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EDITORIAL

While the first day of April may bring out a seemingly never-ending line of pranksters and hoaxers before midday, this year it was also a day of seriousness for many horticulture growers and traders – no joke about it.

On 1 April this year, the new Horticulture Code of Conduct came into full effect, meaning that all trading arrangements between a grower and merchant or agent must now comply with the Code. This mandatory industry code is regulated by the Australian Competition and Consumer Commission (ACCC) and covers the sale of unprocessed horticulture produce, including fruit, vegetables, edible fungi and nuts.

The Horticulture Code of Conduct aims to ensure that trading arrangements in the horticulture industry are clear and transparent, and dispute resolution procedures are fair and unbiased. After the Code was updated in 2017 to offer more protections and increased flexibility in trading arrangements, the deadline to ensure that growers and those they trade with comply with the new laws was extended to 1 April 2018.

Now that the deadline has passed, it is imperative for growers to make sure that all contracts comply with the new Code and all transactions are made under a Horticulture Produce Agreement (HPA). This agreement establishes the conditions of a commercial arrangement with a trader, including payment terms, quality

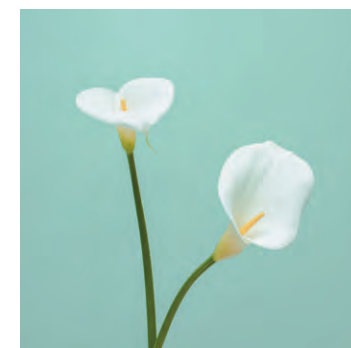
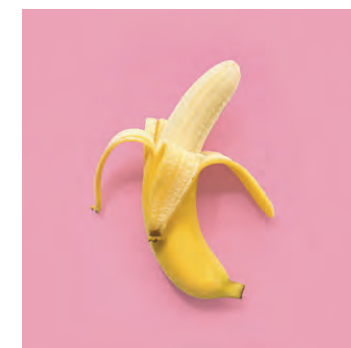
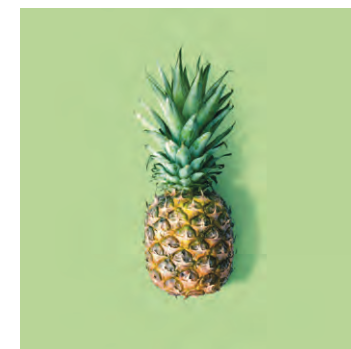
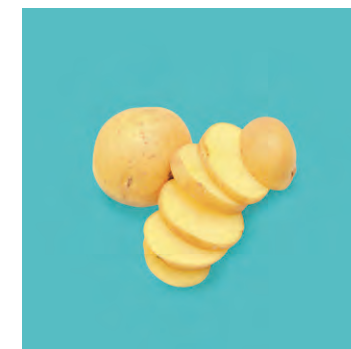
standards, rejection rights, termination and renewal, and how a dispute will be handled. The only exemptions are if you trade directly with a retailer, processor or exporter.

The legal requirement for growers and traders to sign a HPA is an important step in ensuring all parties have written records of their agreements and can be protected in the event of a dispute. It also offers some control over important commercial issues, such as payment times and rejected produce.

It's vital that growers are protected when trading with wholesalers and agents, and the Code helps to ensure that business is conducted appropriately. The ACCC can ask growers and traders to provide the necessary documentation to prove their compliance with the Code, and risk hefty penalties if the requirements are not followed.

Over the past few months, the Australian horticulture industry has been working hard to increase the understanding of the requirements under the Code through grower workshops that have been held across the country, as well as templates that can be accessed via Growcom's website (growcom.com.au).

If any growers face difficulty in implementing a HPA with traders, we encourage you to get in touch with AUSVEG on 03 9882 0277 or info@ausveg.com.au. You can also call the ACCC Infocentre on 1300 302 502 or visit accc.gov.au/horticulturecode for advice in ensuring that all parties are compliant with the Code.



HORT CONNECTIONS 18-20 June 2018
Brisbane Convention Centre

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I am pleased to announce that AUSVEG has joined the newly-formed Horticulture Council, which will ensure that the interests of the Australian horticulture industry are effectively aligned with the National Farmers' Federation (NFF).

The ability to work more closely with the NFF to establish a unified voice in Australian horticulture will increase the effectiveness of representation on cross-industry issues that affect all growers in the industry, such as access to reliable sources of labour and water.

The Council will be represented by AUSVEG, the Australian Blueberry Growers' Association, Apple and Pear Australia Limited, Dried Fruits Australia, Voice of Horticulture (representing its 21 members) and Summerfruits Australia Limited. The Victorian Farmers' Federation, NSW Farmers and Growcom will also be represented on the policy forum.

This announcement coincides with the appointment of Tyson Cattle to the role of AUSVEG National Manager – Public Affairs. In the coming months, Tyson will focus on significantly increasing our advocacy activities and building strong, fact-based cases that AUSVEG will take to government and other stakeholders to advance the issues that are impeding the growth and prosperity of our growers.

One of the biggest advocacy issues on the agenda is the current labour shortage in Australian horticulture. Growers and all downstream market participants are adversely affected by the difficulties associated with securing a reliable workforce and this severely impacts productivity.

Australian vegetable growers always have a preference to employ Australian workers, but the reality is that our industry has a substantial need to hire foreign labour, as local workers are often unwilling to work on vegetable and potato farms or are an unreliable source of labour.

In addition to working holiday makers, the Seasonal Workers Programme is an important contributor to the industry's requirement for imported labour, particularly during peak harvesting times. Workers from countries in the Pacific and Timor-Leste have successfully built strong relationships with growers and become regular seasonal employees.

We need to do more to promote our industry to local and international workers as an employer of choice. To do this we need to shine a brighter light on the vast majority of growers who treat their workers well and provide a range of job and career opportunities to a broad cross-section of their local communities, and in doing so, substantially support their local economies.

AUSVEG will work to ensure that on-farm labour success stories are given the recognition they deserve, and I encourage any grower who wants to share their good news stories to get in touch with our editorial team so that we can publish more positive news stories about our industry.



Bill Bulmer

Bill Bulmer
Chairman
AUSVEG



James Whiteside

James Whiteside
CEO
AUSVEG

AUSVEG has been a vocal advocate for clearer Country of Origin Labelling laws for many years, and we have urged fast food outlets to consider the recent request by Minister for Agriculture and Water Resources David Littleproud MP for them to adopt the new country of origin labelling system.

The new Country of Origin Labelling laws came into effect on 1 July 2016 and will become mandatory on all food products sold in retail stores from 1 July 2018. However, some food products are exempt, including food sold for immediate consumption at fast food outlets and cafes, such as potatoes used for French fries.

While the new country of origin labels provide more information to consumers about their food, the new system's impact will be lessened if it is not applied equally across all food groups.

This inconsistent, two-tiered approach to the new labelling system is problematic for consumers, but if the fast food industry can get on board and agree to voluntarily display these labels on their food products, it would be a decisive affirmation of the right of Australian consumers to make more informed decisions about the food they buy.

It's also a good time to have a conversation as to why our industry is so susceptible to competition from processing potato and vegetable imports.

If our growers aren't able to be cost-competitive with imported produce in an open market, and if this is driving food producers to look overseas for their ingredients, then all stakeholders need to consider how we can work together to help our growers supply Australian consumers with the locally-grown food they're after. This will ensure our potato and vegetable growing operations and wider industry remains profitable and sustainable into the future.

On a lighter note, preparations for Hort Connections 2018 are progressing steadily. AUSVEG and PMA A-NZ have again united to deliver the joint industry conference and Trade Show with a range of industry co-hosts at the Brisbane Convention Centre from 18-20 June.

Nominations for the 2018 National Awards for Excellence are now open. The majority of awards will be presented at the Gala Dinner on 20 June, where potato and vegetable growers and other members of the Australian horticulture industry will be recognised for their achievements and contributions to the industry.

With nine awards on offer, AUSVEG encourages all growers and industry members to go to hortconnections.com.au to nominate their peers who are leading the way in their chosen field. I hope to see you all in Brisbane for what will be another successful event on the industry calendar.

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GET READY! HORT CONNECTIONS 2018 SET TO RETURN TO QUEENSLAND

Preparations for Hort Connections, now in its second year, are in full swing. The event, to be held at the Brisbane Convention Centre from 18-20 June 2018, is set to bring together a record number of growers, supply chain members, government stakeholders and industry service providers in Australian horticulture – and registrations are now open.

In less than 60 days, over 3,000 delegates are expected to converge on the Brisbane Convention Centre for the largest event in Australian horticulture. Hort Connections 2018 is the combination of the National Horticulture Convention and PMA Fresh Connections, and AUSVEG is pleased to host this event once again alongside the Produce Marketing Association Australia-New Zealand (PMA A-NZ).

Building on its inaugural success in 2017, the conference promises to provide immense value to growers, retailers and whole-of-supply-chain members, with unparalleled networking opportunities, world-class speakers and an expansive Trade Show. For the first time, a theme has been incorporated to dissect two key horticulture industry issues – *Doubling productivity and halving waste by 2030*.

Hort Connections 2018 will be co-hosted alongside a diverse range of horticulture industry bodies, including Growcom, Onions Australia, Australian Organic, Apple and Pear Australia Limited, Nursery and Garden Industry Australia, Protected Cropping Australia, the Australian Horticultural Exporters' and Importers' Association and the Australian Society of Horticultural Science. Fresh Markets Australia and the Central Markets Association of Australia are once again official sponsors of the Trade Show as well as co-hosts.

AUSVEG and PMA A-NZ are also looking forward to working with the major partners of this event: Hort Innovation, Bayer, Syngenta, CHEP, Corteva Agriscience™, Agriculture Division of DowDuPont™ and Woolworths.

THE TRADE SHOW

The Hort Connections 2018 Trade Show will provide a platform for a record number of exhibitors to display their cutting-edge products and services as well as forge new connections with delegates. With almost 300 exhibitors confirmed, the Trade Show has doubled in size, indicating that the horticulture industry has a strong desire for the supply chain to get in front of potential and existing customers, and showcase the latest on offer in industry technology, innovation and services.

This connection will be further strengthened with the introduction of the Trade Show Networking Hour, which will be held from 5-6pm on Tuesday 19 June.

Held in conjunction with the Trade Show will be plenary speaker sessions, headlined by National Farmers' Federation President Fiona Simson, award-winning global futurist Chris Riddell and Peak Solutions Entrepreneur-in-Residence Drew Yancey.

There are plenty of additional speakers lined up for the event, who will discuss a wide range of topics covering irrigation, marketing, crop protection and plant and food research and science.

BUILDING NETWORKS AND KNOWLEDGE

Back on the program in 2018 is the Women in Horticulture event, which will be held at the Brisbane Convention Centre on Wednesday 20 June. Keynote speaker Rachael Robertson led the Australian expedition to Davis Station, Antarctica – the second female to lead a team to the Station and the youngest-ever leader. Participants will also hear from *Landline* presenter Pip Courtney and how they can share their stories with the Invisible Farmer project.

Also returning this year are the Australian Vegetables Export Seminar and the Global Innovations in Horticulture Seminar, to be held on Monday 18 June and Wednesday 20 June respectively. They are both valuable opportunities for levy-paying vegetable growers to expand their business knowledge and are not to be missed.

The Perfection Fresh Breakfast and Syngenta Breakfast Session will also take place during the three-day conference, providing additional avenues for horticulture industry members to network with their peers, and gain an insight into different aspects of the industry.

Following the engaging speaker sessions and lively social program is the Hort Connections Gala Dinner, where the National Awards for Excellence will be handed out to the brightest stars of the horticulture industry in 2018. Nominations for the awards are now open, and forms can be found on the Hort Connections website.

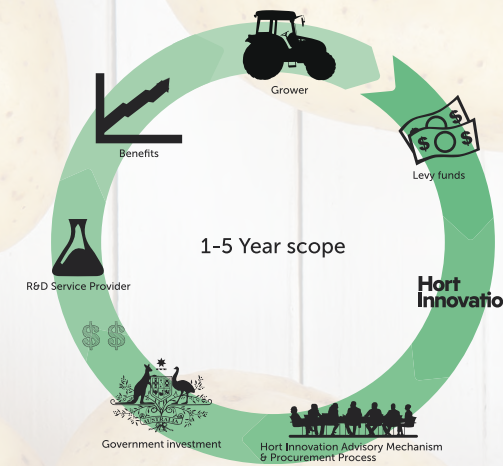
With many exciting speakers and a broad range of social events on offer, *Potatoes Australia* strongly encourages all members of Australian horticulture to register now so they don't miss out on what is sure to be the biggest event on the industry calendar.

