

| April/May - 2017 |

potatoes

australia



| STEPHEN OSBORN - COVER STORY | FEATURE - FOCUS ON TOMATO-POTATO PSYLLID |
| CHRIS GALLAGHER - MAINTAINING A PROFITABLE GROWING OPERATION |



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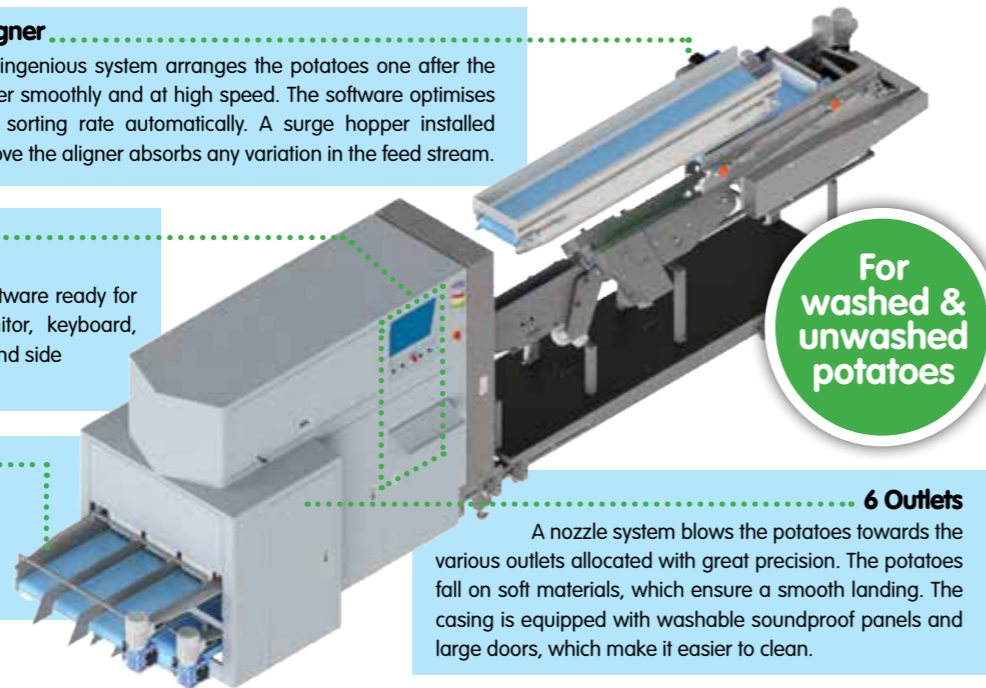
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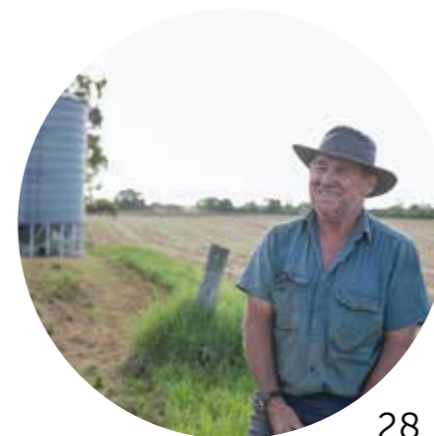
Heavy duty complete turn key solutions



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EDITORIAL

The tomato-potato psyllid (*Bactericera cockerelli*) continues to play on the minds of many in the Australian potato industry, and it is for this reason that we have dedicated eight pages of this edition to the pest.

We begin with an overview of the psyllid and the bacterium it vectors, *Candidatus Liberibacter solanacearum* (CLso), which causes zebra chip disease. Horticulture Innovation Australia has provided support to industry through levy-funded projects and this is discussed further on page 11.

The implementation of effective biosecurity response procedures are vital for the future sustainability and viability of the Australian potato industry. In light of this, AUSVEG National Manager – Science and Extension Dr Jessica Lye has shared an update of the tomato-potato psyllid detection and response, while AUSVEG Biosecurity Adviser Dr Kevin Clayton-Greene provides an overview of the stringent processes that are in place following an exotic plant pest detection in Australia.

The Department of Agriculture and Food, Western Australia (DAFWA) is leading an emergency biosecurity response to combat the psyllid with support from industry stakeholders and government agencies. AUSVEG is also lending its support where possible, with Biosecurity Coordinator Callum Fletcher assisting DAFWA in the surveillance of the pest.

As the saying goes, hindsight is a wonderful thing – and in this feature we look to our neighbours across the ditch for advice on their experience of dealing with the psyllid incursion in New Zealand. We also share an article on the effectiveness of Integrated Pest Management as a strategy to control the tomato-potato psyllid and provide an analysis of the economic impact of the psyllid in countries where it is established, particularly New Zealand and the United States.

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

A national response plan has been agreed to which guides detection, suppression and control efforts that are already underway, including increased monitoring and testing for CLso. In the meantime, AUSVEG will continue to work with all relevant parties to ensure that industry and growers receive any new information that comes to light, and provide assistance where possible.

If you suspect tomato-potato psyllid in your crops or any exotic pest, phone the Exotic Plant Pest Hotline on 1800 084 881.

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SEND US YOUR STORY IDEAS!

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

If you have a great idea for a potential article, let us know!
Send an email to info@ausveg.com.au or call 03 9882 0277.

The Australian potato industry has been on high alert since receiving news of the detection of tomato-potato psyllid (*Bactericera cockerelli*) in Western Australia. Given its potential to cause significant damage to potato and vegetable crops, it is imperative that growers are aware of the potential implications of the detection on their businesses.

In this edition, *Potatoes Australia* has produced several pages of information relating to tomato-potato psyllid. These articles provide a background of the pest and response phase, as well as the economic impact of the psyllid in countries where it is present. Researchers in New Zealand share their experience of dealing with the pest and we also explore potential management options.

The Department of Agriculture and Food, Western Australia (DAFWA) is continuing surveillance in commercial crops and backyard gardens in the Perth area. AUSVEG Biosecurity Coordinator Callum Fletcher travelled to Western Australia for one month where he shared his expertise with the team on the ground.

As the psyllid is capable of carrying the bacterium that causes zebra chip in potatoes, testing is underway to determine whether the bacterium is present in the psyllids found in Western Australia. At the time of writing, the bacterium had not been found.

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

In other news, it is heartening to see the next generation of young scientists paving their way into the horticulture industry – particularly those with a focus on potato research.

Under the watchful eye of researchers from Agriculture Victoria, ViCSPA and the University of Melbourne, the four students featured in this magazine are all trailblazers for the next generation of scientists in the potato industry. It is important that universities, along with the wider industry, continue to work with these young scientists to develop further insights into pests and diseases of potato and vegetable crops.

In exciting news, there is less than one month to go until Hort Connections 2017, a joint event hosted by AUSVEG and the Produce Marketing Association Australia-New Zealand (PMA A-NZ) with support from Fresh Markets Australia, the Central Markets Association of Australia, Potatoes South Australia, Growcom, Irrigation Australia, Australian Organic, Onions Australia and Nursery and Garden Industry Australia.

Hort Connections will be held at the Adelaide Convention Centre from 15-17 May. AUSVEG has been working tirelessly with PMA A-NZ to ensure that this event caters for all facets of the Australian horticulture industry, with thought-provoking speaker sessions, an expansive Trade Show and a vast array of networking opportunities, culminating in the annual Awards for Excellence Gala Dinner. I look forward to seeing you all there.



Geoff Moar

Geoff Moar
Chairman
AUSVEG



James Whiteside

James Whiteside
CEO
AUSVEG

As families and friends gather to spend some valuable time together over the Easter break, it's appropriate to reflect on those in the Australian horticulture industry who, at the moment, are doing it particularly tough.

It was with great sadness that we all read and watched the footage of Cyclone Debbie and her devastating impact on the North Queensland region in late March.

Bowen was among Queensland's worst hit areas, and is a region renowned for its winter vegetable crops including capsicum, chilli, beans, corn and pumpkin.

The potato and vegetable industry is naturally a supply and demand driven industry and unexpected weather events do occur from time to time, which may impact supply. These weather events unfortunately are a reality for the farming industry and tropical cyclones are also a reality for growers in Northern Australia.

AUSVEG would like to pass on its best wishes to growers affected by Cyclone Debbie and reassure them that they are not alone during this difficult time. With our Queensland state member, Growcom, AUSVEG has been working to ensure affected growers understand, and have access to, the mechanisms that are in place to provide support, and to ensure that there is adequate support from industry bodies, State and Federal Governments, consumers and retailers.

Australia's potato and vegetable growers are vulnerable to many conditions, not just those inflicted by Mother Nature. This includes the risk of unfair trading conditions with wholesalers, although AUSVEG is hopeful this will be rectified with reforms to the Horticulture Code of Conduct.

