming systems vary by crop type, markets (e.g. fresh or processing), climate, soils and rotations, just to name a few.
- **Practices in one year/season will influence the next crop.** This highlights the importance of considering the economics over a rotation or several years, rather than one individual crop or year. Sometimes an economic loss in one year can be more than made up in the next crop.
- **Benefits are not additive.** You cannot assess the benefits of each practice individually and then add several together. You need to assess the benefits of the system.
- **Post-harvest costs are substantial for many fresh vegetable lines.** Therefore, post-harvest costs need to be considered when assessing different systems. If improvements can be made in crop quality, there can be substantial savings for post-harvest grading (e.g. labour costs), reduced losses in the supply chain due to better shelf life as well as keeping customers happy (and therefore, more likely repeat business).
- **Soilborne disease can cause episodic crop losses or cause chronic yield reduction.** Crop losses are more obvious when a disease kills plants or causes obvious symptoms such as wilting or yellowing. However, some soilborne diseases may not kill plants, but might reduce yield (see Figure 2).
- **Economic thresholds are not defined for soilborne diseases in vegetables.** The South Australian Research and Development Institute (SARDI) is currently developing soil DNA testing (*Improving soilborne disease*

diagnostic capacity for the Australian vegetable industry – VG15009). These tests will be useful for managing the risk of soilborne disease. However, defining economic thresholds will require more research.

- **Diversity in paddock history and soilborne disease inoculum levels.** Paddocks with a history of disease and with tight rotations will often have a higher level of inoculum compared to paddocks coming out of a pasture phase or with a diverse rotation.
- **We need to consider longer term benefits.** It is easy to assess short term benefits (e.g. from increased yield or price in the first year). Still, longer term benefits need to be considered. Some practices take years before benefits become noticeable.
- **Trends in crop yield or quality.** You might already be producing good quality, high yielding crops but are yields starting to decline? Which practices will help to maintain yields? Would it be economic and/or make life easier in the longer term, to adjust your practices?

- **We need to consider risk management.** Some practices might help to keep the disease inoculum at low levels. This will help to reduce the risk of crop damage/losses in years/seasons that provide an environment favourable for the pathogen. So, in the short-term you might not necessarily see substantial benefits from implementing changes, but you may avoid or reduce crop damage in future years/seasons.
- **New practices come with their own risks.** We need to manage these risks to maximise the benefits. For example, if using cover crops you will need to manage the risk of creating weed or disease problems. This could mean that you need to ensure the cover crop is terminated early enough to avoid creating weed problems or you need to select a cover crop species that will not host diseases for your cash crop (e.g. avoid brassica cover crops if you grow brassica cash crops).



Figure 2: Healthy lettuce plants on left and *Pythium* root rot of lettuce on right. Note reduced root system and pale brown discoloration. Image courtesy of Dr Len Tesoriero.

Find out more 

Please visit the Soil Wealth and Integrated Crop Protection website at soilwealth.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: VG15010

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Figure 1: Compost – the end product. Image courtesy of Dr Doris Blaesing.



Figure 2: Compost spreading at a SWICP demonstration site in WA, Soil Wealth/ICP. Image courtesy of Justin Wolfgang.

Getting the dirt on soil microbes and compost

The Soil Wealth and Integrated Crop Protection (ICP) projects work with growers nationally to put soil management and plant health research into practice. In this edition, the project team delves below the surface into the world of soil microbes, and how to support them through building organic matter and using compost. *Soil Wealth ICP Phase 2 (VG16078)* is a strategic levy investment under the Hort Innovation Vegetable Fund.

We hear so much about soil microbiology these days, but what really is the value of these microbes when growing a crop?

To understand soil microbes, we have to understand the numbers that are involved. An average soil can have up to 30,000 kilograms of microbes per hectare. This is the equivalent of 42 cows!

Another important fact to remember is that there is no “ideal”. It is more about numbers and types of microbes found which, in turn, indicates what is happening in the soil. High levels of fungi often show that the soil is going through the process of breaking down organic matter.

If we can balance the ratios to suit the crop grown and increase the numbers of microbes, this will lead to a healthier soil and the ability to increase microbial numbers even more.

A healthy soil with high numbers of microbes in the correct balance:

- Decompose organic matter into plant available nutrients.
- Help improve soil structure.
- Increase soil nutrition.
- Breakdown complex compounds into plant available nutrients.
- Are involved in nutrient cycling and nutrient availability.
- Help improve soil water holding capacity.
- Contribute to increased soil health.

A great way to build soil microbes and build organic matter is through the use of compost.

Your one-stop-shop for compost

Compost is a mixture of recycled organic materials that have been processed by natural organisms, breaking down the original materials into a usable form. Compost has many benefits for soil. It can feed plants, stimulate beneficial microbes, improve soil structure and help the soil retain nutrients, water and warmth.

However, compost is also a potential source of microbial, chemical and physical contamination. Human pathogens in manure, heavy metals in sewage sludge and plastics left in green waste bins all have the potential to contaminate growing sites and fresh produce.

Growers may therefore be reluctant to use compost, in spite of its potential benefits, because of concerns about how it could affect the safety of the food they grow.

The Soil Wealth ICP team has developed a number of useful resources over the years to guide you in making the right decision about compost. These include:

- **Using compost safely: A guide for the use of recycled organics in horticulture** – This guide describes how fresh produce growers can use compost without affecting their food safety assurance program.
- **Safe compost for fruit and vegetables: A guide for the supply of recycled organics to fresh produce growers** – This guide describes how producers of recycled organic products can ensure that the composts they supply meet the requirements of food safety programs such as Freshcare in accordance with AS 4454-2012 Composts, soil conditioners and mulches.
- **Using compost in commercial vegetable production with Dr Doris Blaesing** – Watch this webinar recording to find out more about the good, the bad and the ugly of compost

use in vegetable production with Dr Doris Blaesing from RMCG.

- **Compost use in vegetable production: a grower's perspective** – Hear from Rob Hinrichsen from Kalfresh in Queensland about using compost in commercial vegetable production systems. This video captures Rob's experiences in soil biology, short- and long-term compost, the financial implications of using compost, and advice for starting out.
- **What is compost worth? Using compost in Australian vegetable systems** – This case study outlines the economic considerations when using compost in vegetable production systems. It is based on lessons learned from several Soil Wealth and ICP demonstration sites.
- **Compost Trial Virginia, SA podcast** – The Soil Wealth and ICP team follows the implementation of a compost trial for vegetable growers in Virginia, South Australia. We speak to the growers, the compost supplier and Dr Doris Blaesing.
- **Recycled organics (compost) in vegetable production** – Watch this webinar recording with Rob Niccol from Australian Native Landscapes and Dr Kelvin Montagu from Applied Horticultural Research, who discuss the value proposition of recycled organics and explain how the compost can be successfully integrated into vegetable growing in Australia.

Find out more



You can access all the resources in this article, as well as news and events from around the country, at soilwealth.com.au. For more information, please contact project leaders Dr Gordon Rogers on 02 8627 1040 or gordon@ahr.com.au and Dr Anne-Maree Boland on 03 9882 2670 or anne-mareeb@rmcg.com.au.