INFO

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

THE FRESH POTATO R&D LEVY AT WORK

STRATEGIC LEVY INVESTMENT



WHO PAYS THE FRESH POTATO R&D LEVY?

The levy is paid by growers who produce and sell either fresh or processing potatoes in Australia.

The charge is set at 50 cents per tonne for fresh and processing potatoes and must be paid by the producer of fresh potatoes or the owner of processing potatoes. The Federal Government also provides funding in addition to grower levy payments. Once paid, these funds are managed by Hort Innovation.

HOW IS LEVY MONEY INVESTED?

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

All investments through the Potato – Fresh Fund are made with advice from the industry's Strategic Investment Advisory Panel (SIAP) – a skills-based panel made of panellists from across the fresh potato industry, the majority of whom are levy-paying growers.

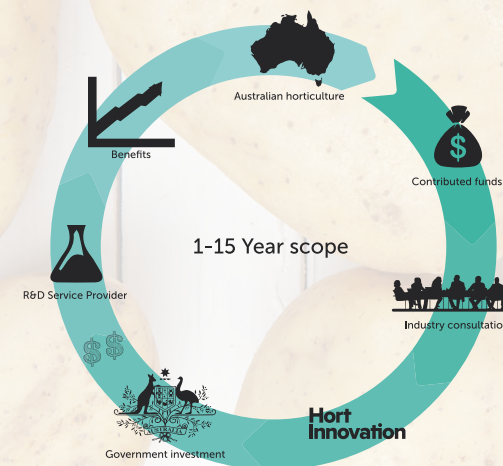
Strategic levy investments have a one- to five-year scope and the R&D is designed to directly benefit growers in the potato industry. Project topics range from pest and disease management to biosecurity matters, with findings communicated through a variety of channels, including *Potatoes Australia*.

You can find information on all current strategic levy investments, and details of the SIAP, on Hort Innovation's Potato – Fresh Fund page at horticulture.com.au/grower-focus/potato.

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

You can read more about Hort Frontiers and the seven funds within it at horticulture.com.au/hort-frontiers.

HORT FRONTIERS



HOW CAN GROWERS GET INVOLVED?

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

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



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



Candidatus Liberibacter spp. in potato. Image courtesy of Whitney Cranshaw, Colorado State University, Bugwood.org.

PROJECT REFLECTION: PREPARING AND PLANNING FOR THE ZEBRA CHIP COMPLEX

A key part of industry preparedness for a possible exotic plant pest incursion is the development of contingency plans specific to high risk pests for the industry. These plans are facilitated by Plant Health Australia, in conjunction with other industry partners. A contingency plan for the zebra chip complex was developed in 2011, and used extensively in 2017 following the discovery of tomato potato psyllid in Australia. *Potatoes Australia* reports.

The arrival of the zebra chip complex in New Zealand has had widespread impacts on their potato industry in terms of crop productivity, quality and management costs. As growers learn to manage the disease across the ditch, it is a timely warning for Australia's potato industry to remain on the front foot in preparation for a potential incursion.

In 2008, a project was undertaken to develop a threat-specific contingency plan for the zebra chip complex. This plan was put together to assist the potato industry to prepare for an incursion by providing background information on the biology and available control measures for the zebra chip complex in potato. The complex is made up of the bacterium (*Candidatus Liberibacter solanacearum*) and its psyllid vector, the tomato potato psyllid (TPP; *Bactericera cockerelli*), both of which are needed to cause zebra chip.

The development of the contingency plan was guided by the potato industry, AUSVEG and technical experts with knowledge of the pathogen or the psyllid, and was overseen by Plant Health Australia.

The plan was called upon in 2017 after TPP was discovered in Western Australia, and sections of the document were used in developing a response plan during the incursion.

Development of a Contingency plan for the Zebra chip complex (PT10018) was a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

PLANNING AHEAD

Leading the desktop project was Plant Health Australia's Dr Sharyn Taylor and Jo Slattery, who sourced literature reviews on zebra chip as well as unpublished material provided by experts in both Australia and New Zealand.

Dr Taylor, who is now Plant Health Australia's National Manager for Surveillance and Diagnostics, said the literature searches followed a template within the contingency plan to collate important background information.

"This is anything that will assist with an understanding of what TPP does and how to potentially manage it, and things that may

be needed for surveillance, tracing and quarantine," she said.

"It's really to help provide the information needed for a response plan."

Contingency plans for exotic plant pests such as the zebra chip complex are available on the Plant Health Australia website and are ready for use when needed by the affected industries.

"These plans sit on the shelf and our hope is that we never have to use them. They are there for preparedness so if the detection occurs in Australia, the information is available to assist the response," she said.

When TPP was discovered in a Perth backyard in February 2017, Dr Taylor said the zebra chip contingency plan was the first document people turned to; although, given the age of the plan, some information needed to be updated, such as information about crop protection products relating to TPP control.

"While these documents are very useful, they need to be relevant. We need to keep reviewing them and making sure that they're current with information from around the world," she said.

STAYING VIGILANT

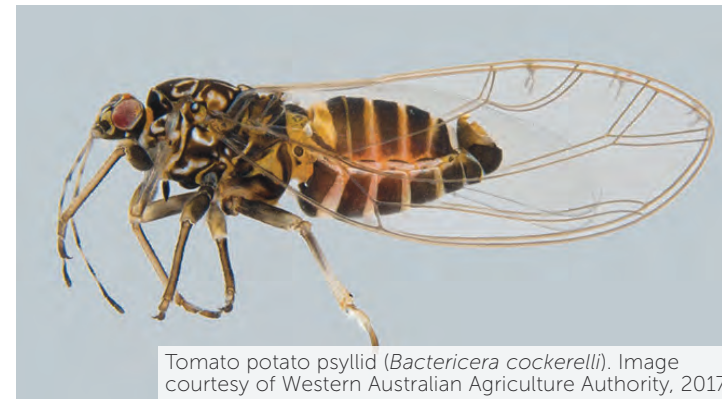
Now that TPP has been detected in Australia, Dr Taylor reiterated the need for constant surveillance and grower vigilance.

"Now that we have the TPP vector for zebra chip in Western Australia, we want people to be on the lookout for any symptoms of the disease," she said.

"There are certain symptoms that can be seen in potatoes, particularly when those potatoes are cooked, and that's been a real spud production and quality issue for New Zealand. While the psyllid itself does cause damage and does need to be controlled, it can be a devastating problem when it's combined with the bacterial pathogen that causes zebra chip.

"If people do think that they have seen the psyllid in other areas outside of Western Australia, it's particularly important that they report it to assist with appropriate management."

However, in the case of an exotic pest incursion, the message is: be prepared.



Tomato potato psyllid (*Bactericera cockerelli*). Image courtesy of Western Australian Agriculture Authority, 2017.

"The better prepared we are, the better chance we have of providing the management tools or advice industry needs," Dr Taylor said.

"Advice for preparedness in general is an important thing. It's part of an insurance policy. We hope that we never need to use it, but when we do, it's really critical that we have current and up-to-date information."

IDENTIFYING TOMATO POTATO PSYLLID (TPP) AND ZEBRA CHIP

TPP is a tiny sap-sucking insect that is brownish with white or yellowish markings on the thorax and a broad white band on the abdomen. Wings are transparent and held vertically over the body. Adults resemble small winged cicadas and are about 3mm long.

The pest primarily attacks a range of plants in the Solanaceae family which includes potato, tomato, eggplant, capsicum, chilli and tamarillo. It also attacks sweetpotato.

Candidatus Liberibacter solanacearum is a bacterium associated with zebra chip disease in potatoes, which results in reduced crop yield and crop health, stem death, yellowing of leaf tissue and misshapen tubers.

Symptoms of zebra chip in potatoes include the plant having shortened internodes and aerial tubers may develop in the leaf nodes, while potato tops are likely to be smaller than normal. The foliage also turns yellow and may have a burnt or purplish appearance. In processed potatoes, the infection causes a brown discoloration in the potato, which is more noticeable when it is fried.

Stems may die completely but regrowth from the base may occur. Tubers from affected plants may have small stalked tubers protruding from the main tuber, called 'chaining', and when cut may show internal browning of the vascular ring or brownish streaks along the medullary rays.

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 more information, please contact Dr Sharyn Taylor on 02 6215 7700 or staylor@phau.com.au, or visit planthealthaustralia.com.au.

The final report for this project is available on InfoVeg. Readers can search 'PT10018' on the InfoVeg database: ausveg.com.au/infoveg/infoveg-database.

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

Project Number: PT10018



INDUSTRY PLANS TO HELP GROWERS MANAGE TPP THROUGH THE SUPPLY CHAIN

It is critical for tomato potato psyllid (TPP)-affected industries to develop and implement management plans to effectively control the pest. The plans also demonstrate industry commitment to minimising the spread and impact of the TPP/*Candidatus Liberibacter solanacearum* (CLso) complex throughout the supply chain.

The Western Australian Department of Primary Industries and Regional Development in partnership with peak industry bodies are working together to develop industry-specific Enterprise Management Plans to help growers manage the TPP complex according to best practice.

WHAT IS AN ENTERPRISE MANAGEMENT PLAN?

An Enterprise Management Plan brings together the best available knowledge into one easily accessible resource for growers, and includes five key components:

1. How to identify TPP and the CLso bacterium.
2. Risk pathways.
3. Control and management options.
4. Biosecurity awareness and implementation.
5. Post-farm gate management.

The plans utilise existing good practice, biosecurity, and quality assurance and certification documents to build on current systems and avoid duplication.

WHY ARE THESE PLANS NEEDED?

Enterprise Management Plans are essential in supporting ongoing efforts to renew and maintain market access, as well as underpin certification and assurance schemes. The plans will also help growers and industry manage TPP both pre- and post-farm gate.

Much of the information is available from local, interstate or international sources, so it brings this information together in a user-friendly format relevant to each industry. Any gaps in knowledge are being flagged for further research.

The vegetable, potato, nursery and garden, and processing tomato industries will have these plans. AUSVEG, vegetablesWA, Potato Growers Association of Western Australia, Australian Processing Tomatoes Research Council and the Nursery and Garden Industry Association are working with the department to develop industry-specific plans for their members.

Growers will be able to access their industry plan online and at industry information sessions during May 2018.

INFO

For more information please contact Gavid Foord at Foord Systems on 0435 018 189 or gfoord@westnet.com.au.



Photography by Rhonda Doyle.



LEADING THE WAY IN POTATO AGRONOMY



NAME: Ruaan Du Plessis
AGE: 43
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 Agronomist at I.K. Caldwell

of mechanisation are dictated by the availability of semi- and low-skilled labour.
 South Africa has export markets into Africa, while Australia must send export produce much further to markets. Major processors like McCain Foods and PepsiCo operate in both countries. Approximately 20 per cent of South African potatoes are processed.

HOW DID YOU FIRST BECOME INVOLVED IN THE INDUSTRY?

I started working with a prominent seed potato farm as a fertiliser agronomist 18 years ago, and have been involved with various potato growers in my agronomy career.

WHAT DOES YOUR ROLE AT I.K. CALDWELL INVOLVE, AND WHAT ARE YOUR RESPONSIBILITIES?

I provide agronomic advice to a range of I.K. Caldwell customers in northern Victoria and southern New South Wales.
 An agronomist plays a key role in the decision-making processes on-farm. It is important to be relevant in the decision-making process and to add value to a farming operation.

WHAT NEW INNOVATIONS, RESEARCH AND/OR PRACTICES HAVE SOME OF YOUR GROWERS IMPLEMENTED RECENTLY?

An increased focus of paying attention to crop canopy management, which can eventually drive higher yields. Variable rate application of nutrients, water and other inputs through irrigation systems will possibly be the next step to help increase on-farm yields.
 To grow potatoes well, lots of water is needed. It is crucial to

manage water usage to grow optimal yields and quality crops. Variable rate water application technology on centre pivots is starting to make inroads on Australian potato farms.

WHAT DO YOU ENJOY MOST ABOUT WORKING IN THE POTATO INDUSTRY?

Potatoes are a horticulture crop that require constant agronomic input to grow well. I have an affinity for horticulture and that's what motivates me to enjoy my work.

WHAT ARE THE BIGGEST CHALLENGES YOU FACE WORKING IN THE INDUSTRY, AND HOW DO YOU OVERCOME THEM?

Higher levels of scrutiny applied to agriculture chemical (ag-chem) products can result in a reduction of ag-chem options used on-farm. In some cases, this may force growers and their advisers to implement production principles that are potentially more environmentally-friendly but not always effective in addressing the issue at hand.

WHAT ARE THE MOST COMMON ISSUES THAT YOU SEE IN POTATO CROPS AROUND YOUR REGION?