The government response proposes a range of reforms that are intended to increase the transparency and accountability of transactions between growers and wholesalers, including amendments that would require traders to generate and keep records on their transactions, along with records of all growers and buyers with whom they deal.

This code of conduct has been in need of reform for many years to make it more relevant to growers, and it's pleasing to see the government's commitment to increasing transparency and accountability under the code.

On a lighter note, AUSVEG is counting down to Hort Connections 2017, which is set to be the biggest event on the Australian horticultural calendar.

To kick off this event, Potatoes South Australia will join other potato industry partners to support Arris Pty Ltd in the launch of the Potato Industry Extension Forum and Industry Luncheon. This unique networking event is an opportunity for potato growers to share their ideas and discuss the key issues affecting their industry. I urge all members of the Australian potato industry to come along, have their say and show their support for the Potato Industry Extension Program as it begins its next phase. The conference will also include a workshop to discuss how the industry responds to and manages the recent incursion of tomato-potato psyllid.



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HORT CONNECTIONS 2017: SPEAKER LINE-UP ANNOUNCED

Hort Connections 2017 will bring the entire fresh produce industry together for three days of networking, education and business opportunities. Several world-class speakers will headline the conference, which will be held from 15-17 May at the Adelaide Convention Centre.

All signs are pointing towards Hort Connections 2017 being the biggest and best conference in Australian horticulture, delivering the freshest insights and tools for delegates to grow their businesses.

AUSVEG and the Produce Marketing Association Australia-New Zealand (PMA A-NZ) are extremely excited to launch this event, to be held at the Adelaide Convention Centre from 15-17 May.

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

Fresh Markets Australia and the Central Markets Association of Australia have been named official Trade Show sponsors as well as co-hosts, while NAB has joined as an Agribusiness Partner.

The inclusion of these industry co-hosts ensures there is something for everyone, while an expansive Trade Show will cater for growers and whole-of-supply-chain companies alike.

SPEAKER SESSIONS

Meanwhile, conference speakers have been carefully selected to cover the most topical issues in the industry, from technology to marketing, global development, the power of data and a session on the Harmonised Australian Retailer Produce Scheme (HARPS).

Assistant Minister for Agriculture and Water Resources, Senator the Hon. Anne Ruston, will provide an insight into the Federal Government's priorities for Australian horticulture in the coming months.

Other keynote speakers include Tennis Australia Director of Customer Relations Jaquie Scammell, who will discuss the significance of people and culture. beyondblue Chairman and former Victorian Premier The Hon. Jeff Kennett AC will headline a mental health forum, while Monash University's ACRS Managing Director Sean Sands will discuss the opportunities to maximise value by designing customer-facing innovations that resonate.

Bega Cheese Executive Chairman Barry Irvin will also be one of the key speakers at Hort Connections. Mr Irvin has led the team that has built the Bega Cheese business, through acquisition and organic growth, and then cemented a number of long-term key business relationships.

Delegates will also hear from Lone Jespersen from Maple Leaf

Foods who will be discussing the importance of developing a food safety culture, while former MasterChef runner-up and Sprout owner and co-founder Callum Hann will share his culinary experiences and offer a valuable insight into the industry.

A range of dedicated speaker streams will run concurrently throughout the event and will be dedicated to marketing, irrigation, vegetables and Horticulture Innovation Australia.

WOMEN IN HORTICULTURE

The ever-popular Women in Horticulture event is open to all delegates and provides a chance to acknowledge and celebrate the integral role that women play in the industry. The event will be held at the InterContinental Adelaide on Wednesday 17 May from 2:00pm to 4:30pm.

Speakers include Senator Ruston, The Ideas Catalyst founder Susie White who will discuss new product and packaging innovations and ABC presenter Tonya Roberts, who will emcee the event. Celebrity chef Geoff Jansz will perform a cooking demonstration with local produce while Horticulture Innovation Australia Relationship Manager Christian Patterson will discuss recent levy-funded projects. The event will conclude with the announcement of the 2017 Women in Horticulture award winner.

ROOF CLIMB FOR YOUNG GROWERS

Returning again in 2017 is another highlight on the social program, the NextGen Young Grower event. Open to full delegates under the age of 35, this year's event will get your adrenaline pumping with an Adelaide Oval roof climb on Wednesday afternoon. Places are strictly limited, so register now to avoid disappointment.

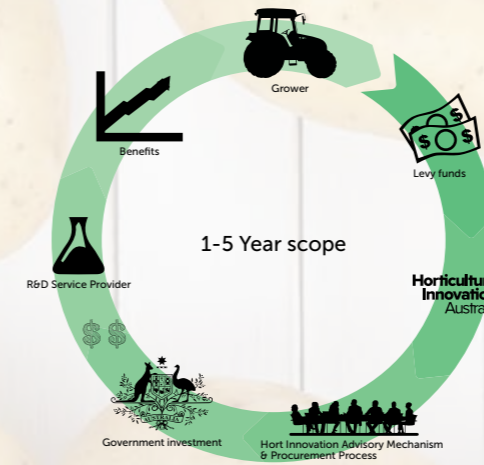
The annual Awards for Excellence Gala Dinner will provide the perfect close to the event, celebrating the achievements of leading growers in the horticulture industry.

INFO

For more information or to register for Hort Connections 2017, please visit hortconnections.com.au.

THE NATIONAL POTATO LEVY AT WORK

POOL 1



WHO PAYS THE NATIONAL POTATO LEVY?

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

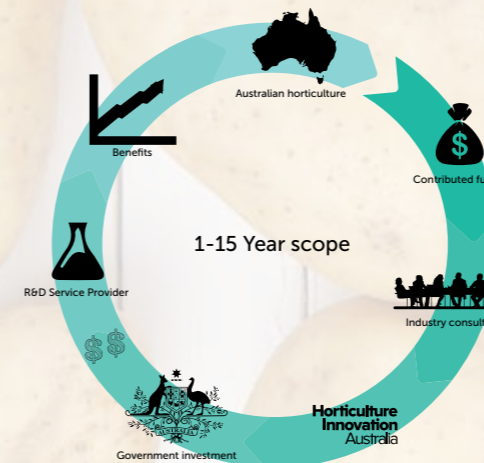
- The charge is set at 50 cents per tonne for fresh and processing potatoes and must be paid by the producer of fresh potatoes or the owner of processing potatoes.

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

HOW IS LEVY MONEY INVESTED?

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

POOL 2



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

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

They are:

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

HOW CAN GROWERS GET INVOLVED?

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

For more information about the National Potato Levies, visit ausveg.com.au/rnd/thelevysystem/potatolevy.htm.

This communication has been funded by Horticulture Innovation Australia Limited using the research and development Fresh Potato Levy and funds from the Australian Government. Project Number: PT15007





An adult tomato-potato psyllid with the moulted 'skin' of a nymph. Image courtesy of Plant & Food Research New Zealand.

TOMATO-POTATO PSYLLID: A DESTRUCTIVE POTATO PEST

In the following pages, *Potatoes Australia* provides readers with a detailed feature on the highly destructive pest, tomato-potato psyllid (TPP) and its implications on the Australian potato industry. To begin, we share an overview of TPP and the bacterium it vectors (*Candidatus Liberibacter solanacearum*), which causes zebra chip disease in potatoes.

The discovery of tomato-potato psyllid (TPP; *Bactericera cockerelli*) in a Perth vegetable garden in February triggered widespread surveillance in commercial crops and backyard gardens in Western Australia, and placed the \$480 million-a-year Australian potato industry on high alert.

TPP also vectors the bacterium *Candidatus Liberibacter solanacearum* (CLSo), which causes zebra chip disease in potato crops.

PSYLLID ORIGIN

TPP is an insect from the United States that spread to New Zealand. It was not considered a major pest in the United States until 1999, when it began to spread from Mexico into California and Texas due to the emergence of a new, more invasive biotype of the psyllid. It was this biotype that was introduced to New Zealand in 2005-06, most likely on smuggled chillies from California.

It is believed that TPP arrived in New Zealand in 2006. A confirmed identification was made in May 2008 in Auckland, but by that point it had spread to many tomato glasshouses in the Auckland area.

In 2008, the initial outbreak in three Auckland glasshouses cost growers NZ\$1 million, with the cost to industry growing exponentially from there.

INSECT DESCRIPTION

TPP is a tiny sap-sucking insect that is black with a white stripe on its back. Adults resemble small winged cicadas and are about 3mm long.

It primarily feeds on potatoes, tomatoes and capsicums, but can live off, or at least shelter on, a large number of other plants (approximately 20 plant families). Other hosts that are preferred by the psyllid include additional solanaceous crops (eggplants, chilli and tamarillos), sweetpotato and weeds, such as nightshade and boxthorn.