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

Project Number: VG16078

Offering a local irrigation solution for Australian veg growers

Water usage and distribution can be a challenge for vegetable growers, particularly when conditions are at their driest. An Australian-owned drip tape has been released onto the market that is aiming to help growers with their water flow rate and to regulate their water consumption as required by different crops.

Vegetable growers are always investigating innovative methods to boost their inputs and reduce on-farm costs. Staying local is important too when looking for such innovation, with assistance and products available straightaway when required.

A local product making its mark on the local vegetable industry is Aqua-Traxx® PBX drip tape. This product has been manufactured in South Australia as a result of expansion and investment in the Toro manufacturing facility at Beverley, South Australia.

Aqua-Traxx® PBX is an extruded tube that is completely seamless. While there are other extruded tubes available, they have individual emitters inserted into the tube during the extrusion process. This means that the closer the emitters are to each other, the more there are, which results in a higher cost.

With this product, the emitter is integrated within the tube, so more slits can be added for closer spacing without the need for additional emitters. This allows growers to choose an outlet spacing from 10 to 90 centimetres based upon their desired wetting pattern without additional cost.

The Proportionally Balanced Cross-Section (PBX) drip tape works to increase flow turbulence and velocity, providing clog resistance, durability and uniform watering to every plant.

"Growers are adapting the tape to suit their style of crop and their soil quality. If it's a really dry year, they might have a higher litrage, and if it's a really wet year, they could lower the litrage," Toro Regional Manager – Queensland, New South Wales and Australian Capital Territory Sheldon Simmonds said.

"There's many different factors that come on-board based on type of crop, soil structure and rainfall. Growers can get water whenever they want, with the method they want to use."

Grower assistance

Help is on hand for vegetable growers looking to implement the drip tape into their crops. In the first instance, GPS tracking is undertaken to map out the paddock to figure out exactly how many rolls of the tape are needed, and whether higher flow or lower flow product is required.

Luke De Paoli is a snow pea, pumpkin and tomato grower in Bundaberg, Queensland. Through word of mouth, Luke bought pallets of the drip tape and is pleased with the results he has seen so far.

"Since using the tape, I've seen good uniformity and quality produce," Luke said.

"It's all about preparation – getting the correct flow rates and spacings for which crop we are growing."

Using Toro Aqua-Traxx® PBX drip tape – in 5/8" at 20cm spacing, low flow, has allowed Luke to deliver small quantities of water, often as required by the soil structure. He uses twin tape rows for his snow peas; e.g. two rows of tape along each row of snow peas, and this helps to regulate water as required.

The product has also proved its ability to withstand the tough weather conditions that growers face.

"Northern Queensland had a really dry year last year and we've recorded some of our best results in the last couple of years. It proves that our product is giving the grower what they need and they're getting good crops from using our tape with different spacings and different flow rates," Mr Simmonds said.

Additionally, Luke has had his local Toro team assist him in some designs, especially flow rates to suit a few of his new blocks.

"When we're visiting, we see both Toro dealers and end users to make sure they're happy. Once a grower has used our product, we then service them both," Mr Simmonds said.

"We're trying to give growers that total solution. I think that's something we've demonstrated and grown, and it's now showing in the field."

Find out more

Please visit toro.com.au or visit your local Toro dealer.



GPS being used on Bundaberg sugar block.



Sean Fitzgerald and Sheldon Simmonds.



Toro Brisbane.



Yellow sticky traps will be used for psyllid monitoring in urban locations.

WA to lead collaboration with TPP monitoring and testing

The Western Australian Department for Primary Industries and Regional Development has announced it will lead a collaboration across all states and territories to monitor for TPP and test for *Candidatus Liberibacter solanacearum*. Alan Nankivell reports.

In June 2019, the Western Australian Department for Primary Industries and Regional Development (DPIRD) announced that it will lead a collaboration of all state and territory jurisdictions for the monitoring and testing across Australia of tomato-potato psyllid (TPP). This is a first for jurisdictions to work collaboratively on monitoring an insect. The program includes training for departmental personnel in identification and trap placement.

Similar models are implemented overseas, such as the “National Potato Psyllid Monitoring Program-Spud Smart” in Canada, which commenced in 2013.

In the past two years, Australian jurisdictions have been monitoring for TPP and testing for *Candidatus Liberibacter solanacearum* (CLso); however, each jurisdiction has used different monitoring strategies. With this program they will all use the same approach to trapping and all testing will be undertaken in the same laboratory. Ongoing monitoring and testing of TPP in Western Australia will occur and when TPP is found in the other jurisdictions they will also be tested for CLso.

Historically it was anticipated that TPP would be detected in the eastern states as they are just across the sea from New Zealand where both TPP and CLso are present. Since 2011, monitoring for TPP was undertaken on commercial growers’ properties, mainly in Tasmania. However, TPP jumped over the eastern states and established in Western Australia.

Lessons learnt

A lesson learnt from the initial incursion in Western Australia was that TPP was found predominately in the urban and peri-urban locations and not in the commercial growing areas. As a result, the monitoring locations in this program will be in urban locations, such as backyards and parks and gardens using yellow sticky traps.

Another lesson learnt from the Western Australian incursion was the engagement with departmental staff and the public who volunteered to set up and collect traps. This proved to be a very successful approach. Again, these resources will be applied by all collaborators to keep the costs down and importantly build community awareness and capability.

Previous monitoring programs in Western Australia have commenced in early spring and run through to late summer to coincide with the local growing season. This approach will be used in the other jurisdictions, with some variation in timing built in to suit the local growing season.

The program is funded through Hort Innovation for the next three years and, in addition to reporting requirements by DPIRD to Hort Innovation, there will

also be regular reports released through *Vegetables Australia*, *Potatoes Australia* and directly through local channels from jurisdictions.

This program is an important part of the preparedness for the arrival of TPP in the eastern states. The monitoring will enable industry stakeholders to be informed early and be ready. We will know where TPP is and where TPP isn’t. It will provide valuable information to assist in the consideration of whether to attempt eradication or move to management, while also providing evidence if CLso become present in Western Australia or a new incursion occurs in the eastern states.

Naturally growers have been reluctant to participate in monitoring programs as they do not want to be the first to have a detection and risk economic loss through quarantine where product is stopped from moving. While there is a commitment to ensure that economic loss does not occur, the timing of a detection can still create uncertainty for industry stakeholders.

Find out more

For more information on this program, please contact AUSVEG National TPP Coordinator Alan Nankivell at alan.nankivell@ausveg.com.au.

Tomato potato psyllid (TPP) National Program Coordinator has been funded by Hort Innovation using the vegetable, fresh potato and potato processing research and development levies and contributions from the Australian Government.

Project Number: MT16018

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Flicking the switch on energy costs

In July 2017, pitt&sherry and AUSVEG VIC were granted an Energy Efficiency Capabilities project from Sustainability Victoria that has resulted in the two organisations working with Victorian growers to cut their on-farm energy costs. *Vegetables Australia* reports.