Seasonal variability in production performance – some seasons see growers having issues with tuber quality for processing; water availability and the cost of irrigation water can dictate the seasonal volume of crops grown; soilborne pests like nematodes and the effect of this pest on potato production; typical foliar diseases such as blights that can reduce production if not treated/managed correctly; and the imminent threat of tomato potato psyllid.

WHERE DO YOU RECEIVE ON-FARM PRACTICE ADVICE AND INFORMATION BEFORE SHARING IT WITH YOUR GROWER NETWORKS?

Industry bodies such as Hort Innovation, peak bodies representing the various grower's groups and consultation with I.K. Caldwell

colleagues. I also liaise regularly with input supply companies to keep abreast of current developments in the ag-chem sector and associated inputs sector, which can potentially drive increases in crop production.

IN YOUR OPINION, WHAT AREAS OF RESEARCH ARE IMPORTANT TO THE POTATO INDUSTRY?

Processing potato products are generally seen as convenience foods and not necessarily as healthy food options – this perception need to be addressed through innovative processing solutions to make the product more appealing to discerning consumers.

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

Potatoes need to be marketed as a healthy food option. This vegetable type needs to be seen in the same light as trendy vegetable types if the industry wants to grow its domestic market share.

WHERE DO YOU SEE YOURSELF IN FIVE YEARS?

Busy with agronomy as part of a mentoring team to help the horticulture industry achieve better, long-term results.

HOW DO YOU THINK MORE YOUNG PEOPLE COULD BE ENCOURAGED TO STUDY AND TAKE UP JOBS SUCH AS AGRONOMY IN THE POTATO INDUSTRY?

Food and fibre will always be in demand, and suitably skilled people are needed to make this happen. Agronomy is one part of this highly dynamic chain.
 Incentives like industry scholarships and graduate programs need to be considered. The incentive programs need to entice students to consider a career in agronomy.
 Agriculture's image in general must become trendier/modernised to attract young people to the industry.



GROWERS PLAY THEIR PART TO REDUCE WASTE AND COMBAT HUNGER

Each year, Australia's largest hunger relief organisation Foodbank distributes over 37 million kilograms of food and groceries to those in need, equivalent to over 183,000 meals a day. To achieve this, there is a high priority for donations of fresh fruit and vegetables. Three Australian growers detail why they donate to Foodbank, and the benefits it provides to their businesses, the industry and society.

Hunger doesn't discriminate in Australia, and the statistics are alarming: 3.6 million Australians have experienced food insecurity at least once in the last year, with 652,000 people seeking food relief from Foodbank's charity partners each month. Out of these 652,000, 27 per cent are children.

Foodbank is the largest hunger relief organisation in Australia, and it offers the Foodbank Fruit and Vegetable Program. This gives growers the opportunity to donate fresh produce to people and families who are struggling, and it is also a viable way to reduce food waste.

Working with Australia's fruit and vegetable growers in all facets of the supply chain, Foodbank collects any produce in surplus, not to specification or incorrectly labelled – as long as it is suitable for human consumption. Produce can be donated easily at one of Foodbank's warehouses around the country, wholesale markets or directly from the farm.

Potatoes Australia spoke to growers from Victoria, Queensland and South Australia who donate a large amount of fresh fruit and vegetables each year to Foodbank about why they take part in the program.

GETTING INVOLVED

Foodbank Victoria visits the Fresh Select Werribee pack house on a weekly basis to collect donations, or is on-call if required. Fresh Select donates cauliflower, broccoli, celery, lettuce, cabbage and Brussels sprouts to the organisation.

Fresh Select Operations Manager Anthony Palma said the company decided to get involved with Foodbank after realising there was a huge amount of fresh produce going to waste due to surplus stock, or produce not up to specification.

"We also asked all our growing partners if they were able to donate, even if it's only one box it all adds up and they were more than willing to help," Anthony said.

"The benefit for vegetable growers getting involved in an initiative like this is that it allows them to reduce food waste by donating produce which would otherwise be disposed.

As an industry it makes us proud to know we can be part of something that is benefiting the greater community and assisting those in need."

Carl Walker from Phantom Produce in far-north Queensland has

encouraged a number of growers in the Bowen region to donate to Foodbank.

He said it helps everyone – not just the underprivileged – and pointed to Cyclone Debbie which affected much of Queensland in March 2017 as an example.

"After the floods, people didn't realise how many middle-class families could not afford to eat properly because their house was damaged by the floods – they were struggling. That's what I tell people: it's not just about the underprivileged; what about the middle-class families that have some bad luck? One of them might lose their job and are struggling to make payments," Carl said.

"It could happen to any of us, so Foodbank is from a social point helping your fellow man and it's economically good long-term for our future customers."

HELPING SOCIETY

John Magarey is a pear grower from South Australia. He and his brother, Andrew, run Magarey Orchard and have been donating to Foodbank in South Australia for 11 years. The brothers decided to become involved in the charity for two reasons.

"One is that we have an interest in trying to help people, and second is that we have product that we're not able to sell in the marketplace very easily so we decided it was an easy match – instead of throwing it in the bin, send it somewhere where it helps people," John said.

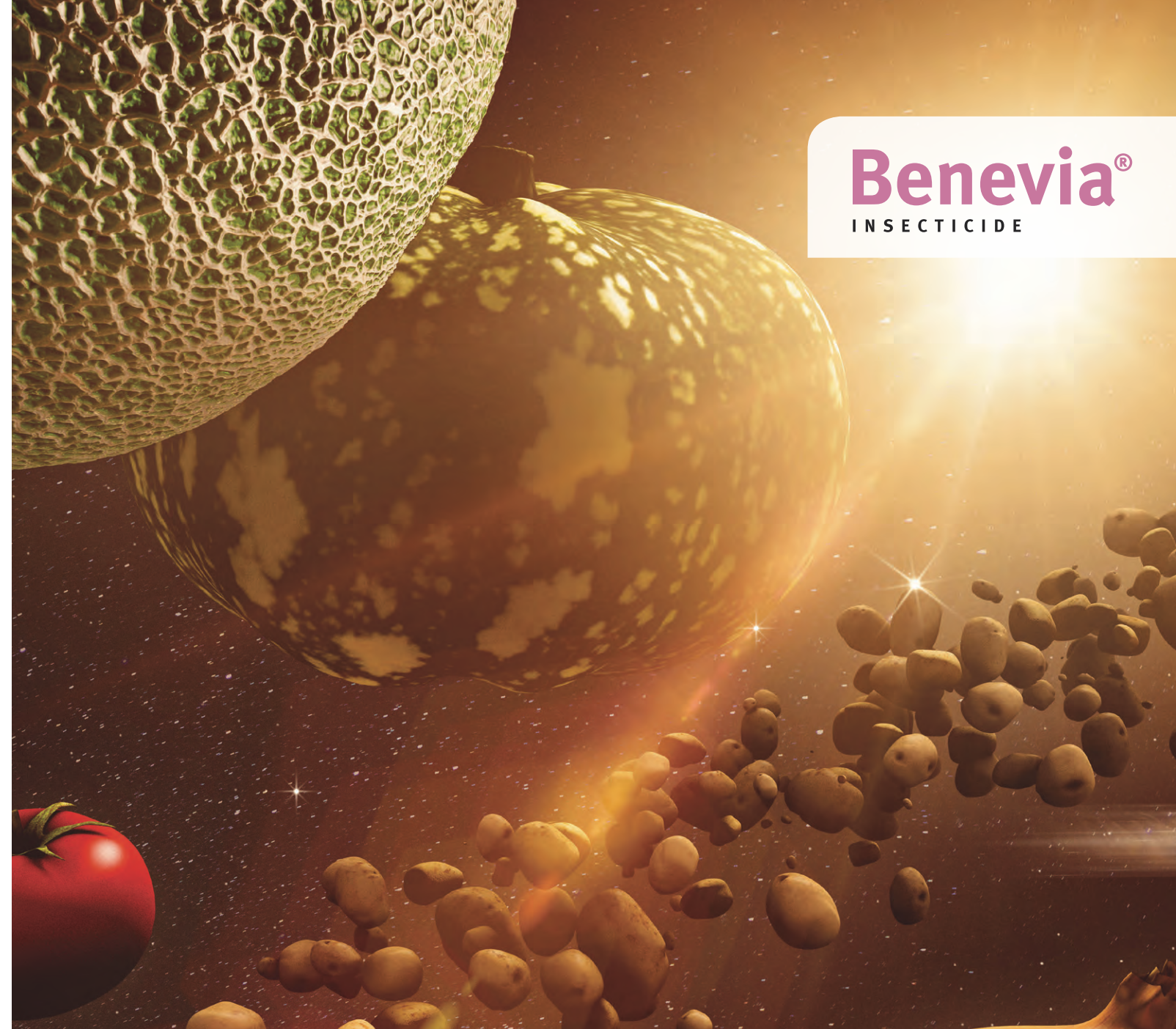
John is humble about what his business does for Foodbank South Australia.

"We're not after a financial gain out of doing this. You do it because you feel as a society, we're trying to find the best use of our product in all places.

"We have a desire to be helpful to people – but we're not doing anything out of the ordinary, nor is it extraordinary for us as a business. It's just something that is good for our society to do, which is try and make the best use of all we've got."

INFO

For more information or to find out how to donate, please visit foodbank.org.au.



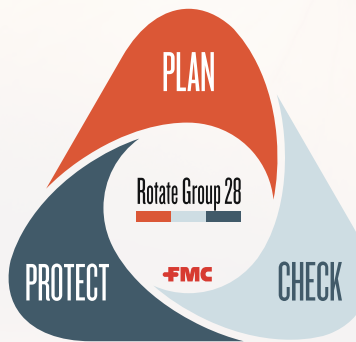
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University of Maine potato specialist Dr Steve Johnson.



Former director of the potato program for the North Dakota State Seed Department Willem Schrage.



INDUSTRY AND SCIENCE EXPERTS GATHER FOR PLANT PATHOLOGY PRESENTATION

Victorian members of the Australasian Plant Pathology Society held a special presentation hosted by ViCSPA on 13 February. The keynote speakers of the day included Willem Schrage and Dr Steve Johnson from the United States, who spoke at length about the challenges facing potato growers in Australia and the US. *Potatoes Australia* reports.

The importance of potato seed certification was on the agenda in February with around 30 people converging on ViCSPA's headquarters at Toolangi, north-east of Melbourne, for a Victorian Branch meeting of the Australasian Plant Pathology Society.

ViCSPA General Manager Dr Nigel Crump welcomed the visitors to Toolangi and gave an overview of seed potato certification and its importance in Australia. Attendees then heard from two international guest speakers, University of Maine potato specialist Dr Steve Johnson and former director of the potato program for the North Dakota State Seed Department, Willem Schrage, who shared their experiences of working with certified seed potato growers in the United States.

La Trobe University PhD student Brittney Caruana also presented at the event. Ms Caruana is working with Dr Brendan Rodoni at the AgriBio facility located at the university's Bundoora campus in Victoria, and her presentation focused on developments in the laboratory to improve the prediction of disease resistance in potatoes.

A HELPING HAND

Mr Schrage spoke about factors influencing seed potato productivity, which include potato varieties and diseases. He also outlined the three pillars of seed potato certification: industry and growers; research; and regulations and enforcement. Research, he said, was particularly important in establishing tolerances, testing procedures, and studying the eligibility of fields and pest and disease monitoring.

A former field inspector, Mr Schrage was in Australia as a guest of ViCSPA to work with seed inspectors and growers in Victoria and South Australia about the issues currently affecting them.

"Having an international expert such as Willem work with the

seed inspectors adds to the professional capability of our seed inspectors and ensures that we are operating to a high standard," Dr Crump said.

Mr Schrage told *Potatoes Australia* that Australia is very similar to other potato growing countries around the world, with diseases such as potato virus Y (PVY) affecting crops.

"PVY has become a problem and people have to come to grips with the combination of aphid pressure and keeping seed clean over the generations," he said.

"One of the things we saw is that symptomless carriers of PVY can give great disappointment on the farm and people don't realise it.

"The ViCSPA requirement that you leaf test your seed crops just before harvesting, I think, has prevented a lot of problems on the farms. However, the problem of course is always if you find a positive, it means you have a positive but if you don't find a positive, it doesn't mean a disease isn't there. That's one thing that I've found here – it is very similar to where we are in North Dakota."

EXPERT INSIGHT

Dr Steve Johnson, a crops specialist and extension professor with the University of Maine, was in Australia for the first of two three-month educational sabbaticals working with ViCSPA. During this time, Dr Johnson will develop a range of educational tools to improve grower knowledge and skills and ultimately enhance the productivity and profitability of Australian growers. This work is being funded by the University of Maine and ViCSPA.