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

ZEBRA CHIP SYMPTOMS

While zebra chip disease has not been detected in Western Australia at the time of writing, it is still important to monitor crops and keep an eye out for indicators of the bacterium CLSo, as zebra chip disease can significantly reduce the yield and health of potato crops and render potatoes unsaleable.

Foliage symptoms in potato plants include stunting, chlorosis and swollen nodes, causing a zig-zag appearance of the upper growth, a greater number of auxiliary buds and leaf scorching leading to early dieback.

Zebra chip can affect fresh, processing and seed potatoes in different ways. Symptoms are less severe for fresh potato, but there is a reduction in yield.

In processing potatoes, the infection causes a brown discoloration in the potato, which is more noticeable when it is fried. This results in rejection of the crop, as they cannot be used for chips because of the 'burnt' appearance and a perceived effect on taste.

ADVICE FOR GROWERS

Growers who suspect that TPP may be present in their crop need to report this to the **Exotic Plant Pest Hotline on 1800 084 881**.

In Western Australia, growers can also use the Department of Agriculture and Food, Western Australia (DAFWA) MyPestGuide reporting app. Details about how to access and use the app are available at agric.wa.gov.au. DAFWA has also developed a video that provides guidelines for psyllid detection. This video, and associated fact sheets, can be found on the AUSVEG biosecurity web page at ausveg.com.au/biosecurity.

INFO

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

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

Project Number: PT15007

Horticulture
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SUPPORTING AUSTRALIA'S POTATO GROWERS DURING AN INCURSION

Following the recent tomato-potato psyllid incursion in Western Australia, Horticulture Innovation Australia has engaged the Australian potato industry to provide immediate funding from the fresh and processing potato levies, vegetable levies, as well as funds from the Australian Government to support industry efforts in managing the incursion.

The first response funding following the detection of tomato-potato psyllid (TPP) in Western Australia was used to engage a key researcher from Plant & Food Research New Zealand to deliver possible responses to the incursion in regards to monitoring and control of TPP, as well as information on Integrated Pest Management and long-term management planning.

Horticulture Innovation Australia is continuing to seek advice from both the fresh and processing potato Strategic Investment Advisory Panels (SIAPs) into additional areas of R&D investment in managing this incursion, in particular around management and surveillance of TPP. This is being done in consultation with other industry state and national bodies, which have the responsibility for implementing response arrangements.

Horticulture Innovation Australia continues to work closely with AUSVEG, other industry bodies and levy payers to determine the best strategy for funding to be used with the greatest impact in managing biosecurity issues.

BOOSTING NATIONAL BIOSECURITY

In addition, the nation's seven plant Research and Development Corporations (RDCs) recently announced a new partnership approach to strengthen the nation's biosecurity. Headed up by Horticulture Innovation Australia, the new initiative will increase research coordination, reduce duplication and fill gaps in plant biosecurity R&D.

The initiative will also create better linkages between industry research and the national biosecurity systems managed by the Australian and state and territory governments.

"To date, Australia's approach to managing research investment and delivery for our plant industries has been fragmented and lacking coordination. This is simply because the biosecurity space is incredibly complicated, crossing more than 50 commodities, all states and territories, and countless stakeholder groups," Horticulture Innovation Australia Chief Executive John Lloyd said.

The group has developed a list of principles for guiding plant biosecurity research to ensure the development of a successful cross-sectoral approach. These principles will be used to coordinate plant biosecurity research and development decisions across all RDCs.

INFO

For more information, please visit horticulture.com.au or contact Hort Innovation Relationship Manager Christian Patterson on 02 8295 2382 or 0433 896 753 or email christian.patterson@horticulture.com.au.

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African Boxthorn *Lycium ferocissimum*, a non-crop host plant of tomato-potato psyllid.



Foliar symptoms in potato as a result of infection with *Candidatus Liberibacter solanacearum*. Image courtesy of Plant & Food Research New Zealand.



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

TOMATO-POTATO PSYLLID DETECTION: WHAT HAPPENS FROM HERE?

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

Many had been expecting the arrival of tomato-potato psyllid (TPP) in the eastern states of Australia, possibly deposited by easterly wind currents, or brought in by one of the millions of international travellers who land in eastern seaboard airports each year. However, when it comes to pest incursions, sometimes risk-based analyses will only take you so far. The psyllid was, in fact, found in a Perth vegetable garden.

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

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

PROCEED WITH CAUTION

Government and agricultural industries represent the two biggest players in our biosecurity system. However, there are other players (and beneficiaries) – for example, bushwalkers and natural resource management groups have an important role to play in maintaining the health of our natural environments, and travellers can have significant impacts on spreading harmful pests if proper biosecurity precautions are not followed. As a traveller, are you aware of fruit fly-free regions in your state, or around the country? Do you dump your strawberries before entering Tasmania?

Throughout the lifetime of the biosecurity program, growers have commented to me about the change in paradigm, from

one that embraced a culture of farm hygiene and community awareness/knowledge to one of disconnect on the part of community, and apathy on the part of plant industries. It is during crisis situations when biosecurity best practices become topics of discussion once again. It seems logical to take steps to promote a culture of investment in preparedness and education, rather than reaction and response.

CURRENT TPP RESPONSE

The Department of Agriculture and Food, Western Australia (DAFWA) is undertaking surveillance in commercial crops and backyard gardens in the Perth area, following the confirmed detection of TPP. Apart from attempting to determine the spread of the pest from the Perth metropolitan area, DAFWA officers are conducting proof of freedom surveillance in priority production areas. This is one such activity that could be undertaken now in the eastern states as a preparedness measure.

Working under the guidelines of the Emergency Plant Pest Response Deed, the Western Australian government has heeded industry advice. After an incident definition phase lasting six weeks, this incursion is now in the response phase. As of 22 March, the National Management Group (NMG) for TPP (comprising all Australian governments, affected industry representatives and Plant Health Australia) agreed to a short-term national response plan. The NMG will consider the appropriateness of the initial response after 30 days. This period will allow critical information on the nature and spread of the pest to be collected.

A Quarantine Area Notice has been declared for the Perth metropolitan area and other local government districts until 30 October 2017. The quarantine area includes a control zone and suppression zone. DAFWA has also developed a detailed surveillance plan targeting commercial and residential growers in

the Perth metropolitan and regional areas of Western Australia. The surveillance plan will guide detection, eradication, suppression and control efforts, and establishes a watch zone covering non-quarantine areas of Western Australia with a view to proving an area of freedom to support continued trade in solanaceous plants and produce. At the time of writing, *Candidatus Liberibacter solanacearum*, which causes zebra chip disease in potatoes, had not been detected in Australia.

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

INFO

Any unusual plant pest should be reported immediately to the relevant state or territory agriculture agency through the Exotic Plant Pest Hotline (1800 084 881).

For further information, contact AUSVEG National Manager – Science and Extension Dr Jessica Lye or AUSVEG Biosecurity Coordinator Callum Fletcher on 03 9882 0277 or jessica.lye@ausveg.com.au or callum.fletcher@ausveg.com.au.

The Vegetable and Potato Biosecurity Program is funded by the Plant Health Levy.

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

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AUSVEG PROVIDES ON-THE-GROUND ASSISTANCE DURING EMERGENCY PEST INCURSION

During the first emergency teleconference to discuss the detection of tomato-potato psyllid (TPP) in Western Australia, AUSVEG offered to send its Biosecurity Coordinator Callum Fletcher to Perth to aid in the response. The Department of Agriculture and Food, Western Australia (DAFWA), which led the response efforts, accepted this offer and Callum relocated to Perth from 9 February to 9 March. Financial support covering the additional costs were provided by the Department of Agriculture and Water Resources.

CRISIS SUPPORT

Immediately after the detection of the psyllid, DAFWA set up an Incident Response Centre at its South Perth campus, where Callum was based. The Centre contained over 50 DAFWA staff who coordinated and implemented the state's response efforts from a centralised location.

There were two purposes for Callum's presence in Western Australia. The first was to provide a permanent industry voice and presence at the heart of the Incident Response Centre, alongside regular attendance at daily meetings and updates from vegetablesWA Chief Executive Officer John Shannon and Potato Growers Association of Western Australia Executive Officer Simon Moltoni.

The second was to provide technical advice to aid the response, based on Callum's prior experience with TPP in New Zealand. From the initial detection of TPP in New Zealand in 2008 until his move to Australia to work for AUSVEG in 2016, Callum has worked on research and surveillance of the psyllid in his former roles at Plant & Food Research New Zealand and as an industry consultant.

FURTHER WORK

While based at the Incident Response Centre, Callum contributed to training DAFWA staff and developing surveillance methods, as well as developing suppression and eradication plans. He also facilitated the information transfer of New Zealand-based expertise to aid in the effective detection, destruction and management of the psyllid and its host plants.

