

| March/April - 2017 |

vegetables

australia



| JAMES DICKSON - COVER STORY | THE FRONT LINE - TOMATO-POTATO PSYLLID RESPONSE |
| ANDRES CRUZ - A GLOBAL PERSPECTIVE ON VEG PRODUCTION |



Knowledge grows

Legends in the Field



16



30



44

CONTENTS

REGULARS

- 05 Editorial
- 06 Messages from the Chairman and CEO
- 52 Around the states

FEATURES

- 10 Dawn of a new era: AUSVEG welcomes its new leader
- 16 Young grower profile: Andres Cruz
- 34 Women in Horticulture: What does a farmer look like?
- 44 Grower profile: James Dickson

INDUSTRY NEWS

- 14 Counting down to Hort Connections 2017
- 47 New fungicide aims to tackle disease resistance
- 50 An online marketplace for growers

R&D

- 08 Veggie Bites
- 09 The National Vegetable Levy at work
- 12 Victoria's regional veg industry to take centre stage at two-day event
- 18 Attention pumpkin growers: Have you seen this etch?
- 20 Women on a mission: North America inspires Australia's vegetable growers
- 22 VegNET: Program updates from around the nation
- 23 Veggie Stats: Carrot
- 26 Ask the industry
- 27 Biosecurity brief
- 28 The Front Line: Tomato-potato psyllid detection
- 30 Maintaining a productive and profitable pea industry in Tasmania
- 32 Practical action on cover crops, pest management and vegetable crop nutrition
- 33 New training opportunities in the pipeline for veg industry members
- 36 New resistance found in vegetable pest
- 38 Building stronger relationships with veg growers to achieve long-term, sustainable growth
- 40 A multi-faceted approach to soil borne disease management
- 42 Economic update: Comparison of field and covered capsicum and lettuce production
- 46 Veg Growing Leaders announced for 2017
- 48 Minor use permits
- 49 Industry in the media

EDITORIAL

The recent detection of Tomato-potato psyllid (*Bactericera cockerelli*) in Western Australia is a timely reminder that you can never be too careful when it comes to biosecurity in the Australian vegetable industry.

While most growers and industry members were expecting the pest to reach the east coast of Australia if it were to arrive on our shores, it took everyone by surprise when the psyllid was instead detected on the opposite side of the country.

The Department of Agriculture and Food, Western Australia is currently leading the response to this detection with support from industry stakeholders and government agencies. AUSVEG is also lending its support where possible, with Biosecurity Coordinator Callum Fletcher assisting DAFWA in the surveillance of the pest.

Callum is well-versed in the area of Tomato-potato psyllid incursions, having experienced the impact of the pest first-hand when it arrived in New Zealand more than 10 years ago. In recent weeks he has also travelled extensively around Western Australia to share his knowledge of the psyllid at grower meetings.

As demonstrated by this recent detection, the implementation of effective biosecurity response procedures is vital for the future sustainability and viability of the Australian vegetable industry.

In light of this, AUSVEG National Manager – Science and Extension Dr Jessica Lye has shared an update of the Tomato-potato psyllid detection and response on page 28, while AUSVEG Biosecurity Adviser Dr Kevin Clayton-Greene provides an overview of the stringent processes that are in place following an exotic plant pest detection in Australia (page 27).

It is clear that the news of this detection could cause significant economic hardship for growers and their businesses. As such, this will be an extremely distressing time, particularly for growers in the west, and it's vital that industry and government provide them with support during what will be a difficult period.

In the meantime, AUSVEG will continue to work with all relevant parties to ensure that industry and growers receive any new information that comes to light, and provide assistance where possible.

If you suspect Tomato-potato psyllid in your crops or any exotic pest, phone the Exotic Plant Pest Hotline on 1800 084 881. This will put you in touch with your state or territory's department of agriculture or biosecurity.

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TORO

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With the news that Tomato-potato psyllid (*Bactericera cockerelli*) has been detected for the first time in Western Australia, it is imperative that growers are aware of the potential implications of the detection on their businesses.

Tomato-potato psyllid is a tiny insect – approximately 3mm long – and a significant production pest in countries where it is present, including New Zealand and the United States. It attacks a range of plants in the Solanaceae family including potato, tomato, eggplant, capsicum, chilli and tamarillo, along with sweetpotato.

The Department of Agriculture and Food, Western Australia (DAFWA) is currently undertaking surveillance in commercial crops and backyard gardens in the Perth area and a member of the AUSVEG biosecurity team, Callum Fletcher, is currently on the ground in Western Australia sharing his expertise and his experience of dealing with this pest in New Zealand.

As the psyllid is also capable of carrying the bacterium that causes Zebra chip, testing is underway to determine whether the bacterium is present in the psyllids found in Western Australia. However, the bacterium has not been found in any samples taken to date.

AUSVEG will continue to work with industry and government stakeholders to ensure effective management of this pest. In the meantime, domestic trade restrictions are also in place, so I urge all growers to contact their state department of primary industries for more information.

Growers are asked not to spray or disturb suspected plants at this time. Any suspect detections of Tomato-potato psyllid can be reported to the Exotic Plant Pest Hotline on 1800 084 881 or using DAFWA's MyPestGuide reporting app in Western Australia.

On a more positive note, the vegetable and wider horticulture industries have some exciting events to look forward to in the months ahead, with the town of Lindenow in Victoria hosting the East Gippsland Vegetable Innovation Days from 3-4 May. Less than two weeks later, we will head across to Adelaide for Hort Connections 2017.

The Innovation Days are a major event for the East Gippsland Food Cluster as part of the levy-funded National Vegetable Extension Network. More than 600 local and international industry members are expected to attend the two-day event, where there will be plenty of opportunities to network, exchange ideas and view the demonstration sites on display.

The AUSVEG team is looking forward to continuing these important discussions at Hort Connections 2017, a joint event hosted by AUSVEG and PMA Australia-New Zealand with support from Fresh Markets Australia, the Central Markets Association of Australia, Potatoes South Australia, Growcom, Irrigation Australia, Australian Organic, Onions Australia and Nursery and Garden Industry Australia.

Hort Connections will be held at the Adelaide Convention Centre from 15-17 May, and I am very much looking forward to attending this premier event in horticulture and meeting our industry members as well as delegates from the vast array of industries that have joined as co-hosts in 2017.



Geoff Moar

Geoff Moar
Chairman
AUSVEG



James Whiteside

James Whiteside
CEO
AUSVEG

Following many years of campaigning on behalf of Australian vegetable growers, AUSVEG has welcomed future reforms to the Horticulture Code of Conduct, which the Federal Government announced recently in response to an independent review.

This code of conduct has been in need of reform for many years and we are pleased that the government is taking the review's key recommendations on board and committing to increasing transparency and accountability under the code.

The amendments include a requirement for traders to generate and keep records on their transactions, along with records of all growers they deal with. The announcement of civil penalties also means there are now greater recourses available for all parties who have suffered from behaviour that breaches the obligations laid out by the code.

The reform process brought all stakeholders to the table, and AUSVEG appreciates the work of Assistant Minister for Agriculture and Water Resources, Senator the Hon. Anne Ruston, in taking a hands-on role to ensure that the reformed code is stronger and more effective for Australian growers.

In other news, the Department of Agriculture and Food, Western Australia (DAFWA) is undertaking surveillance in commercial crops and backyard gardens in the Perth area, following the confirmed detection of Tomato-potato psyllid.

DAFWA is working closely with the horticulture industry, including AUSVEG, vegetablesWA and the Potato Growers Association of WA to respond to and minimise the impact of the psyllid. At the moment, DAFWA is undertaking surveillance in metropolitan and regional areas to determine the spread of the pest, as well as liaising with other state jurisdictions, the federal department and industry through the Consultative Committee on Emergency Plant Pests.

AUSVEG is supporting DAFWA in its response, and our Biosecurity Coordinator Callum Fletcher has been on the ground in Western Australia since the early days of the outbreak, travelling widely throughout the state advising DAFWA and growers on surveillance and control options.

Finally, I would like to congratulate the 18 participants chosen to undertake the Growing Leaders National Vegetable Industry Leadership Program, a vegetable levy-funded project facilitated by Rural Training Initiatives. The participants hail from all around Australia and represent a wide range of industry sectors, including AUSVEG, with our own Environment Coordinator Andrew Shaw among the participants.

This program helps to develop the skills of new and emerging leaders with a mix of theory, practical industry-based visits and discussion panels with industry experts. One of the Growing Leaders workshops will be held in conjunction with Hort Connections 2017, allowing participants to meet and network with members from across a vast array of horticulture industry bodies during this exciting event.

Growing Leaders enables participants to have a positive impact on their business and the wider industry by giving them the tools to achieve their leadership goals. This, in turn, will benefit not just the individual, but the entire Australian vegetable industry heading into the future.

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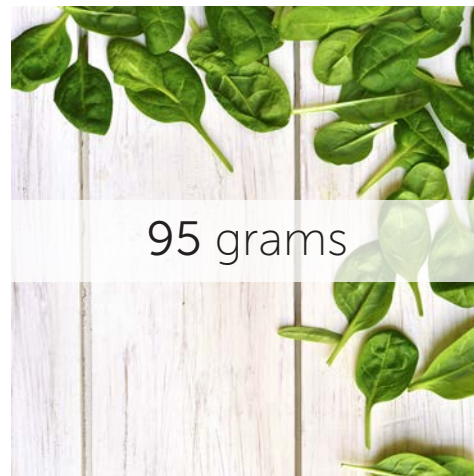
1 week

The Heart Foundation recommends that, when sliced, pumpkin can be stored in the refrigerator in an airtight container for up to one week.



5-8 cm

Dutch carrots are approximately five to eight centimetres long (tapered) and are grown mostly in Victoria and New South Wales. *Source: MarketFresh Australia (marketfresh.com.au).*



95 grams

One serve of spinach is 95 grams (or half a cup) and provides a good source of vitamin A and vitamin C, as well as folate, iron and magnesium. *Source: Go For 2 & 5 (gofor2and5.com.au).*

1.9 serves

The *National Health Survey 2014-15* revealed that on average, children aged 2-18 years consumed 1.9 serves of vegetables each day in 2014-15.

75 grams

The National Health and Medical Research Council defines a standard serve of vegetables as approximately 75 grams. Examples of a standard serve include half a cup of cooked green or orange vegetables or half a medium sweetpotato.

27 per cent

Project Harvest Wave 42 results show that 27 per cent of consumers surveyed suggested the availability of smaller vegetable portions could help them to reduce vegetable waste.



10 per cent

Veggycation® states that cooking turnip retains vitamin C and potassium at 10 per cent of the Recommended Dietary Intake per serve, and recommends consumers enjoy the vegetable stir-fried or steamed.



6000 BC

Records show that capsicum has been used in cooking since 6000 BC. It became popular in Australia thanks to European and Asian migrants. *Source: Better Health Channel (betterhealth.vic.gov.au).*



25 per cent

One serve of rhubarb provides a good source of vitamin K (25 per cent of the Recommended Dietary Intake or four grams for fibre), according to Veggycation®.

R&D

Drive Train

INFO

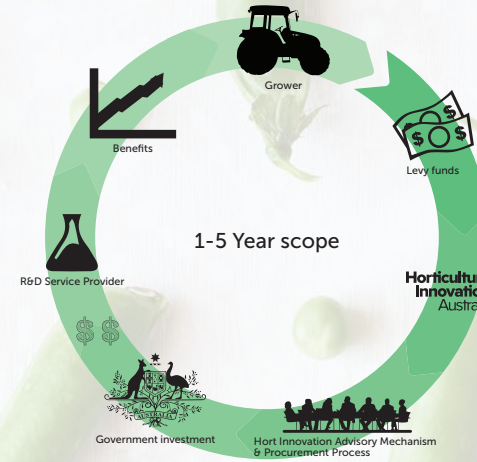
This communication has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15027



THE NATIONAL VEGETABLE LEVY AT WORK

POOL 1



WHO PAYS THE NATIONAL VEGETABLE LEVY?

The levy is paid by growers who produce vegetables in Australia.

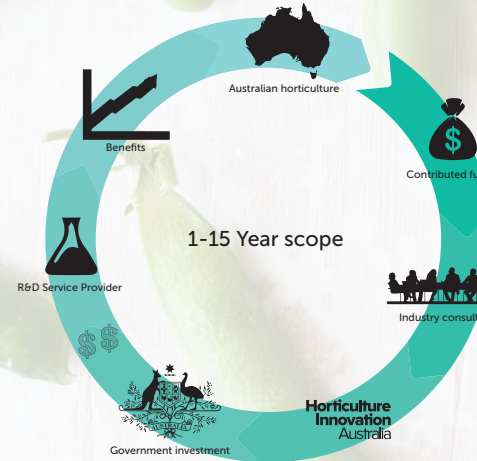
- The charge is set at half of one per cent at the first point of sale.

The Federal Government also provides funding in addition to grower levy payments. Once paid, these funds are managed by Horticulture Innovation Australia.

HOW IS LEVY MONEY INVESTED?

There are now two pools with different funding priorities. Pool 1 is funded by grower levies with contributions from the Federal Government. This pool has a one to five year scope and will invest in applied R&D designed to directly benefit growers. This includes pest and disease management and biosecurity matters, with findings communicated through a variety of channels including *Vegetables Australia*.

POOL 2



Pool 2 has a one to 15 year scope and matches strategic co-investment funds with at least \$20 million, at the Pool's maturity, of government seed funds annually. This pool aims to address multi- and cross-industry challenges and opportunities of strategic and long-term importance to Australia's horticulture industries.

Six 'Foundation Funds' have so far been established in Pool 2 and will work with an expert panel to direct strategic projects. They are:

- The Leadership and People Development Fund
- The Fruit Fly Fund
- The Asian Markets Fund
- The Green Cities Fund
- The Health, Nutrition and Food Safety Fund
- Pollination Fund

HOW CAN GROWERS GET INVOLVED?

Vegetable growers play a fundamental role in advising on the allocation of both levy and co-investment funds, and will be engaged in extensive consultation with Hort Innovation in regional grower meetings, industry-specific consultation programs and individual grower and grower group consultation. Growers can also submit ideas for R&D projects via Hort Innovation's Concept Portal at horticulture.com.au/concept-proposal-form.

For more information about the National Vegetable Levy, visit ausveg.com.au/rnd/thelevysystem/vegetablelevy.htm.

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Photography by Luka Kauzlaric.

AUSVEG CEO James Whiteside.

DAWN OF A NEW ERA: AUSVEG WELCOMES ITS NEW LEADER

Following a lengthy search, AUSVEG appointed James Whiteside as its new CEO in December 2016. James has an extensive background in agriculture and agribusiness, with over 20 years of experience in the fertiliser industry. He spoke to *Vegetables Australia* about taking on the role of AUSVEG CEO, his plans for the future of the peak industry body and the importance of communicating with Australia's vegetable and potato growers.

James Whiteside has a strong future vision for AUSVEG, the nation's leading horticultural body representing vegetable and potato growers.

As the former Chief Operating Officer for Incitec Pivot Fertilisers, James brings a high level of enthusiasm, industry knowledge and expertise to his new role as AUSVEG CEO. James was also the Chief Executive Officer of one of Incitec Pivot's joint venture companies, Quantum Fertilisers, a Hong Kong-based international fertiliser trading company, and he is currently Chairman of Verdant Minerals Limited and a director for Agribusiness Australia.

As he settles into the role of AUSVEG CEO, James has hit the ground running – identifying the need for an updated business strategy, as well as outlining the challenges the organisation faces and how these can be overcome.

FRESH CHALLENGES

After graduating from the University of Melbourne with a Bachelor of Agricultural Science and entering the world of agribusiness and corporate leadership, James explained what attracted him to the CEO position at AUSVEG.

"I was keen to do something different in my career after having spent a long time working for big commercial organisations. I was looking for a change but was keen to continue to pursue a career in the broader agriculture industry, which is where I feel most comfortable," he said.

"What I liked about AUSVEG was a couple of things: I was taken by the integrity, capability and enthusiasm of the board members that I met. These are people who are giving a life-long commitment to the industry, and I've found that quite inspiring.

"I also think the horticulture industry is a noble one. It makes a wonderful product; an important product for society and in markets that have huge potential to grow. Not only is this important as we deal with the challenge of feeding an ever-

growing population, but also because it means that growers' businesses can also grow and prosper.

"There are a raft of opportunities for growers to access new markets, develop new brands and grow profitability through really good, canny marketing, both domestic and off-shore. I like that challenge."

DEVELOPING A STRATEGY

Resetting AUSVEG's business strategy is at the top of the to-do list in 2017, and James admits there are a range of challenges he faces in implementing this strategy.