Dr Johnson's presentation was entitled *Dickeya: A Real Threat to Australian Potato Seed Production*. He reflected on the past three years since *Dickeya* was discovered in the

United States, and noted that it was the fastest epidemic he had ever worked with.

Most commonly, blackleg in Australia is caused by the bacteria pathogen *Pectobacterium atrosepticum*. However, a strain of *Dickeya* (*Dickeya dianthicola*) causing blackleg of potato was found in Western Australia in 2017. There are no other reports of *Dickeya* affecting potatoes in Australia. Dr Johnson's presentation gave a good insight to the experiences in dealing with a new pathogen that causes blackleg of potatoes and the need for the Australian industry to remain vigilant in regards to this new pathogen.

Dr Johnson discussed the conditions that can lead to a higher incidence of *Dickeya* in potato crops, including a warmer environment (with temperatures over 25 degrees Celsius). He warned that yield reduction can be as high as 100 per cent due to this destructive disease, and it tends to spread with water running down the row, which causes further crop losses.

Dickeya levels increase over time, and from disease symptoms in the field, it can be difficult to tell the different species of the causal pathogen apart. Dr Johnson said the industry needs to understand the pathogen(s) that can cause blackleg and added that it spreads rapidly with potato handling.

He reiterated the need for clean potato seed to prevent this disease from presenting itself in a crop.

"*Dickeya* and blackleg development is related to seed inoculum level. You need to get it out of the seed, and make sure that the certification tolerances set are valid (with more tests)," he said.

To wrap up the presentations, Ms Caruana gave an in-depth, technical insight into the advanced potato breeding work being done as part of her PhD thesis. She discussed how current commercial cultivars could be improved in terms of disease resistance, postharvest and yield.

Using PVY as an example, she outlined the outcomes of her research: identifying new sources of PVY resistance and the delivery of advanced tools for the next generation of potato breeding.

GROWERS WALK THE FIELD IN SEARCH OF KNOWLEDGE

Potato growers across the Ballarat district received the opportunity to discuss the Australian potato industry with local and international experts, when they attended a Potato Paddock Field Walk in February hosted by Western AG's Ballarat branch.

More than 30 potato growers travelled to Ballarat in western Victoria for a Potato Paddock Field Walk, where they heard from a variety of speakers and visited two potato growing operations.

The Western AG Ballarat event, in conjunction with Nufarm, Bayer and IPM Technologies, was held on 14 February. Presenters on the day included two internationally renowned potato experts: Dr Steve Johnson, crops specialist and extension professor with the University of Maine; and former director of the potato program for the North Dakota State Seed Department, Willem Schrage.

Joining the American-based potato industry members were ViCSPA General Manager Dr Nigel Crump, Dr Paul Horne from IPM Technologies, Western AG agronomist David Ryan and R&D representatives from Nufarm and Bayer.

A wide range of topics were on the agenda, from alternative fungicide programs to new integrated pest management (IPM) programs and current trends in the global potato industry.

Field walk attendees visited two farms throughout the morning. The first stop was a trial site located at Dominic Prendergast's paddock in Ascot, north of Ballarat. This site compared fungicides including Nufarm's products Digger and Supanova.

It was here that Dr Johnson and Dr Crump addressed the crowd about threats to the potato industry such as tomato potato psyllid (TPP), along with ideal fungicide programs on display for the day.

The group then travelled to Clarkes Hill to visit an IPM demonstration conducted by IPM Technologies, where they met Dr Horne and Angelica Cameron, as well as Bayer representative Alistair Beyer.

Dr Horne and Ms Cameron demonstrated the effect of beneficial insects in the potato crop and handed around samples for participants to examine. They also discussed how to identify the beneficial insects as well as the benefits they provide to a crop. Mr Beyer spoke about Movento, an insecticide which is compatible with IPM production systems.

The day concluded with lunch and drinks, which provided an opportunity for growers to network and share their thoughts and ideas from the field day.

INFO R&D

For more information, please contact Dr Nigel Crump at nigel.crump@vicspa.org.au.

INFO R&D

For more information, please contact David Ryan at david.ryan@westernag.com.au



SHARING KNOWLEDGE: THE KEY TO PSYLLID MANAGEMENT

It has been over 12 months since the tomato potato psyllid was discovered in Western Australia, and other growing regions around the country are preparing for its potential arrival. In this column, McCain Foods Agriculture Manager Josh Opas reflects on a visit from New Zealand agronomist Rob Cox, who provided practical psyllid management advice to potato growers at meetings in Ballarat, South Australia and Tasmania.

McCain Foods Australia & New Zealand agriculture staff held a regional meeting in August 2017, which included a presentation from New Zealand North Island agronomist Rob Cox from In-Depth Agronomy, entitled *Practical Management of tomato potato psyllid (TPP)*.

The team was very impressed with the presentation as Rob had lived through the New Zealand TPP incursion and had developed a practical approach to advise growers.

At a similar time, McCain had set up a working group with Ballarat growers to look at all things TPP, and to prepare for a future incursion. Out of this, it was decided to bring Rob across to conduct grower meetings in Ballarat, South Australia and Tasmania. All growers in the district, both seed and commercial, were invited to achieve an "all-in" approach to control, with over 60 growers attending these meetings. Other industry representatives and agronomic advisers also joined the discussion.

The presentations were interactive and discussion involved the addition of integrated pest management (IPM) into any TPP management system; what to look for in terms of plant and tuber symptoms of zebra chip; how to recognise the various lifecycle stages of the psyllid; chemistry available (cost, efficacy and position in management system); and general crop monitoring.

TAKE HOME MESSAGES

- Monitoring your crop is critical to understand lifecycles of TPP and levels of beneficial predators, so targeted chemical control programs can be used – this maintains beneficials in the crop for as long as possible and controls the right lifecycle stages of TPP. Detecting plant symptoms will determine the level of infestation in a particular crop. Yellow sticky traps have limited benefit as they only give an indication of insect populations that may have infected crops in the past.
- Open communication with customers (whether it be processors or seed buyers etc.) is crucial – the earlier that a zebra chip-infected crop is established, the earlier a plan can be made to deal with the crop. Once a crop is infected, you cannot hide as both plant and tuber symptoms will be obvious.
- The New Zealand potato industry still exists and is expanding. Growers are making profits and processors are making chips. The industry has evolved for the better, becoming more professional.
- There will be added cost in both application and chemicals.

- Seed is a bigger issue as TPP will be transferred to new crops, increasing potential inoculum levels and spreading the problem. It is critical to maintain a strong seed scheme and seed that is void of zebra chip.

BUILDING KNOWLEDGE

These discussions boosted awareness among the grower community and enabled difficult questions to be answered. While a potential TPP/zebra chip incursion is a serious and major impost on the potato supply chain, it was positive to see how the New Zealand industry is managing the situation and therefore how the Australian industry may respond.

THE "ROLLS ROYCE" PROGRAM

New Zealand agronomist Rob Cox provided an example of a full and complete program that could be used to control the tomato potato psyllid (see below). He stipulated that crop monitoring to determine pest populations and life cycle stages, integrated pest management principles and growers' individual circumstance will determine the exact program.

Planting: Actara or Confidor (thiamethoxam/imidacloprid) in furrow

20DPP: Mavrik (tau-fluvalinate) x 1

27DPP: Vertimec (abamectin) or Transform (sulfoxaflor) x 2

41DPP: Movento (spirotetramat) x 2

55DPP: Benevia (cyantraniliprole) + possible knockdown x 1

62DPP: Vertimec/Tripsol (abamectin + acrinathrin) or

Transform x 2-3

83DPP: Delegate (spinetoram) x 2-3 (may require apheicide)

104DPP: Karate (lambda-cyhalothrin) x 3

125DPP: Methamidophos x 3

*Reglone

Approximate cost: \$1,000 – \$1,200 per hectare

INFO

For more information, please contact Josh Opas on 0438 045 144 or at jopas@mccain.com.au. To provide your feedback, contact Anne Ramsay on 0400 368 448 or at ppaa.eo@gmail.com.

EMPLOYMENT RECORDS: AN ESSENTIAL CHORE

In this edition, Growcom's Fair Farms team provides an overview of the records growers need to keep to achieve compliance with Australia's Fair Work laws and how to identify gaps in their employment records or procedures. New developments in the Fair Farms initiative are also outlined.

Few people get excited about paperwork and record keeping, but for better or worse, they are an essential part of operating a farm business. The same applies for employment records. Australia's Fair Work Act requires that all businesses maintain comprehensive employment records, and this is subject to random checks by Fair Work inspectors. Some of the key employment records that must be maintained include:

- Employment contracts.
- Evidence that comprehensive induction processes are followed.
- Hours of work and pay rates.
- Superannuation contributions.
- Leave – accrued and taken.
- Performance and behaviour management.
- Termination records.
- Individual flexibility arrangements (if used).
- Guarantee of annual earnings records.
- Transfer of business records.
- Records to show that due diligence practices are undertaken when working with labour hire contractors.

At a market level, retailers are under increasing pressure to demonstrate that they have 'ethical supply chains'. The emergence of assessments and audits for growers who supply supermarkets has become another significant driver for rigorous and efficient record keeping around employment policies, practices and procedures.

The volume of records that must be kept can be daunting, and is particularly challenging for farm businesses that have a high turnover of employees. Here are some tips that can make the task easier:

- Break things down into straightforward, manageable tasks.
 - Make record-keeping quicker and easier by developing practical templates for key documents. This will also help maintain uniformity in your records. A number of templates from Growcom are available at growcom.com.au/growcom-shop.
 - Set regular review dates to follow-up missing documents.
- Completing the Hort360 workplace relations module is an excellent way to identify any gaps in your employment procedures and records and make an action plan to address them. Online access to the module will be available soon for those who want to complete a self-assessment.

Employment records can be maintained manually, on the computer or kept online. It is important to use a system that you can operate easily and one that allows you to quickly demonstrate to an auditor or Fair Work inspector that everything is in order.

Keeping up-to-date with your employment records will help avoid incurring penalties for breaches of law and will ensure your business is ready, if necessary, to tackle an audit process seamlessly and with confidence.

CERTIFICATION FOR FARM BUSINESSES AND LABOUR HIRE COMPANIES

The Fair Farms certification – based on a new code of practice for fair employment in the fresh produce industry that will be certified through Freshcare – is in its pilot phase. The team is aiming to launch the scheme in mid-2018.

Good news for growers who use labour hire companies to supply farm workers: the Recruitment, Consulting and Staffing Association (RCSA) recently launched StaffSure. This certification scheme provides assurance that a recruitment or labour hire company is making every effort to operate legally and honestly in its activities and transactions. StaffSure will improve the level of visibility and transparency regarding workforce service providers – giving growers greater confidence that they are dealing with a reputable and proven provider. To find a certified company, go to staffsure.org.

SEE US AT HORT CONNECTIONS 2018

The Fair Farms Team will be at the Growcom booth at the Hort Connections 2018 trade display at the Brisbane Convention Centre from 18-20 June. Pop by and chat with us to find out more about:

- What's happening with the Freshcare Fair Farms certification.
- The new certification (StaffSure) available for labour hire companies.
- The Hort360 workplace relations module.
- Workplace relations matters and Fair Work laws.
- Practical ways for farm businesses to ensure their employment practices meet industry standards and comply with legal requirements.

The whole Fair Farms team will be at Hort Connections 2018, including:

- Rebecca Gardiner, Workplace Relations Advisor (Growcom).
- Donna Mogg, Industrial Relations Specialist (DLM Consulting).
- Rachel Mackenzie, Policy and Advocacy Manager (Growcom).
- Jane Muller, Fair Farms Initiative Project Coordinator (Growcom).
- Clare Hamilton-Bate, General Manager – Industry Development (Freshcare).

INFO

To register your interest in a Fair Farms seminar or Hort360 workplace relations risk assessment for your business, contact Rebecca Gardiner at Growcom on 07 3620 3844 or rgardiner@growcom.com.au.

The Fair Farms Initiative is delivered by Growcom in partnership with Freshcare and other industry groups. It is supported with funds from the Fair Work Ombudsman community engagement grants program.