On average, electricity retail prices have increased by more than 60 per cent since 2012 – and are likely to continue to rise.

In response to the pressure this adds to businesses, pitt&sherry and AUSVEG VIC have been creating opportunities to reduce energy costs and meet sustainability goals by assisting farmers to identify energy efficiency opportunities and better understand the use of renewable energy options.

This has been achieved through the Energy Efficiency Capabilities project – a Sustainability Victoria initiative that was granted to the organisations two years ago. Since then, 12 Victorian farms have been assessed and, as a result of that engagement, there has been approximately \$1.6 million worth of investment made in energy productivity, saving these farms \$408,000 in energy costs per year. The project concluded at the end of May this year.

Starting small

Throughout this project, growers were encouraged to assess their energy costs from across all facets of the farm and start with small adjustments as they looked to

continuous improvement.

On-farm assessments were conducted, and a strategy was formed as a result. Growers were then given advice on how to proceed. There were also implementation grants available to growers interested in maximising performance within their business. These were also available from Sustainability Victoria.

“We helped growers to put together a strategy on how to lower their energy costs, and what they needed to do in order to get there,” pitt&sherry Senior Energy Engineer Charles Luo said.

“This meant that they didn’t have to go with massive capital investment straightaway; they could do a range of small things as to not impact their businesses too severely as they continue to get better.

“Every farm can really focus on this energy productivity message by improving their farm from day one with continuous improvement. That’s the best way for them to save on energy and make themselves more competitive. Once you get into that mindset, that’s when you can start thinking about solar and more capital-intensive investments like nickel.”

Grower benefits

The AUSVEG VIC website has facilitated the on-farm information gathered by pitt&sherry in the form of 10 fact sheets, while an Energy Efficiency Calculator has also been established so that growers can undertake their own investigation into energy reduction.

“The idea is to build some industry

resilience and individual grower resilience so it’s a lot easier to save your costs at the farm gate rather than trying to recover it further down the supply chain in margins,” pitt&sherry Energy Sector Lead – Technical Director, Energy Services Robert Nicholson said.

“I think that from the significant amount of investment, we’ve been able to also give growers what the expected energy savings would be. And there are other benefits that are more difficult to quantify, such as operational efficiency and process management, that result in businesses becoming better at what they do.”

Furthermore, there are plans to roll this project out nationally, using this project as an example of how growers can benefit. There are opportunities for further workshops and presentations to take place for vegetable growers interested in reducing their energy costs.

“We certainly are open to answer questions and help growers through the process. We’ve had a relationship with AUSVEG for the last four years and are very keen to see this roll out in other states, because it clearly had a benefit for vegetable growers,” Mr Nicholson said.

Find out more

Please contact Robert Nicholson on 0418 224 795 or rnicholson@pittsh.com.au or Tom Cohen on 03 9882 0277 or info@ausveg.com.au.

Targeting smarter ways to package fresh produce

Images of choked waterways, plastics floating in our oceans and harming sea animals, and piles of plastics and other wastes ending up in landfill have seen consumers demanding reduction in the use of plastics and more sustainable packaging. Watermark Principal, Patent and Trademarks Attorney Amanda Jones discusses the innovation in packaging relevant to vegetable producers who are looking for smarter packaging.

The pressure on packaging usage has increased in the past 12 months, with countries such as China imposing import restrictions on foreign waste. These bans are said to exclude 99 per cent of the recyclables that Australia previously sold to China, leaving local governments with a serious issue around waste collection and disposal.

Various retailers have banned single use plastics such as shopping bags as part of the solution to reducing plastic waste. Major food retailers Coles and Woolworths introduced the ban on 1 July 2018.

In April this year, Aldi announced its bold target that all packaging will be reusable, recyclable or compostable by 2025. This is in line with 2025 global packaging targets.

Australia's Environment Ministers, in partnership with the Australian Packaging Covenant Organisation (APCO), announced the plan to make 100 per cent of packaging in Australia reusable, recyclable or compostable by 2025. The Australasian Recycling Label was also introduced by the Federal Government in 2018 to assist consumers to recycle properly. The label breaks down the components of a product's packaging (e.g. the box, any internal trays and plastic wrapping), indicating how recyclable the components are.

Packaging plays an important role in the food industry in protecting food and reducing food waste.

It reduces food waste and loss of resources for production by extending product shelf life and protecting food from contamination and spoiling.

Packaging also protects food in transit and, with increasing food export, online sales and delivery of food products, packaging will continue to be important. Further, in the minds of many consumers, re-sealable packaging optimises food freshness and is the best

way to reduce household food waste.

Innovation focus

Consumer demand, and a push from government bodies for reduction of waste and more sustainable packaging, drives innovation.

Government and industry have been investing in research to create materials that have less end-of-life impact. One promising example is the Melbourne-based company Plantic, a producer of a bio-based, renewable and recyclable plastic material made from a feedstock of naturally high amylose starch that is ideal for barrier packaging applications. The packaging requires approximately half of the energy to produce than traditional fossil fuel plastics.

At the recent Hort Connections conference held in Melbourne, various companies were exhibiting innovative packaging materials. One example is BioPak, which is producing plastic-free trays made from sugarcane pulp that are compostable.

Increased patenting activity is seen worldwide in the area of biodegradable and recyclable materials, with China currently the largest filer of patents in this space. This reflects the research and focus on finding better packaging solutions with a reduced environmental footprint. A Patent Themescape map (see image below) shows the intensity of patent filing and hot focus points of activity.

Companies are also looking at ways to reuse and repurpose materials to avoid them ending up in landfill and at packaging designs so they can be greener, smarter and more sustainable. Manufacturers are also thinking

about the waste created throughout production and finding innovative ways to reduce this waste.

Rejecting waste

Australian growers are looking at on-farm waste. It has been estimated that 20 to 40 per cent of fruit and vegetable waste on Australian farms results from rejection of the produce before it arrives at the supermarket. Consumer perceptions of quality and product freshness are being directly correlated to visual appearance. While consumer perceptions need to change, packaging plays a part in preserving quality and freshness.

Products rejected by consumer standards are being reused to create value-added products. Examples of this innovation are the vegetable producers Kalfresh, which are processing 'waste' carrots into pre-cut bagged shredded carrots. There are also rejected bananas being used to produce the Natural Evolution range of gluten-free green banana flour products and the use of avocado seconds for cold pressed avocado products.

Your sustainability target

Companies need to look at the 'how' of packaging used in their business and need to be thinking of implementing their own sustainable packaging targets before regulations are imposed. There are many options for alternative packaging materials and designs that are more environmentally sustainable and that will ultimately be more accepted by the consumer.

Find out more

Please visit watermark.com.au.