"Some of the challenges, I think, stem from the fact that the industry is extremely fragmented. Not just from a grower perspective, with lots of different products being grown in different regions by growers large and small, but also there is the structure of the industry associations, the way monies are levied and the way those monies are managed. There are a lot of peak industry bodies, all with a lot in common but with differing views on certain issues," James explained.

"I need to pick my way through all of those complexities and develop an appropriate strategy which addresses the needs of growers, assures the economic viability of the organisation and ensures that we have the right people doing the right jobs to deliver it."

POSITIVE OUTLOOK

James believes there are opportunities for AUSVEG to expand, provided the peak industry body continues to demonstrate that it can deliver value to growers.

"We have an opportunity to expand our range of services, so I think the growth opportunities are significant," he said.

"There's a huge thirst for information. We're probably only scratching the surface now in terms of the work that we're doing



in our export program to help growers access some of the export market opportunities. I think there are a number of opportunities that we will be pursuing pretty aggressively over the next 12 months."

However, meeting Australia's vegetable and potato growers is something James is most looking forward to in 2017. The new AUSVEG CEO said getting to know growers is a privilege and he is inspired by talking to farming operators, both big and small.

"I find those people are really inspiring, and the industry is jam-packed with those sorts of growers. It's important that we can come up with a business that actually delivers the benefits that demanding, high-performing growers want us to deliver," James said.

"What I want is for growers to see us being active in the marketplace, and see us doing things that they think are important.

"I think if we can do those two things, then growers will by and large be pretty happy with our performance."

James added that communication between AUSVEG and Australia's vegetable and potato growers is a two-way street.

"As much as we want to communicate with growers, we also want growers to communicate with us, because fundamentally we've got to make sure that we're spending our time doing the things that are important to them," he said.

INFO

For more information, please contact AUSVEG on 03 9882 0277 or info@ausveg.com.au.

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Daniel Hammond at the EGVID 2017 site.

VICTORIA'S REGIONAL VEG INDUSTRY TO TAKE CENTRE STAGE AT TWO-DAY EVENT

The regional vegetable hub of Lindenow, located 20 kilometres west of Bairnsdale in Victoria's Gippsland region, is gearing up to host the East Gippsland Vegetable Innovation Days (EGVID 2017) at Bulmer Farms from 3-4 May. *Vegetables Australia* spoke to co-organiser Shayne Hyman about what participants can expect from the two-day innovation showcase.

Lindenow, a tiny town nestled in the fertile Mitchell River valley, is set to attract more than 600 delegates from around Australia and overseas when it hosts the East Gippsland Vegetable Innovation Days (EGVID 2017).

The event will be held from 3-4 May at Bulmer Farms and will be jointly hosted by agronomist Stuart Grigg and Bulmer Farms' Managing Director Andrew Bulmer. It will also be a major event for the East Gippsland Food Cluster as part of the National Vegetable Extension Network, a program funded by Horticulture Innovation Australia (Hort Innovation) using the research and development National Vegetable Levy and funds from the Australian Government.

A key contributor to the Gippsland region, the East Gippsland Food Cluster is a not-for-profit collaborative network of Eastern Gippsland agrifood businesses that implements a range of projects to support the sustainable development of the region's vital agrifood sector.

The Innovation Days are proudly promoted by major sponsor Boomaroo Nurseries and follow the inaugural Leafy Veg Demonstration Day, which was held in May 2014 and focused exclusively on leafy vegetables. In contrast, this year's Innovation Days have expanded to include a wide array of vegetable crops.

WHAT TO EXPECT

EGVID 2017 will kick off on Wednesday 3 May at 12 noon, and will run until 4pm that day. The demonstration sites, hosted by the top 10 seed companies in Australia, will be available to view throughout the afternoon.

An Industry Networking Dinner will be held at Lindenow Hall in the evening. There are 300 tickets available for the dinner from trybooking.com/254337 and all tickets must be purchased prior to the night. Former AFL footballer Sam Kekovich will be the keynote speaker and will reflect on his experience of growing up on a vegetable farm.

The following day, delegates will be able to hear a range of brief presentations within the Fresh Select Event Hub from each of the event's silver sponsors: E. E. Muir & Sons, DuPont, Elders Bairnsdale, South Pacific Seeds, Rijk Zwaan, Nufarm Australia and Grolink Nursery.

"They'll be talking about the R&D and innovative developments within their respective businesses to directly benefit vegetable

producers' sustainability and bottom lines," Vegetable Industry Development Officer for Gippsland Shayne Hyman said.

"The Hort Innovation vegetable levy-funded project RIPPA (Robot for Intelligent Perception and Precision Application) from the University of New South Wales will be on-site, with the development team showing delegates the progress to date."

Delegates will also have the opportunity to sample freshly prepared local produce. Boomaroo Nurseries will prepare hundreds of canapes from produce grown on the demonstration site while One Harvest, Australia's largest producer of fresh cut bagged salads, will provide a fresh and healthy lunch.

Day two will wrap up at 3pm, with a team of food service and restaurateurs coming in to inspect the site, talk about emerging trends, quality and production techniques and network.

"There will be a discussion on what their needs are and their expectations of vegetables, and what the vegetable growers and the industry are capable of delivering and innovating," Ms Hyman said.

POSITIVE RECEPTION

Ms Hyman said the Lindenow community and the Gippsland vegetable supply chain are looking forward to the two-day event.

All of the presenters will be focusing on the new, the favourite, and the innovative from across the whole industry supply chain against the backdrop of one of Australia's significant and emerging vegetable production regions – East Gippsland.

Follow the event on Twitter (@2017EGVID) or Facebook by searching 'EGVID2017'.

R&D  Drive Train

INFO

For more information on the East Gippsland Vegetable Innovation Days or to purchase a ticket to the EGVID 2017 Industry Networking Dinner, please contact Vegetable Industry Development Officer for Gippsland Shayne Hyman on 0417 330 081 or shayne.hyman@eastgippslandfoodcluster.com.au.

Regional capacity building to grow vegetable businesses – East Gippsland (East Gippsland Food Cluster) has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15047

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FULL STEAM AHEAD: COUNTING DOWN TO HORT CONNECTIONS 2017

Combining the National Horticulture Convention and PMA Fresh Connections, Hort Connections 2017 will bring together the largest number of growers, supply chain members, government stakeholders and industry service providers in the Australian horticulture industry. The event will be held in Adelaide from 15-17 May 2017.

Registrations are now open for delegates wishing to attend the largest event on the Australian horticulture calendar, Hort Connections 2017, which will be held at the Adelaide Convention Centre from 15-17 May.

AUSVEG is excited to launch this event alongside PMA Australia-New Zealand (PMA A-NZ) and looks forward to continuing the positive legacy from previous conventions while providing more value to growers, retailers and whole-of-supply-chain members.

Hort Connections 2017 will be co-hosted alongside a range of horticulture industry bodies including Australian Organic, Onions Australia, Irrigation Australia, Growcom, Potatoes South Australia and Nursery and Garden Industry Australia.

Fresh Markets Australia (FMA) and Central Markets Association of Australia (CMAA) have been named official trade show sponsors as well as co-hosts. The two horticultural bodies return following successful partnerships during both the 2016 National Horticulture Convention and PMA Fresh Connections events.

This ground-breaking event will incorporate world-class speakers, an expansive Trade Show and unparalleled networking opportunities for delegates.

SOMETHING FOR EVERYONE

The inclusion of these industry co-hosts ensures there is something for everyone, with the speaker sessions offering a wide range of highly regarded presenters. These sessions will run in conjunction with the largest horticulture Trade Show yet, with over 200 exhibitors set to showcase the latest in fresh market and horticulture industry technology, innovation and services.

Hort Connections 2017 will provide delegates with an opportunity to come together under the one roof to meet with leading agribusinesses, network with their peers and gain valuable insights into a large cross-section of the fresh food industries.

THE VENUE

Adelaide Convention Centre is conveniently located on North Terrace, in the heart of Adelaide. The Centre is surrounded by parklands and overlooks the River Torrens, with public transport and a taxi ramp on its doorstep.

It is a short walk from both international and boutique hotels, allowing delegates to easily return to their accommodation after a busy day of networking and visiting the Trade Show. There is also plenty of entertainment located close by for delegates should they have time for a longer stay.

THE PROGRAM

The inaugural joint initiative between AUSVEG and PMA A-NZ will certainly build on last year's record attendance at the National Horticulture Convention, where over 1,500 international and domestic delegates took part in a variety of business, social and networking events.

This year, there will be a series of business development sessions from many areas of horticulture, including vegetables, potatoes, onions, fresh fruit, cut flowers, certified organic growers, nurseries and the irrigation industry.

Returning in 2017 are the Global Innovations in Horticulture Seminar and Australian Vegetables Export Seminar – these are valuable opportunities for levy-paying vegetable growers to gain an insight into business expansion and are not to be missed.

In addition, Potatoes South Australia will use Hort Connections as a platform with other potato industry partners to support Arris Pty Ltd in the launch of the Potato Industry Extension Forum. Additionally, Potatoes South Australia will host an Industry Luncheon on Monday 15 May, preceding the Forum.

There will also be an important mental health forum, headlined by former Victorian Premier and beyondblue Chairman, The Hon. Jeff Kennett AC.

SOCIAL EVENTS

Also returning in 2017 is the DuPont Theme Night, where delegates can relax, dress-up and gather for an entertaining dinner and drinks extravaganza. The theme for this year's event is 'Australiana'.

Also back on the program are the Women in Horticulture and the NextGen young grower events. These popular social outings provide a wonderful opportunity for networking and information-gathering in a relaxed setting. The Hort Connections Gala Dinner will follow the engaging speaker sessions and vibrant social program, which will all combine to shape the biggest event on the 2017 Australian horticultural calendar.

With the inaugural Hort Connections 2017 less than two months away, *Vegetables Australia* strongly encourages all members of the Australian horticulture industry to visit hortconnections.com.au for more information on registration and accommodation details.

INFO

For more information, please contact AUSVEG on 03 9882 0277, email info@hortconnections.com.au or head to hortconnections.com.au.



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A GLOBAL PERSPECTIVE ON VEG PRODUCTION



NAME: Andres Cruz
AGE: 35
LOCATION: Heatherton, Victoria
WORKS: Butler Market Gardens
GROWS: Herbs, spring onions, leeks, Asian vegetables, oak lettuces and rhubarb

HOW DID YOU FIRST BECOME INVOLVED IN THE VEGETABLE INDUSTRY?

I decided to study agronomy, mainly because I always pictured myself working outdoors and around nature. My mother had a big influence on me – she always shared her stories about growing up on a farm. We as a family always lived in the city, but she made sure every year for the family veggie garden we chose a vegetable to grow and look after.

WHAT IS YOUR ROLE IN THE BUSINESS?

I am the Technical Manager and Agronomist. As the Technical Manager, I'm responsible for technical compliance and quality assurance by achieving optimal food safety and customer compliance under the various standards within the Australian fresh produce industry. I also review and maintain the Food Safety and Quality Control systems.
 My role as an Agronomist is to provide agronomy and technical support to production by working constantly in production planning, variety selection, update of agrochemical programs and advising on crop management and Integrated Pest Management (IPM) programs for hydroponics crops.

WHAT DO YOU ENJOY MOST ABOUT WORKING IN THE VEGETABLE INDUSTRY, AND HOW DO YOU MAINTAIN YOUR ENTHUSIASM?

I like that our production cycles are shorter, so it's always busy. There's always a new crop being sown in the ground, another germinating, emerging, reaching maturity, in harvest, etc.

You get to see all the growing stages in a day if you wish. New technologies and more sustainable ways to grow our produce keeps me excited. There's always something to learn either by a mistake that you wish you didn't do or by reading a new paper online or travelling around the world to see what's out there that you haven't considered yet.

WHAT ARE THE BIGGEST CHALLENGES YOU FACE WORKING IN THE INDUSTRY?

At the beginning, because you looked young it felt like you needed to prove constantly that you knew one or two things about farming. Experienced growers have a vast knowledge so it's understandable to second guess the younger generation, but I feel through hard work and by being responsible and passionate, your voice gets louder and we are able to coexist and cooperate successfully.

WHERE DO YOU RECEIVE YOUR ON-FARM PRACTICE ADVICE AND INFORMATION FROM?

I studied agronomy at Pontifical Catholic University of Valparaiso in Chile and that gave me a good strong base of knowledge. I graduated nine years ago and the experience of working always in the vegetable industry has helped me a lot. I'm honest when I say I'm a frequent user of AUSVEG website resources, along with other universities and research institutions.

YOU TRAVELLED TO SOUTH AMERICA AS PART OF THE 2016 YOUNG GROWER INDUSTRY LEADERSHIP AND DEVELOPMENT MISSION. WHAT DID YOU LEARN FROM THIS EXPERIENCE?

There are so many things that stick with you when you travel, like new friends, graphic memories and cultural exchanges. From Brazil, I was amazed to see very small growers (less than five hectares) covering a high percentage of the vegetable market industry (in Sao Paulo they represent 80 per cent of the market) and through specialty and niche

markets they can sustain their farms, which is quite impressive.

In Argentina, greenhouse growers around La Plata (Buenos Aires) are using many cultural practices and a reduced amount of spraying – they have taken IPM to the next level. The reason behind this is that many pests have become resistant due to many years of over spraying and bad practices. It's a good lesson to learn, because in the long run it pays off to be more sustainable.

In Chile, they maximise their water use efficiency by cropping most of their vegetables with drip lines and, whenever possible, in combination with mulched beds. It's something that I think should be the standard practice anywhere where water is in limited supply.

WHAT AREAS OF RESEARCH ARE IMPORTANT TO THE VEGETABLE INDUSTRY AND YOUR BUSINESS?

I personally feel we need to re-educate consumers in relation to what makes a vegetable marketable. Growers put a lot of hard work into growing, but sometimes the weather is not on your side and the amount of produce wasted in farms because of unrealistic customer specifications is quite considerable. My philosophy is: "A few holes or marks won't take the good out of the veggies."

WHERE DO YOU SEE OPPORTUNITIES FOR GROWTH IN THE AUSTRALIAN VEGETABLE INDUSTRY?

It is always interesting to find new crops for a demanding market; finding the dream "niche market" as they say. I believe there are opportunities for native edible plants to break through the market as they have adapted much better to the local climate and they add a sense of belonging to the land as well. Now this might have sounded a little bit hipster, but I live in Melbourne.

AS A VEGETABLE GROWER, WHAT IS YOUR BIGGEST ACHIEVEMENT SO FAR?

Being able to grow vegetables in different parts of the world like Chile, New Zealand, Germany and Australia.
 From my experience in Australia, I will have to mention our hydroponic project that started in June 2015 with one greenhouse at Butler Market Gardens under a Nutrient Film Technique (NFT) system. We grew a wide range of herbs which allowed us to experiment with different varieties, the setup, and the nutrient solution, as well as become familiar with the different pests and

diseases. After a couple of months, we had it successfully running under an IPM program where the main pest control is made by releasing biological controllers and commercially producing basil, watercress and mint. This autumn, the second and third operational greenhouse will be producing a wider range of herbs.

WHERE DO YOU SEE YOURSELF IN FIVE YEARS?

Hopefully here in Australia and working in the vegetable industry. I'm attracted to new challenges and learning from new crops so, more than spatially, I'd like to see myself in a place where I feel my knowledge about farming has been extended and I'm more connected to integrated farming and sustainable development. As an agronomist, you never stop learning.

WHAT IS YOUR VISION OF THE AUSTRALIAN VEGETABLE INDUSTRY IN THE FUTURE?

I can see Australia getting bigger in sustainability. There are many studies about reduced tillage or no tillage, permanent beds, cover crops, beneficial insects, etc. While in Australia, I've been able to attend field days and see the benefits from those practices which influence the way in which you grow your crops.

HOW CAN MORE YOUNG PEOPLE BE ENCOURAGED TO TAKE UP JOBS IN THE VEGETABLE INDUSTRY?

Last year, I participated in the Urban Agricultural Forum in Victoria and I was able to meet a lot of young people interested in farming all across the country. I think we are seeing a current trend in people wanting to engage more with vegetable gardening or knowing how their food is being farmed. We should promote their voice and let the young farmers share their stories. I think it works by diversifying the messenger and how the message is presented to young people.

R&D ■ Drive Train

INFO

The 2016 Young Grower Industry Leadership and Development Mission was funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy, contributions from Australian vegetable growing businesses and funds from the Australian Government.

Project Number: VG15703

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L-R: Pumpkin grower John Marin helps Adam Harber from AHR install some data loggers, watched by Jim Kappas from Fresh Produce Group.