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Adjuvant not required	✓*	✗	✗	✓
Liquid formulation	✓	✓	✗	✓
Rainfastness	When dry	n/a	6hrs	20 mins from drying

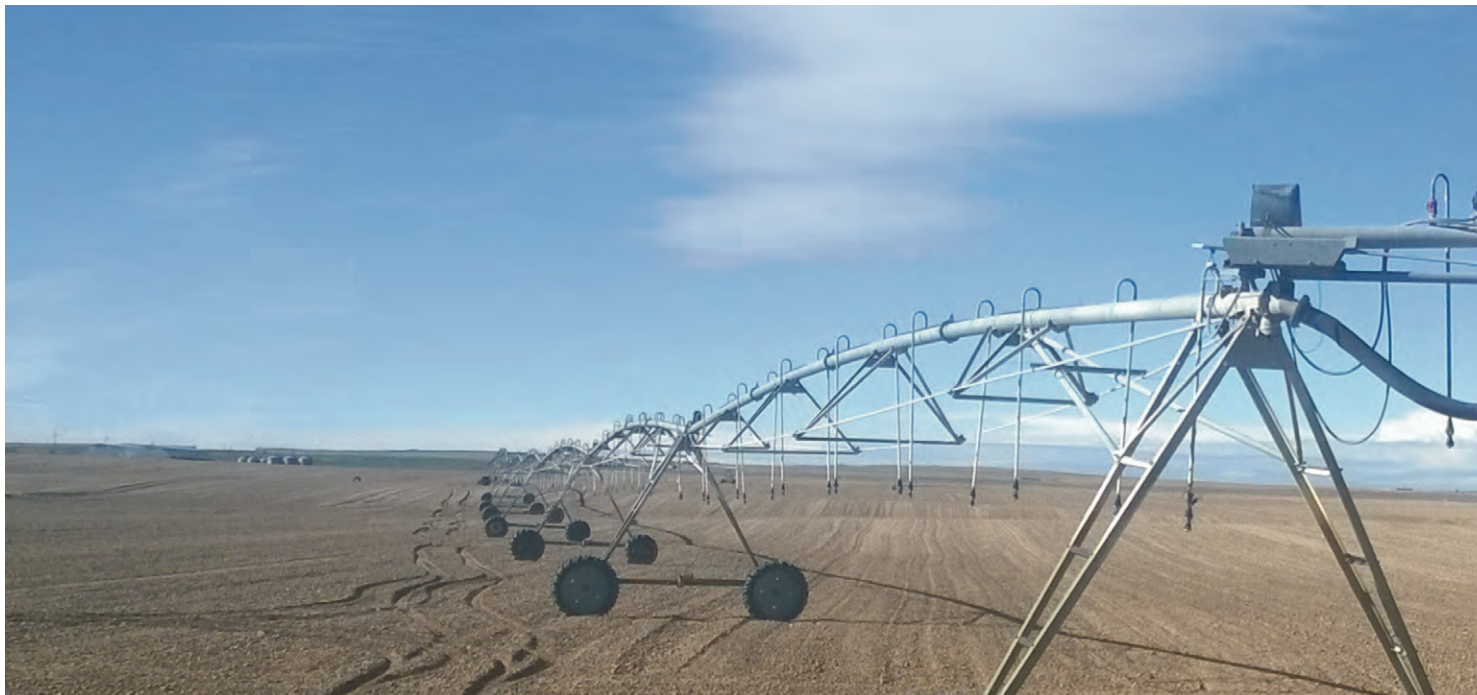
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Research conducted in the Netherlands has focused on strategies that can be used to optimise potato crop development in brackish conditions, including irrigation practices. Image courtesy of Rufus Pilgrim.

LIVING WITH SALINITY IN POTATO CROPS

Growers working with brackish soils are better off learning to 'live with salinity' rather than fight it, according to scientists at Wageningen University in the Netherlands. Senior Researcher Greet Blom leads a team that looks at ways to optimise potato crop development in areas experiencing high salinity, including through irrigation practices. Heather Briggs spoke to Dr Blom and experienced potato agronomist Andy Alexander about this widespread issue in soils.

Salt-affected soils are a problem throughout the world, including many regions in Australia. Continuous salinisation of land – especially irrigated agricultural land in semi-arid and arid regions – is also a growing problem that is estimated to be increasing at a rate of 0.25-0.5 of a millihectare per year.

Wageningen University Senior Researcher Greet Blom has been part of a team assessing different strategies that can be used to optimise crop development in brackish conditions, paying particular attention to irrigation practices. Other potential methods for minimising salt damage include soil coverage by mulching, intercropping and integration with aquaculture.

According to Dr Blom, in-furrow and sprinkler irrigation are the usual systems used in potato fields but if the irrigation applies brackish or saline water, salt will accumulate near the root zone. However, accumulation will also depend on ridge formation and the irrigation practice.

"When surface drip irrigation is applied, water can often be saved and, depending on the drip schedule, it is even possible for salt ions to be permanently leached from the root zone," Dr Blom said.

Her research focused on the electrical conductivity distribution in the root zone, on reduction in root water uptake either due to osmotic hindrance (lack of absorption) or dryness, and on the penetration depth of the electrical conductivity of salinity at the end of the growing season.

Dr Blom discovered that in sandy soil, this electrical conductivity was much higher than in other soils. Surprisingly, the reduction in root water uptake was the lowest in sand, which she attributes to

the specific shape of the water retention characteristic of the sand used in the study.

"This indicates a good knowledge of soil hydraulic properties is crucial when optimising drip irrigation strategies," Dr Blom said.

"We also found the distribution pattern in the root zone was different for two different rooting patterns considered; therefore a good understanding of the rooting pattern, including root growth, is needed when optimising drip irrigation strategies."

Furthermore, an extra drip line in the gully caused lower electrical conductivity values underneath the gully. As slightly more water was added compared to the standard situation, this also caused more leaching and thus a deeper penetration of the electrical conductivity.

"This scenario could be improved by lowering the water delivery of the main drip line at the top of the ridge," Dr Blom said.

Attention to the effects of irrigation frequency need to be monitored because the salinisation rate of the soil and plant response depends on the irrigation strategy and the combination between frequency, irrigation period and flow rate. However, this did not form part of the study.

FURTHER DISCOVERIES

Apart from a well-chosen irrigation strategy, application of a soil coverage or mulching treatments may also improve crop performance under saline conditions. Scientific studies have reported significantly higher leaf area index, water use efficiency,

intercepted photosynthetically active radiation and finally tuber yields in the mulched plots. This is compared to the non-mulched plots under the same irrigation treatment, due to a reduction in soil temperature by 4-6 degrees Celsius, and preservation of soil humidity.

"Salinisation of the root zone can be effectively prevented by leaching and smart irrigation schedules. However, a more sustainable way of preventing salt accumulation in the subsoil and in the groundwater has not been well developed," Dr Blom said.

"In order to prevent an unwanted situation in the long run, more attention should be paid to develop smart technologies to monitor contamination and to get rid of the salts in a sustainable way."

Dr Blom's studies have also revealed that while salinity will generally decrease shoot growth and the proportion of extra-large tubers, it will not affect tuber number – and will sometimes even result in a higher dry matter tuber yield.

AUSTRALIAN FOCUS

Potato agronomist Andy Alexander agreed that salinity can be an issue, particularly where irrigation water is sourced from boreholes, often called a two per cent trigger. Using collective water from reservoirs can also have a degree of salinity.

Mr Alexander, who has over 20 years' of agronomic experience in Australia involving ware and seed potatoes, added that when centre pivots or linear reels are used for irrigation rather than trickle, irrigating at night can help to avoid scorch. As temperatures are lower, evaporation is slower so plants have a longer period of time to absorb the water.

"I have always found salt tolerance to vary in different varieties," Mr Alexander said.

"Developing varieties with this trait could be key to the Australian potato markets."

CALENDAR

12 MAY: CROOKWELL POTATO FESTIVAL

Where: Crookwell, New South Wales

What: Celebrating over 150 years of growing potatoes high on the Southern Tableland of New South Wales, the Crookwell Potato Festival is full of entertainment with cooking demonstrations and markets. Consumers can also learn from growers about how potatoes reach their table.

Further information:
crookwellpotatofestival.com.au

27-31 MAY: WORLD POTATO CONGRESS

Where: Peru, South America

What: The 10th World Potato Congress will be held in Cusco, Peru. It is the first time this triennial event has visited Latin America, and it will be held in tandem with the 28th Congress of the Latin America Potato Association (ALAP). The theme for this year's event is *Biodiversity, food security and business*.

Further information: potatocongress.org

18-20 JUNE: HORT CONNECTIONS 2018

Where: Brisbane Convention Centre, Queensland

What: A joint initiative between AUSVEG and the Produce Marketing Association Australia-New Zealand, Hort Connections is set to deliver another world-class event to growers and the supply chain alongside a range of industry co-hosts. Hort Connections 2018 is the premier event for the horticulture industry, encompassing the vegetable, fruit, cut floral and nursery sectors.

Further information: hortconnections.com.au

12-14 AUGUST: VICSPA 2018 POTATO INDUSTRY CONFERENCE

Where: Melbourne, Victoria

What: The 2018 Potato Industry Conference is set to feature leading international and national expert speakers and exceptional industry trade displays. It will feature a gala dinner, which will be a biennial celebration of industry achievement and provide an opportunity to catch up with colleagues and friends. The theme for this conference is *The Art of Growing Potatoes*.

Further information: vicspa.org.au



For more information, please contact Greet Blom at greet.blom@wur.nl



Nightshade in potatoes that show mature weeds compete with the black berries. Image courtesy of Ian Macleod.

WAR AGAINST WEEDS: TWENTY YEARS ON

Over twenty years ago, a project was undertaken in Tasmania to investigate the most effective control measures for black nightshade in potato crops. Trial sites were established across four states, and it resulted in a new product registered for grower use. Project leaders Ian Macleod and Phil Frost spoke to *Potatoes Australia* about this project, and how it has impacted today's weed management practices.

Along with fat hen and radish, black nightshade is among the most problematic weeds for potato growers, particularly in Victoria and Tasmania.

All weeds have an impact on potato crops, however black nightshade is more problematic as it is the same genus as potatoes (meaning it's closely related, but not quite family). It is therefore more difficult to selectively control with herbicides.

Black nightshade is a vigorously growing weed – it will compete with the crop to be managed. This competition leads to a reduction in yield, and black nightshade also acts as a host for potato disease-causing organisms.

In 1996, funding for research was obtained from the Horticultural Research and Development Corporation (now Hort Innovation) through the fresh potato and potato processing research and development levies, to evaluate and develop weed management strategies for control of black nightshade.

This project was led by Ian Macleod and Phil Frost, who were working for Serve-Ag's Research Division in Tasmania, which subsequently evolved into the independent research company, Peracto, where the pair still work. They spoke to *Potatoes Australia* about the three-year project which concluded in 2000.

Control of Black Nightshade (Solanum nigrum) and Other Weeds in Potatoes (PT96047) was a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

A MAJOR PROBLEM

Casting his mind back 22 years ago, Mr Macleod said that black nightshade had become an issue in Tasmania and researchers had to look further afield in managing this widespread weed.

"At the time, we were working fairly broadly across a number of crops: potatoes was one that was a concern for growers and they were keen to invest some money in trying to find better ways to manage the weeds in the crop," he said.

"The existing strategies they used were damaging the crop – whether that was some of the herbicides causing damage or through mechanical weed control causing damage. There was a push to find better ways of doing things."

Mr Macleod and Mr Frost looked at a number of potato growing areas around Australia and, after liaising with agronomists in those areas, set up trial sites in four states including Western Australia, South Australia, Queensland and Tasmania.

"We looked at setting up some crops with typical weed problems, particularly nightshade, and tried different trial strategies to see how they worked on different soil types in different climatic zones, and in different potato varieties," Mr Macleod said.

PROJECT RESULTS

Based on these trials, Mr Macleod said the research team discovered a range of strategies to control black nightshade in certain circumstances and conditions.

"We did find some new herbicides that provided good results and we were able to generate data to get one of those products registered for use," Mr Macleod said.

National registration of products with the active ingredient clomazone, such as Command, occurred in August 1999.

The results from the project also translated into long-term benefits for the industry. While black nightshade is still an issue for potato growers today, Mr Frost said that there was a better understanding of the weed itself as well as the crop protection products available, how they worked and how best to use them in a management strategy for the fast-growing weed.

"Certainly, the management of black nightshade in potatoes now is not as much of an issue as it was back then (in 1997-2000)," he said.

"Like any pest or disease, a lot of these management strategies involve a number of different approaches to tackle the problem or a pest. It's really about managing nightshade in your cropping system and management in fallow and other crops, not just potatoes.

"I think growers' understanding of how to manage those weeds in their cropping systems is better; there are more tools now to manage some of these weeds which helps, so there's a lot of different ways they can do that."

INFO

For more information, please contact Ian Macleod at imacleod@peracto.com.

The final report for this project is available on InfoVeg. Readers can search 'PT96047' on the InfoVeg database: ausveg.com.au/infoveg/infoveg-database.

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

Project Number: PT96047



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Relationship Manager
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STRENGTHENING RELATIONSHIPS TO IMPROVE AN INCURSION RESPONSE



The importance of learning from past incursions is essential when planning for potential future incursions. Given its experience with previous plant pest incursions, the Northern Territory recently hosted a workshop that focused on industry preparedness, including the role indigenous communities can play in a response. AUSVEG Biosecurity Advisor Dr Kevin Clayton-Greene reports.