Minor use permits

Permit Number	Crop	Pesticide Group	Active	Pest/ Plant disease/ Target weed	Date Issued	Expiry Date	Permit Holder	States
PER8930 Version 5	Eggplant, peppers (chillies, capsicum & paprika), shallots and spring onions	Insecticide	Phorate	Aphids, jassids, mites, thrips and onion maggot	14-Aug-11	31-Jan-21	Hort Innovation	All states
PER14703 Version 3	Spinach (<i>Spinacia oleracea</i> only), silverbeet	Herbicide	Ethofumesate	Pre-emergence – various weeds	01-Aug-14	31-Jul-24	Hort Innovation	All states except VIC
PER87563	Brassica vegetables (including broccoli, Brussels sprouts, cabbage, cauliflower). Suppression only	Insecticide	Emamectin benzoate	Leafminers, including vegetable leafminers	06-Jun-19	30-Jun-24	Hort Innovation	All states except VIC
PER87630	Brassica vegetables, brassica leafy vegetables, lettuce, green beans (field and protected)	Biofungicide	Bacillus amyloliquefaciens (<i>B.amyloliquefaciens</i>)	Bacterial spot/blight (<i>Xanthomonas spp.</i>) (suppression only)	18-Jun-19	30-Jun-22	Hort Innovation	All states except VIC
PER87631	Spinach and silverbeet	Insecticide	Chlorantraniliprole	Cabbage leaf miner	21-Jun-19	30-Jun-24	Hort Innovation	All states except VIC
PER87670	Brassica leafy vegetables	Insecticide	Bacillus thuringiensis subsp. Aizawai (Xentari WG BtA)	Diamondback moth, cabbage white butterfly, helioverpa, vegetable looper	01-Jul-24	31-Jul-24	Hort innovation	All states except VIC

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PIRSA Biosecurity SA contractor releases SIT flies during the eradication response to the outbreak of Queensland fruit fly at Loxton, South Australia (December 2018 - April 2019).



PIRSA Biosecurity SA: Keeping South Australia fruit fly and phylloxera free

In this edition, the Primary Industries and Regions South Australia (PIRSA) provides an overview of the South Australian biosecurity system, including the importance of biosecurity in the state; the role of the State Government in biosecurity; the work currently being undertaken, particularly in fruit fly eradication; and the challenges and future opportunities in biosecurity.

South Australia is in an enviable position to be the only mainland state that is fruit fly-free and one of the very few places in the world that is free of the vine destroying pest phylloxera. This has allowed South Australian wine producers to maintain production from some of the oldest vines in the world.

Not only does such pest free status provide benefits for South Australia's important \$1.2 billion horticulture industry, it underscores why a strong and effective biosecurity system is essential, particularly for maintaining and improving market access.

The Primary Industries and Regions South Australia (PIRSA) Biosecurity SA Plant Health group manages the risks to South Australia posed by plant pests and diseases. Its services include:

- Fruit fly prevention, detection and eradication.
- Market access certification and movement control of imports and exports.
- Movement restrictions, border control and compliance.
- Quarantine movement advice for travellers and business.
- General pest surveillance.
- Exotic plant pest emergency response and control.

Identifying threats

Each year, the South Australian Government spends about \$5 million keeping fruit fly and other plant pests out of the state through a range of prevention, detection and eradication measures managed by Biosecurity SA.

While fruit fly and phylloxera understandably dominate the South Australian conversation on plant biosecurity, they are not our only

biosecurity focus. PIRSA Biosecurity SA is vigilant against a number of potential biosecurity threats including tomato-potato psyllid, potato spindle tuber viroid, red imported fire ant, green snail and cucumber green mottle mosaic virus.

PIRSA Biosecurity SA's Plant Health team has over 60 years of experience in managing fruit fly with a 100 per cent success record in eliminating fruit fly outbreaks. That experience has been instrumental when dealing with other incursions, including the successful eradication response to the detection of Khapra beetle on Kangaroo Island in 2016.

It shows that South Australia's biosecurity surveillance and reporting systems are highly effective, and Biosecurity SA is working well with industry to protect our primary industries.

A common factor in the success of many plant biosecurity operations in South Australia has been the prompt action by members of the public, ensuring detections come to light at an early stage.

However, constant vigilance and preparedness remains critical in South Australia's plant health landscape. South Australia's border control system comprises of the following key strategies:

- The Plant Quarantine Standard, which sets the conditions under which plant material may enter the state and prescribes measures for the eradication or control of declared pests within South Australia's borders.
- Quarantine stations at Yamba (Sturt Highway), Ceduna (Eyre Highway), Oodla Wirra (Barrier Highway) and Pinnaroo (Mallee Highway).
- A state-wide network of 18 quarantine bins.
- Random roadblock operations.

As part of ensuring the Riverland Pest Free Area and South Australia's broader

fruit fly-free status, PIRSA Biosecurity SA also conducts regular inspections of over 3,500 fruit fly trap sites (over 7,500 traps) in metropolitan Adelaide, the Riverland production area, Port Augusta, Port Lincoln and Ceduna.

Ongoing plant health risks prompted the South Australian Government in December 2018 to announce the introduction of a zero tolerance approach at the Yamba Quarantine station (effective from 4 January 2019) and at state-wide random roadblock operations (effective from 21 December 2018).

Anyone caught not complying with the Plant Quarantine Standard face fines and penalties of up to \$100,000.

Spreading the biosecurity message

However, there is only so much government can do to protect South Australia against plant pests and disease, which is why PIRSA Biosecurity SA works closely with industry in promoting on-farm biosecurity. One example is the *Clean Your Farm* initiative with AUSVEG SA, which commenced in the Northern Adelaide Plains horticulture region earlier this year.

The program is aimed at equipping growers to strengthen their biosecurity credentials and associated market access by reinforcing the benefits of strong biosecurity practices and provides education and support with a particular focus on two key biosecurity risks – how equipment and people can spread disease and that bad bugs can live in weeds. Another focus of the campaign is ensuring translated information is available for Vietnamese producers in the region.

Clean Your Farm includes targeted on-farm and nursery site visits, the provision

of tool disinfection kits, information resources and industry workshops.

The ultimate goal of the project is to heighten awareness of good biosecurity practice and to encourage growers to treat biosecurity planning in a similar manner to quality assurance or risk planning such as work, health and safety or bushfire planning.

A national approach

Embracing new technologies is providing exciting new and important opportunities for South Australia's Plant Health system, including being a key player in the national SITPlus research and development partnership. The \$45 million program is currently piloting an integrated pest management solution to Queensland fruit fly (Qfly) through a strategic, co-ordinated and national approach.

The SITPlus program is led by Hort Innovation, in partnership with PIRSA along with CSIRO, Plant and Food Research New Zealand, the New South Wales Department of Primary Industries, Agriculture Victoria, Macquarie University, Biosecurity Tasmania and the University of Western Sydney. All partners have interconnected interests in the development and uptake of science

solutions for the management of Qfly.

At the centre of the SITPlus program is the cutting edge \$3.8 million National SIT Facility that South Australia hosts at Port Augusta. Opened in November 2016, a total of 20 million sterile flies are currently being produced at the site each week. This facility is putting South Australia on the world map in regards to SIT and is a potential game changer for the state's and Australia's horticulture industries. While SIT facilities have been used with great success around the world to combat a range of fruit fly species, including Mediterranean fruit flies (Medfly), the production technique at Port Augusta using a gel-based food source is the first of its kind in the world.