Symptoms of Brown etch in a butternut pumpkin.

ATTENTION PUMPKIN GROWERS: HAVE YOU SEEN THIS ETCH?

Brown etch, or Rust mark, is a major problem for many Australian pumpkin growers, especially producers of butternut varieties. It regularly results in significant losses on-farm, product quality downgrades or rejections in the market. Dr Jenny Ekman from Applied Horticultural Research (AHR) explains the damage Brown etch can cause to pumpkins and the factors behind it.

In growing regions such as Mareeba, Bundaberg and Gatton in Queensland, pumpkin losses due to Brown etch can reach 50 per cent or more. Sometimes, crops may be abandoned as they are not worth harvesting, due to the large percentage of affected fruit.

Brown etch can develop in the field, where it can appear as concentric brown rings or patterns. As the pumpkin ages, the brown area dries and cracks, which allows for the growth of fungal diseases and rots.

Worse, in many ways, is when the condition develops during transport. By this time, the pumpkins have been picked, packed and possibly trucked for thousands of kilometers, only for them to have to be re-graded or even rejected upon arrival at the market.

A project on this issue, entitled *Improved management of pumpkin brown etch*, has been funded by Horticulture Innovation Australia using the research and development National Vegetable Levy and funds from the Australian Government. Led by Applied Horticultural Research (AHR), the aim is to find out what causes Brown etch and how to manage it.

A GLOBAL ISSUE

According to project leader Dr Gordon Rogers, Brown etch is not just a problem for Australian growers.

"Brown etch occurs in any area that grows butternut pumpkins and their hybrids. You would think that there would be lots of research on this issue. However, there are only a handful of references, and surprisingly little is known about what causes it," Dr Rogers said.

It is not even clear whether Brown etch is caused by a disease or if it is actually a physiological disorder. Attempts to induce the symptoms have had mixed results.

Vegetable pathologist Dr Len Tesoriero from the New South Wales Department of Primary Industries (NSW DPI) has been trying to find a causal organism on pumpkins affected by Brown etch.

"It has always been assumed that a fungus was to blame. In the past, researchers have isolated various species of *Fusarium*, while others have suggested that a type of gummy stem blight (*Didymella bryoniae*) was the cause," Dr Tesoriero said.

"However, none of these organisms can be consistently isolated from the affected tissue. Many of the samples we have worked on have yielded no live pathogens at all. It's possible this is because the fungus has already died by the time we see symptoms. Alternatively, it may not be a fungal disease at all."

GROWER DISCUSSION

In November 2016, the project team met with pumpkin growers from around Australia in Mareeba, Queensland to

discuss when and where they had seen Brown etch.

According to Dr Jenny Ekman from AHR, humidity and prolonged wetness definitely appear to be important factors.

"Crops grown on plastic mulch or sandy sites seem less likely to get Brown etch than those grown on heavy soil, especially if overhead irrigation is used. Growers have also suggested that it is worse if there is a change in the weather, such as when a cold front comes through after a long dry spell," she said.

A series of weather stations are now being installed on farms to examine the climatic conditions associated with the onset of Brown etch. It is also planned to conduct post-harvest trials to examine whether different storage and packing methods can control Brown etch during transport.

"Pumpkins are normally packed into cardboard bins for transport, but these have no ventilation," Dr Ekman explained.

"Warm temperatures, high humidity and condensation inside the bins could be making Brown etch worse during transport. We are going to test different handling strategies, including Chép's new plastic, foldable bins, to try to reduce the problem."

The research team would like to hear from growers who have seen Brown etch in the past, or who are currently experiencing this issue in their crops. They are also particularly keen to analyse any immature pumpkins that are just starting to show symptoms of Brown etch.

R&D ■ Farm Productivity, Resource Use & Management

INFO

Any growers who have observations to contribute or would like to be involved in the project can contact Dr Jenny Ekman on 0407 384 285 or at jenny.ekman@ahr.com.au.

This project has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15064



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An icy cold day at Smith Gardens in Keswick, Canada.



Delegates enjoy a day of research at the University of Guelph's Pest Diagnostic Clinic, Canada.



Inside Foothill Greenhouses north of Toronto, Canada.



Aaron Mabry, Senior Manager of Grower Services at one of Bolthouse Farms' carrot fields in the United States.

WOMEN ON A MISSION: NORTH AMERICA INSPIRES AUSTRALIA'S VEGETABLE GROWERS

A group of nine Australian female vegetable levy-payers from various sectors of the supply chain recently travelled to North America on the 2016 Women's Industry Leadership and Development Mission. Visits to farms and key industry stakeholders in the United States and Canada provided Australia's female growers with a great insight into the North American vegetable industry.

A once-in-a-lifetime opportunity was met with great anticipation and enthusiasm as participants of the 2016 Women's Industry Leadership and Development Mission prepared to visit farms, machinery and precision agriculture firms as well as prominent horticulture groups, during their two-week tour of the North American vegetable industry.

From 10-24 October 2016, the group travelled to the United States and Canada where they learnt about the need for greater output from their vegetable growing operations, the novel innovations used on-farm and off-farm as well as the intricacies of the supply chain.

Throughout the mission, participants forged key contacts with their North American counterparts and discussed the main issues facing their respective industries, as well as sharing their knowledge about various industry practices and acknowledging the role women play in the global horticulture sector.

A UNIQUE EXPERIENCE

Technological innovation was an overarching theme during the mission, with many visits organised to leading companies and farms in the North American agriculture technology innovation sector.

The mission began in California, where participants visited Bolthouse Farms in Bakersfield, one of the largest carrot growers and processors of carrots in the United States. It was here that participants viewed three different stages of production, from field growing, to processing and finally packaging.

Following this, participants travelled north to the Salinas Valley where they visited Taylor Farms' leafy vegetables processing facility which runs 24 hours a day, seven days a week.

During the mission, participants also gained an insight

into advanced precision irrigation systems with a visit to IRZ Consulting's Portland office in the state of Oregon. Dr Fred Ziari, Founder and CEO of IRZ Consulting, gave an inspiring presentation that highlighted how precision irrigation has advanced in the state.

MANUFACTURING TOUR

Processing machinery was a prominent theme during the mission and participants visited the global headquarters of Key Technology, which is a world leader in processing machinery manufacturing and design. Participants were treated to a full tour of the facility, with demonstrations of the machinery in action, and a presentation highlighting the benefits of the machinery. They also enjoyed a tour of the manufacturing floor and a full explanation of the engineering effort that goes into the machinery itself.

EYE-OPENING VISITS

Moving further north to Canada, participants visited various growing outlets including greenhouses and field-managed farms.

Leamington, in extreme south-west Ontario, proved to be a hub for greenhouse growing in Canada, with several large-scale greenhouses in operation in the small area. Participants visited the greenhouse operation Enns Plant Farm while in Leamington, where they learnt about the intricacies of greenhouse tomato growing and exporting. Enns Plant Farm is a major exporter of tomatoes to Costco supermarkets throughout the United States.

LEARNING OPPORTUNITIES

The contrast between large-scale and small-scale farming was also an underlying theme throughout the mission, with various

small-scale farms visited in parts of rural Ontario. It was observed that production quantities and technology uptake was of a similar level to Australia with different 'mum and pop' type farms, bringing participants back to earth after witnessing the extreme output of some growing operations in places like California.

In addition, the delegation visited the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), where they were given a presentation that focused on growing statistics and government plans for agriculture in the Ontario region.

The group also enjoyed a visit to the University of Guelph in Ontario, where they were treated to a tour of the Pest Diagnostic Clinic. Here they were shown how various pests affect vegetables under the microscope. This gave participants an insight into how scientists are combating these pests on- and off-farm.

A SUCCESSFUL MISSION

The mission concluded with visits to smaller, technologically advanced farming and greenhouse outlets in the Toronto region, with participants receiving advice about what small farms can do to exponentially increase their productivity and sustainability in the immediate future.

Looking ahead to the future, both short- and long-term, is the key to sustaining a successful business, and this also extends to the wider Australian vegetable industry. Now that the participants have returned home to their respective states, they can pass on the vast array of new information and knowledge gained from the mission to their peers.

Participants can also keep in contact with their North American counterparts in an effort to create long-term, sustainable relationships that will help to shape the entire Australian vegetable industry.

R&D ■ Drive Train

INFO

AUSVEG would like to thank OMAFRA for its assistance in organising farm visits and stakeholder meetings during the mission. A full project report is available on the InfoVeg website: ausveg.com.au/infoveg.

The 2016 Women's Industry Leadership and Development Mission was funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy, contributions from Australian vegetable growing businesses and funds from the Australian Government.

Project Number: VG15703

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Growers inspecting the RIPPA robot on display at Schreurs & Sons celery farm in Victoria.



Bowen and Gumlu growers recently visited the South Australian Produce Markets.

VEGNET: PROGRAM UPDATES FROM AROUND THE NATION

The National Vegetable Extension Network has a new name: VegNET. The project is starting to deliver important benefits to vegetable growers through its 10 regionally-based extension projects. Here are some recent highlights from Victoria and North Queensland.

GROWING VICTORIAN VEG BUSINESSES

“Growing vegetable businesses” has been the key message for the VegNET rollout in Victoria’s northern, western and south-eastern regions, with profitability and cost of production a priority for growers.

Robot for Intelligent Perception and Precision Application (RIPPA) trials in Clyde in the south-eastern region and Lindenow in East Gippsland have generated a lot of interest. As well as weeding, RIPPA provides crop-monitoring data including growth, yield estimation and soil moisture levels.

Cost of production remains a priority issue, and the project team will soon provide BizCheck assessments to growers to measure and understand the main inputs of their business and how they interact to determine farm profit.

Recent events included a farm walk in Werribee South on 8 March to talk about the yield results emerging from the compost and reduced-tillage demonstration site (part of the Soil Wealth and Integrated Crop Protection projects). A workshop for the Vegetable Strategic Investment Plan was also held on the same day.

Meanwhile, a Port of Melbourne export facilities tour on 5 April will enable a behind-the-scenes look at the facilities and their role in the vegetable supply chain.

Project events, news, resources and shared lessons from other growers across the region are included in a monthly e-newsletter distributed to Victorian growers. To sign up, please contact one of the field officers:

- Northern region – Ken Orr, 0428 502 936 or ken.orr54@bigpond.com
- Western region – Clinton Muller, 0498 192 596 or clintonm@rmcg.com.au
- South-eastern region – Carl Larsen, 0419 622 393 or carll@rmcg.com.au
- Online: growingvicveg.com, Twitter: @GrowingVegBizs

NORTH QUEENSLAND GROWERS TOUR INNOVATIVE SA FARMS

Eight Bowen and nearby Gumlu (North Queensland) vegetable growers learnt about marketing, irrigation technology and precision agriculture during a three-day study tour of

innovative South Australian farming systems and technology.

There is value for growers of field vegetables to learn from other industries and production systems such as viticulture and glasshouse horticulture. The tour began at the South Australian Produce Markets, facilitated by its CEO Angelo Demasi. Growers gained a better understanding of the market system and the role it plays in the state’s produce supply. Grower Dale Williams of Euri Gold Farms, Bowen, found learning about improvements in packing and product standards particularly useful.

After visiting several covered production growers, Jonathan Land from Gumlu said that covered production tactics have helped him to find potential ways to streamline his own operation.

Carl Walker (Phantom Produce, Bowen) visited Dominic Skinner of Machine Engineering Australia in the Barossa and now believes soil moisture probe technology would be very useful, particularly in learning to manage water usage.

The study tour was arranged jointly by Bowen Gumlu Growers Association and Queensland Department of Agriculture and Fisheries (QDAF), and was supported by VegNET.

The tour followed the *Adoption of variable rate technology in Queensland’s intensive vegetable production systems project*, led by QDAF, where 12 farms trialed and adopted a suite of precision approaches. This project was jointly funded by QDAF and the Federal Government’s National Landcare Program.

How to keep in touch:

- Industry development officer: Cherry Emerick, 0427 701 225 or idm@bowengumlugrowers.com.au
- Facebook: facebook.com/bowen.growers
- Online: bowengumlugrowers.com.au/home

R&D ■ Drive Train

INFO

For more information on the National Vegetable Extension Network and upcoming events, please contact Adam Goldwater on 02 8627 1040 or adam.goldwater@ahr.com.au.

This project has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15049



VEGGIE STATS: CARROT

To enable deeper insights into the production and trade performance of key Australian vegetable products, we have developed a series of crop-specific Veggie Stats profiles. The next instalment of this series provides an update on carrot production.

The following Veggie Stats article has been developed specifically to give readers a detailed snapshot of the key facts and figures on carrots. Veggie Stats utilises data from the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

It is important to note the data itself provides a broad indication of the performance of carrot growers and should be interpreted carefully. The data is presented at the national level and therefore does not account for differences among jurisdictions.

In addition to this, the information provided is not specific to every Australian grower since each enterprise operates differently from one another.

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VEGGIE STATS: CARROT

KEY STATISTICS

- Australia produced around 260,000 tonnes of carrots in 2014-15, worth an estimated \$145 million.
- They were around 230 carrot producers in Australia in 2014-15.
- There were around 4,600 hectares devoted to carrot production in 2014-15. Western Australia and Victoria have the largest areas devoted to carrots, accounting for over 52 per cent combined.
- Carrot exports earned around \$85 million in 2016, double what it was 10 years earlier.

CARROTS	AUSTRALIA	NSW	VIC	QLD	SA	WA	TAS
Ha	4,623	184	1,231	804	411	1,237	756
% Total Ha	100%	4%	27%	17%	9%	27%	16%
Tonnes	261,057	6,604	73,680	31,924	31,015	62,357	55,477
% Total tonnes	100%	3%	28%	12%	12%	24%	21%
Value \$m	\$144.7	\$3.7	\$40.8	\$17.7	\$17.2	\$34.6	\$30.8
T/Ha	56	36	60	40	N/A	50	73
Growers	222	44	29	38	10	31	70

Source: ABS. Australian Agricultural Commodities, 2014-15



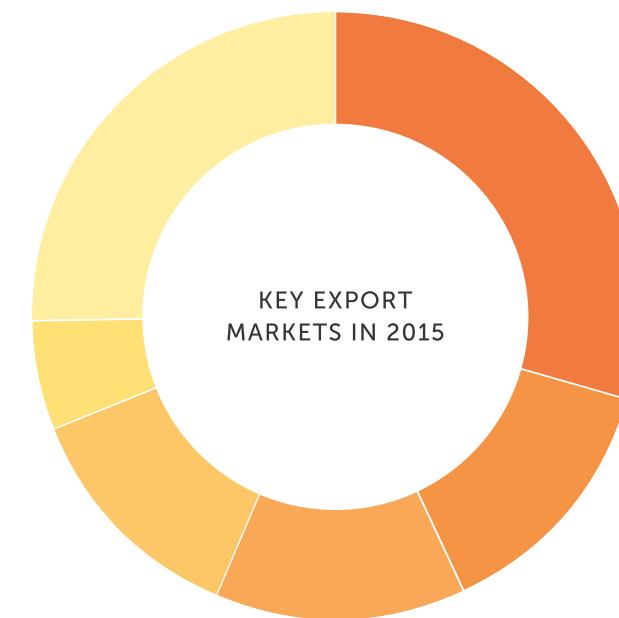
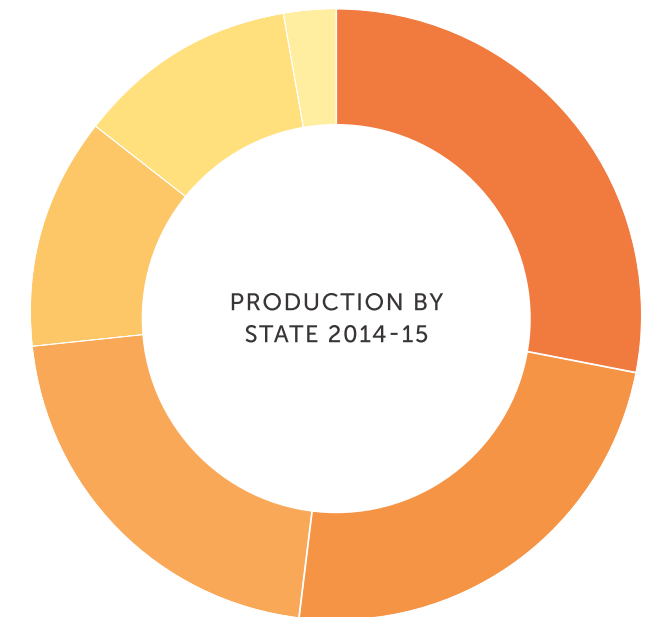
FACT: Carrots first came to Australia in 1788 with the First Fleet. Convicts planted 'Long Orange' carrots on Norfolk Island just two weeks after their arrival and gathered in their first harvest in October of that year.