The past few *Biosecurity brief* columns have mentioned the changes occurring in the relationship between industry and governments in the biosecurity space. The recent eastern state approach to dealing with tomato potato psyllid (TPP), should it arrive, being a case in point.

Another example of this improved collaboration occurred in February when Plant Health Australia visited Darwin to conduct a Biosecurity Industry Liaison Workshop. This one-day event focused on incursion preparedness, and I was invited to the workshop along with a range of other industries and affected groups.

Northern Territory is at the frontline for biosecurity due to its proximity to Papua New Guinea and Indonesia – both of which have pests that could cause considerable damage to Australian horticulture. Exotic fruit flies, type two late blight and citrus greening are some of the pests/pathogens that could create havoc in Australia.

The increasing horticultural development of Australia's north can only increase the probability of an exotic incursion gaining a foothold. Vigilance, such as that provided by the Northern Australian Quarantine Strategy (NAQS), is of ever-increasing importance. The small population of the Northern Territory (less than 250,000 people) also means that its resources are very limited.

GETTING COMMUNITIES INVOLVED

Of particular interest for the Northern Territory (but also north Queensland and northern Western Australia) is the important role that indigenous communities can play in a response and how important it is to develop a strong relationship with them.

The purpose of the workshop was to learn from past incursions in order to improve response effectiveness when the next one occurs. Along with numerous industry representatives (not just plant-based), there were also some indigenous community representatives and government personnel.

The Northern Territory has had numerous incursions over the past decade; some of which have been very expensive but also successful (e.g. banana freckle is on the cusp of being eradicated).

While I was asked to contribute from a vegetable perspective, it was clear that the experiences of all concerned were often very similar. It is also apparent that the complexity of Australia's

biosecurity system – particularly how and what happens during a response – is a major roadblock.

Even for those who work in the biosecurity space on a daily basis, there is still some confusion about roles and responsibilities. The positive thing about these sorts of workshops is that they give people a chance to clarify these areas before an incursion actually occurs.

UNDERSTANDING AN EMERGENCY RESPONSE

Industry personnel play a key role in an incursion and it is vital that they are involved from day one. It is essential that those involved understand the Emergency Plant Pest Response Deed (EPPRD), the role of industry and also what is involved in Cost Sharing, Normal Commitments and Owner Reimbursement Costs (ORCs). Industry is also in the best position to identify financial hardship and ensure that counselling (financial and emotional) can be provided where required. This latter point is something that has not been done very well in the past and needs to be part of any response preparation.

It is also important that industry is actively involved in response plan preparation and that an initial response plan is in place as soon as possible. Without a response plan, there can be no ORCs. Furthermore, unless eradication has been attempted, a Transition to Management cannot occur.

It is therefore incumbent upon the local industry and the peak industry bodies to be closely involved in the response plan to ensure it is realistic and will "pass muster" at the National Management Group (NMG). Note that for a response plan to be approved and therefore actioned at the NMG, all parties must agree on the budget.

Lastly it must always be borne in mind that the EPPRD is a national response and that local and national priorities do not always align.

Coming back to the workshop in the Northern Territory, it was a particularly worthy exercise and its biosecurity personnel are to be congratulated on this initiative. Noting the turnover in staff in many jurisdictions (and in industry), it is suggested that this exercise should be repeated by others in Australia.

INFO

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

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EMBRACING TECHNOLOGY KEY TO TASSIE POTATO GROWER'S SUCCESS

Scott Rockliff knows a thing or two about potato growing. The sixth-generation grower from Sassafras in northern Tasmania has taken the reins of Skelbrook Produce from his father Bill, and over the past 20 years has added a new dimension to the business – freight. Scott speaks to Michelle De'Lisle about Skelbrook Produce, the challenges he faces and his passion for on-farm innovation.

For six generations, the Rockliff family has been growing potatoes along the north-west coast of Tasmania in Sassafras, a 200-year-old town renowned for its food and wine production.

A lot has changed since Scott Rockliff's ancestors established the original farm in the 1800s. Nowadays, innovation is a must – understanding the latest in technology required for potato growing and thinking outside the square to produce a consistent crop is essential.

After taking over the management of Skelbrook Produce from his father Bill around six years ago, Scott and his wife Belinda now operate a potato contract planting and harvesting operation, together with a freight transporting business that carries potatoes (along with other freighting opportunities). Skelbrook Produce consists of two farms spanning 350 and 200 acres respectively.

The contracting business digs about 8,000 tonnes of potatoes annually alongside Scott's freighting venture, which has grown significantly in recent years.

In addition to potatoes, Skelbrook Produce grows poppies, beans, peas, broad beans, baby carrots and wheat.

MOVING FORWARD

After purchasing trucks from a potato-freighter nearly two decades ago, Scott decided to expand this side of the business and upgrade his equipment to comply with occupational health and safety

regulations as well as increase productivity. He explains why he made that initial investment in trucks.

"A lot of the time the biggest problem with potato carting is having trailers under the harvester. With a lot of other contractors you end up waiting and you're paying crew on the harvesters to wait around for the trailers. Whereas when I have control of my own trucks, I don't have that downtime in waiting," he says.

"As things progressed, my trucks were getting a bit older and the way that the laws are now, you've got to have better gear to be running up and down the road.

"We're in our second year of being reasonably big. I've got a partner who runs the truck side of the business now, and it seems to be working reasonably well."

GROWER CHALLENGES

Scott says the biggest issue potato growers have faced over the years is that the earnings from their product have stagnated.

"We're not getting any more money for our product. We've really had to increase in capacity; a lot of our paddocks now are twice the size of what they used to be – they're eight hectares instead of four, and you end up growing more to make the same amount of money that you used to.

"This is because the profit margins aren't in most of the crops. Our input costs have gone up but the end product – what we get

paid – hasn't increased as much as it probably should have done, which makes it a bit tougher.

"You can't grow an average crop. You've got to strive to have a good crop now to make a dollar out of it; otherwise it ends up being an exercise with no reason."

In an attempt to combat this challenge, Scott has embraced technology on his farm including operating a three-row spud planter, which has increased yield.

He added that it was important to not only embrace tractors and ground working equipment but other larger inventions such as the Robot for Intelligent Perception and Precision Application (RIPPA), which the University of Sydney's Australian Centre for Field Robotics developed for weed management in the vegetable industry.

In the biosecurity space, maintaining disease resistance on-farm is important as well as keeping pests at bay.

"We rake up trash from the crops and burn it once the crops have been harvested, particularly with the poppies. We do the same with wheat crops; some wheat crops we leave through the winter as a cover crop," Scott says about his farm biosecurity measures.

"You have to try and keep your gear as clean as you can from farm to farm and know which weeds are in different paddocks. You've just got to keep your finger on the pulse if you can. Otherwise it'll turn around and bite you."

Scott points to the latest fruit fly incursion in Tasmania and tomato potato psyllid, which was discovered in Western Australia in 2017.

"Our biggest concern is now the fruit fly is here, we then worry about the tomato potato psyllid and whether it's going to come into Tasmania or not. Hopefully it won't, but who knows?" he says.

"Hopefully biosecurity measures can keep that out. It'd certainly make it easier (for the potato industry) down the track."

INNOVATION IN FOCUS

Experimenting with equipment and building on-farm machinery are activities that Scott enjoys.

"I like to be a bit innovative in the industry and try new things.

"I can be pretty handy in the workshop – we can change or modify something for it to do a better job," he says.

"I always say there's not one piece of gear that you can buy – whether it's something you can work ground with or a harvester – without modifying it by a reasonable amount so it works for your conditions."

An example of this innovation is a moulding system that had been implemented to keep out potato tuber moth and prevent potato greening, which can occur when tubers are exposed to sunlight.

"We always used to have trouble with greening and potato moth; the top soil could get potato moth or the ground cracks because the green tubers were sticking out the top. So I came up with a better moulding system.

"Now that's taken off – I think that same system is now on at least eight planters around the state. They've been pretty impressed with the job that it's doing so that probably stands out as my biggest win," Scott says.

LOOKING AHEAD

At the moment, Scott is simply focused on making the farm a worthwhile investment and perhaps expanding when opportunities arise.

"We're leasing a bit of ground now and we grow 2,800 tonnes of potatoes for Simplot. I suppose it's just being able to maintain that, and try to get a foothold in some of these farms. Whether we buy more farms down the track or we increase production again, I don't know," he says.

Scott's son has just turned 13 and the decision to become a grower is entirely up to him, Scott says.

"He is showing some interest but if he doesn't want to do it, he doesn't have to do it. It'd be great if he did but we're not pressuring him at all to do anything down the road.

"With farming, you've got to be committed to it and passionate about it. If you're not passionate about it, you might as well not bother because it's what drives you to do the work at the end of the day."



KNOW WHERE TOMATO POTATO PSYLLID IS... AND WHERE IT ISN'T

Surveillance for tomato potato psyllid (TPP) and testing for the bacterium it can vector, *Candidatus Liberibacter solanacearum*, is underway around Australia. National TPP Coordinator Alan Nankivell reports on the latest results from each state. This project is a strategic levy investment under the Hort Innovation Fresh Potato, Potato Processing and Vegetable Funds.

Tomato potato psyllid (TPP) was found in Western Australia in February 2017. As a result, an initial surveillance program was established and within weeks it was found that TPP had spread over an extensive area and that it would not be possible to eradicate.

A Transition to Management (T2M) plan was then established. This included intensive testing of trapped TPP for the existence of *Candidatus Liberibacter solanacearum* (CLso), which causes the zebra chip complex, a disease in potatoes that has significant economic impact. The importance of the link between TPP and CLso is that the psyllid is the only known vector for CLso.

A component of the T2M program is that all jurisdictions undertake trapping for the psyllid during the life of the T2M to ascertain if TPP is absent. See below for an overview of the programs currently underway in various jurisdictions.

WESTERN AUSTRALIA

As part of the T2M program, extensive trapping has been undertaken over the summer. It is currently underway during autumn in the Local Government Areas where TPP was previously found. The purpose is to collect as many TPP as possible and test them for CLso.

At the time of writing, a total of 26,861 psyllids were collected and 6,348 were tested for CLso. Testing was independently validated in an interstate laboratory and indicates that no CLso is present. A further 1,640 psyllids will be tested for CLso from the 2018 autumn trapping program. At this point, Western Australia has made no plans for further surveillance following the completion of the T2M program.

SOUTH AUSTRALIA

South Australia's surveillance strategy is based on targeting host crops that are susceptible to attack. Properties have been sampled across the state, even if no formal link to infested sites in Western Australia has been established. The objectives of this surveillance strategy are to:

- To confirm that neither TPP nor CLso are known to be present in South Australia.

- To inform national decision making by following up identified links to known infestations in Western Australia.

The strategy targets both TPP and CLso although in the case of CLso, sampling will only occur if a link is made to a positive detection in Western Australia.

Surveillance is targeting six areas of concern:

1. Nursery stock and/or seed potatoes linked to any confirmed infections of CLso.
2. Nursery stock linked to confirmed detections of TPP.
3. Solanaceous nursery stock (and nursery stock of other hosts e.g. sweetpotato, any ornamentals – if applicable) linked to the Quarantine Area (highest priority) and Restricted Area – movements over the past 1-2 years.
4. Tomato crops, capsicum crops and other solanaceous crops.
5. Potato crops.
6. Backyard gardens and weeds.

The total number of commercial properties to be surveyed is based on the following assumptions:

- Up to 200 properties grow commercial solanaceous crops and none grow other true hosts of TPP (e.g. sweetpotato) in South Australia.
- If it were present, the prevalence of TPP is low as the psyllid is not known to be present in South Australia (design prevalence is set at one per cent, i.e. one property in 100).
- TPP, if present, is randomly distributed across South Australia (i.e. all areas and properties have the same likelihood of infestation).
- The level of confidence required is 95 per cent. At these prevalence and confidence levels, with the assumed number of commercial properties, up to 170 properties will be surveyed. At the time of writing, no TPP and therefore no CLso has been found.

The current surveillance program will be completed by May 2018 and there are no plans to continue surveillance after this time.

VICTORIA

Victoria's surveillance strategy commenced in autumn 2017. There has been surveillance of 148 crops, 880 sticky traps analysed, 28

samples tested for CLso and a large proportion of crops visually scouted for presence of the psyllid and symptoms of CLso. No TPP or CLso was detected during the autumn round of surveillance.