PIRSA Biosecurity SA has already used sterile flies produced at Port Augusta as part of successful Qfly eradication responses in metropolitan Adelaide in 2018 and the recent outbreak at Loxton earlier this year.

The advent and success of SIT technology, along with an increasing focus by the South Australian Government on other AgTech opportunities, points to an exciting new future for plant health in the state.



PIRSA Biosecurity SA contractor conducting baiting operations during the eradication response to the outbreak of Queensland fruit fly at Loxton, South Australia (December 2018 - April 2019).

Find out more R&D

Please visit pir.sa.gov.au.

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.

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Export sees Australian horticulture go from strength to strength

The Australian horticulture sector continues to go from strength to strength, with the value of horticulture exports now closing in on the lamb and dairy sectors. A key driver of this strength has been favourable access to key trading markets, writes NAB Agribusiness Customer Executive Neil Findlay.

As a sector now worth approximately \$11.4 billion, there's no doubt that Australian horticulture has been a bright spot in the Australian agricultural landscape.

Having just attended the hugely successful Hort Connections 2019 conference in Melbourne, it was exciting to see and hear from representatives from right across the horticulture supply chain, and with a conference theme of 'Growing our Food Future', the role of export and trade conditions was front and centre for many.

In early July we released our *Horticulture in Focus* report, which takes a closer look at how growth in export value is driving strength in the horticulture industry.

Today, our horticultural exports have grown to a value of \$3.2 billion. To put this in context, the Australian lamb and mutton, and dairy sectors have an export value of \$3.6 billion and \$3.5 billion respectively.

Benefits flowing from the China-Australia Free Trade Agreement (ChAFTA), which entered into force in 2015, have contributed to this growth. Improved market access and lowered tariffs under ChAFTA have had a large impact, particularly for the fruit sector.

In the first three years after ChAFTA

was ratified, the value of Australian navel orange exports doubled. Mandarin export values tripled over the same period.

While overall the value of Australian fruit exports is 112 per cent greater than it was a decade ago, not all fruit has benefitted from ChAFTA terms. Fruits that are less export-oriented, like strawberries and bananas, have not seen major price growth in a long period of time.

The tree nut sector is booming, and the number of almond trees in Australia has increased 67 per cent in the five years to 2017-18.

With over 11 million almond trees, and four million of these yet to reach fruit bearing age, we anticipate that Australian almond production values will increase rapidly in the near- to medium-term.

New opportunities in Asia have led to a resurgence in the table grape sector, with annual table and drying grape production increasing from 75,000 tonnes in 2011-12 to 164,000 tonnes in 2016-17.

Permanent plantings in the Murray Darling Basin are increasing, and many are water intensive. As they increase, and rainfall and water allocation availability tightens, we see a structural increase in water prices as likely.

Looking at vegetables, the value of domestic production has increased to reach over \$4 billion in 2017-18.

The value and volume of fresh vegetable exports increased in the 2018 calendar year to \$281 million and 227,000 tonnes. Interestingly, the value of vegetable imports is also increasing, and is now over \$1 billion per annum, comprising mostly frozen and processed foods.

This demonstrates the importance of market access for exports, as well as an internationally competitive food processing sector.

Our most recent NAB Agribusiness Banker Survey, released in May 2019, indicates that on the whole horticulture business conditions are positive and strongly outperforming agriculture more broadly.

Find out more

To read the NAB Agribusiness *Horticulture in Focus* report, visit: <https://business.nab.com.au/in-focus-horticulture-june-2019-35500/>

AUSVEG in the Media

Hort Connections

AUSVEG and Hort Connections appeared prominently in the media both during the three-day conference and following the event. Main areas of interest for the event included award winner profiles, conference speakers and coverage of the trade show. AUSVEG CEO James Whiteside also appeared in the media following his presentation to delegates discussing the future of Australia's horticulture industry and how it can overcome its many challenges.

Federal Election

James and AUSVEG National Manager – Public Affairs Tyson Cattle appeared on broadcast media and in print in the lead up to the 2019 Federal Election calling on the major Australian political parties to review policies with negative impacts for the horticulture industry, highlighting issues such as wage increases, reviews of agricultural chemicals and a lack of commitment to an Agriculture Visa. James also congratulated the

appointment of Deputy Nationals Leader Bridget McKenzie as the new Minister for Agriculture.

Exports

AUSVEG National Manager – Export Development Michael Coote appeared in the media to discuss the industry-funded Reverse Trade Mission, noting AUSVEG's ongoing efforts to develop international export markets and reiterating the importance of developing key international trade relationships through events such as the Reverse Trade Mission.

Michael also appeared in the media discussing the international demand for Australian carrots, saying that carrots are a commodity where Australian growers are able to be price competitive due to automated production methods that can reduce labour needs.

Pests and biosecurity

AUSVEG National Manager – Communications Shaun Lindhe discussed the recent findings of redback spiders

in supermarket broccoli, explaining that the presence of redbacks can be a sign that the farmer is using environmentally sustainable growing practices, to reduce the levels of chemicals to control pests in their crops.

AUSVEG Biosecurity Officer Madeleine Quirk appeared on ABC Radio and online discussing the threat of giant African snails to Australian horticulture, noting that while the snail is not currently present in Australia, it poses a large risk to crops if it were to establish in the country.

Find out more

Communication of R&D projects in the Australian vegetable industry has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government.

Project Number: VG15027

Hort Innovation
Strategic levy investment

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Spotlight on Silverleaf whitefly: A destructive pest

Name: Silverleaf whitefly
(*Bemisia tabaci*)

Silverleaf whitefly (SLW) is a major pest that can spread a number of diseases of significant issue for the vegetable industry. It was first detected in Australia in 1994, and there are currently three known biotypes of the pest present in Australia – Australian native (AN), B biotypes and Biotype Q, which was recently discovered in Queensland. Australian strains of SLW differ from exotic biotypes that are found overseas (and not present in Australia) as they attack different host plants, respond differently to insecticides and their ability to transmit exotic diseases.

SLW feeds on the undersides of leaves and, when present in large numbers, can significantly impact plant health. In crop plants, this leads to reduced yield and quality of produce.

Pest description

Adult SLW are sap sucking, flying insects that grow to 0.8mm to 1.2mm long. They have white wings and yellow bodies and congregate on the undersides of leaves. Very high populations can develop within three to four weeks.

SLW nymphs are oval and scale-like in appearance. They develop from whitish green in colour to greenish yellow as they go through growth stages. Older stage nymphs develop prominent red eyes. Eggs are oval-shaped and pearly white, but difficult to detect with the naked eye.

An early sign of infestation is yellow spotting of leaves caused by SLW feeding. As numbers increase, yellowing intensifies to cause whole leaf yellowing and eventual leaf drop. At high numbers, it can delay plant growth. Nymphs cause toxic reactions in many host plants when they feed. Reactions vary depending on plant species but generally lead to disorders such as distorted fruit growth, fruit bleaching, irregular ripening, leaf streaking, silvery, yellowing and blanching.