STATE PRODUCTION

- Australia produced around \$145 million worth of carrots in 2014-15.
- Victoria produces approximately 28 per cent of all carrots grown in Australia, followed by Western Australia at 24 per cent and Tasmania at 21 per cent. Tasmania is the most productive state, with average yields of 73 T/Ha.



Source: ABS. Australian Agricultural Commodities, 2014-15



KEY EXPORT MARKETS

- Australia exports carrots to a growing number of countries. The largest export destination in 2016 was United Arab Emirates (30 per cent) followed by Malaysia (14 per cent), Singapore and Saudi Arabia (both 13 per cent) and Qatar (6 per cent). Over 50 per cent of carrot exports are destined for the Middle East.
- Carrot exports earned a record \$86 million in 2016. Western Australia accounts for 82 per cent of all carrot exports with earnings of \$70 million in 2016.



Source: ABS. Australian Agricultural Commodities, 2014-15

R&D

Drive Train

INFO

The Economist Sub-Program is a component of the Vegetable Industry Communication Program and has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15027

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White blister. Image courtesy of Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org.



SPOTLIGHT ON WHITE BLISTER: A HIGHLY DESTRUCTIVE DISEASE

White blister is back on the agenda for growers, following a fluctuation in temperatures across Australia this summer. This destructive fungal-like disease affects brassicas and has spread across the country. Syngenta Technical Services Lead Scott Mathew explains what can be done to minimise the impact of the disease.

Due to the wide ranging weather conditions we've been experiencing this summer, a disease that I have continually been asked about is White blister (*Albugo candida*).

White blister is a fungal-like disease of brassicas that can be devastating if left untreated. After first being identified during the 2001-02 summer, White blister has rapidly spread across Australia.

White blister appears as yellow-to-brown spots on the upper leaf surface and white round-to-oval blisters that develop on the matching under leaf surface. These blisters consist of masses of white dust-like spores. The disease can also cause swellings on roots and stems, and distortions of flowers and leaves.

Sources for White blister infection can include diseased plants or crops, volunteer crucifers, wild crucifers, cruciferous weeds and crop debris. White blister can be spread by wind, rain or by insects dispersing aerial spores.

General conditions for White blister infection include:

- Rain splash of spores from soil onto the plant.
- Free water (dew, fog, irrigation or rain) on leaves and stems.
- Spores germinate at temperatures between 1-20 degrees Celsius (°C), with the optimum range being 10-14 °C.
- The best conditions for infection by spores are after three hours of leaf wetness at 20 °C.
- Disease development can occur at temperatures ranging from 10-25 °C.
- The blisters can become visible from 6-10 days after infection.

DISEASE MANAGEMENT

There are several management strategies that can be used to control White blister. The best approach is to adopt a number of these strategies in an integrated manner.

Controlled watering

- A short, heavy watering is preferable to a long, light watering.
- Avoid night irrigations if possible.

Ventilation

- Maintain good air-flow within the crop to allow leaves to dry off quickly and minimise ideal infection conditions.

Nutrition

- Maintain a balanced nutrition program to reduce stress on the plant.

Hygiene

- Remove any sources for infection, such as volunteer radish, cruciferous weeds and crop debris.
- Ensure all equipment (bins, crates etc.) and machinery entering the farm have been thoroughly cleaned prior to arriving at the farm, preferably with a high pressure washer.
- Ensure that all staff and visitors entering the farm do not have soil and organic matter on their shoes and equipment.

Fungicides

- Many of the fungicides that are effective against White blister are protectant fungicides and therefore need to be applied prior to the infection occurring.
- Rotating fungicide modes of action is also key to prevent the development of fungicide resistance.

R&D  Drive Train

INFO

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

The R&D content for this article has been provided to *Vegetables Australia* to educate Australian vegetable growers about the most relevant and practical information on crop protection technologies and their on-farm applications. This communication has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15027

 Horticulture Innovation Australia



RESPONDING TO AN EXOTIC PEST INCURSION

AUSVEG has been heavily involved in dealing with one of the most potentially damaging pests to arrive in Western Australia – Tomato-potato psyllid. AUSVEG Biosecurity Adviser Dr Kevin Clayton-Greene explains what happens behind the scenes in response to a potato and vegetable pest incursion.

Following the detection of Tomato-potato psyllid in Western Australia in February, it is perhaps timely to re-visit what happens when an exotic pest arrives in this country.

AUSVEG is a signatory to the Plant Pest Deed, which is a contract between all states, territories, the Federal Government and industry parties who have elected to sign.

The Deed sets out what happens when an exotic pest arrives in Australia, how it is managed and the obligations of parties who have signed up to the Deed. The Deed only covers eradication responses and does not cover issues such as trade and management of the pest if it can't be eradicated.

The Deed is managed by Plant Health Australia, which is jointly funded by all signatories to the Deed – funding is one-third Federal, one-third states and territories and one-third industry parties. AUSVEG is a signatory and has a levy set currently at zero.

WHAT HAPPENS WHEN A SUSPECT PEST IS IDENTIFIED?

After receiving information that an unusual and suspect exotic pest has been found, plant health officers are legally required to inform the Federal Government's Australian Chief Plant Health Officer (ACPHO).

Shortly after, the ACPHO calls a meeting of all states and territories and those industry parties that the pest could impact. This group is known as the Consultative Committee on Emergency Plant Pests (CCEPP). In the case of Tomato-potato psyllid, the industry parties include AUSVEG, Nursery and Garden Industry Australia (NGIA) and processing tomatoes. The fresh tomato industry is not part of the process as it does not have a national body and is not a signatory to the Plant Health Deed.

The function of the CCEPP is essentially to determine if the incursion is an exotic plant pest; if it can be eradicated; and produce a response if eradication is deemed feasible.

The response plan is the responsibility of the state or territory in which the incursion occurred. In the current case involving Tomato-potato psyllid, the host state is Western Australia.

AUSVEG's role on the CCEPP is to provide an industry perspective and assist where it can with the preparation of a

response plan and incursion control. This can take many forms but in serious cases such as Tomato-potato psyllid, it usually involves an AUSVEG staff member working directly with grower organisations in the host state.

Decisions of the CCEPP are by consensus, but in some cases consensus cannot be achieved. In this case, matters are referred to the board of Plant Health Australia.

After determining that a pest can be eradicated and an agreement on a response plan has been reached (which must contain a budget) CCEPP provides this advice to the National Management Group (NMG), which is comprised of the Senior Executives of all organisations involved in the incursion.

NMG is responsible for making the decision about an incursion and eradication, and relies on the advice from CCEPP. However, it is not bound by the CCEPP. In agreeing to a response plan, all parties must agree on the budget.

AUSVEG must then consult with the Federal Government about financial obligations and how it can repay any debts for which it is obligated. This will in some cases require a positive levy to be struck.

With respect to other areas such as trade and market access, AUSVEG can only provide advice and hope to achieve harmonisation of responses by jurisdictions and seek to be informed so it can advise relevant industry bodies. Decisions around these aspects are solely the provenance of governments through the Sub-Committee on Domestic Quarantine Arrangements (SDQMA).

R&D  Farm Productivity, Resource Use & Management

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For more information, contact AUSVEG on 03 9882 0277 or email info@ausveg.com.au.

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Project Number: VG15023

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Tomato-potato psyllid nymphs. Image courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org.

TOMATO-POTATO PSYLLID DETECTION: WHAT HAPPENS FROM HERE?

Early in February, the vegetable and potato industries received the news that they had hoped to never hear. Tomato-potato psyllid has, for the first time, been found in Australia. AUSVEG National Manager – Science and Extension Dr Jessica Lye has provided this update to readers.

Many had been expecting the arrival of Tomato-potato psyllid in the eastern states of Australia, possibly deposited by easterly wind currents, or brought in by one of the millions of international travellers who land in eastern seaboard airports each year.

However, when it comes to pest incursions, sometimes risk-based analyses will only take you so far. The psyllid was, in fact, found in a Perth vegetable garden.

This detection comes following a swath of unfortunate biosecurity events for horticultural industries since 2014. Only last year *Varroa jacobsoni* (cousin to the dreaded *Varroa destructor*) was found in Townsville, representing a significant threat to industries that rely on pollination.

In 2014, I found myself in the thick of the Cucumber green mottle mosaic virus incursion – an outbreak where over 20 cucurbit growers in the Northern Territory were placed under strict quarantine for two growing seasons. Government and industry learnt hard lessons during the virus outbreak and it was a very low point in our recent biosecurity history.

PROCEED WITH CAUTION

Government and agricultural industries represent the two biggest players in our biosecurity system. However, there are other players (and beneficiaries) – for example, bushwalkers and natural resource management groups have an important role to play in maintaining the health of our natural environments, and travellers can have significant impacts on spreading harmful pests if proper biosecurity precautions are not followed. As a traveller, are you aware of fruit fly-free regions in your state, or around the country? Throughout the lifetime of the biosecurity program, growers have commented to me about the change in paradigm, from one that embraced a culture of farm hygiene and community awareness/knowledge to one of disconnect on the part of community, and apathy on the part of plant industries. It is during crisis situations when biosecurity best practices become topics of discussion once again. It seems logical to take steps to promote a culture of investment in preparedness and education, rather than reaction and response.

CURRENT RESPONSE

The Department of Agriculture and Food, Western Australia (DAFWA) is undertaking surveillance in commercial crops and backyard gardens in the Perth area, following the confirmed detection of Tomato-potato psyllid. Apart from attempting to determine the spread of the pest from the Perth metropolitan area, DAFWA officers are conducting *proof of freedom* surveillance in priority production areas. This is one such activity that could be undertaken now in the eastern states as a preparedness measure. AUSVEG has sent Vegetable and Potato Biosecurity Coordinator Callum Fletcher to Western Australia to aid in response efforts



Adult Tomato-potato psyllid. Image courtesy of Pest and Diseases Image Library, Bugwood.org.



Psyllid sugars. Image courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org.

as an adviser and to speak at regional grower meetings. Callum has a history of facilitating and advising on Tomato-potato psyllid management and has first-hand knowledge of the New Zealand incursion in 2006.

Working under the guidelines of the Emergency Plant Pest Response Deed, the Western Australian government has responded quickly and has been encouraged to heed industry advice. This incursion is in the incident definition phase – a necessary part of the process characterised by containment activities and data gathering. Information about pest spread and control options will inform a decision on eradication potential.

AUSVEG is extremely aware of the hardship faced by Western Australian growers if this incursion expands in size and severity. From an industry perspective, the AUSVEG Crisis Management Team, in partnership with Potato Growers Association of Western Australia, vegetablesWA and Horticulture Innovation Australia, has been working hard to ensure that the Tomato-potato psyllid outbreak is responded to effectively.

R&D ■ Farm Productivity, Resource Use & Management

INFO

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 National Manager – Science and Extension, Dr Jessica Lye at jessica.lye@ausveg.com.au or 03 9882 0277.

The Vegetable and Potato Biosecurity Program is funded by the Plant Health Levy. This communication has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15027



TOMATO-POTATO PSYLLID: BIOLOGY AND IMPACT

Tomato-potato psyllid is an insect from the United States that spread to New Zealand in 2005-06. It can significantly impact production, attacking a range of plants in the Solanaceae family including potato, tomato, eggplant, capsicum and chilli. Tomato-potato psyllid can carry the bacterium *Candidatus Liberibacter solanacearum*, causing 'Zebra chip' in potato.

WHAT TO LOOK FOR

A clear indicator of the psyllid's presence on a crop is the crystals of honeydew that the nymphs produce. These are a waste product that looks like caster sugar and are found on the leaves of an infested plant. The nymphs are small, oval and green-yellow in colour while the adults are likely to jump off the plant if disturbed and, as such, are more difficult to see.

Feeding of Tomato-potato psyllid results in 'Psyllid yellows', which is a major issue for tomatoes and capsicums and results in less fruit, reductions in fruit size and changes in the texture of the skin.

Growers are urged to check for signs of the psyllid and report any unusual detections via the **Exotic Plant Pest Hotline (1800 084 881)**. Growers are advised not to spray specifically for the psyllid until their crops have been surveyed and appropriate crop protection products for use have been identified.

Managing a crisis in the vegetable industry

A Crisis Management Team, facilitated by AUSVEG, has been funded and trained to effectively respond to any crisis that may negatively impact growers, consumers, industry assets or the reputation of the vegetable industry.

A crisis management plan has been developed by the industry to respond to a crisis. The AUSVEG Crisis Management Team works with relevant stakeholders, authorities and the supply chain to manage and minimise the impact of crises on the industry.

Early notification and preparation are critical to an effective industry response.

Crisis Hotline: 1300 855 170

AUSVEG/Media enquiries: 03 9882 0277

Is there an issue that could affect the wider vegetable industry or its reputation with the public?

A crisis can occur at any time and can include:

- Accidental or deliberate contamination
- Threats/blackmail/extortion
- Theft of dangerous chemicals
- Significant workforce issues or unrest
- Felonious activity (market fraud or manipulation)
- Biosecurity incidents (or failure to report)

If you are aware of a potential/emerging crisis:

1. Call the Crisis Hotline on **1300 855 170** or AUSVEG Crisis Management Team on **03 9882 0277**
2. Refer enquiries, including media, to AUSVEG on **03 9882 0277**



This project, Crisis Management Awareness for the Australian Vegetable Industry, has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15016



Image courtesy of the Tasmanian Institute of Agriculture.

MAINTAINING A PRODUCTIVE AND PROFITABLE PEA INDUSTRY IN TASMANIA

The Tasmanian Institute of Agriculture (TIA) is working with Simplot Australia to conduct a project that focuses on improving the productivity and profitability of processing peas in Tasmania. TIA Senior Lecturer in Horticultural Science Dr Alistair Gracie spoke to *Vegetables Australia* about the project and the activities undertaken to date.

Green peas are an important crop within the intensive vegetable cropping system in Tasmania. Each year, Tasmanian vegetable growers produce approximately 24,000 tonnes of green peas from about 4,000 hectares for processing, and that is worth an estimated \$10 million at the farm gate.

Simplot Australia contract-grows all green peas for processing purposes in Tasmania, which accounts for around 95 per cent of the total production in Australia. While the vast majority of peas are packaged as frozen produce, the viability of frozen pea production in Australia is currently under threat due to increased competition from the import of processed vegetables.

To combat this, the Tasmanian Institute of Agriculture (TIA) has joined forces with Simplot to undertake a vegetable levy-funded project entitled *Precision seeding benefits for processing pea production* (VG15039). Led by TIA Senior Lecturer in Horticultural Science Dr Alistair Gracie, the project team will work closely with growers and key stakeholders in the vegetable industry to increase the yield per hectare production of peas in Tasmania.

INCREASING YIELD AND PROFITABILITY

The project, commonly known as ‘Precision Peas’, aims to help the industry increase Tasmania’s average yield from six tonnes per hectare to its target of eight tonnes per hectare by 2020.

“In the area of green peas, we have looked at the yields that the growers have achieved. These yields can vary substantially from grower to grower, so the question is: What causes that variation in yield?” Dr Gracie said.

“The idea of the project is to maximise the return to growers and

also the benefits that provides Simplot Australia. The growers and Simplot are working together in this to reliably achieve high yields.”

Dr Gracie said that the project will focus on the key areas of crop establishment and correcting growth habits that have occurred in the past.

“Establishment of the crop actually determines your yield capacity. It provides a platform for the yield potential and that’s why we’re focusing on this area,” he said.

“Through time, we’ve tended to grow peas at the same density regardless of the variety. Some of those peas have different growth habits, so we’ve got to make sure of the optimum density and special arrangement of these particular varieties.

“We also want to know if we can then manipulate the potential for growth at the establishment phase to maximise the energy that goes into producing the pods and peas.”

PROJECT ACTIVITIES

Dr Gracie and his team have conducted four field trials this season, which looked at density and spatial arrangements, and their interaction.

“We’re looking at return on investment for getting the best spatial arrangement possible. We want to understand that, so we’ll try to achieve the extremes and compare that across different locations at different times of sowing as well as different varieties,” Dr Gracie said.

“In addition to that, we’ll be doing some glasshouse work where we’re trying to see whether we can manipulate where the peas are putting their internal resources. Can we change the branching habit of peas and their plants so that they actually



Image courtesy of Heath Holden.

L-R: TIA Senior Lecturer in Horticultural Science Dr Alistair Gracie, Simplot Agricultural Services Manager R&D Leon Hingston and Simplot Agricultural Manager Jo Tubb.

produce more pods – with peas in them hopefully – at certain stages of development?