During the month that Callum was in Western Australia, a range of grower meetings were held in Perth, Bunbury, Manjimup, Albany, Geraldton and Carnarvon and consisted of presentations and question and answer sessions conducted by Callum and DAFWA staff. During these visits, regional DAFWA staff were also given further instruction on the effective surveillance of the psyllid.



NEIGHBOURS ACROSS THE DITCH REFLECT ON TOMATO-POTATO PSYLLID

New Zealand has been battling the destructive tomato-potato psyllid for over 10 years. *Potatoes Australia* spoke to Plant & Food Research New Zealand scientist Dr Jessica Dohmen-Vereijssen about our Trans-Tasman neighbour's experience in dealing with the initial incursion and current management strategies.

The tomato-potato psyllid (TPP) and the plant pathogen it transmits, *Candidatus Liberibacter solanacearum* (CLso), were first recorded in New Zealand in 2006 and 2008 respectively.

Crop & Food Research (CFR) initially undertook the main research on TPP and CLso at the time of the incursion, and this continued after CFR became part of the New Zealand Institute for Plant & Food Research Limited (PFR) in late 2008.

The researchers worked in parallel with industry to coordinate, prioritise, identify funding sources and implement a research program to underpin the ongoing management of the TPP/CLso complex in a range of solanaceous crops, after it became clear that eradication was not feasible.

LACK OF KNOWLEDGE

In hindsight, and taking into account the limited prior knowledge of TPP/CLso risk and the lack of a recent high impact incursion in the vegetable industry, organisations and industry in New Zealand could have been better prepared for TPP/CLso.

In 2006, CFR had no policy for assessing the risk for new pest or disease incursions, no systematic way of listing potential risks, and no plan for responding to incursions or allocating resources to deal with new incursions, including those that could not be eradicated and so required long-term management. Neither did the vegetable industries.

The relative fragmentation of the industries affected (capsicums, fresh tomatoes, processing tomatoes, seed potatoes, processing potatoes, fresh potatoes and tamarillos) compounded the challenge of mounting a cohesive and coordinated response.

"Truly collaborative research between growers and science organisations are essential for uptake by industry of useful strategies and learnings," PFR scientist Dr Jessica Dohmen-Vereijssen said.

"Besides learnings in terms of management strategies, a lot of knowledge was and had to be generated through fundamental research projects, to elucidate insect and bacterium genetics, biology and ecology."

PEST MANAGEMENT

Over the past 10 years, PFR and other agencies have developed the following psyllid management strategies in New Zealand:

- Defining action thresholds based on multiple decision-aiding tools, including regular scouting of crops, yellow sticky trap monitoring (potato) and degree day accumulation to aid start of spray programs.

- How to conduct plant assessments in potato crops.
- Identifying where and how to trap for TPP in potato crops.
- Presence and seasonality of natural enemies/beneficial insects naturally occurring in potato crops.
- Companion plantings to sustain natural enemies around crops.
- Development of spray programs (insecticides and agricultural oils) to manage TPP in potato – going from no sprays to weekly sprays was the big shift in potato crops.
- Focusing on the importance of insecticide resistance management. While TPP is a focus, management for other pests and diseases still needs to be taken into account.
- Effect of selected insecticides and agricultural oils on CLso transmission, as well as natural enemies/beneficial insects.
- Identifying botanicals and biorational insecticides to manage TPP in potato crops.
- Post-harvest disinfestation of fruit, particularly capsicums.

ASSISTING NEIGHBOURS

PFR is actively assisting Western Australian agencies, including the Department of Agriculture and Food, Western Australia (DAFWA), with TPP surveillance, management options, post-harvest disinfestation options and molecular diagnostics.

Dr Dohmen-Vereijssen travelled to Western Australia where she provided expertise based on her experiences and trained surveillance personnel with a focus on plant assessments, insect identification and plant symptoms related to TPP and CLso. She will continue to work with DAFWA and other agencies from New Zealand.

Her PFR colleagues Dr Grant Smith, Dr Rebekah Frampton and Sarah Thompson have also been providing expertise in TPP and CLso molecular diagnostics from New Zealand.

Dr Dohmen-Vereijssen said it is always desirable to eradicate new pest incursions if this is possible.

"If eradication is not possible, an effective pest management plan needs to be developed as quickly as possible to enable growers to continue to produce high quality crops in the presence of TPP and/or CLso. This is likely to require considerable changes to pest management practices in affected crops."

INFO

For more information, please visit plantandfood.co.nz.

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

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Black nightshade *Solanum nigrum*, a non-crop host plant of tomato-potato psyllid.



Bactericera cockerelli nymph. Image courtesy of Plant & Food Research New Zealand.

RESPONDING TO AN EXOTIC PEST INCURSION

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



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

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

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

WHAT HAPPENS WHEN A SUSPECT PEST IS IDENTIFIED?

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

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

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

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

AUSVEG's role on the CCEPP is to provide an industry perspective and assist where it can with the preparation of a response plan and incursion control. This can take many forms but in serious cases such as TPP, it usually involves an AUSVEG staff member working directly with grower organisations in the host state.

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

After determining that a pest can be eradicated and an agreement on a response plan has been reached (which must contain a budget), CCEPP provides this advice to the National Management Group (NMG), which is comprised of the Senior Executives of all organisations involved in the incursion. NMG is responsible for making the decision about an incursion and eradication, and relies on the advice from CCEPP. However, it is not bound by the CCEPP. In agreeing to a response plan, all parties must agree on the budget.

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

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

With respect to the current TPP outbreak, the NMG considers that responding to the current incursion is in the national interest given the potential economic impacts, should TPP be established in Australia. Accordingly, a 30-day response plan has been approved to allow critical information to be collected on the nature and spread of the complex. This process will be led by DAFWA. After 30 days, a re-evaluation of the situation will occur.

INFO

For more information, contact AUSVEG on 03 9882 0277 or email info@ausveg.com.au. A more detailed statement on the 30-day response plan can be seen at agriculture.gov.au/about/media-centre/communiques/tomato-potato-psyllid-2.

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

Project Number: PT15007





USING AN INTEGRATED PEST MANAGEMENT STRATEGY TO MANAGE PSYLLIDS

At the time of writing, tomato-potato psyllid (TPP) in Western Australia was being controlled under a response plan that has not yet transitioned to management. In this article, Paul Horne and Jessica Page from IPM Technologies, along with Anne Ramsay from the Potato Processors Association of Australia, explain the benefits of using Integrated Pest Management when dealing with a TPP incursion.

Tomato-potato psyllid (TPP) vectors a serious disease of potatoes that is caused by a bacterium, *Candidatus Liberibacter solanacearum* (CLso). Significant losses (up to 50 per cent) have been reported from potato crops in the United States and up to 80 per cent in glasshouse tomatoes in New Zealand. In processing potatoes, the bacterium causes zebra chip disease, due to changes to the sugars stored in the tubers.

The good news is that the Australian potato industry recognised the problem and the risk back in 2008 and commissioned a project (PT09004), conducted by Australia's IPM Technologies Pty Ltd and Plant & Food Research New Zealand, to look for control options within an Integrated Pest Management (IPM) strategy. This was so the Australian potato industry could be prepared for the very situation that we are now faced with.

A DESTRUCTIVE PEST

The arrival of TPP in New Zealand destroyed IPM in many crops where minimal insecticide use had previously been practiced. This included glasshouse crops where highly developed IPM strategies had been implemented for many years. The initial approach to dealing with this pest in New Zealand potato crops involved regular (typically weekly) use of a range of insecticides, including many broad-spectrum products.

When broad-spectrum insecticides are used against the psyllid, it destroys the IPM control of other pests such as aphids, thrips and potato moth, which can otherwise be successfully dealt with using IPM strategies. Western flower thrips (*Frankliniella occidentalis*), which vector tomato spotted-wilt virus, is resistant to almost all insecticides available to potato growers, and so poses a particular threat in this scenario.

TPP has natural enemies, such as lacewings and damsel bugs overseas, but they are different species to those in Australia. PT09004 aimed to confirm that the key beneficial species necessary to prey on potato psyllid are already present in potato crops in south-eastern Australia.

PROJECT FINDINGS

The field work for PT09004 was funded by Australian growers and processors of potatoes through the Australian Potato Research Program. In that project it was confirmed that brown lacewings, hoverflies, damsel bugs and a species of ladybirds all accepted psyllids as prey, even in the presence of alternative prey such as aphids. This means that the generalist predators that are present in Australian potato crops are going to be extremely important in controlling potato psyllid.

Field trials in Canterbury, New Zealand, confirmed that the draft IPM strategy could be used to control all pests, including TPP. This draft strategy involved the use of biological control agents, some cultural methods and the use of selective insecticides.