There are multiple cultural, chemical and biological methods of control that can be applied to manage SLW and the viruses it carries. Methods include insecticides; intercropping with non-hosts; coloured or reflective mulches; control of alternative



weed hosts that may harbour whitefly transmitted viruses; and natural parasites, predators and pathogens.

Transmission: SLW adults are efficient vectors in spreading Gemini viruses from infected plants into healthy crops. Gemini viruses include tomato leaf curl virus (TLCV) and tomato yellow leaf curl virus (TYLCV), which infect beans, capsicums, tomatoes and a wide range of ornamentals and weeds.

Favoured by: SLW populations build up rapidly during spring and summer. In Queensland, the pest can complete 8-12 generations in a year.

Earlier emergence occurs at higher temperature. In warm weather the life cycle, starting with eggs and going through four nymphal stages until the winged adults emerge, takes 18-28 days, but can take up to 30-48 days in winter.

Host range: The host range of SLW varies with different biotypes. The highly invasive B biotype, present worldwide, is estimated to have a host range of around 600 plant species. This includes a number of crop and ornamental plants worldwide.

SLW is a serious pest of many vegetable crops, including tomato, eggplant, cucurbits, sweetpotato, brassicas and beans.

Resources: New South Wales Department of Primary Industries: dpi.nsw.gov.au
Queensland Department of Agriculture and Fisheries: daf.qld.gov.au
Business Queensland: business.qld.gov.au

Note: 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).

Find out more

The final report for both of these projects is available on InfoVeg. Readers can search 'VG08051' or 'VG06029' on the InfoVeg database: ausveg.com.au/infoveg/infoveg-database.

Previous projects aid silverleaf whitefly control

Project: Getting the most out of *Eretmocerus hayati*, an effective natural enemy of silverleaf whitefly (VG08051)

About: Due to its broad host range and ability to develop resistance to insecticides rapidly, CSIRO imported a new species of parasitoid (*Eretmocerus hayati*; *E. hayati*) and began releasing it in November 2004 as part of project VG06029 – *Release, post-release evaluation and habitat management of the silverleaf whitefly parasitoid Eretmocerus hayati*, a strategic levy investment under the Hort Innovation Vegetable Fund.

It established well and has since spread to all major vegetable production areas in Australia where SLW occurs. Following post-release evaluation, CSIRO identified that while it was highly effective, grower management practices could either assist or hinder the parasitoid's effectiveness. This research focused on how to get more out of the parasitoid, and better silverleaf whitefly (SLW) control.

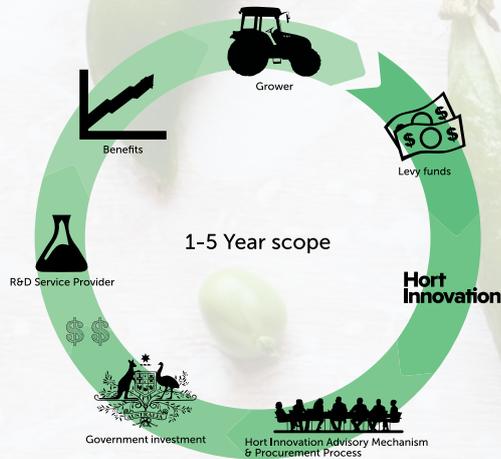
Outcome: Results were used to provide guidelines to growers that help to integrate control options for SLW. These guidelines were summarised in a user guide that identified a set of practical approaches that growers could adopt and integrate into their farming practice.

Conducting surveys of grower practices, laboratory and field experiments on growers' properties showed that several years post-release of *E. hayati*, SLW had significantly decreased in all areas.

Recommendations: Growers and crop agronomists should follow the recommendations provided in the field guide, including when required, select an insecticide less harmful to *E. hayati*, practice good farm hygiene, control broad-leaf weeds, provide a refuge and/or early-season low-medium suitable crop as part of the rotation prior to planting highly suitable SLW crops.

THE VEGETABLE R&D LEVY AT WORK

STRATEGIC LEVY INVESTMENT



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.

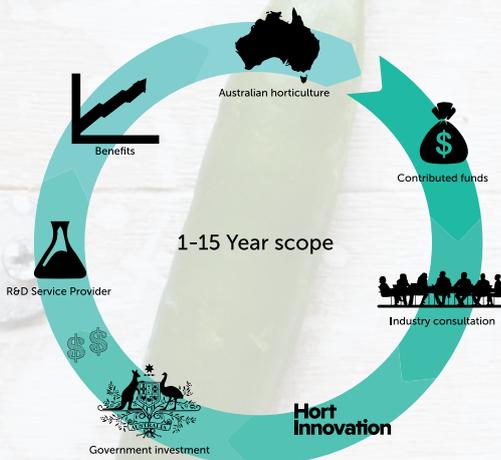
Strategic levy investments have a one- to five-year scope and the R&D is designed to directly benefit growers in the vegetable industry. Project topics range from pest and disease management to biosecurity matters, with findings communicated through a variety of channels, including *Vegetables Australia*.

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.

HORT FRONTIERS



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).

Commodity Profile:

Zucchini

\$72 million

For the year ending June 2018, the value of Australian zucchini production was \$72 million. Australia produced 40,063 tonnes of zucchini, with the majority grown in Queensland and Victoria. Fifty per cent of Australian households purchased zucchini, buying an average of 407 grams per shopping trip.

Source: Australian Horticulture Statistics Handbook Vegetables 2017/18.

72.9% sold in major supermarkets

Harvest to Home reports that major supermarkets comprised 72.9 per cent of all zucchini sold, while non-supermarkets make up 18.6 per cent of dollar share of trade.

8.2% increase in dollar sales

For the year ending 23 March 2019, zucchini increased by 8.2 per cent in terms of dollar sales and grew 4.8 per cent in terms of volume purchased (kg). The average spend also rose from \$14.49 to \$15.50.

Source: Harvest to Home

Veggycation® recommends that summer squash fruit (such as zucchini) are not stored for longer than 10 days at 5-10°C. Storage at below 5°C for more than 3-4 days will generally result in chilling injury.

According to Project Harvest Wave 39, the top triggers to purchase zucchini are ease of preparation and to use as an ingredient in dishes. Consumers limit their purchase of zucchini because they already consume enough and don't want to waste any.

In 2015, a final report was released on the strategic levy investment *Fruit fly research: Gap analysis* (VG13040) which collated and reviewed fruit fly R&D relevant to the vegetable industry. Fruit flies are recognised as one of horticulture's most serious pests, and a range of important species attack fruiting vegetables such as zucchini. To find out more, search 'VG13040' on the InfoVeg database: ausveg.com.au/infoveg/infoveg-database.

Veggycation® states that zucchini is not to be peeled. It recommends trimming the vegetable before use, and then storing it in the vegetable drawer of the fridge.

Project Harvest Wave 43 suggests that growers look to add value to zucchini by producing pre-packaged formats. The purchase of these formats has increased over time, and pre-packaged zucchinis will appeal to time-poor consumers.