“We grade the pea plant when it starts to flower and you can tell they’re going to have a range of maturities up the length of the actual stem of the pea plant. We know that the first two nodes that actually flower on a plant contribute to over 90 per cent of final yield when it comes to harvest and we’re looking at whether we can get them to branch at key stages to maximise the number of pods that set early in the development of a crop.”

To communicate the results of the project, TIA and Simplot have organised field days at the Forthside Research Station in Tasmania.

“In following years we will run further field trials to demonstrate the benefits of getting the planting phase right, or as good as possible. Planting is not straightforward but we’re going to demonstrate what the ideals actually look like,” Dr Gracie said.

WHAT’S NEXT?

At the time of writing, Dr Gracie and his team had collated the data from the field trials for analysis. This data will be shown to Simplot Australia, grower groups and the Pea and Bean Productivity Group, which comprises growers, industry representatives from Tasmanian Farmers and Graziers Association, TIA, University of Tasmania and the Department of Primary Industries along with Simplot Australia field staff.

“We will put our recommendations forward, which will inform next season’s trials and what the focus will be,” Dr Gracie said.

At the end of the project, the research results will be used to inform the development of best practice guidelines for precision planting of peas, which will be distributed through Simplot to its pea grower base and made available online.

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For more information, please visit utas.edu.au/tia or simplot.com.au. This project has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15039



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L-R: Adam Townsend (Houston's Farm) and Kelvin Montagu (AHR) inspecting cover crops.

PRACTICAL ACTION ON COVER CROPS, PEST MANAGEMENT AND VEGETABLE CROP NUTRITION

The Soil Wealth and Integrated Crop Protection projects work with growers nationally to put soil and plant health research into practice. In this edition, we learn about a new demonstration site in Tasmania as well as implementing Integrated Pest Management and anhydrous ammonia for vegetable crops.

COVER CROP TRIAL ESTABLISHED IN TASMANIA

As part of the levy-funded project *A multi-faceted approach to soilborne disease management* (VG15010), a farming systems trial has been established at Houston's Farm, Cambridge in southern Tasmania. The trial will examine how cover crops can be integrated into baby leaf production systems and what effect this has on soil condition. It will also look at soil borne disease incidence and subsequent yield and quality of lettuce, rocket and baby leaf spinach.

The 5.6 hectare trial will be run for two years with the following four treatments replicated three times:

1. Control – conventional cropping, approximately 2.5 baby leaf crops per year.
2. Summer cover crop – winter baby leaf production.
3. Winter cover crop – summer baby leaf production.
4. Perennial lucerne for 18 months – then cropping.

The site was sown from 20-22 December 2016 as follows:

- The summer cover crop is a mix of sunn hemp, sorghum and Sudan grass mix.
- Lettuce was sown in the cropping treatments.
- The lucerne cover crop will be sown in autumn 2017, so this will allow the opportunity to trial several other cover crop species over the summer before sowing to lucerne, including:
 - a. Millett.
 - b. Mung bean.
 - c. Tillage radish.
 - d. Mix millet, mung bean and tillage radish.
 - e. Ryegrass.
 - f. Buckwheat.

A farm walk was held in late February to view how the range of summer cover crops have performed. You can follow the progress of the site on the Facebook page, accessible under the 'Demo Sites' tab on the project website.

IMPLEMENTING IPM ON-FARM IN VICTORIA

Werribee South vegetable grower Daniel Fragapane runs a 42 hectare farm growing cauliflowers and broccoli for supermarket chain Aldi. He adopted Integrated Pest Management (IPM) on his Werribee South farm following a recommendation from his cousins.

Daniel has been impressed with the results he has seen in this crop following the use of IPM. The biggest challenge for him has been time scheduling of control options, such as avoiding peak UV periods for caterpillar control with products such as Dipel in summer.

Daniel has managed these challenges through a combination of targeted control, including strategic location spraying rather than whole-of-farm, and using alternative products when required.

VIABILITY OF ANHYDROUS AMMONIA FOR VEG CROPS

Anhydrous ammonia is the most concentrated form of nitrogen fertiliser, containing 82 per cent available nitrogen. It has long been used as a pre-plant and side dressing fertiliser in the cotton and grain industries. It results in a high retention of nitrogen in the soil, reduced leaching of nitrates through the soil and yield increases in various crops. However, it needs to be treated with care as it can cause injury to farm workers.

Anhydrous ammonia has beneficial effects on soil microbes, nitrifying bacteria and worms. It is more suited to row crops rather than baby leaf crops.

Incorporating anhydrous ammonia into vegetable cropping systems can provide a range of benefits to producers such as increased soil health, reduced cost, increased yield and reduced environmental impact from a reduction in nitrate leaching.

All the above resources can be accessed via the Soil Wealth/ICP website under the 'Resources' tab.

R&D ■ Drive Train ■ Farm Productivity, Resource Use & Management

INFO

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.

More information and resources are also available from the Soil Wealth/ICP website at soilwealth.com.au or integratedcropprotection.com.au. The Soil Wealth, Integrated Crop Protection and *A multi-faceted approach to soilborne disease management* projects are funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Numbers: VG13076, VG13078 and VG15010



NEW TRAINING OPPORTUNITIES IN THE PIPELINE FOR VEG INDUSTRY MEMBERS

VegPRO is the vegetable industry's own education and training initiative. It is currently working on three new vegetable industry-specific resources aimed at upskilling producers and their staff, from casual workers to experienced growers. Program coordinator Sophie Lapsley provides an update on the initiative, and outlines how industry members can get involved.

The Vegetable Industry Education and Training Initiative, VegPRO, is a targeted training initiative that aims to effectively upskill people at all levels in the industry and fill any training gaps that producers and their staff may have.

This is not a top-down driven process where VegPRO tells the industry what it requires; it is up to industry to share their training needs with VegPRO. This includes the 'what', the 'who', the 'where' and the 'how'.

VegPRO is adaptive to the needs of those who ask for training and aims to take training out of the classroom, as there are many ways to learn.

The VegPRO website can help industry members or even those thinking about joining the industry to keep up-to-date with available training, workshops and courses that are available, and it will soon have the facilities to host online industry training. The site also has a portal that provides useful resources and information on the vegetable industry, along with career ideas and what the industry can offer individuals as a long-term career.

WHAT IS VEGPRO CURRENTLY WORKING ON?

The initiative is currently developing three new training resources:

1. **A fresh product food safety induction for casual workers, which will be available in English as well as other languages.** The aim of this training is to provide a resource for growers and packers that ensures workers have sufficient knowledge and are competent in the area of fresh food safety. This training will be available online and can also be delivered on-site or by labour hire companies. It will comply with food safety quality assurance.

2. **Work Health and Safety (WHS) instructional videos that will either stand alone or accompany the VegWHS information package.** These videos will cover some of the more common safety practices that need to be carried out on-site. If you are not familiar with the VegWHS package, this is also available through VegPRO or via your regional National Vegetable Extension Network (VegNET) member.

3. **Advanced professional negotiation and influencing training.** This course has been designed to help growers and industry members think and act to improve business outcomes by gaining greater skills in confidence, engagement, negotiation and influencing to maximise their opportunities.

These are just a few of the ideas that have been submitted by growers to VegPRO and it's happening! Vegetable industry members are encouraged to have their say and receive the training that meets their needs.

VegPRO will also be at Hort Connections 2017, which will be held at Adelaide Convention Centre from 15-17 May. Bring your ideas and stop by for a chat to see how the program can help you.

R&D ■ Drive Train

INFO

If anyone is interested in these upcoming training opportunities, please contact VegPRO coordinator Sophie Lapsley on 0426 200 996 or sophiel@rmcg.com.au or visit the website at vegpro.com.au. Any training ideas or feedback can be submitted via the website under the 'Call for Ideas' tab or by calling Sophie.

This project has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15028



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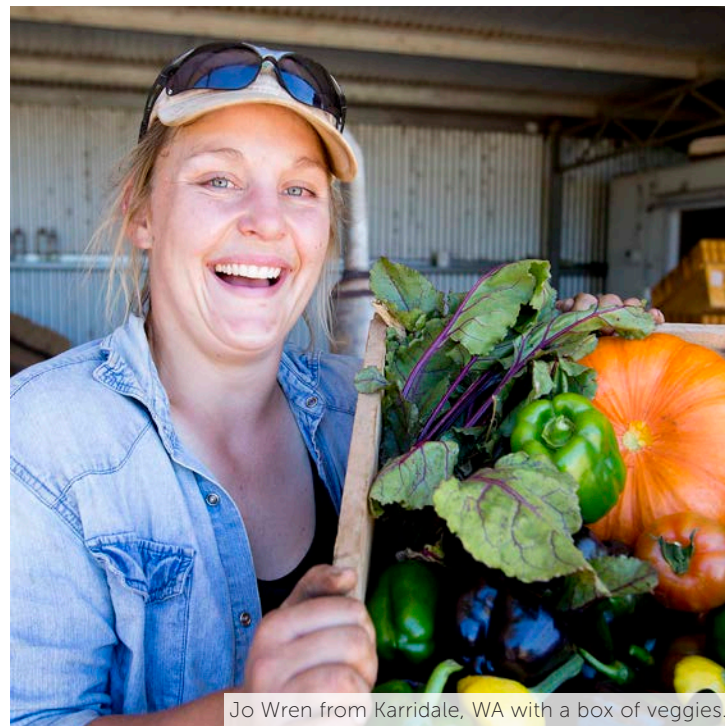


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Cynthia Langlois and Jeanne Desgagnes from Montreal, Canada picking cherries at Westcastle Cherries in Orange, NSW.



Jo Wren from Karridale, WA with a box of veggies.

CHALLENGING THE STEREOTYPE: WHAT DOES A FARMER LOOK LIKE?

Kim Storey and Cassie Gates are on a mission to change the perception of those within the agriculture industry, by producing a book that combines real photos and stories of Australian farmers and their families. Cassie spoke to *Vegetables Australia* about their project, *What Does a Farmer Look Like?*

So.... What does a farmer look like?

That is a question that photographer Kim Storey pondered one day in a conversation on social networking site, Twitter, in mid-2016.

Kim had noticed how a majority of farmers are represented when it comes to a simple Google search. She typed in "What does a farmer look like?" and pictures of old, bearded men with overalls and pitchforks appeared on the screen. Her mission then was to produce a book that would encourage farmers to realise that they are different to the stereotype.

The photographer then joined forces with her graphic designer friend, Cassie Gates. For the past few months, the two women from Eugowra, New South Wales, have visited a range of farmers around Australia in a bid to profile and share what they look like with the rest of the world.

The result of their work will be a coffee table book entitled *What Does a Farmer Look Like?* which the women aim to complete by December 2017.

TELLING TALES

As the graphic designer, Cassie attends and directs the self-funded photo shoots when she can, and it will be her job to design the end product.

Cassie explained what the project's objectives are, and at the top of the list was to hear farmers' stories.

"We tend to only hear negative stories in the media, such as those about droughts and the problems associated with them," she said.

"We just wanted to show that farming is a great life for a lot of people and there are happy people out there doing something that they love.

"We're writing the stories ourselves. We interview each farmer when we visit them and keep in touch with them as well – obviously things change over time. It's developing a bit of a community with the farmers we've visited already."

Cassie expressed her amazement at the people she has met, and admires their passion for the land.

"I've learnt that a lot of farmers are open to diversification in their farming. I think it's amazing to be able to do various things on your property. The farmers are keen to learn new things themselves; they want new ideas on how to be successful and produce great products.

"I'm loving meeting all these great people. They're just passionate about what they do."

FARMER FEEDBACK

Since Kim's Twitter conversation in mid-2016, the concept of what a farmer looks like has grown rapidly.

"There has been a lot of interest – everyone is keen to find out

about other farmers and what they're doing. It has always been assumed that farming is for the older generations, but there is a lot of new, young blood coming through with new ideas," Cassie said.

Interest in the project is reflected in the numbers. Kim and Cassie are featuring at least 100 farmers in the book and there are plans for a second edition. It may also lead to an international venture, but this is a long-term thought.

"We won't go too big just yet. We just have to get the first book done," Cassie said.

GETTING INVOLVED

At the time of writing, Kim was in Western Australia taking photos at vegetable growing operations. Other vegetable growers are encouraged to contact Kim and Cassie via their Facebook page should they wish to be featured in *What Does a Farmer Look Like?*

"Drop us a message and let us know what your farm is and we'll get back to you if we're in the area. We're travelling around all of Australia, so it's not defined by any area," Cassie said.

"If there are any producers out there that grow products that aren't common or are specialised, we'd love to hear from them. We want to show that we can produce our food in Australia and that we don't need to source it from overseas. The idea is to go Australian!"

INFO

For more information or to contact Kim and Cassie, please visit [facebook.com/whatdoesafarmerlooklike](https://www.facebook.com/whatdoesafarmerlooklike) or whatdoesafarmerlooklike.com.

WOMEN IN HORTICULTURE TO GET INVOLVED AT HORT CONNECTIONS 2017

The annual Women in Horticulture event will return to Hort Connections 2017, to be hosted by AUSVEG and PMA Australia-New Zealand (PMA A-NZ). This year's theme will focus on getting involved and adding value to your business.

Hort Connections will be held from 15-17 May at the Adelaide Convention Centre. Women in Horticulture is scheduled to take place on 17 May from 2:00pm to 4:30pm at the InterContinental Adelaide.

PROGRAM UPDATE

Assistant Minister for Agriculture and Water Resources, Senator the Hon. Anne Ruston, will be headlining the guest speakers. The Ideas Catalyst founder Susie White will also speak on new product and packaging innovations and introduce some hands-on creativity techniques to generate new product ideas.

Celebrity chef Geoff Jansz will also perform a cooking demonstration with a focus on how local produce can be used in the kitchen. Geoff and Horticulture Innovation Australia Relationship Manager Christian Patterson will also discuss their work on a levy-funded community garden project: VG16025 – *Increased consumption and sales by developing community awareness and benefits of vegetables*.

To wrap-up the event, the recipient of this year's Women in Horticulture award will also be announced by 2016 winner Sharron Windolf.

For more information or to register for the event, please visit hortconnections.com.au.



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Green peach aphid. Image courtesy of Jim Baker, North Carolina State University, Bugwood.org.



Myzus persicae colour variation.



Red morph of Green peach aphid.

NEW RESISTANCE FOUND IN VEGETABLE PEST

Green peach aphid is a widespread pest that attacks many vegetable crops including capsicum, eggplant, broccoli, potato and lettuce. A recently completed vegetable levy-funded project found that the pest is resistant to another insecticide, bringing its known resistance to a total of four mode of action groups within Australia. *Vegetables Australia* spoke to researcher Dr Siobhan de Little about the findings.

Green peach aphid (GPA, *Myzus persicae*) resistance to neonicotinoid insecticides, which are commonly used in vegetable production, was recently confirmed by scientists involved in research undertaken on behalf of Horticulture Innovation Australia (Hort Innovation) and the Grains Research and Development Corporation (GRDC).

As a part of Project VG12109 *Management of insecticide resistance in the green peach aphid*, the project team at Cesar has been culturing populations of GPA from across Australia for use in insecticide-resistance experiments.

The project returned similar findings to other projects that Cesar had previously undertaken with GRDC in canola – specifically, that GPA across Australia is resistant to carbamates, pyrethroids and organophosphates.

After performing a biological assessment and more genetic testing, the first evidence of low-level resistance to neonicotinoids in some GPA populations in parts of Australia was found.

LOW LEVEL DISCOVERY

Dr Siobhan de Little, a senior consultant at Cesar, discussed what this discovery means for vegetable growers and outlined the importance of resistance management strategies in Australia.

“Neonicotinoid insecticides such as imidacloprid are commonly used to control aphids in vegetable crops because they’re effective,” Dr de Little said.

“The level of resistance that we found in our studies is relatively low – we don’t believe that it will result in spray control failures with neonicotinoid products. But it could potentially get worse if resistant management strategies aren’t put into place.

“If resistance management strategies aren’t used, down the line

a grower may potentially see a higher level of resistance in GPA. The fact that neonicotinoid-resistant GPA populations have been found across Australia means that growers need to be particularly careful about how this chemical group is used. It is important to avoid repeated sprays from neonicotinoid products; instead rotate spray options between different mode of action groups.”

EFFECTIVE CONTROL

A GPA resistance management strategy is available to growers on the AUSVEG website. Although developed specifically for vegetable field crops in the Bundaberg region, many of the principles and recommendations hold true in other regions.

Dr de Little also advised growers to restrict their neonicotinoid use to drip irrigations and not to immediately follow-up any drip irrigation or nursery drenches with another foliar neonicotinoid spray.