The second round of surveillance started in November 2017 and was due for completion by the end of February. Sticky traps are the surveillance tool deployed to target risk commodities and ensure appropriate geographical spread across the state. In addition:

- 72 crops will be surveyed for TPP.
- 27 crops will be surveyed for CLso (done in conjunction with TPP).
- Current summer surveillance will continue to meet area freedom confidence levels and an additional quota of:
- 72 crops surveyed for TPP.
- 27 crops surveyed for CLso (done in conjunction with TPP).

Based on new findings from Western Australia, visual surveillance for TPP will be omitted because research suggests that sticky trapping is currently the most effective mechanism for early detection within a crop. Deployment of yellow sticky traps have increased to twice this season (between November and March).

At the time of writing, 191 crops have been surveyed for TPP, with 29 surveillance events left to complete in potatoes and community gardens. No TPP and therefore no CLso has been found.

QUEENSLAND

Queensland's survey strategy includes surveys focused on the commercial vegetable production areas of the Lockyer Valley, Bundaberg, Bowen/Burdekin and Atherton Tablelands, and prioritising host plantings of capsicum, chilli, tomato, eggplant, potato and sweetpotato.

The properties chosen for surveillance are based on likely risk, are representative of the production area and include field crops, covered cropping and nursery production. Surveillance techniques include the deployment of yellow sticky traps around the perimeter of crops. These efforts are being conducted over several seasons to take advantage of when crops are in the ground and when temperatures favour pest development.

Additional surveys of commercial nurseries, community gardens and urban areas are also planned in Queensland from January to June 2018. These activities employ a range of techniques appropriate for TPP such as the deployment of yellow sticky traps, sweep netting, beat sheets and visual surveillance. At the time of writing, 182 traps have been returned and no TPP and therefore no CLso has been found.

NEW SOUTH WALES

The New South Wales surveillance strategy is a collaborative effort between the NSW Department of Primary Industries (DPI), Local Land Services (LLS) and industry for the deployment of sticky traps.

The primary locations for the traps are the commercial production zones encompassing seed and ware potatoes; field tomatoes, capsicum and eggplant; protected cropping; processing tomatoes and nurseries (production and retail).

Other non-commercial sites such as community gardens and backyard vegetable gardens are targeted through LLS activities and the utilisation of DPI/LLS staff volunteering to put out a trap. The key production areas are the Riverina, Sydney Basin and North Coast.

At the time of writing, 50 sites had surveillance completed this spring/summer, where 214 traps were deployed. This is a follow-up to the autumn 2017 surveillance, which covered 230 sites with 513 traps checked. At the time of writing, no TPP and therefore no CLso has been found.

TASMANIA

Tasmania has a TPP trapping program in place since 2011. This program has been carried out by the Tasmanian Institute for Agriculture (TIA) in collaboration with Biosecurity Tasmania and is a strategic levy investment funded by Hort Innovation and contributions from the Australian Government (see page 32).

Tasmanian surveillance for TPP uses yellow sticky traps. Surveillance in urban areas is being conducted by Biosecurity Tasmania, where TPP hosts are present in higher numbers and/or where vegetable production exists, such as near community gardens and/or vegetable importation and nurseries. A total of 50 trap sites in urban areas will be completed by April 2018.

Surveillance occurs as close to optimum temperature for psyllids as possible, with one trap set occurring in spring/summer and one in autumn 2018. All traps remain in the field for at least seven days prior to assessment.

Tasmania currently has approximately 450 commercial potato growers around the state. Four surveillance traps per paddock are placed around the crop perimeter and replaced weekly throughout the growing season. At the time of writing, no TPP and therefore no CLso has been found.

INFO

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

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

Project Number: MT16018



UPDATE ON NATIONAL TPP SURVEILLANCE PROJECT

The Tasmanian Institute of Agriculture has been coordinating national surveillance of the tomato potato psyllid across Australia, with over 3,000 traps sent to growers and industry members. Trapping Coordinator Raylea Rowbottom provides an update.

In the 2017/18 growing season, the Tasmanian Institute of Agriculture (TIA) has increased levels of surveillance for tomato potato psyllid (TPP) as part of the project *Surveillance of the tomato potato psyllid in the Eastern States and South Australia* (MT16016), a strategic levy investment under the Hort Innovation Fresh Potato, Potato Processing and Vegetable Funds.

Raylea Rowbottom has been coordinating the TPP surveillance program since April 2017. Several others make up the team, including Calum Wilson (Project Manager) and Paul Walker (Senior Entomologist) along with Geoff Allen and Stephen Quarrell.

This surveillance is focused on the early detection of adult psyllids using yellow sticky traps in the hope of improved chances of containment, control and eradication of TPP should it be discovered. The supply of traps is driven by industry demand, with TIA providing traps, as requested, to surveillance participants in Tasmania, South Australia, Victoria, New South Wales and Queensland. Information from this trapping also supports state-wide area freedom.

There are 18 participating industry partners across the eastern seaboard of Australia and Tasmania covering processed potato, fresh potato and processed tomatoes. Also participating are over 20 hobby farmers, community gardens/schools and urban/backyard growers. To date 3,049 traps have been dispatched, many of which have been sent in bulk to cover trapping in certain regions until April 2018. Since September, over 32 per cent of these traps have been returned – all of which have had no detection of TPP.

As part of trap assessment, the number of beneficial insects and native psyllids has been recorded. There have been several native psyllids identified (see Table 1). These psyllids are referred to as 'bycatch' as they are unlikely to be feeding on agricultural crops but come from native vegetation.

Beneficial insects caught on these traps assist in the balance of the ecosystem by consuming insect pests such as aphids, scale, whitefly and other psyllid species. On average, numbers of beneficial insects per trap have been low, and dominated by lacewings and ladybirds (see Table 2).

SURVEILLANCE TRAPS RETURNED

LOCATION	NUMBER OF RECORDS
New South Wales	86
Queensland	220
Tasmania	623
Victoria	172

NATIVE PSYLLIDS AND BENEFICIAL INSECTS DETECTED

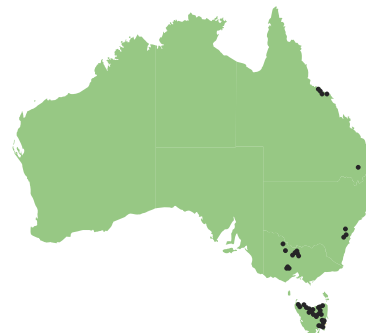
STATE	PSYLLIDAE*	TRIOZIDAE*
New South Wales	0.3609	0
Queensland	0.3390	0.0445
Tasmania	0.6727	0.0046
Victoria	0.2538	0

Table 1: Average number of Psyllidae and Trioziidae on traps per day of surveillance. These psyllids are Australian native psyllids that do not feed on Solanaceae crops.

	NSW	QLD	TAS	VIC
LADYBIRD	0.3189	0.0207	0.1409	0.0313
OTHER LADYBIRD	0.2096	0.0581	0.0132	0.0031
BROWN LACEWING	0.5409	0.0149	0.3116	0.0662
DAMSEL BUG	0	0.0014	0.0002	0.0016
GREEN LACEWING	0.0030	0.0012	0	0.0032
HOVERFLIES	0.0033	0.0036	0.0376	0.0319
RED & BLUE BEETLE	0.0031	0	0	0.0082

Table 2: Average number of beneficial species on traps per day of surveillance.

SURVEILLANCE TRAP DISTRIBUTION



INFO

If you would like to be included in the surveillance program, please contact Raylea Rowbottom on 0428 745 752 or raylea.rowbottom@utas.edu.au.

For more information on the project visit utas.edu.au/tia/centres/vegetables.

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

Project Number: MT16016



Common scab on potato. Image courtesy of R.W. Samson, Purdue University, Bugwood.org.



TACTICS TO AVOID ECONOMIC LOSSES FROM COMMON SCAB

Common scab is caused by the bacteria-like organism *Streptomyces scabies* and it is a prevalent soil- and seed-borne disease that occurs in potato growing regions throughout the world. Syngenta Technical Services Lead Dave Antrobus explains what short- and long-term tactics potato growers can use to control common scab in their crops.

Fundamental to avoiding significant losses to common scab in potato are background knowledge about the paddock you're planting into and an understanding of how a combination of different control measures will work best for you.

For growers, there is a lot of information on common scab. Agriculture Victoria has a good technote (AG0313) and more valuable material is available on the Cornell University website (plantclinic.cornell.edu/factsheets/commonscabpotato.pdf). I'll summarise their main points here.

Common scab is caused by *Streptomyces scabies*. This disease overwinters in the soil and can also be seed-borne. It can survive for a very long time in alkaline soils and becomes increasingly scarce in acidic soils.

DO YOU KNOW YOUR SOIL PH?

Information you should know is the pH of your soils. As a rule, within a soil pH range of five to eight, the incidence and severity of potato scab increases with increasing alkalinity. Scab usually remains at a satisfactory level where soils are pH 5.0 to 5.2. At neutral pH of 7.0 and above, this disease can be severe.

For growers considering liming, it may be best to hold off until after the potato crop is grown and harvested as applications in the lead-up to planting can greatly increase the risk of common scab infection.

Fertilisers that impact soil pH can also impact on this disease. A lot of people think that animal manures have a lower soil pH in the same way that commercial nitrogen fertilisers do. However, many animal fertilisers (for example, those sourced from chicken egg farms) can raise soil pH substantially. The main reason is due to the lime-like materials such as calcium and magnesium in the manure. Similarly, wood ash can make the soil more alkaline.

The lowering of soil pH with applications of sulphur has proven useful in reducing scab in some soils of high pH. The use of acid-producing fertilisers such as ammonium sulphate as a source of nitrogen can help.

Over the longer term, try to maintain soil pH levels between

5.0 and 5.2 by using acid-producing fertilisers such as ammonium sulphate. Avoid or limit the use of alkaline-producing amendments such as lime and manure.

WHAT OTHER TECHNIQUES CAN YOU USE?

Long rotations of five years or more between potato crops, preferably with legumes (but excluding beets, carrots, parsnips and fleshy-rooted crucifers), are useful in reducing the severity of potato scab.

If your paddocks have a history of scab, plant resistant varieties, obviously avoid susceptible ones and only sow clean certified seed.

MAXIM® 100FS is a seed treatment that will reduce the effects of common scab. It can be applied to the seed prior to storage, or at planting. In addition to providing suppression of seed-borne common scab, this product is relatively broad-spectrum and can also control black dot, fusarium dry rot, black scurf (*Rhizoctonia* spp.) and silver scurf.

Dry soil when tubers start to form, and for the five weeks after that, will increase the chances of common scab occurring. For this reason, growers should water regularly over this time and maintain soil moisture at field capacity. Pay close attention to irrigation on coarse-textured soils, due to their reduced moisture-holding capacity. Gravelly or sandy areas tend to dry out more rapidly and are often sites of heavy scab infection.

As with all disease control strategies, the combination of as many different methods as possible will ensure the best results.

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 PotatoesAustralia:info@ausveg.com.au. Please note that your questions may be published.

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



Mediterranean fruit fly (*Ceratitis capitata*). Image courtesy of Scott Bauer, USDA Agricultural Research Service, Bugwood.org.

CONTROLLING FRUIT FLY POPULATIONS FOR A SUSTAINABLE HORTICULTURAL FUTURE

The Fruit Fly Fund is one of seven funds developed under Hort Frontiers, a strategic partnership initiative led by Hort Innovation that facilitates collaborative, cross-horticulture projects. Hort Innovation R&D Manager for the Hort Frontiers Fruit Fly Fund Penny Measham spoke to *Potatoes Australia* about the importance of developing fruit fly management options, and the projects that are currently being undertaken in this space.

Hort Innovation has developed the Hort Frontiers strategic partnership initiative to expand its funding model beyond its traditional levy investments, and to better equip Australian horticulture for the future ahead. It facilitates collaborative cross-industry research focused on longer-term, complex and traditionally under-invested themes identified as critical for the future of Australian horticulture.

There are currently seven themes and corresponding strategic funds in Hort Frontiers: Advanced Production Systems; Asian Markets; Fruit Fly; Green Cities; Health, Nutrition and Food Safety; Leadership; and Pollination.

Hort Frontiers can invest funds from across the industry and value chain, alongside contributions from the Australian Government.

IN THE SPOTLIGHT: FRUIT FLIES

The Hort Frontiers Fruit Fly Fund has been developed in response to the increasing impact of Queensland fruit fly (Qfly) and Mediterranean fruit fly (Medfly) on Australian horticulture, particularly given the withdrawal of key management tools such as broad spectrum pesticides that were historically important in endemic areas. The fund aims to develop ways to control fruit fly populations and secure the productivity of the Australian horticulture industry.

Within the Hort Innovation Fruit Fly Fund is the \$45 million SITplus partnership, which comprises a diverse range of individual projects.