IPM Technologies and collaborators showed that control of TPP is possible without reliance on heavy use of insecticides. In more good news, since this work was funded, newer selective chemistries have been developed that are softer and with greater efficacy, which means that managing the psyllid using IPM is an effective and viable option for Australian potato growers.

IPM Technologies is currently funded by the potato and onion industries to demonstrate the value of IPM through Horticulture Innovation Australia-funded project MT16009 – *An IPM Extension Program for the Potato and Onion Industries*. The project will deliver workshops, training and one-on-one support, which is timely given the current incursion of TPP and proven success of managing the pest via IPM.

INFO

For more information about the project, please contact Paul Horne and his team on 0419 891 575 or email info@ipmtechnologies.com.au.

For more information about PPAA, please contact Anne Ramsay on 0400 368 448 or email ppaa.eo@gmail.com.

Control of potato psyllid with an IPM strategy has been funded by Horticulture Innovation Australia Limited using the research and development National Potato Levy and funds from the Australian Government.

Project Number: PT09004

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THE ECONOMIC IMPACT OF TOMATO-POTATO PSYLLID OVERSEAS

The tomato-potato psyllid, which vectors the bacterium that causes zebra chip disease in potatoes, has been found in multiple locations in Perth and in the south west corner of Western Australia. *Potatoes Australia* examines the impact the pest has had on the United States and New Zealand, where it has been present for some time.

At the time of writing, the tomato-potato psyllid (TPP) has only been identified in Western Australia, and measures have been put in place to prevent its spread to the eastern states.

The pest attacks plants in the solanaceae family, including tomatoes, potatoes, capsicum, chillies, eggplant and sweetpotato. These crops were valued at over \$120 million per annum in Western Australia alone in 2014-15 and covered an area of approximately 2,000 hectares, with around 1,700 hectares of that devoted to potato production at a value of around \$46 million annually.

As the extent of the incursion is still unclear, it is too early to make an accurate assessment of the economic impact of the psyllid in Australia. The hope is that current control measures put in place by authorities in Western Australia succeed in containing the psyllid and preventing its spread to the eastern states.

At this time, the immediate economic costs will be borne mostly by Western Australia. Beyond that, interstate trade in affected vegetables and machinery will be disrupted.

LEARNING FROM THE PAST

Typically, the presence of TPP is associated with *Candidatus Liberibacter solanacearum*, a bacterium that causes zebra chip disease in potatoes. At the time of writing, the bacterium had not been detected in Australia.

While the bacterium does not pose a risk to human health, it can have a very real economic impact on the affected potato industry. We can learn from the experience of New Zealand and the United States, where growers have been dealing with the disease for some time. In the United States, the disease was first reported in 2000 and quickly spread to include all the major potato growing regions. Costs associated with control include a spraying schedule of up to 10 applications per season for potatoes.

The costs of ongoing chemical applications range from around AU\$1,700 per hectare in southern US states, to AU\$4,000 per hectare in New Zealand. This includes the cost of chemicals and labour, as well as machinery depreciation and maintenance.

Farms also face the costs imposed by more rigorous on-farm biosecurity measures in terms of the movement of labour and machinery around the farm and ongoing pest monitoring. Farms that exceed a pre-determined threshold of incursion may suffer not only the loss of the whole crop, but also the additional costs associated with the safe disposal of affected potatoes.

In the longer term, experience in New Zealand has shown that yields can decline, not only from the presence of the disease but also from soil compaction associated with additional machinery movements over time. According to authorities in New Zealand, yields have been falling for the past three to four years as a result.

The disease also had trade implications, with quarantines imposed on US potato exports to the Republic of Korea. It also raised concern among other countries about the safety and quality of US potatoes.

FINAL WORD

As mentioned earlier, more work needs to be carried out by various agriculture departments to assess the extent of the incursion before the full economic impact of the TPP incursion in Australia can be determined. There are too many moving parts to predict what the ultimate outcome will be at this stage.

Suffice to say, the potato and wider vegetable industry is facing a significant economic challenge in the coming months and years. AUSVEG is working closely with authorities as they analyse these issues and will keep growers informed whenever new information becomes available.

INFO

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

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Project Number: PT15007

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MAINTAINING A PROFITABLE, DIVERSE GROWING OPERATION



NAME: Chris Gallagher
AGE: 26
LOCATION: Waubra, Victoria
WORKS: GTRA (Gallagher Trading)
GROWS: Potatoes, lambs, beef, cattle, wheat, canola, pyrethrum

HOW DID YOU FIRST BECOME INVOLVED IN THE POTATO INDUSTRY?

I've been involved in the industry all my life. My family was growing potatoes long before I became involved in the business, and we've continued to grow them ever since.

WHAT DOES YOUR ROLE IN THE BUSINESS INVOLVE, AND WHAT ARE YOUR RESPONSIBILITIES?

My Dad, older brother Arvin and I share all roles and responsibilities in relation to planting, growing and harvesting potatoes.

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

The biggest challenge for us is remaining profitable while maintaining our machinery in order to keep costs minimal.

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

What I enjoy most about the industry is the diversity it brings to our farm and the alternative financial opportunity at an otherwise low-income time of year.

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

The majority of on-farm advice and information I've received has been from Dad, with some of the more recent and technical information coming from David Ryan of Independent Agronomy.

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

Disease control is the most prevalent issue for us at the moment.

WHAT NEW INNOVATIONS, RESEARCH AND/OR PRACTICES HAS YOUR BUSINESS IMPLEMENTED RECENTLY?

While still considering innovation, our business has taken a more conservative approach to potato production by keeping employment and input costs to a minimum.

WHERE DO YOU SEE OPPORTUNITIES FOR GROWTH IN THE AUSTRALIAN POTATO INDUSTRY, AND WHAT IS YOUR VISION OF THE AUSTRALIAN POTATO INDUSTRY IN THE FUTURE?

I think finding ways to compete better with imported potato prices could provide opportunities for growth on Australian farms.
With the growing population, I think it's possible that demand could go up over time, which will hopefully increase potato prices and farm productivity.

What I enjoy most about the industry is the diversity it brings to our farm and the alternative financial opportunity at an otherwise low-income time of year.

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

Young people could possibly be encouraged to become involved in growing potatoes if there was some form of financial assistance to help overcome the initial high infrastructure costs.

WHERE DO YOU SEE YOURSELF IN FIVE YEARS?

It's hard to say, but I'd like to think that we will be in a similar position to now in regards to growing potatoes. While we can continue to make a profit from them, it'll keep the business more diverse.



Photography by Luka Kauzlaric.





POTATO EXTENSION ACTIVITIES AIM TO ADDRESS IMPORTANT INDUSTRY ISSUES

The Potato Industry Extension Program's Project Reference Group, together with Arris and Horticulture Innovation Australia, is in the process of determining the service delivery providers for a range of extension activities for the potato industry. As Australian Potato Industry Extension Project Manager Adrian Dahlenburg explains, the program of activities is one that addresses important issues for the industry and develops resources that will benefit producers into the future.

SEED QUALITY AND CROP PERFORMANCE

This activity will review the scientific literature that discusses recent linkages between all matters relating to seed potatoes, and the impact of seed quality factors on crop performance and yield.

On-farm demonstration plantings based on recommendations from the literature review will be undertaken as part of the project. Observations and video recordings will be made of the outcomes and gathered into simple language reference resource materials, and then archived for ready access by industry stakeholders in the future.

PEST AND DISEASE DIAGNOSTICS

Pest and disease diagnostics and identification will be much easier for all stakeholders in the potato industry with the production of web-based apps that can be used in the field or in the office on desktop computers, tablets and mobile phones. Improved communication, reduced mistaken diagnostics and improved treatment recommendations will result from the use of these apps.

BACK TO BASICS

During the life of the project, it is intended that a range of resource and information packages be developed on topics that can provide producer-friendly information on aspects of crop production that are considered to be essential knowledge for a potato production enterprise.

Modern electronic media and resources like webinars will be used as the medium for many of the resource materials. Topics selected for inclusion in the 2017 round of activities include soil factors and production, irrigation scheduling, timing of crop operations, interpreting soil tests, conducting farm trials and understanding the risks in potato growing.

COST OF PRODUCTION AWARENESS

While it is recognised that every farm is different and there will be variable needs and best fit scenarios across the industry, this activity will evaluate the potential value, operational effectiveness and likely level of use of a range of different economic analysis tools/ computer programs that growers could use to better understand their production costs and assist in decision making on-farm. A selected model from the evaluation that is most suitable for use by potato growers will be developed as a computer application.

STAKEHOLDER'S FORUM

The first potato industry forum for this project will be held on Monday 15 May at Hort Connections 2017 from 2:30pm to 5:00pm. The event will be held at the Adelaide Convention Centre and an industry luncheon will be hosted by Potatoes South Australia before the forum.