“You definitely don’t want to double up on neonicotinoid products – you want to use them sparingly where you need them in crop protection as opposed to just using them as a go-to option,” she said.

CORRECT IDENTIFICATION AND IPM

Dr de Little advised that before reaching for the resistance management strategy, make sure that the aphid affecting the crop is correctly identified as GPA.

“Resistance management strategies are important when using crop protection products on any insects, but GPA is a special case as it’s so resistant to many different products. Making sure that GPA is the aphid that you’re looking at is the first step,” she said.

Monitoring is the key to reducing the risk of GPA along with promoting beneficial insects such as parasitoid wasps, lacewings and ladybird beetles, which are natural predators of aphids.

“Integrated pest management (IPM) that encourages beneficial species can really help lower the risk of crop damage by GPA and other aphids,” Dr de Little said.

FURTHER EXPLORATION

Dr de Little and her team at Cesar are continuing to investigate insecticide resistance and the management of GPA.

Growers are asked to contact Dr de Little if they have any GPA in their crops.

“We’d like to receive GPA because we’re still conducting resistance testing. If growers experiencing control failures send samples, we will be able to test them and let them know the resistance status of the GPA population in their area,” she said.

“It will also help us to identify any emerging resistances that might be around.”

Dr de Little is in the process of publishing a paper on the project, which incorporated testing newer chemistries that are around such as Transform™ (sulfoxaflor), Movento® (spirotetramat) and Benevia® (cyantraniliprole).

“We have tested populations of GPA across Australia and we haven’t seen any resistance at all to any of those products. All three of those products are still effective as control of GPA and can be used in a rotation management strategy that will effectively control or suppress the populations, assuming label recommendations are adhered to,” she said.

R&D ■ Farm Productivity, Resource Use & Management

INFO

For more information about Green peach aphid and insecticide resistance research, please contact Cesar senior consultant Dr Siobhan de Little on 03 9349 4723 or at sdelittle@cesaraustralia.com.

The GPA resistance management strategy can be accessed via the AUSVEG website at ausveg.com.au/biosecurity/GPA-RMS-Bundaberg-vegetables.pdf. This project has been partly funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG12109



GREEN PEACH APHID: A QUESTION OF COLOUR

Red or green? When it comes to Green peach aphid (GPA), you’re asking the wrong question, according to Cesar researcher Dr Siobhan de Little.

Despite its name, GPA is not always green in colour, ranging from shades of light and dark green, yellow, pink, red and even black. Each colour type is called a morph, and this colour variation is due to the type of carotenoids (colour pigments) in the aphid.

There is also some belief that greater insecticide resistance is present in red morph populations; however, this idea is not supported by research.

During Cesar’s laboratory and field experiments, results showed that different colour morphs from a single population respond in the same way to insecticides. In particular, researchers found that the dose response curves of both red and green morphs of insecticide-susceptible GPA are identical, indicating that factors other than aphid colour are linked to insecticide resistance in this species.

WHY DOES THE RED MORPH OF GPA SEEM TO SURVIVE SPRAYING?

There are several reasons why red GPA may appear to survive spray application:

- A resistant population of GPA (that happens to contain both green and red morphs) is present in your crop.
- The red morph is more obvious (both larger and more distinct) than the green morph on plant leaves.

High levels of insecticide resistance provide challenges to effective GPA control. In GPA populations that are resistant to synthetic pyrethroids and carbamates, the applications of these crop protection products will have no impact on GPA levels.

In populations that are resistant to organophosphates, the application of insecticides from this chemical group may provide some initial control but subsequent applications will have little to no effect on a resistant population due to the nature of this resistance mechanism.



Horticulture Innovation Australia Relationship Manager Christian Patterson.



Horticulture Innovation Australia Relationship Manager Brad Wells.

BUILDING STRONGER RELATIONSHIPS WITH VEG GROWERS TO ACHIEVE LONG-TERM, SUSTAINABLE GROWTH

Horticulture Innovation Australia (Hort Innovation), using the National Vegetable Levy and contributions from the Australian Government, invests in a wide range of R&D projects that aim to improve the future viability of the vegetable industry and its growers. *Vegetables Australia* spoke to Hort Innovation Relationship Managers Brad Wells and Christian Patterson about their role in supporting growers.

Horticulture Innovation Australia (Hort Innovation) currently has four strategic investment pillars that guide levy investment in the vegetable industry. They are Farm Productivity, Resource Use and Management; Market and Value Chain Development; and Consumer Alignment. In addition, the Drive Train pillar provides underlying support to help increase the scope and effectiveness of all R&D projects and activities.

Each year Hort Innovation, using the National Vegetable Levy and funds from the Australian Government, invests a significant amount of funding into grower-focused R&D projects that align with these pillars.

Vegetables Australia spoke to Hort Innovation Relationship Managers Brad Wells, who works within the Market and Value Chain Development pillar and Christian Patterson, who works within the Consumer Alignment pillar, about their roles in ensuring growers are aware of new R&D projects in the industry.

A PRIMARY FOCUS

Both Brad and Christian are working closely with their respective Strategic Investment Advisory Panels (SIAPs) and other growers to develop the next vegetable Strategic Investment Plan, which aims to accurately reflect the industry's R&D funding priorities over the next five years.

"It's important for growers to be involved so we know we are going in the right direction, that we know it's a grower-focused research outcome and also that they have ownership of the decisions that are made," Brad said.

"When outputs like the *Export Strategy 2020* are finalised, growers know that it's coming, they are excited about the work and the investment that's coming and they are involved in the process of implementing such an important project. They can also be advocates out in the field."

Christian added that the panels allow for a varied, experienced group to offer advice as to what areas of investment are most important and critical to their respective industry.

"The involvement of these panels is critical to the success of the funding of various projects, as they are the voice of the greater

industry and represent a cross-section of industry experts – growers, suppliers and the like," he said.

GROWER COMMUNICATION

One valuable aspect of Brad and Christian's role as Relationship Manager is the ability to visit Australia's vegetable growers, who are spread out across the nation.

However, travelling to meet growers face-to-face and communicating information can be a challenge.

"Getting the information out and having people understand the value of the R&D that's happening can be a challenge," Brad said.

"Sometimes, you've got a core group that understand but it's then trying to drive the benefits of that R&D out to the rest of the industry. That is why we're excited about the vegetable industry's Regional Capacity project where you've got people located around Australia in specific production areas. Working with them is important."

Brad and Christian both relish the opportunity of face-to-face interaction with growers.

"My best work as a Relationship Manager is done face-to-face with the growers. Sometimes the best advice and industry information is gathered when you're standing in the field with a grower and getting a first-hand understanding of the issues," Christian said.

He added that Hort Innovation plays a significant role in the adoption of R&D on-farm in the vegetable industry.

"As the body that invests the levies collected, we're responsible for ensuring that the R&D is taken up as much as possible by growers and other stakeholders. This is a critical part of what we do and contributes greatly to the growth and sustainability of the industry."

FURTHER GROWTH

Brad believes there is great potential for growth in the vegetable industry, particularly in exports. This sentiment was clearly reflected in the recently developed *Export Strategy 2020*, which aims to increase Australian exports by 40 per cent, or \$315 million, by 2020.

"The Market and Value Chain Development SIAP is enthused by the strategy's goals. I think we're going to areas that we probably haven't touched on previously and with free trade agreements and strong demand for our products, that makes exporting more viable," Brad said.

Christian added that providing support for younger growers is also a priority.

"I also see an opportunity with the younger growers forging their way into the industry. Supporting these younger growers along the way is vital – there's a lot to learn from these guys and they also need our support from the ground up," he said.

Australia's vegetable growers are able to contact Brad or Christian should they require assistance, or need advice on any industry issues. They are also encouraged to become members of Hort Innovation to be updated with regular advancements in R&D.

"We want growers to see us as approachable and be safe in the knowledge that they are being heard. That is our ultimate goal," Christian said.

R&D ■ Drive Train

INFO

For more information relating to levy-funded R&D projects being delivered through Hort Innovation, please visit horticulture.com.au or contact Hort Innovation Relationship Managers Brad Wells on 02 8295 2327 or brad.wells@horticulture.com.au, or Christian Patterson on 02 8295 2382 or christian.patterson@horticulture.com.au.

This communication has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15027



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A MULTI-FACETED APPROACH TO SOIL BORNE DISEASE MANAGEMENT

Australia's vegetable growers face many challenges, including the threat of soil borne diseases. Researchers Dr Doris Blaesing, Donna Lucas, Kelvin Montagu, Len Tesoriero and Dr Gordon Rogers provide an update on a vegetable levy-funded project that will assist growers in managing each of the major soil borne diseases.

Vegetable growers and their advisers have identified soil borne diseases as one of their main challenges for soil management and crop protection. Soil borne diseases cost Australia's \$4 billion vegetable industry an estimated \$120 million each year.

Project VG15010, *A multi-faceted approach to soil borne disease management*, is a vegetable levy funded research and extension project. Extension outputs for this project are delivered by the Soil Wealth and Integrated Crop Protection projects (VG13076 and VG13078).

The project has already undertaken a range of activities since it was established in November 2016. The first was to prioritise the main soil borne disease threats facing growers and then work out what the project would do to improve their management.

Generally, soil borne disease management has become more challenging due to fewer crop protection options, more intensive production systems and consumers demanding perfect-looking produce, while at the same time wanting growers to minimise the use of pesticides. Growers and advisers also said that they are interested in integrated control methods and looking after soil health.

The latest techniques for managing these diseases was reviewed, and the information is now being translated into a suite of new grower-oriented best practice materials to communicate this information in an effective way. Other project activities include demonstration sites, field walks, webinars and master classes.

Several of the high priority diseases still need more research. For these, focused field and glasshouse research is being undertaken to provide effective management solutions to growers and advisers.

A key output for the project will be a comprehensive best practice guide for the management of economically important soil borne diseases in vegetables in Australia.

DISEASE PRIORITISATION

The project conducted a comprehensive gap analysis and prioritisation of soil borne diseases, hosts and regions using a process that built on previous projects and research in the area. The key components of the process included:

- A review of previous Australian soil borne disease projects and disease priority lists.
- Consideration of the Strategic Agri-chemical Review Process (SARP) priorities.
- Consultation with pathologists, nematologists, advisers and agronomists.
- Targeted survey of representative Australian vegetable growers.
- Input from the project reference group.
- Consideration of the value of production.

This process resulted in identifying the following disease and crop combinations as being worthy of attention by the project (see Figure 1).

Many of the diseases identified in the prioritisation process have already been the subject of a great deal of research, and relevant

information can be accessed via soilwealth.com.au. The website and an associated bulletin provide information on upcoming events. Please visit the website to subscribe to the bulletin.

NEW RESEARCH

The project has a focused research component, which investigates new methods for managing Damping off complex in baby leaf spinach, *Sclerotium rolfsii* and Damping off in capsicums and Cavity spot in carrots. To date, field trials on new fungicide chemistry have been established in Tasmania and Bundaberg, and the impact of improved soil management, including cover crops, biofumigation and compost additions is being evaluated in Tasmania and Western Australia.

LINK TO OTHER PROJECTS

The project links closely with the Adelaide-based South Australian Research and Development Institute (SARDI) on a project that is developing DNA testing methods to quantify disease inoculum in vegetable soils (VG15009). The current focus is on developing soil tests for Club root in brassicas and Cavity spot/forking in carrots.

The soil borne disease project is also engaging with the National Vegetable Extension Network (VegNET) in each state to bring regionally topical information to growers.

FIGURE 1: DISEASE AND CROP COMBINATIONS

CROP	SOIL BORNE DISEASE FOCUS
BRASSICAS	Clubroot (<i>Plasmodiophora brassicae</i>)
	Sclerotinia (<i>S. sclerotiorum</i>)
	Damping off (<i>Rhizoctonia</i> spp.)
CARROTS	Cavity spot and forking (<i>Pythium sulcatum</i> and <i>P. violae</i>)
	Damping off complex (<i>Rhizoctonia</i> spp./ <i>Pythium</i> spp.)
	Root knot nematodes (<i>Meloidogyne</i> spp.)
BABY LEAF SPINACH	Damping off complex (<i>Rhizoctonia</i> spp./ <i>Pythium</i> spp./ <i>Fusarium oxysporum</i>)
LETTUCE	Sclerotinia (<i>S. sclerotiorum</i> and <i>S. minor</i>)
	Damping off complex (<i>Rhizoctonia solani</i> / <i>Pythium</i> spp., <i>Fusarium oxysporum</i>)
CAPSICUMS AND CHILLIES	Sclerotium stem rot (<i>Sclerotium rolfsii</i>)
	Damping off complex (<i>Rhizoctonia</i> spp., <i>Pythium</i> spp., <i>Fusarium oxysporum</i> , <i>Phytophthora</i> spp.)
	Root knot nematodes (<i>Meloidogyne</i> spp.)
FRENCH BEANS	Sclerotinia (<i>S. sclerotiorum</i>)
	Damping off (<i>Rhizoctonia</i> spp.)
	Sclerotium rolfsii
LEEKES AND CELERY	Basal plate rot (<i>Fusarium</i>)
	Pink root (<i>Pyrenochaeta terrestris</i>)

R&D ■ Farm Productivity, Resource Use & Management

INFO

For more information, please refer to soilwealth.com.au or contact Dr Doris Blaesing (dorish@rmcg.com.au) or Dr Gordon Rogers (gordon@ahr.com.au).

This project has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15010



SOIL BORNE DISEASE MANAGEMENT: WHAT WE ALREADY KNOW

Some key management practices apply to all the key soil borne diseases and vegetable crops and are therefore a focus of the project's extension and demonstration activities. They are:

Understanding risks

- Pre-plant soil tests and seed tests.
- Crop histories and monitoring of diseases in previous crops to guide site selection and crop choices.
- Weather monitoring and disease forecasting to help with managing risks identified by, for example, soil and seed tests and to target pesticide applications.
- Understanding the relationship between soil borne disease and soil conditions/soil health (suppressive soils).
- The abovementioned risk assessments are not yet used a lot for commercial crops because R&D gaps still exist. The project team will cooperate with parallel research projects that address R&D gaps in this area.

Managing risks

It is important for growers to consider the following in an attempt to prevent soil borne diseases:

- Site selection, knowledge of paddock conditions and disease history.
- Rotation with non-hosts.
- Selection of optimal planting times (especially for susceptible varieties or 'risky' paddocks).
- Soil health management, especially biological diversity and soil structure (minimum tillage or controlled traffic) and suitable organic amendments (suppressive soils).
- Enabling good surface drainage and soil structure.
- Microclimate manipulation for irrigation (minimise foliage wet periods, use drip irrigation) and humidity (row direction and plant spacing, canopy type).
- Use of tolerant or resistant cultivars.
- Biofumigation/cover crops.
- Avoiding excess nitrogen and ensuring good overall nutrient/fertility management.
- Good weed control and controlling hosts.
- Roguing infected plants early.
- Minimising soil, water and equipment movement from infested fields to clean sites and implementing hygiene and sanitation practices.
- Optimising fungicide types, application methods and timing, as well as pesticide resistance management.
- Fumigation for protected and high value crops such as seed (this a last resort).

For all damping off fungi (e.g. *Pythium* spp., *Fusarium* spp., *Rhizoctonia* spp.) additional risk management approaches are:

- "Clean" seed and transplants and good nursery practices.
- Minimisation of plant stress via good overall crop management.
- Monitor water source (especially for hydroponic crops) to ensure there are no pathogens.
- Support quick emergence from soil and good early root growth.



COMPARISON OF FIELD AND COVERED CAPSICUM AND LETTUCE PRODUCTION

In this edition of *Vegetables Australia*, AUSVEG Economist Dominic Regan examines the yields of two important vegetable crops: capsicum and lettuce. While they may seem to be an unlikely pair, these commodities have been chosen because both respond very well to production in covered systems.

Capsicum and lettuce account for around seven per cent of all vegetable crops grown in Australia, producing around 185,000 tonnes per year. There are around 750 businesses growing these two crops.

This Economic Update will examine yields in field and covered production of capsicum and lettuce in Australia.

CAPSICUM PRODUCTION

Covered production does not have to involve expensive investment in modern glasshouse technology. Many of the benefits associated with covered capsicum cropping can be gained with low-cost poly coverings in tropical and sub-tropical areas by reducing damage caused by heavy rain, wind and solar radiation. With the correct setup, pests can also be more cost-effectively managed, which makes covered cropping a viable and profitable investment.

Growers can extend the growing season significantly and produce more and higher quality fruit under cover. Capsicums grown under cover account for less than eight per cent of total area devoted to their cultivation, but account for around 16 per cent of total production, making

it a much more efficient growing method.