According to The Better Health Channel, zucchinis were introduced to Spain from South America in the 16th century. They were grown in Italy about 300 years ago and were popular in the Mediterranean regions for many years before becoming common in other parts of the world.

Chemical risk management highlighted at annual conference

AusChem is a not-for-profit organisation committed to training people for the safe, effective and efficient use of AgVet chemicals. It held its annual AgVet Chemical Conference in May, which served as a professional development platform for the trainers. Nikita Chawla reports.

AusChem identifies AgVet chemical use and management training needs of the market and provides training for safe, effective and efficient application and management of chemicals. The annual conference was held over 30-31 May at the University of Melbourne's Dookie Campus in Shepparton, Victoria.

The conference was attended by trainers who have relevant vocational qualification in agriculture, horticulture or conservation. Farmers, quarantine officers and project managers from plant and animal industries were also present.

Gaining knowledge

A major focus of the conference was the safe and effective use and storage of chemicals. Tony Bundock from Genesis

Horticultural Solutions discussed the appropriate application of chemicals in greenhouses. Following from his presentation, David Leitch from Agsafe presented on four product stewardship programs their organisation offers for safe supply, use and disposal of agricultural and veterinary chemicals and containers through the supply chain.

AUSVEG project officers also presented at the conference, with Patrick Arratia and Shakira Johnson discussing their respective projects *Vegetable Agrichemical Pest Management Needs and Priorities* (VG16060) and *iMapPESTS: Sentinel Surveillance for Agriculture* (ST16010).

The conference also comprised theoretical and practical sessions describing the use of drones in agriculture and research, especially for the application of AgVet chemicals, with Charles Chow from XAG Australia demonstrating the benefits with a practical demonstration with a drone in the field.

The conference concluded with AusChem Executive Manager Michael Schaefer reiterating that anyone who uses AgVet chemicals should complete the appropriate training, discussing the specially-designed courses that AusChem provides for people at all levels of involvement in the use of AgVet Chemicals.

Find out more

Readers interested in participating in a course or would like further information, please visit auschemtraining.com.au.

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AUSVEG SA

South Australia's leading growers, researchers and industry members have been recognised at the 2019 AUSVEG SA and William Buck Vegetable Industry Awards for Excellence.

More than 250 growers and industry members gathered at the Arkaba Hotel on Wednesday 22 May to celebrate the important contributions to the potato, vegetable and wider horticulture industry, and showcase their leadership, dedication and innovation.

The winners of the Awards for Excellence are as follows:

- Mark Pye, Zerella Fresh – Grower of the Year.
- Daniel Hoffmann, Hoff Family – Young Grower of the Year.
- Jason Clark, Symons Clark Logistics – Industry Impact.
- Bianca Marrone, Marrone Fresh – Women in Horticulture.

- Barbara Hall, South Australia Research and Development Institute (SARDI) – Researcher of the Year.
- Peter Petsios, SA Tomato Co – Biosecurity Award.

I would like to congratulate Daniel Hoffmann for also taking out the national Corteva Young Grower of the Year award at Hort Connections in Melbourne in June, as well as Mark Pye who won the Innovation Partner Award. Both Daniel and Mark were worthy winners of the national awards and I look forward to seeing what they do in the future.

We are fortunate to have so many growers, researchers and other industry members who are among the best in the world at growing fresh produce for local and international consumers. I would like to congratulate the award winners and thank them for their continued dedication to our industry.



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AUSVEG VIC

AUSVEG VIC was proud to support Hort Connections 2019, which was held in Melbourne from 24-26 June. With around 3,500 delegates and over 40 industry partners and industry groups involved, Hort Connections was a fantastic celebration of collaboration within the Australian horticultural sector. Hort Connections moves up to Brisbane next year and is an event that is not to be missed, as it brings more industries together from around Australia and internationally.

AUSVEG VIC and the Stephanie Alexander Kitchen Garden Foundation launched a new pilot program at Hort Connections 2019. The organisations have put together a program that incorporates and encourages primary schools to get on local Victorian farms to learn about food production and preparation. AUSVEG VIC's long-term vision is to have every primary school visit a vegetable grower's property once a year to learn about how vegetables are produced and to taste fresh vegetables on-site.

AUSVEG VIC has been working with a new sponsor to reduce energy bills for growers through large-scale buying power, and is currently working on another tender to help reduce more growers' bills. The first tender, which included 13 businesses, saw a saving of over one million dollars across the businesses and we believe that there are more savings to be made.

If you would like to find out more information about the energy tenders or details about the recently launched schools on-farms pilot program, please contact AUSVEG VIC State Manager Tom Cohen.



VGA trading as AUSVEG VIC



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Growcom

They say nature hates a vacuum. A tree falling in a rainforest starts a mad race to occupy the now vacant space.

The same is true of our governments.

Politicians and public servants both stay at the top of the greasy pole by quickly filling new holes discovered in existing policy and legislation.

Too often with an accelerated media cycle, it matters more that the hole is filled quickly than what exactly it's being filled with.

It is essential for horticulture (and any other industry) that as soon as an issue is discovered and governments put their hand into their policy toolboxes, we are there first to offer the option of self-regulation.

Self-regulation is where an industry voluntarily adopts and monitors its own compliance with a set of minimum standards. Done right, self-regulation is known to be more efficient and effective than the heavy hand of the bureaucracy.

We have seen the Queensland Government wade in recently with strict new regulations to protect the Great Barrier Reef. Compliance costs will rise, and privacy will be lost.

This has been an opportunity for self-regulation that agriculture has failed to fully grasp.

And the biggest issue today in horticulture that's created a hole in national policy is compliance with workplace law along the fresh produce supply chain.

Again, as politicians and public servants start casting around for a solution, it's essential as an industry that we take control

of our own destiny and offer up the option of sensible self-regulation.

The alternatives are bleak. Either government gets involved, or worse still, as has been reported lately in the national press, the supermarkets take on the role of regulator with the help of the unions.

The threat of this last alternative is real. It would be a nightmare for farmers, creating multiple standards as well as a mountain of paperwork and overzealous audits.

So Growcom is working hard on behalf of industry to develop a self-regulation solution that provides assurance our fresh produce supply chain remains fair for all.

As the peak body representing horticulture in Queensland, an important part of the value Growcom adds is promoting and coordinating self-regulation on behalf of our industry.

And here we have a strong record.

Freshcare was born in Queensland and is now the accepted national standard for food safety. We have developed Hort360, the cutting-edge best management practice program that is delivering productivity gains for growers.

Now we have developed Fair Farms, the self-regulation solution for providing assurance the fresh produce supply chain complies with workplace law.

But building Fair Farms is only half the job. Without industry support and take-up by as many farms as possible, we'll lose control and will be inviting governments, supermarkets and unions to fill the hole instead.



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Tasmanian Farmers and Graziers Association

The 2019-20 Tasmanian State Budget was recently handed down, with the Tasmanian Farmers and Graziers Association successful in a number of proposals that will benefit producers across the state. This included an increased focus of on-farm safety through education and a Quad Bike Safety Rebate Scheme. The scheme assists producers through a cash-back rebate of up to 50 per cent of the purchase price of an approved rollover/crush protection device. This is an important achievement in encouraging uptake of rollover/crush devices on quad bikes to reduce accidents and fatalities on farms, due to roll over accidents.