The industry forum is designed to deliver awareness, review and planning of the Potato Industry Extension Program. The forum will involve 15-20 minute presentations on technical aspects of tomato-potato psyllid, precision agriculture, drones and robotics, as well as four speakers on different aspects of soil health. These presentations are intended to provide both a review of recent activities, knowledge and developments of relevance to the industry and create an awareness of new technologies that could be used in research or extension activities in the future.

Forum participants will be encouraged to participate in a simple planning and discussion session, which is aimed at assisting Arris to formulate the plan for future extension activities that are relevant and well-aligned with industry needs.

The forum is open to anyone with an interest in the potato industry. It is free of charge and your attendance is encouraged,

as your inputs and contributions to our planning process are valued.

Attendance at the Potatoes South Australia luncheon is not required for you to be a part of the forum. You can register for this event at arris.com.au/potato-extension/forum.

HOW TO GET INVOLVED

Arris is committed to a close association and strong engagement with industry to help direct and determine our extension activities. As we have limited direct access to most of the industry producers/ stakeholders, communication can be fragmented and difficult without these connections.

Please consider completing the simple registration for stakeholders (name, email, mobile and location required) at arris.com.au/potato-extension/stakeholders. This will allow us to make

direct contact to canvass your interest and valued inputs on program ideas and activities. We recognise your time is precious and needs to be primarily focused on your business activities. For that reason, any requests for feedback and inputs to our planning will be simple and take less than two minutes to evaluate and respond via mobile phone and tablet polling procedures.

INFO

For further information or to discuss the Potato Industry Extension Program, please contact Project Manager Adrian Dahlenburg on 0488 739 300 or adahlenburg@arris.com.au or Arris Pty Ltd Managing Director Jim Kelly on 08 8313 6706 or jkelly@arris.com.au.

The Potato Industry Extension Program has been funded by Horticulture Innovation Australia Limited using the research and development Fresh and Processing Potato Levies and funds from the Australian Government.

Project Number: PT15002



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DEVELOPING SMARTER CROP TESTING

A Soil Moisture Assessment Treatment (SMART) test has been developed to assist growers in knowing when to apply a crop protection product. Syngenta Technical Services Lead Scott Mathew provides advice on how to best use the test and the factors that may affect crop protection product application.

With the unpredictable weather we have experienced this summer, growing conditions have resulted in vigorous potato plants and higher than usual weed counts present in crops. As a result, halting plant growth and controlling weeds for harvest may prove a little more difficult this season. Desiccating potato crops offers growers management advantages by aiding the harvest process and improving tuber maturation. As a result, a few common questions come up at this time of the year, as outlined in this article.

I HAVE HEARD OTHER GROWERS TALK ABOUT THE SMART TEST – WHAT IS IT AND HOW DO YOU DO IT?

Syngenta developed the Soil Moisture Assessment Treatment (SMART) test as a practical and simple way to assess when the crop is at the right stage to apply REGLONE®. There are four steps to the test, but in short it involves “hands-on” soil moisture tests using a spade in the field (be prepared to test at several sites).

Steps to complete the test:

1. Dig down and take a soil sample from the centre of the ridge (five centimetres below the deepest tuber).
2. Gently squeeze the soil sample into a ball with your hands. If it is sufficiently moist to pass the test, it will remain as a ball. If it collapses, it has failed the test.
3. Repeat at several points across the paddock, especially in drier areas.
4. If the soil test is a fail or borderline, delay product application until the soil is moistened by rainfall or irrigation.
5. If the test is a pass, choose the rate of the product dependent on the haulm condition.

WHAT COULD CAUSE UNEVEN DESICCATION RESULTS WHEN USING REGLONE®?

As with the use of any crop protection product, always read the label directions before use. Getting a good result from use of this product has some critical elements, but it comes back to attention to detail with application, including environmental conditions and the condition of the vine itself.

1. Choose the correct rate to match the amount of green material you want to desiccate (i.e. the more vine present, the higher the rate needed).

2. For the best results, an even and complete coverage and good penetration of the spray into the target foliage is necessary.
3. Aim for a fine to medium spray quality with a minimum of 100 litres of water per hectare (L/ha). Use higher water volumes (200 to 300 L/ha) to obtain coverage of dense haulm.

DO ANGLED NOZZLES AID THE USE OF REGLONE® FOR DESICCATION?

The theory and practice behind angled nozzles is to provide greater coverage and spray penetration into a broad leaf canopy, among other benefits. Angled nozzles such as the Syngenta Potato Nozzle (which has a 30° angle nozzle tip) is an XR 110 04 nozzle. Originally designed for fungicide use, it has proven to be very effective for use with this product when desiccating vines. Use the Potato Nozzle alternated forward and back along the boom for best results, with a recommended water volume of 200 L/ha.

CAN SPRAY.SEED® (PARAQUAT + DIQUAT) OR STRAIGHT PARAQUAT-BASED PRODUCTS BE USED TO DESICCATE POTATO VINES PRIOR TO HARVEST?

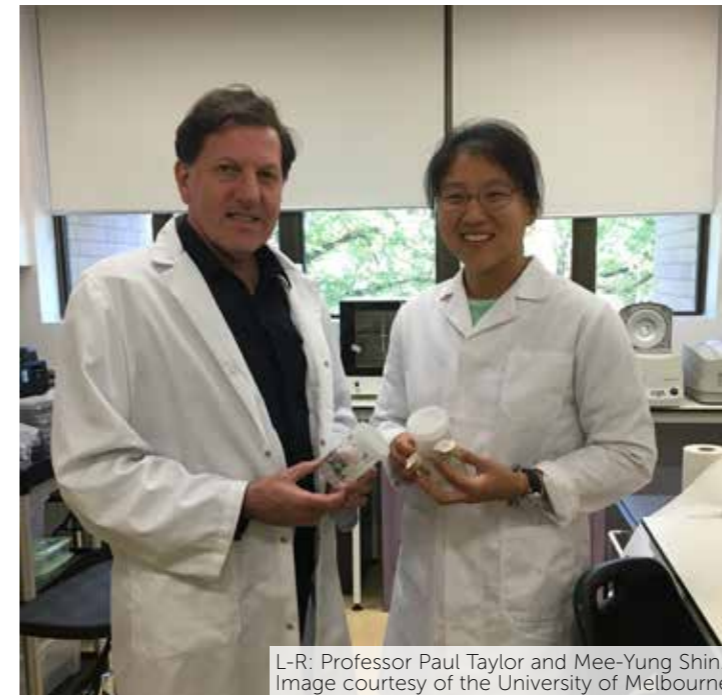
No. Paraquat-based products are not registered in Australia for this purpose. SPRAY.SEED® (paraquat + diquat) has a specific warning to not use the product for potato haulm desiccation. The only crop protection product registered for this purpose in Australia is diquat 200 g/L (REGLONE®).

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

Project Number: PT15007



L-R: Professor Paul Taylor and Mee-Yung Shin. Image courtesy of the University of Melbourne.

GAINING AN UNDERSTANDING OF VERTICILLIUM WILT

Verticillium wilt is often difficult to detect in potatoes, however it has been found to be closely associated with Potato Early Dying syndrome. Professor Paul Taylor from the University of Melbourne provided *Potatoes Australia* with a research update on the disease.

Verticillium wilt is a damaging soil borne disease of potatoes, where the pathogen infects, colonises and causes wilting in plants. It is likely to be present in all Australian potato fields, with the potential to cause crop losses ranging from one to 20 per cent.

Previous research shows that it is linked to Potato Early Dying (PED) syndrome, which can be caused by an interaction between different species of the soil borne fungal pathogen *Verticillium* (*Verticillium dahliae* and the lesser common *Verticillium albo-atrum*) and the root lesion nematode (*Pratylenchus crenatus*).

Often there is no distinctive visible symptoms of Verticillium wilt other than general poor health of potato crops, such as yellowing of foliage and wilting. Other host species of Verticillium wilt include pigweed, nightshades, bindweed and thornapple.

Professor Paul Taylor from the University of Melbourne supervised a project funded by Horticulture Australia Limited (now Horticulture Innovation Australia), entitled the *Australian Potato Research Program Phase 2 (APRP2)*, which included a focus on Verticillium wilt research.

“Our first objective was to understand the interaction of *Verticillium dahliae*, which is the major Verticillium, with nematodes to investigate if it had an interaction that was responsible for producing Potato Early Dying symptoms. We did extensive surveying of tubers that were coming from fields and found that Verticillium was quite widespread,” Professor Taylor explained.

“We reproduced the disease in the glasshouse, using inoculation techniques to develop a model that could be used to identify resistance in varieties of potatoes grown in Australia under controlled conditions, as well as to assess the efficacy of some organic supplements to see if it was possible to suppress some of the pathogen.