Field growers average around 20 tonnes per hectare (T/Ha), while covered operations are producing more than twice that weight. Queensland and Western Australia are the most productive outdoor capsicum growing states, with yields over 20 T/Ha. Official statistics need to be interpreted with caution, but Victoria has the highest covered yields at over 60 T/Ha, with South Australia and Western Australia producing over 40 T/Ha each.

LETTUCE BY NUMBERS

Lettuce also adapts well to covered growing techniques. Although less than one per cent of the total lettuce crop is under cover (as with capsicums), covered cropping accounts for a larger share of production at over 2.5 per cent. Field-grown lettuce averages around 20 T/Ha across Australia but varies from around 9 T/Ha in New South Wales and 18 T/Ha in Queensland and South Australia, to a high of 23 T/Ha in Victoria.

As the statistics show, covered cropping techniques for capsicum and lettuce are already producing much higher yields than traditional field-grown crops. A number of site-specific

factors will affect whether these higher yields result in higher returns to growers.

However, with the prediction of more frequent extreme weather events, investment in coverings becomes an increasingly logical response. The greatest benefits may come from labour savings as more plants can be grown in a smaller area. Along with soilless cultivation, automation and innovations in labour, the potential to significantly improve returns to growers exists in covered cropping.

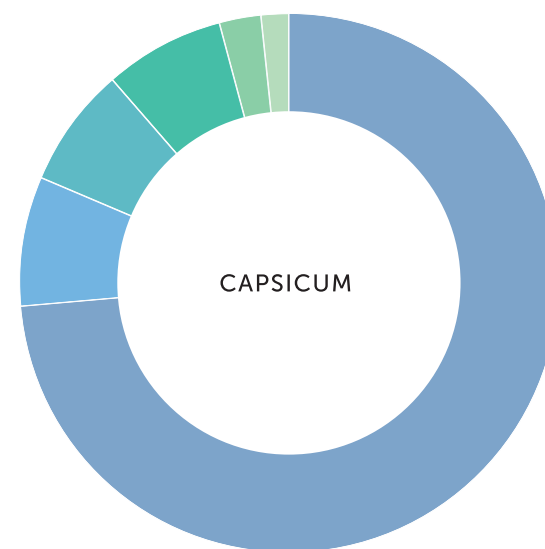
R&D ■ Drive Train

INFO

For more information, please contact AUSVEG Economist Dominic Regan on 03 9882 0277 or dominic.regan@ausveg.com.au.

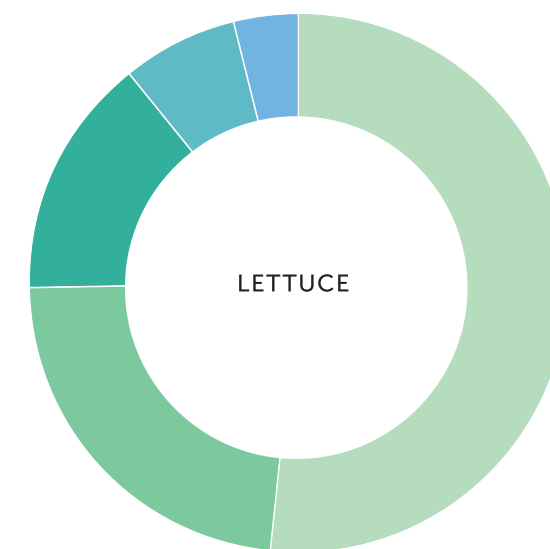
The Economist Sub-Program has been funded by Horticulture Innovation Australia using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15027



■ TAS ■ NSW ■ WA ■ VIC ■ SA ■ QLD

Source: ABS, Australian Commodity Statistics, 2014-15



■ NSW ■ SA ■ WA ■ QLD ■ VIC

Source: ABS, Australian Commodity Statistics, 2014-15

TABLE 1: CAPSICUM AND LETTUCE STATISTICS

VEGETABLE TYPE	AREA (HA)	TONNES	YIELD (T/HA)	VALUE (\$M)
CAPSICUMS - OUTDOOR	1,801	36,838	20.4	\$121.2
CAPSICUMS - UNDER COVER	149	6,895	46.1	\$22.7
CAPSICUMS - TOTAL	1,951	43,732	22.4	\$143.9
LETTUCE - OUTDOOR	6,855	136,035	19.8	\$163.8
LETTUCE - UNDER COVER	52	3,497	67.4	\$4.2
LETTUCE - TOTAL	6,907	139,532	20.2	\$168.0

Source: ABS, Australian Commodity Statistics, 2014-15

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PLANTING THE SEED FOR A SUCCESSFUL BUSINESS

James Dickson's passion for plants started in the backyard garden as a boy. He has spent the past 15 years in nurseries and is showing no signs of slowing down in his current role as Head Grower at Gro-Link Nursery, a family-run business at Werribee South in Victoria. James spoke to Michelle De'Lisle about his role at Gro-Link, the future of the business, the challenges faced and his thoughts on the vegetable industry as a whole.

"Growing is a combination of art and science – the art is when to use the science."

So says James Dickson, Head Grower at Gro-Link Nursery and a private consultancy business owner.

James should know: After 15 years of working in various nurseries around Australia, he has created and designed a process of growing called a *Holistic Approach to Standardised Management*.

"What that means is that all inputs into this facility are factored in and understood," James explains.

"It's the quality of the media in which we grow the seedlings, the quality of the water, the nutrients and how all these inputs interact with each other to then create a standardised growing approach, purely for the farmers."

James' passion for growing seedlings and his thirst to improve and simplify the growing process has contributed to business and personal success.

His workplace, Gro-Link Nursery, is owned by the Fragapane family. Located at Werribee South, the second-generation business was established 25 years ago and plays an important role in the vegetable industry. Gro-Link was one of the first production nurseries in Australia, and it supplies more than 100 million seedlings per annum to growers primarily located in Victoria.

James' role as Head Grower involves all aspects of growing, including the full customisation of a nutrient program.

"There are so many different types of varieties and groupings of varieties that it takes a custom growing approach," he says.

A THRIVING BUSINESS

James has worked at Gro-Link Nursery for almost four years, and in that time the business has grown 10-15 per cent each year.

"It's all credit to the Fragapane family. They've created a fantastic nursery that just needed somebody with my passion and understanding of growing to help lift it up to the next level. I work so well with Managing Director David Fragapane – I always say that I don't work *for* the Fragapanes; I work *with* them and that's how I still feel after four years," James says.

"I have a fully autonomous role and we work closely with our stakeholders and every seed company in Australia. There are just so many little things that we do and I suppose that's my biggest input – my experience with nutrient management and being able to grow a consistent, healthy seedling. As a result of that, our business is growing rapidly."

GROWER CHALLENGES

Despite a booming business, James says weather is his toughest test as a grower – particularly the conditions

experienced in Victoria over the past 12 months.

"Whatever is happening within the climate, we're feeling it at the ground level. It's much harder than it ever has been to grow a consistent crop, purely because of these massive fluctuations in temperature, which also brings more disease pressure or extended life cycles of insects. I just find the last 12 months have been more challenging than ever," James says.

In response, Gro-Link Nursery – under the watchful eye of James and the Fragapane family – has started to undergo major changes that will span over the next 1-2 years and make way for ongoing growth of the business.

"We're going through a large-scale retro fitting of our current facility, which will give us a lot more control of our nutrients, our water quality and our sterilisation practices within the nursery. We're moving from quite a manually operated system to digital dosing systems – all touch screen control systems," James says.

"We're also looking at building a large under cover facility, which will give us a lot more temperature control and also take away that huge element of rain events and hail."

IMPORTANT ISSUES

There are many areas of research that are vital to the ongoing sustainability of the vegetable industry, and James outlined what he believes are most important.

"What I find is, there's a gap between the research that's happening and the average farmer having an understanding of how it benefits them," James says.

"Continued research around crop protection is also needed. I'm a big believer in Integrated Pest Management – more work needs to be done around using beneficial insects, the natural health of the soil using bacteria and focusing on back when they were farming 100 years ago. Over the generations, farmers have become so used to having high crop protection

inputs and I feel that's not necessary in this day and age.

"With the farmers that are going back to focusing on the health of their soil, I'm seeing a greater result in their farm with less inputs – whether it be less synthetic fertilising inputs or less crop protection inputs.

"I'd love to see more research done around more sustainable field-growing practices, in the right balance. No-one wants to lose 20 per cent of their crop, but they'd be happy to lose five per cent of their crop if it meant that they weren't spraying as much and the health of their soil was coming back to how it was 50 years ago."

SUSTAINABILITY GOALS

James' broad knowledge and his standardised management approach to growing was recently recognised at the 2016 Syngenta Growth Awards, where he was named a regional winner in the sustainability sector.

The forward-thinking grower described the experience as humbling.

"I was just so proud to be considered part of that league of industry people," James says.

"What Syngenta was trying to understand is: How do we better educate the average consumer about why we have to do what we do with vegetable crops? Everybody is able to get information at the touch of their phone, and there is a whole new movement of pest-free and chemical-free produce, but in reality crop protection products play a very important role in the sustainability of being able to provide enough food for the population.

"A healthy, forward-moving seedling is the beginning of all successful farms. It's so important that the nurseries are producing and delivering healthy seedlings because it impacts the farmers so much if they don't have that consistency. There's something really pure and simple about what we do here."



VEG GROWING LEADERS ANNOUNCED FOR 2017

Now in its eighth year, the Growing Leaders National Vegetable Industry Leadership Program will return in 2017 with 18 participants announced. This year's workshops will focus on developing participants' skills and knowledge to contribute to debate, drive change and address challenges in the Australian vegetable industry.

The Growing Leaders National Vegetable Industry Leadership Program is returning in 2017, with 18 participants ready to take part in the vegetable levy-funded initiative.

Facilitated by Rural Training Initiatives, Growing Leaders aims to build individual vegetable industry participants' skills and knowledge, strengthen businesses in the vegetable community and assist individuals in developing solid skills for the future benefit of the industry.

This year, there were 29 applicants vying for a place in the program and Rural Training Initiatives Managing Director Jill Briggs was thrilled with the quality of applications.

"The 29 people who applied put in terrific applications, so we've got a strong field again. We're really looking forward to this year's program," Ms Briggs said.

She added that participants can expect to develop key leadership skills, with exposure to effective ways of handling conflict and improved communication techniques on the program agenda.

"They will definitely achieve an outcome because they'll be spending time as a group of 18 coming up with a project that they have to deliver by the time the program has finished," she said.

"I believe they will also achieve a clear understanding of how the industry works and where the decision makers sit, and how to influence those decision makers."

CHALLENGING WORKSHOPS

The Growing Leaders program consists of nine days where participants attend workshops that focus on experiential learning (the program has three residential sittings and each runs for three days at a time).

The first three-day residential commenced on 7 March in Melbourne with the theme of "Leadership and Me." The workshops helped participants to understand how they work as a leader and who they are.

A highlight of this residential was a visit to the Melbourne Market. "This was terrifically informative and eye-opening, particularly for the growers who may not have stepped into that part of the supply chain before," Ms Briggs said.

An industry networking dinner was also held with guests spending time hearing from the Growing Leaders and sharing their knowledge. The second residential will be held in conjunction with Hort Connections 2017, a joint industry conference and trade show hosted by AUSVEG and PMA Australia-New Zealand from 15-17 May at the Adelaide Convention Centre. The third and final residential sitting will be held in Canberra in September.

GROWING LEADERS 2017 PARTICIPANTS

Alexander Russell, PEAQ Farms	Katie Tierney, Organic Growers Group
Alexandra Keith, Bulmer Farms	Kaushik Mulukutla, Fresh Select
Andrew Moore, Harvest Fresh Cuts	Kellisha Iyalu, One Harvest
Andrew Shaw, AUSVEG	Kim Phan, 4 Ways Fresh
Chris Friars, Riverside Produce (Harvest Moon)	Lachlan Schreurs, Schreurs and Sons
Darren Wood, Monsanto	Rachel Archbald, Syngenta
Dumisiani Mhlanga, Choice Seedling	Roslyn Pennings, Barden Produce
Herman Kemp, One Harvest	Sina Niakansafy, Houston's Farm
Jamie Alabakis, Fresh Select	Tayla Field, One Harvest

R&D ■ Drive Train

INFO

For more information about Growing Leaders, please contact Rural Training Initiatives Managing Director Jill Briggs at jill@ruraltraininginitiatives.com.au.

This project has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15030



NEW FUNGICIDE AIMS TO TACKLE DISEASE RESISTANCE

A new level of disease control will be available to the Australian horticultural sector through chemistry that was not previously available to growers. The registration of a new fungicide will provide growers with an alternative to control Downy mildew and Late blight, along with other product advantages.

The launch of Bayer's Infinito® SC Fungicide marks the introduction of two new fungicide modes of action into the Australian vegetable foliar fungicide market: Group 28 and 43.

The fungicide brings growers particular benefits around resistance management and also provides an alternative to control Downy Mildew and Late blight.

"The two active ingredients in the one formulation provide a good anti-resistance strategy because they're different modes of action and there's no known resistance to either of the components anywhere in the world," Bayer Senior Development Specialist Norm Stone said.

"Infinito gives growers a good arsenal for control of those particular diseases – there's been a lack of new chemistry in this area for a number of years, so it is an exciting development for Bayer and industry more generally."

DISEASE CONTROL

Peter Dettloff, who grows onions along the Murray River near Swan Reach in South Australia, trialed the fungicide on part of his 30-hectare program in 2016 with good results.

Mr Dettloff said the product is a much-needed alternative for control of diseases such as Downy mildew.

"We have a number of diseases that give us fairly major issues and Downy mildew is one of them. We've had a lot of cool weather and damp conditions, which have been conducive to outbreaks," he explains.

"If you're not vigilant with regular inspections of your crop and nipping Downy mildew in the bud at the early stage, you can get significant crop loss."

Perhaps the most significant aspect to the registration of this product is the options it will give growers to manage disease resistance.

"The fact that it's new chemistry is significant – the biggest problem we've had with a lot of the current Downy mildew controls is basically there are only two main active ingredients used," Mr Dettloff said.

"Disease resistance is a big issue, so as a grower you certainly look at trying to bring anything with new chemistry into the program to minimise those issues."

INFO

For more information, please contact your local Bayer Crop Science representative or visit www.crop.bayer.com.au.

LOOK OUT FOR THE BUYERS' GUIDE IN THE NEXT ISSUE!



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CROPLANDS

MINOR USE PERMITS

PERMIT NUMBER	CROP	PESTICIDE GROUP	ACTIVE	PEST/ PLANT DISEASE/ TARGET WEED	DATE ISSUED	EXPIRY DATE	PERMIT HOLDER	STATES
PER13322 VERSION 2	Kang kong, ceylon spinach, amaranth, taro (leaves) and watercress	Insecticide	Spinetoram	Potato moth (<i>Phthorimaea operculella</i>)	12-Jun-12	31-May-22	Horticulture Innovation Australia Limited	ACT, NSW, QLD, SA, TAS, NT and WA
PER14536 VERSION 2	Sweet corn (field only), chillies and paprika (protected and field), spring onions and shallots (field only)	Miticide/ Insecticide	Abamectin	Two-spotted mite (<i>Tetranychus urticae</i>)	30-May-14	31-Dec-18	Horticulture Innovation Australia Limited	All states (except VIC)
PER13088 VERSION 2	Specified root vegetables, celeriac, leeks, spring onions and shallots	Insecticide	Spinetoram (Success Neo Insecticide)	Western flower thrips, Hawk moth and Helicoverpa sp.	29-Mar-12	31-Mar-22	Horticulture Innovation Australia Limited	NSW, QLD, WA, NT, TAS, ACT and SA
PER13626 VERSION 2	Silverbeet, spinach, spring onions, shallots, green beans and navy beans	Herbicide	S-Metolachlor	Various broadleaf and grass weed	23-Jul-12	30-Jun-22	Horticulture Innovation Australia Limited	ACT, NSW, QLD, SA, TAS, NT and WA
PER13496 VERSION 2	Celery	Herbicide	Linuron	As listed on approved product label	4-May-12	30-Apr-22	Horticulture Innovation Australia Limited	All states except VIC

All efforts have been made to provide the most current, complete and accurate information on these permits, however we recommend that you confirm the details of these permits at the following APVMA website: apvma.gov.au/permits/search.php.

LABEL REGISTRATION: REVUS

Please note that the following permit (PER14837) will now be surrendered due to the recently approved label extension by the APVMA. The new Syngenta "Revus Fungicide" (Mandipropamid) Label has been registered.