Further funding was also allocated towards the management of roadside vegetation after lobbying by TFGA. This is an important achievement in protecting Tasmanian roads and properties from the

spread of fires and weeds.

Plus, the TFGA is very supportive of Tasmanian Irrigation receiving \$70 million over four years from 2019-20, for Tranche 3 irrigation projects. In addition, the Federal Government has committed \$100 million towards Tranche 3 irrigation schemes.

In other news, potato and pea growers are focusing on contract negotiations for the upcoming growing season. Representatives from each industry have met with processors over several weeks to negotiate contract terms. Discussions have centred around the past growing season for potatoes and peas, as well as potential challenges of future seasons and the impact on contract terms. The negotiations between processors and growers are ongoing for both potato and pea growers.



Robert Hardie

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NSW Farmers Association

The ongoing drought in New South Wales continues to have significant impact on our horticultural sector. A NSW Farmers online survey in April found nearly 90 per cent of growers think it's unlikely they'll have sufficient water to maintain permanent plantings through the autumn and winter.

We're increasingly concerned that government responses aren't focused on horticulture. The Federal and New South Wales Governments have offered \$12 million in water infrastructure rebates with drought-hit farmers able to claim up to 25 per cent on new farm water infrastructure such as tanks, pipes, bores and de-silting dams; however, these rebates are only available to livestock producers.

Another issue causing anxiety is the recent increase in nut plantations. More than 40,000 hectares along the Murray Valley in New South Wales, Victoria and South Australia are now covered with more than 10 million irrigated almond trees, 25 per cent planted in the past few years. Owners include large global corporations, and high returns are attracting investment from North America and China.

These corporate growers are mainly on cheaper dryland cropping properties on

general security water within pumping distance of the southern Murray-Darling Basin's major rivers. Recently, SunRice chair Laurie Arthur argued that the increase in permanent nut plantings in the lower Murray Darling is outstripping the capacity of the river system. The Almond Board of Australia has called for a moratorium on all new water allocations for greenfield irrigation developments; this view is echoed by NSW Farmers.

NSW Farmers is seeking a review that considers water capacity constraints and ensures that further water-saving projects that have been identified are achieving their stated outcomes. We are also calling for no further developments downstream of the Barnah Choke until issues associated with the physical capacity of the river to carry water are dealt with.

The cost-effectiveness and physical capacity of water systems remain a challenge. The irrigated communities of southern New South Wales are saying there should be recognition of that scenario to ensure their water can be provided. They've struggled with reduced rainfall; now they're at crunch time.



Laura Cunningham and Chris Pham

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NT Farmers Association

The 2019 growing season has gone off with a bang for vegetables producers in the Northern Territory. The majority of Asian vegetable growers are producing record yields, and this is evident from the volume of product entering the southern markets.

NT Farmers is facilitating collaborative biosecurity surveillance with the Department of Primary Industry and Resources and the Federal Government's Northern Australia Quarantine Strategy department. These departments are working together to monitor crops on commercial vegetable properties around the Darwin rural region.

The focus of these collaborative surveillance programs is to engage with non-English speaking producers about biosecurity and increase awareness of best practice on-farm management.

This strategy minimises the disruption to the growers' harvest season and highlights

the importance of biosecurity, while enabling early detection for possible incursion threats to the industry.

The data collected is then shared between both jurisdictions and a summary report given to growers to assist in understanding the pest and disease issues within the area. This surveillance strategy provides the Northern Territory's vegetable industry with the scientific evidence required to prove area of freedom for interstate trade.

Our Integrated Pest Management site complements the surveillance program through the collaboration of shared research with government departments. We work together with producers to create an understanding of pest and disease management strategies to ensure the safety and sustainability of our vegetable industry in the Northern Territory.



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vegetablesWA

Blessed are those who hunger and thirst for righteousness, so says *Matthew 5:6*.

And there was a fair level of hunger and thirsting at vegetablesWA, when righteously pursuing the Western Australian government over their attempts to introduce water licensing fees to horticulture and agriculture more broadly. Fortunately, we achieved a blessed win for growers in that we were able to get the government to drop the proposal. This is a feat my predecessor Jim Turley also achieved about a decade ago. It was useful to lead a coalition of industry associations, including the WA Potato Growers Association, WA Farmers, WA Citrus, Pome West and Wines of WA in these efforts.

I recently launched a landmark pilot project to assess the benefits of Australia's Seasonal Worker Programme to the WA horticulture industry. The State Government will fund the pilot project that will run for 12 months and assess the benefits to the horticultural industry of providing a facilitation service for the Seasonal Worker Programme and the Pacific Labour Scheme. Obviously obtaining and retaining reliable farm labour is one of the biggest challenges facing vegetables growers in WA. Through the project, we will identify between six and 12 Western Australian horticulture businesses willing to participate in the trial and assess their labour needs, constraints and opportunities.

We recently held an extremely successful HortConnectWA Beer and barbecue networking event in Manjimup with more

than 35 people braving the blustery weather to join Field Extension Officer Sam Grubisa, and our Quality Assurance Facilitator Joel Dinsdale (the newly appointed Industry Ambassadors), along with Operations Manager Rebecca Blackman at Pemberley of Pemberton. HortConnectWA is designed to bring together younger people who are either growers from across all horticulture industries as well as other younger people across value or supply chains. We hold a series of regional events as well as a major state-wide event associated with our annual industry summit.

Western Australia hosted a field day at Ivankovich Farms in Myalup, which was a great success. We had more than 35 attendees come and extend their knowledge about using cover crops for weed suppression. Seeing growers from as far away as Albany and Gingin made the project all the more worth it. If you weren't able to attend but would like to hear about it, please contact Sam Grubisa.

I was also pleased to host the CEO of the National Farmers' Federation Tony Mahar, who was on a visit to Western Australia. It was great to introduce him to some of our growers and help him learn more about the vegetable industry and the situation in WA more generally.

The second-year results of our benchmarking program are about to be released so stay tuned for details on what has been a revolutionary project.

Calendar

4-6 September – Asia Fruit Logistica

Where: Hong Kong

Asia Fruit Logistica is Asia's leading trade show for the international fresh fruit and vegetable business. Last year's event attracted more than 13,000 visitors from over 70 countries and drew high-quality buyers from some 20 different markets across the Asia-Pacific region. The Logistica is accompanied by the Asiafruit Congress, which takes place the day before the trade show.

Further information: asiafruitlogistica.com

12-13 September 2019 – Australasia Pacific Extension Network (APEN) International Conference

Where: Darwin, Northern Territory

The APEN International Conference, held biennially, is an international meeting for rural advisory practitioners, researchers and academics who combine the best extension research and practice from developing and developed countries. A wonderful opportunity to share knowledge and improve extension.

Further information: apen.org.au/events/conferences



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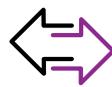
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