“Also we detected a few cases of tubers in Tasmania and Victoria infected with *Verticillium albo-atrum*, which plays a predominant role in disease in potatoes in the United States. It doesn’t seem to play the same sort of role in Australia and we don’t quite know why, so that’s an area of research for the future.”

DISEASE MANAGEMENT

Potato growers are advised to determine the level of inoculum in their soil by obtaining a proper diagnosis of Verticillium using the DNA-based soil testing service, PreDicta Pt, developed by the South Australian Research and Development Institute (SARDI).

If the results confirm the Verticillium pathogen, Professor Taylor said growers are recommended to remove potato plants and tubers from the field at harvest.

“Also, they should clean the field up and then practice crop rotation or use a non-host plant, which may be going into pasture. I know this is often not the way with high intensive production, but the only way to try to reduce the disease in the soil is to avoid planting potatoes back into it.”

Another aspect of Professor Taylor’s work was to identify the level of resistance of Verticillium wilt in current potato varieties, which could also be used to manage the disease.

“An outcome of that was the identification of a particular variety called Denali, which had reasonable levels of resistance that hadn’t been found before,” he said.

A screening of several Australian potato cultivars for resistance to *Verticillium dahliae* in glasshouse trials showed that some varieties are considerably more resistant than others. This work could be repeated in commercial fields to study resistance of commercial potato cultivars.

CURRENT RESEARCH

According to Professor Taylor, more research on Verticillium wilt needs to be undertaken.

“We’ve understood that there is a problem and we now have a model system that we can use to study the disease in more detail,” he said.

“At the moment, we have another PhD student (Mee-Yung Shin) looking at the mechanism of resistance. We’re looking at taking these resistance lines and understanding the resistance that’s in line to prevent the disease from developing.

“It also needs field trials to assess the varietal resistance in the plants. Some of the future work is using molecular techniques to look at the inoculum levels in particular fields, to see if it’s evenly distributed and just how the fungus exists in nature.”

INFO

For more information, please contact Professor Paul Taylor at paulwtj@unimelb.edu.au or turn to page 26 to read about PhD student Mee-Yung Shin’s research on Verticillium wilt.

The topic for this article was selected following the results of PT13013 *A review of knowledge gaps and compilation of R&D outputs from the Australian Potato Research Program*.

This communication was funded by Horticulture Innovation Australia Limited using the research and development Fresh Potato Levy and funds from the Australian Government.

Project Number: PT15007





Former potato research student Josephine Lamattina.



Powdery scab. Image courtesy of Sandra Jensen, Cornell University, Bugwood.org.



Former potato research student Veradina (Dina) Dharjono.

POWDERY SCAB UNDER JOSEPHINE'S MICROSCOPE

Powdery scab is a serious issue for Australian potato growers, and there is currently no reliable control strategy. Josephine Lamattina completed her Masters project that focused on novel control methods for the disease and she shared the results of her research with *Potatoes Australia*.

Powdery scab is an endemic soil disease that infects the root hair system of the potato plant, and produces both scab symptoms on the surface of the potato as well as hundreds of dormant spores, which can survive in the soil for up to 15 years. There are currently no registered fungicides for this disease in Australia.

Former potato research student Josephine Lamattina spoke to *Potatoes Australia* about the research that she conducted into this significant disease, entitled *Novel control methods for powdery scab*.

PROJECT OBJECTIVES

Josephine completed her studies in 2014 at Agriculture Victoria, as part of her Masters of Biotechnology studies at Deakin University.

"My study aimed to induce plant resistance by harnessing the potato plant's natural defence system by chemically spraying the plant to promote immunity, prior to the disease infecting the crop," she explained.

A hydroponic bioassay system was used to examine the interaction between powdery scab disease and the potato plant. This means that the biological activity, or the potency of the disease, was tested in a laboratory to determine its effect on the plant's growth.

Josephine said that while the research was useful, there was a need for further study to be undertaken.

"This novel research was useful in developing a proof of concept study to investigate the effectiveness of chemical foliar application in reducing powdery scab on the potato plant. However, further studies are needed to test multiple applications in an up-scale approach in field trials," she said.

Despite the requirement for further studies, there are grower benefits as a result of Josephine's project.

"This research can provide a commercially viable means to reduce the powdery scab disease from infecting the potato crop, which in turn will provide greater benefit, with less cost to the grower," she said.

BRIGHT FUTURE

Josephine comes from a farming background with her parents, Russell and Tina, operating and managing a large-scale growing operation. The former Masters student is now working as the Quality Assurance Manager in the family business, A&G Lamattina & Sons, which grows, processes and distributes fresh produce around Australia.

Josephine's five brothers are also involved in the third-generation family business, which was started by their grandparents in 1955.

It is Josephine's enthusiasm for the horticulture industry, in both the research and consumer categories, that fuelled her desire to study a disease such as powdery scab.

"I enjoyed learning and developing new techniques and applying my skills to a practical setting, which may provide benefits to farmers in the near future," she said.

"My role as the Quality Assurance Manager is to ensure all produce that leaves our farm exceeds all customer expectations in regards to quality, consistency and of course, taste."

INFO

Josephine Lamattina was co-supervised by Dr Tonya Wiechel and Dr Arati Agarwal at Agriculture Victoria.

For more information, please contact Dr Wiechel at Tonya.Wichel@ecodev.vic.gov.au or 03 9032 7347.

APRP2 – Soil Health and Disease Mitigation has been funded by Horticulture Innovation Australia Limited using the research and development National Potato Levy and funds from the Australian Government.

Project Number: PT09026



LOVE OF A CHALLENGE DRIVES DINA

Veradina (Dina) Dharjono is following her dream to work in agriculture, and her goal is to become a plant pathologist. A Bachelor of Science graduate, Dina spoke to *Potatoes Australia* about her PhD that she completed in 2016, which focused on a major potato disease in Australia.

Veradina (Dina) Dharjono is passionate about science and research, particularly in the agriculture sector.

Dina was a Bachelor of Science (majoring in agricultural science) student at the University of Melbourne and graduated with a Doctor of Philosophy at the end of 2016. She completed her thesis in mid-2016.

Dina's project studied the potential management of Verticillium wilt, a soil borne disease that affects potatoes (turn to page 23 for more information on this disease).

Many Australian potato growers had indicated losses of up to 20 per cent as a result of Potato Early Dying (PED). It's often hard to attribute the early die-off of a crop to one particular factor, so this project was funded to better understand the role that Verticillium wilt plays in PED in Australia (Project PT09029).

The project was split into two sections, as Dina explained to *Potatoes Australia*.

"One part of the project looked at resistant varieties, so that was basically screening certain cultivars to look for resistant cultivars. The other part was using soil amendments – I used sulphur, brown coal and blood and bone meal with a lot of glasshouse screening to see if they reduced the Verticillium disease," she said.

STUDY METHOD

To gain a thorough understanding of the effects of Verticillium wilt, Dina developed a lab-based test to screen potato cultivars for their resistance to Verticillium. This included evaluating different doses of Verticillium spores.

"It was looking at the best spore concentration to inoculate the plant and then screen potato cultivars with that concentration," she explained.

Three potato cultivars were found to have different levels of resistance to Verticillium.

"Cultivar Denali was medium to highly-resistant, and cultivar Catani and Desiree were moderately resistant."

Dina hopes that one day, this cultivar testing will provide meaningful information to growers to make informed decisions on potato cultivar selection.

The second part of Dina's project involved the development of a test tube assay to assess the efficacy of soil amendment to reduce Verticillium microsclerotia. The addition of different rates of sulphur, brown coal and bone meal reduced the viability of Verticillium microsclerotia, along with changing the microbial communities in the soil. Dina said that in the future, combining the two experiments will provide better management for the disease.

FUTURE PLANS

While Dina is currently preparing practical classes for agriculture students at the University of Melbourne, it is a career in plant pathology or research that really appeals to her.

"I want to stay in the agriculture industry. It has been my childhood dream, working in agriculture. I like the critical thinking part, and the challenging part of the research. That's what has made me go forward, finish the PhD and pursue a future in plant pathology research."

INFO

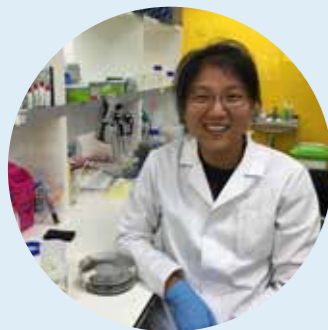
Veradina (Dina) Dharjono was co-supervised by Dr Tonya Wiechel at Agriculture Victoria and Dr Nigel Crump at ViCSPA.

For more information, please contact Professor Paul Taylor from the University of Melbourne at paulwtj@unimelb.edu.au.