PERMIT NUMBER	CROP	PESTICIDE GROUP	ACTIVE	PEST/ PLANT DISEASE/ TARGET WEED	DATE ISSUED	EXPIRY DATE	PERMIT HOLDER
PER14837	Leafy vegetables including: head and leafy lettuce, rocket, silverbeet (chard), endive, spinach, Asian leafy vegetables	Fungicide	Mandipropamid	Downy mildew (<i>Plasmopara viticola</i>)	24-May-15	31-Mar-18	Horticulture Innovation Australia Limited

MALDISON REGISTRATION FOR FRUIT FLY

The following permits will be surrendered at the end of the summer season (May 2017) as the uses are now registered and covered under a label registration.

PERMIT NUMBER	CROP	ISSUED DATE	EXPIRY DATE
PER13815	Maldison/Persimmons/Fruit Fly	20-Feb-13	30-Jun-18
PER12940	Maldison/Strawberries, Blueberries and Rubus spp./Fruit Fly	6-Oct-11	30-Jun-18
PER13749	Maldison/Strawberries (perimeter bait spray only)/Fruit Fly	29-Oct-12	31-May-21
PER13677	Hy Mal Insecticide/Rubus, Ribes and Blueberry/Fruit fly bait spray	28-Jun-13	30-Jun-18
PER13253	Maldison/Table grapes/Queensland and Mediterranean Fruit fly	31-Jan-12	31-May-21
PER13031	Maldison/Capsicums and Cucumbers/Fruit Fly	6-Oct-11	31-May-17
PER12907	Maldison/Stonefruit/Fruit Fly	6-Oct-11	31-May-21

INDUSTRY IN THE MEDIA

AUSVEG reached a cumulative national audience of 602,230 in February, with 190 media reports mentioning AUSVEG across print and broadcast outlets.

TOMATO-POTATO PSYLLID DETECTION

Following the detection of Tomato-potato psyllid in Western Australia in February, AUSVEG National Manager – Science and Extension Dr Jessica Lye appeared extensively on radio. Dr Lye noted that the psyllid is the number one priority pest for the potato industry and it also impacts vegetable crops such as tomato and capsicum.

She added that some eastern states of Australia have put emergency movement restrictions into place until producers in Western Australia can prove area freedom. Dr Lye also urged growers to remain vigilant in checking their crops.

RECENT REFORMS

AUSVEG CEO James Whiteside appeared in print media discussing the reforms to the Horticulture Code of Conduct. Mr Whiteside stated that the code had been in need of reform, and was now more relevant to growers. He congratulated the Federal Government for the proposed reforms which will strengthen the transparency of trading relationships.

AUSVEG National Manager – Public Affairs Jordan Brooke-Barnett

also appeared on radio discussing the reforms to the Horticulture Code of Conduct as well as the recent Country of Origin Labelling reforms, which will give consumers greater confidence about where their food has come from.

BOOSTING VEG EXPORTS

AUSVEG National Manager – Export Development Michael Coote appeared in print and broadcast media discussing the *Vegetable Industry Export Strategy 2020*, which aims to increase the value of vegetable exports to \$315 million, or 40 per cent, by 2020.

Mr Coote said the strategy will ensure vegetable exports are treated as a long-term channel to market by delivering industry-specific export training programs for growers, increasing the range of opportunities for growers to connect directly with overseas buyers and exploring product development and collaboration opportunities to determine the best products or business models for export success.

R&D INFO

Communication of R&D projects in the Australian vegetable industry has been funded by Horticulture Innovation Australia Limited using the research and development National Vegetable Levy and funds from the Australian Government.

Project Number: VG15027

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AN ONLINE MARKETPLACE FOR GROWERS

The HiveXchange is a national online wholesale market for fruit and vegetables. It has been designed and built in consultation with producers in Australia, allowing them to find and trade directly with participating wholesale buyers and agents from the farm gate. HiveXchange CEO Antonio Palanca explains what this online market has to offer growers.

Currently, there is no national marketplace for wholesale fresh produce in Australia and no online marketplace for produce. To fill this void, HiveXchange has been built to facilitate sustainable trade outcomes for farmers and the food industry using digital technology, specifically trust-based e-commerce.

The business model has wholesale buyers purchasing vegetables through the online market. Lines added in recent months include mushrooms, broccoli, cauliflowers, leafy greens and capsicums.

PLATFORM COMPARISON

There are differences between this online initiative and a traditional wholesale market transaction, as HiveXchange CEO Antonio Palanca explained.

"Firstly, the HiveXchange is always open, it's national, and all prices negotiated with the end buyers are visible. It is not a physical marketplace, it's an electronic marketplace and everything is managed electronically with automation support," Mr Palanca said.

"Growers should consider using the platform to build more resilience into their distribution. It is not advocated that growers should completely replace their existing channels; rather that they should get serious about looking at digital technologies as a way of reaching new markets, building more direct relationships with different buyers and building greater resilience into their supply chains."

Mr Palanca added that growers have the flexibility to make private offers at different price points to different buyers, or open offers to everyone. Trade is automatically contracted under the Horticulture Code of Conduct and levy collection is automated for every trade.

FRAUD PROTECTION

The platform is owned and managed by an Australian operation, and Mr Palanca assures growers that trades executed over the HiveXchange are secure and private.

"As for buyers, the website recruits quality buyers, many of whom would be well-known to farmers. The farmer is trading direct with those buyers and not through intermediaries, reducing risk," he said.

"The marketplace has a business development team on hand to offer growers insight into the bona fides of buyers on the platform, and every single trade is contracted with binding legal obligations on both the buyer and seller."

INFO

For more information, please visit hivexchange.com.au or call 1800 417 017. To register to trade on the HiveXchange, visit hivefloor.com.au/register.

CALENDAR

3-4 MAY: EAST GIPPSLAND VEGETABLE INNOVATION DAYS

Where: Lindenow, Victoria

What: Lindenow, a tiny town nestled in the fertile Mitchell River valley, is set to attract more than 600 delegates from around Australia and overseas when it hosts the East Gippsland Vegetable Innovation Days. The event will be held at Bulmer Farms and will be jointly hosted by agronomist Stuart Grigg and Bulmer Farms' Managing Director Andrew Bulmer.

Further information: Please contact Shayne Hyman on 0417 330 081 or see page 12.

5-8 APRIL: FOOD & HOTEL INDONESIA

Where: Jakarta, Indonesia

What: Food & Hotel Indonesia is a leading international food and hospitality event, attracting key trade-only buyers from all sectors of the hospitality and retail industry. This year's event will be largest in the show's history with 1,600 international exhibitors set to connect with over 30,000 qualified buyers.

Further information: foodhotelindonesia.com.

15-17 MAY: HORT CONNECTIONS

Where: Adelaide Convention Centre, South Australia

What: A joint initiative between AUSVEG and PMA Australia-New Zealand (PMA A-NZ), Hort Connections will be co-hosted by Australian Organic, Onions Australia, Irrigation Australia, Central Markets Association of Australia, Fresh Markets Australia, Potatoes South Australia, Growcom and Nursery and Garden Industry Australia. This premier event will deliver a world-class program and trade show to growers and whole-of-supply companies alike.

Further information: Please contact AUSVEG on 03 9882 0277 or visit hortconnections.com.au.

6-8 SEPTEMBER: ASIA FRUIT LOGISTICA

Where: Hong Kong

What: Asia Fruit Logistica is Asia's leading trade show for the international fresh fruit and vegetable business. Last year's event attracted more than 11,000 visitors from 74 countries. The Logistica is accompanied by Asiafruit Congress, which takes place the day before the trade show.

Further information: asiafruitlogistica.com.



HORT CONNECTIONS

15-17 May 2017

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AROUND THE STATES



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Queensland peak industry body Growcom has been successful in obtaining funding through the Fair Work Ombudsman's Community Engagement Grants Program (CEGP), which targets vulnerable workers.

Unfortunately for the horticulture industry's national reputation, there have been many well-publicised examples of workers being mistreated in the horticulture industry.

The seasonal nature of the industry and a transitory workforce increases the vulnerability of our workers to exploitation, despite many growers operating ethically.

Growcom, along with many other industry representative bodies, is keen to show leadership in this area and ensure growers across Australia are completely across their obligations.

Labour is the single biggest cost for most growers. Shonky operators who treat their workers poorly can significantly undercut the many growers or labour providers doing the right thing, and push prices down.

Our industry employs large numbers of working holiday makers and people from non-English speaking backgrounds who tend not to engage with employee support services. By targeting employers rather than the workers themselves, we are hoping to see a significant improvement in the treatment of these workers across the industry.

The funding will enable us to roll out our workplace relations Best Management Practice module (Hort360) nationally to provide growers with one-

The conclusion of the Plant Biosecurity Cooperative Research Centre (PBCRC) in 2018 requires the development of a plan to coordinate research, development and extension (RD&E) in this important area. Following the Australian Farm Institute's consultation into the options for a nationally coordinated plant biosecurity RD&E structure, the PBCRC has released a proposed model called SmartBiosecurity. A future model will need to progress high level RD&E capabilities to the plant-based industries and develop a robust, long-term strategy to ensure adoption of projects and project outcomes.

NSW Farmers continues to discuss the proposed SmartBiosecurity model but agrees that there is a need for a plant biosecurity RD&E model that will maintain and strengthen Australia's biosecurity framework. Our biosecurity footprint represents a competitive advantage for agricultural produce, delivers enhanced biosecurity outcomes for plant industries and has been a collaborative effort from federal, state and industry members and other partners through

on-one risk assessments of their current practices.

Using data generated by this process, Growcom will develop targeted workshops dealing with specific areas of non-compliance or concern, improving employment standards across the industry.

In conjunction with the Hort360 program, Growcom will be partnering with the on-farm assurance program Freshcare to develop an ethical treatment of workers certification to enable growers to demonstrate (through a third party audit) that they are meeting best practice standards.

It is our objective to engage with the supply chain to gain recognition of this certification rather than using overseas systems that are less relevant in the Australian context and just add another compliance burden onto growers.

A long-term objective of this program is to facilitate growers to undertake formal training in human resources to build a 'beyond compliance' culture within the industry.

At a policy level, we are also keen to explore options for working more closely with the labour hire industry and have participated in national discussions concerning a labour hire certification program with other industry players such as the National Farmers' Federation.

As an organisation, we are very excited to have the opportunity to be part of the solution to this significant issue and ensure that all our growers do the right thing by their workers, boosting the reputation of the industry for the benefit of all.

funding of the model. We must ensure this is continued into the future.

Equally vital to the horticulture industry is access to labour. NSW Farmers continues to engage with AUSVEG, National Farmers' Federation and other industry organisations in seeking a working and just labour hire system. At the end of 2016, NSW Farmers participated in a number of meetings that looked at the options available to regulate and ensure labour hire companies are reliable – protecting farmers and farm labourers. Growers remain concerned about unscrupulous labour hire companies taking advantage of foreign workers, leaving the worker and the farmer exposed when they close their business down and leave problems behind them.

There are a number of considerations that NSW Farmers will be discussing with members, including investigating the establishment of an accreditation scheme for labour hire firms, a possible ethical labour component in quality assurance programs, and the possibility of a voluntary code of conduct for labour hire firms.



Wayne Johnston
Tasmanian Farmers and
Graziers Association
President
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Harvest has begun for processing varieties at both companies in Tasmania. Late sown crops have fared well, with cooler weather and good rain events in January. In general, it has been a low disease pressure season.

Isolated cases of crop damage due to an easterly rain weather event were reported along Tasmania's east coast in January. Early sown crops, which are being harvested now, are showing signs of a wet September and October start. There has been differing quality throughout depending on soil type, from red to light sands. Sandy soils are producing product that is mainly small in size, with some tuber cracking and splitting, while produce is visually better in the red soil. At this rate, both processors may struggle to achieve the required tonnage.

Fresh market crops are faring well, albeit a little later than normal and good prices remain.

In stark contrast to this time last year, water storages throughout the state are still in

good health. Growers are hopeful of a settled weather through to April to finish off crops and to commence storage harvest.

Prior to Christmas, the State Government announced that the Blueberry rust incursion which was discovered in August last year will not be eradicated. Instead it will be 'managed'. The infected property will be obliged to undertake a spray management program along with an on-farm management plan.

The TFGA believes that this is a poor outcome, not only for every other blueberry grower in the state, but for Tasmania's biosecurity system as a whole and the reputation that this state has enjoyed in this area for so long. Other producers look to Tasmania because of our strident and robust reputation in this area, and this decision has put that at risk. We will continue to fight for our state's biosecurity to be given the priority it deserves, at both state and national level.



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NSW Farmers' Association
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SEND US YOUR STORY IDEAS!

Vegetables Australia is always on the lookout for local and international vegetable R&D projects, leading growers and industry news to profile in the magazine.

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AROUND THE STATES



Jordan Brooke-Barnett
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AUSVEG SA spent a great deal of time in late 2016 fighting for SA growers to have access to new water resources as part of the 'Save our Foodbowl' campaign. At the heart of this issue was ensuring South Australian growers were able to receive a significant portion of 20GL in new water resources made available on the Northern Adelaide Plains.

In the view of AUSVEG SA, these resources are essential to ensure the existing industry is able to grow and provide jobs in the local community to build on the \$550 million contribution that our industry makes to the SA economy each year. It was initially flagged that an overseas consortium would be taking the majority of these resources; however, since our campaign, recent discussions with the State and Federal Government have given AUSVEG SA cause for hope of a common sense outcome that looks after local growers.

As part of the campaign, AUSVEG SA conducted significant survey work with growers and was able

to uncover 8GL of existing demand in the region, comprising a potential \$200 million in additional investment. AUSVEG SA has been making the case for local growers to have the ability to access these new water resources and building an economic case for supporting the incumbent industry. We have committed significant resources towards this campaign to secure these critical resources for local growers. While this issue is far from being resolved, AUSVEG SA is optimistic about recent discussions and thanks its members for their support on this critical issue.

In other news, AUSVEG SA has set Wednesday 12 April for its third annual Vegetable Industry Dinner and Awards for Excellence. The evening is an opportunity for the SA industry to get together and celebrate its leaders. AUSVEG SA thanks its members for their support of last year's event and looks forward to seeing a good turnout at this year's event.



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In response to the recent detection of Tomato-potato psyllid (*Bactericera cockerelli*), Agriculture Victoria has imposed restrictions on the importation of host material sourced from any State or Territory that has not issued an area freedom certificate for the pest. These restrictions came into effect at 12.00pm Monday 20 February 2017.

For the purposes of Victorian entry restrictions relating to the psyllid, the following definitions apply:

- 'Host Plant' means any plant or plant product belonging to the family Convolvulaceae or the family Solanaceae. This includes sweetpotato, capsicums, tomatoes, eggplants and potatoes.
- 'Host Material' means any host plant, and any agricultural equipment or packages used in the cultivation, processing, packaging or transport of any host plant.

Effective immediately, the entry or importation into Victoria of any Tomato-potato psyllid host material is prohibited, unless the host material was grown on, sourced from, or last used on a property where an officer responsible for agriculture has issued an area freedom certificate certifying that the State or Territory or part of the State or Territory is known to be free of Tomato-potato psyllid.

Containerised nursery stock, cut flowers and foliage belonging to the family Solanaceae that have been sourced from an area not covered by an area freedom certificate are prohibited entry into Victoria.

Where an area freedom certificate has not been issued, the host material must:

1. In the case of fruit belonging to the family Solanaceae, have undergone pre-shipment fumigation and inspection; or

2. In the case of tubers belonging to the family Convolvulaceae, have been brushed or washed to remove soil in accordance with an approved accreditation; or
 3. In the case of plants and plant products belonging to the family Convolvulaceae (excepting tubers), have been sourced from a property free of Tomato-potato psyllid in accordance with an approved accreditation; or
 4. In the case of agricultural equipment and used packages, have been cleaned free of soil and organic matter by brushing, high pressure water or steam; and
 5. Accompanied by a plant health certificate, assurance certificate or plant health declaration, certifying or declaring that the host material has been treated and inspected in a manner described in the above points 1, 2, 3 and 4.
- Please note that tubers from the family Solanaceae that have been sourced from an area not covered by an area freedom certificate are prohibited entry into Victoria.

Tomato-potato psyllid host material imported into Victoria, which are required to be accompanied by a plant health certificate, assurance certificate or plant health declaration must be:

1. Presented to an Inspector for inspection; or
2. Presented for verification by a person accredited to do so by Agriculture Victoria.

This information was accurate as at 2 March 2017. For more information or updates, please contact your local Agriculture Victoria Plant Standards Officer by telephone on 136 186 or email market.access@ecodev.vic.gov.au.

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