Fruit fly continues to impact Australian horticulture, particularly in the area of market access as horticulture exports become increasingly critical to the industry. Millions of dollars are estimated to be lost each year due to the pest. Additional risks posed by fruit flies include the potential need for expensive post-harvest treatments and fruit damage.

Fruit Fly Fund R&D Manager Penny Measham said a range of projects are being conducted under the Fruit Fly Fund, including piloting the production of Sterile Insect Technique (SIT) in Qfly; creating tools to allow communities to prepare for SITplus with Area Wide Management programs; and piloting eradication of Medfly in Carnarvon, Western Australia.

Within the Hort Innovation Fruit Fly Fund is the \$45 million

SITplus partnership, which comprises a diverse range of individual projects. The SITplus program aims to deliver an integrated solution to the management of Qfly and involves a consortium of research organisations.

Hort Innovation and the South Australian Government have funded the establishment of the \$3.7 million sterile Queensland Fruit Fly facility in Port Augusta, which will allow for the production of at least 50 million sterile flies per week.

"In 2018, we plan to be conducting sterile fly releases as part of the response to Qfly outbreaks in South Australia," Mrs Measham said.

"In addition, we will start testing releases as a management option in areas of low pest pressure."

High quality, reliable and cost-effective larval diets are a core requirement of any SIT program. It is essential to develop new approaches to these larval diets, and Macquarie University in New South Wales is currently investigating the options.

Application of SIT also requires preparation, and CSIRO and Hort Innovation are developing a comprehensive guideline for area coordinators and growers to assess their current situation and carry out the required tasks and programs.

Macquarie University, with other SITplus partners, is also developing knowledge of Qfly and factors that will assist with management of the fly, including development of attractants,

understanding of climate interactions, population genetics and trap catch analysis.

Hort Innovation has received significant support from around the world in regards to fruit fly research, particularly the International Atomic Energy Agency (IAEA). The United States Department of Agriculture has also provided significant support as well as access to its fruit fly factories and release operations.

"SITplus representatives have also visited growers and facilities in multiple countries to bring back knowledge to Australia," Mrs Measham said.

Eradicating Medfly from Carnarvon is another main focus of the Hort Frontiers Fruit Fly Fund. The Western Australian Department of Primary Industries and Regional Development is trialling a

combination of fruit fly baiting and the release of sterile fruit flies, and this project will be used as a pilot for developing fruit fly-free areas or areas of low pest prevalence in southwest Western Australia.

GROWER PERSPECTIVE

Grower feedback has been incorporated in the development and ongoing review of the Fruit Fly Fund projects, Mrs Measham said.

"In particular, growers helped define the core problems and issues on the ground that the research is addressing."

While it may have the word 'fruit' in its name, the fruit fly doesn't just affect fruit growers; it also has the potential to affect the vegetable industry.

"Fruit fly is a pest of vegetables as well, especially capsicum, but also cucumbers, pumpkins and other vegetables. Development of management options and maintaining Pest Free Areas is important for market access, both domestically and internationally," Mrs Measham said.

INFO R&D

To submit an idea for a future project, visit Hort Innovation's Concept Proposal Form at horticulture.com.au/concept-proposal-form. *Potatoes Australia* will profile each Hort Frontiers Fund in further detail in future editions of the magazine.

For more information, please visit horticulture.com.au or contact Penny Measham at penny.measham@horticulture.com.au or 07 3198 6758.

These projects have been funded by the Hort Frontiers Fruit Fly Fund, part of the Hort Frontiers strategic partnership initiative developed by Hort Innovation, with funding from a range of co-investors and contributions from the Australian Government.



CURRENT PROJECTS UNDER THE HORT FRONTIERS – FRUIT FLY FUND

PROJECT CODE	PROJECT TITLE	SERVICE PROVIDER
AI13001	Dietary sterilisation of male Qfly	CSIRO Biosecurity Flagship
FF15000	SITplus: Port Augusta Qfly SIT Factory	Primary Industries and Regions South Australia
HG13034	SITplus: Improved management system for Qfly	The New Zealand Institute for Plant & Food Research
HG13039	Medfly Eradication from Carnarvon Using AWM and SIT	Department of Primary Industries and Regional Development (WA)
HG13045	Larval diets for high-productivity mass-rearing	Macquarie University
HG14033	SITplus: Raising Qfly sterile insect technique to world standard	Macquarie University
HG14035	Establishment of the sterile Qfly facility	Primary Industries and Regions South Australia
MT13040	Area-wide integrated pest management using the SIT technique	CSIRO
MT13509	SITplus: Developing and optimising production of a male-only temperature-sensitive-lethal strain of Qfly, <i>B. tryoni</i>	South Australian Research and Development Institute



SEE YOUR LEVY AT WORK WITH THE LATEST HORTLINK!

Get an update on all new, current and recently completed levy-funded activity with the new edition of Hort Innovation's Hortlink. Just released, you can check out the section for potato growers at horticulture.com.au/hortlink-2018-edition-1/potato, or the section for potato processors at horticulture.com.au/hortlink-2018-edition-1/potato-processing.

As well as easy-to-read project updates, results and resources you can use in your business, Hortlink includes case studies, industry contacts and more. Don't miss the Faces of Horticulture section, which includes a closer look at Hort Frontiers activity, scholarship opportunities and other handy info!

Stay in the loop with your levy by becoming a member of Hort Innovation, the grower-owned, not-for-profit research and development corporation for Australian horticulture. Paying a levy doesn't automatically make you a member, but signing up is free at horticulture.com.au/membership.

READ IT NOW



Examining the ancestors of modern potato varieties in North America has revealed important genetic pathways that could prove useful in selective breeding practices. Image courtesy of Robin Buell.

REVISITING THE PAST TO UNDERSTAND THE FUTURE

An informative study that has the potential to assist the global potato community understand the origins of the cultivated potato has been conducted in the United States. This research can help breeders understand the complexity of the potato genome (DNA) and initiate more strategic breeding approaches, as *Potatoes Australia* reports.

As Confucius once said, "Study the past, if you would divine the future." This has certainly proven to be true when it comes to improving potato cultivars.

A study of the ancestors of modern potato varieties in North America has revealed the genetic mechanisms by which the cultivated potato arose from wild species.

Robin Buell, Michigan State University (MSU) Foundation Professor of Plant Biology and senior author of the paper which appeared in an issue of *Proceedings of the National Academy of Sciences*, spoke to *Potatoes Australia* about the study.

"I have been interested in potato genetics for nearly 20 years and with access to the available genome sequencing technologies, we were finally able to ask and answer the question by which wild species of potatoes were selected by ancient farmers (a process called domestication) and how modern breeders have since selected improved cultivars to meet agronomic needs across the globe," she explained.

Genomics involves an organism's complete set of DNA, including all of its genes. Professor Buell said that analysing these ancient potatoes will allow breeders to focus on a subset of the 39,000 genes in the potato genome to target in selective breeding.

efforts. While this is basic research, it helps breeders understand the complexity of the potato genome and initiate more strategic breeding approaches."

The team from MSU and scientists from Virginia Polytechnic Institute and State University also studied potential genetic sources that control circadian rhythm – that is, the 24-hour internal body clocks that humans and plants both share.

"We can measure circadian rhythms by looking at leaf movements. That was done by our collaborator Eva Farre here at MSU, who is an expert on this phenomenon," Professor Buell said.

"Essentially we saw a difference in the circadian period between some wild species and cultivated potato, suggesting there had been selection for potatoes with different circadian periods."

LOOKING AHEAD

If funding was made available, Professor Buell said the next step could be to examine more Chilean landraces to expand on how these differ from North American cultivars, and identify more specifically the origin of potatoes taken to

While this is basic research, it helps breeders understand the complexity of the potato genome and initiate more strategic breeding approaches.

RESEARCH FINDINGS

Professor Buell and her team found that historical introgressions, or transfer of genetic information between species (in this case, the wild species) as a result of hybridisation, are critical to the adaptive traits in cultivated potato.

"We also were able to identify key genes that are associated with traits such as maturity, disease resistance and sexual fertility," she said.

"Many of these help focus on adapting to different climates, fending off different pathogens or improving yield; keys that we hope to better understand to improve future breeding

Europe and eventually North America. There could also be benefits for the Australian potato industry.

"As a lot of potato germplasm is shared globally, this data can be overlaid on Australian potato germplasm development," she said.

"I think this would could be expanded to include Australian germplasm and help shape our global understanding of potato diversity."

INFO R&D

For more information, please contact Robin Buell at buell@msu.edu.

REGIONAL UPDATES



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AUSVEG SA held its third annual Vegetable Industry Awards for Excellence on Wednesday 11 April with longstanding event sponsor William Buck. The event was the biggest to date and it was an opportunity to reflect on industry leaders and achievements over the past year.

AUSVEG SA is excited about the period ahead, with a number of innovative new projects such as our Integrated Pest Management (IPM) trials continuing for the third year, having our new Export Development Manager on board and delivering a number of training and R&D events at our new home at the markets.

In coming months, AUSVEG SA management will be visiting regions throughout South Australia to hear about issues facing horticulture producers in the state. As part of this, we are keen to meet as many growers as possible and deliver leading programs and advocacy throughout the state.

In political news, AUSVEG SA is excited to work with the new South Australian Government and will be having ongoing policy discussions with them to set a policy platform for horticulture development in the state.



Matthew Gay
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Growers' Association
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The potato growing season in Crookwell is all but finished. The modern varieties are all killed off and the traditional varieties are getting a final watering.

The growing season was a relative tough one this year, with all growers irrigating substantially to compensate for a hot, dry summer.

It seems that after an extended dry period comes a lot of rain in one hit. We experienced 100 millimetres-plus of rain on 25 February and this finished most crops off. However some water logging was reported.

We are currently in a dry spell again at the time of writing this report, and are concerned we may get another deluge at harvest time just to make things a little difficult; but yields

are expected to be around average and quality very good.

The growers in Crookwell are very concerned about tomato potato psyllid (TPP) and are currently monitoring for any signs of this insect. We are happy to report no physical findings of TPP in the Crookwell area. We are very vigilant with our monitoring of seed crops and stringently follow our quality assurance guidelines to ensure our crops are clean. There was limited insect activity this season and therefore very little spraying which is always good.

Hopefully all growers can lift their crops early and avoid being caught in a wet winter. Time will tell.



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AUSVEG VIC held its annual Awards for Excellence on Friday 13 April, where a number of awards were presented to the deserving growers and researchers in the Victorian potato and vegetable industries. These awards were in recognition of their achievements throughout the past year. Hosted by Wolfdene, this year's event was also successful in offering growers and key suppliers the opportunity to network and form new relationships.

AUSVEG VIC will be launching a new website in the coming months to feature new research and development in the industry. AUSVEG VIC will focus on the research that has been conducted by industry showcasing case studies, video interviews and podcasts. The

new website platform will allow growers easier access to critical information that will help to develop and change the growing environment of Victoria.

If you would like to hear more about the website or express your opinion about the direction of AUSVEG VIC's strategy moving forward, please contact the State Manager Tom Cohen.



VGA trading as AUSVEG VIC

YOUNG POTATO PEOPLE

G'day again,

I hope the seasons have been good to you, and the things you are stressing about aren't worrying you too much.

Unless you've been living under a rock, you would have noticed lately that almost everything is moving to 'online' sales. We are seeing the major supermarket chains now offering online ordering services with home delivery so people no longer need to leave the house to purchase their potatoes. Some smaller producers, who would normally spend all their weekends at farmers' markets, have started operating from online stores where they have been able to sell produce direct to consumers.

It seems as though if you run a business, you need a website and a Facebook page. It's amazing how Facebook has changed our lives so much – it is now to the point that if it isn't on Facebook, it doesn't exist. People have become so plugged in to social media these days that they struggle in the real world.

And with the rise of cryptocurrency, we are starting to see even our money move to an online platform. If you don't know what cryptocurrency is, it's things like Bitcoin – a virtual currency that is designed to be used globally. It is designed to be a safe, decentralised currency that can be used for just about anything. If you invested in some Bitcoin in 2009 when it was worth nothing, and sold it last year when it was worth \$26,000, I dare say your enterprise may look a little different today.

For now, rather than thinking about what could have been, we can make sure we are giving it our best shot at producing as much exposure for our businesses as we can. Potatoes don't get much good press these days, so it is up to us as the industry to remind people how good these little beauties are.



Once a farmer did win the lottery. When he was asked what he was going to do with the money, he responded, "I will probably just keep farming until it's all gone."

Cheers,
Stu



@youngpotatopeps



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Check out Stu Jennings' regular Young Potato People column in this issue of Potatoes Australia, and scan the QR code to access Adama Australia's Potato Solutions Guide.



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