Enhancing the understanding of Verticillium spp. in Australian Potato Production has been funded by Horticulture Innovation Australia Limited using the research and development National Potato Levy and funds from the Australian Government.

Project Number: PT09029





NAME: Mee-Yung Shin
CURRENTLY STUDYING: PhD in Agriculture, University of Melbourne
PREVIOUS STUDY: Bachelor of Agriculture (Honours)

WHAT ARE YOU RESEARCHING?

My project investigates the host-pathogen relationship of potato and *Verticillium spp.*, which leads to major wilt diseases such as Verticillium wilt and Potato Early Dying (PED) syndrome.

The research focuses on the pathogenicity of two major Verticillium wilt pathogens, *V. dahliae* and *V. albo-atrum*, in resistant and susceptible potato cultivars, as well as the infection pathway of each pathogen.

I will also be investigating the efficacy of soil amendments in controlling/reducing the incidence of Verticillium wilt of potato.

WHY ARE YOU CONDUCTING THIS RESEARCH?

V. dahliae is widespread throughout potato fields in Australia, whereas *V. albo-atrum* has only been detected in a few soils in Tasmania and Victoria. Beyond this, very little is understood about

the significance and epidemiology of these pathogens in Australia.

Gaining a better understanding of how they infect potato roots and colonise entire plants, as well as the efficacy of more environmentally and economically sustainable methods of management (such as application of soil amendments), is important in ensuring that there can be better management of Verticillium wilt.

WHAT DOES THIS RESEARCH MEAN FOR THE POTATO INDUSTRY?

Verticillium wilt is a major disease of a very wide range of crops, and has been extensively studied worldwide. However, there is only a small existing body of knowledge regarding Verticillium wilt of potato in an Australian context. This research will further our understanding of Verticillium wilt of potato in Australia, allowing growers in our industry to make more informed and relevant decisions in the management of their crops.

WHEN WILL YOU COMPLETE YOUR STUDY?

I hope to complete my study around March 2019.

WHAT WOULD YOU LIKE TO DO AFTER YOU FINISH YOUR STUDIES?

After finishing my studies, I would like to move overseas and gain some research experience abroad. It would be incredibly rewarding to contribute to agricultural research and extension in a developing nation and interesting to see the contrast between the Australian potato industry and those in other countries.



NAME: Varun Iyer
CURRENTLY STUDYING: Master of Biotechnology and Bioinformatics, La Trobe University
PREVIOUS STUDY: Bachelor of Technology in Biotechnology, D. Y. Patil University, Mumbai, India

WHAT ARE YOU RESEARCHING?

The project is investigating microorganisms of a common scab suppressive soil using DNA technology to identify groups of bacteria and fungi that are responsible for disease suppression.

WHY ARE YOU CONDUCTING THIS RESEARCH?

Common scab is an important disease in potato worldwide, especially in warm, dry growing seasons. The disease affects the quality of the potato by producing scabs on the tuber surface. Common scab occurs on a variety of potato cultivars in many soil types. There are no effective control methods for common scab as they are inconsistent and often fail.

My supervisor, Dr Tonya Wiechel and the potato team from Agriculture Victoria, found a common scab suppressive soil in Ballarat, Victoria. Glasshouse studies demonstrated that the suppressiveness can be transferred to non-suppressive soil, suggesting the mechanism for suppression was biological in

nature (good microbes involved) and does not depend on the physiochemical properties of the soil.

WHAT DOES THIS RESEARCH MEAN FOR THE POTATO INDUSTRY?

Common scab is one of the most prevalent potato defects, which has a negative impact on potato tuber quality and greatly reduces the market value of potatoes. Identifying the common scab suppressive mechanisms will help us develop agricultural practices that will increase disease suppression in the field and increase yield, improve quality and reduce costs for growers.

WHEN WILL YOU COMPLETE YOUR STUDY?

May 2017.

WHAT WOULD YOU LIKE TO DO AFTER YOU FINISH YOUR STUDIES?

I want to do a PhD in agricultural research and continue my career as a plant pathologist in both academic and industrial sectors.

INFO

Mee-Yung Shin is supervised by Professor Paul Taylor at the University of Melbourne and Dr Tonya Wiechel at Agriculture Victoria. Varun Iyer is co-supervised by Dr Tonya Wiechel at Agriculture Victoria.

For more information, please contact Professor Paul Taylor at paulwtj@unimelb.edu.au or Dr Tonya Wiechel on 03 9032 7347 or at Tonya.Wichel@ecodev.vic.gov.au.

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

Project Number: PT15007



PLANT-PARASITIC AND FREE-LIVING NEMATODES: WHAT ARE THE DIFFERENCES?

The previous edition of *Potatoes Australia* included an article detailing research into free-living nematodes that were causing damage to potatoes in the United Kingdom. However, potato growers in the United Kingdom are the only people in the world who consider that 'free-living' nematodes are pests. Dr Graham Stirling, Nematologist with Biological Crop Protection, clarified the situation to *Potatoes Australia*.

The article, 'United Kingdom prepares to tackle free-living nematodes', which appeared in the February/March 2017 edition of *Potatoes Australia*, discussed a molecular diagnostic test for free-living nematodes that was being developed in the United Kingdom. The research was conducted because these nematodes were known to be pests of potatoes.

Dr Graham Stirling has been researching the impact of nematodes on a range of agricultural crops in Australia for nearly 50 years and he explained that when potato growers in the United Kingdom refer to nematodes, they use different terminology to everyone else in the world.

"Potato cyst nematode is the United Kingdom's most important pest and it becomes sedentary after it sets up a feeding site within the root. Most other plant-parasitic nematodes remain motile (move around) throughout their life cycle, and so growers in the United Kingdom consider them to be 'free-living'," Dr Stirling said.

PLANT-PARASITIC NEMATODES

Unlike potato growers in the United Kingdom, Australia and the rest of the world sub-divide plant-parasitic nematodes into three major groups and consider free-living nematodes to be beneficial. Dr Stirling provided the accompanying table to explain the situation with regards to plant parasites (see Table 1).

"The two sedentary endoparasites are both important pests of potato, with potato cyst nematode a major threat to the Australian industry and root-knot nematode relatively common when potatoes are grown in sandy soils," Dr Stirling explained.

TABLE 1: IMPORTANT NEMATODE PESTS OF POTATO IN AUSTRALIA

NEMATODE GROUP	LIFE HISTORY AND FEEDING HABITS	EXAMPLES	
		COMMON NAME	GENUS
SEDENTARY ENDOPARASITE	Nematodes enter roots but lose the capacity to move after establishing a feeding site	Potato cyst; Root-knot	<i>Globodera</i> <i>Meloidogyne</i>
MIGRATORY ENDOPARASITE	Nematodes live within roots but remain motile throughout their life cycle	Root-lesion	<i>Pratylenchus</i>
ECTOPARASITE	Nematodes remain in soil and feed externally on roots	Stubby root Dagger	<i>Paratrichodorus</i> <i>Xiphinema</i>

"Migratory endoparasites such as root-lesion nematode can also cause serious damage to potato, with *Pratylenchus crenatus* one of the most important species in southern regions.

"Although ectoparasitic nematodes are usually considered less important, they sometimes occur in high populations in sandy soils. In addition to the damage they cause to roots, they have the capacity to transmit plant viruses. Stubby root nematode is particularly important in this regard, as several species are known to transmit tobacco rattle virus, a serious virus disease of potato."

FREE-LIVING NEMATODES

Dr Stirling explained that free-living nematodes are not plant parasites – they are beneficial organisms that feed on bacteria, fungi, nematodes and other soil organisms. He said that because their numbers respond to the availability of food sources and also to changes in the soil environment, free-living nematodes provide a good indication of the biological status of soil.

"Free-living nematodes provide two important benefits to potato crops: they mineralise nutrients in the soil and provide a food source for predators," Dr Stirling said.

"Bacteria and fungi break down organic matter in the soil and are then consumed by other soil organisms. The organic matter being decomposed contains nutrients, and those nutrients are transferred through the bodies of all the organisms in the food chain.

"When free-living nematodes eat bacteria and fungi, for example, nutrients such as nitrogen, phosphorus and potassium are incorporated into their cells. However, some of those nutrients are also excreted in mineral form and become available for use by plants. This process is known as nutrient mineralisation.

"The other important role of free-living nematodes is to provide a food source for predators. Healthy soils contain fungi, mites, nematodes and other organisms that prey on nematodes and in most cases these predators are not fussy about whether they are eating a plant parasite or a free-living nematode. Consequently, the presence of free-living nematodes helps to maintain populations of predators that can then go on to eat some of the pest nematodes we are trying to control."

INFO

For more information, please contact Dr Graham Stirling at graham.stirling@biolcrop.com.au.

Readers can also purchase Dr Stirling's book *Soil Health, Soil Biology, Soilborne Diseases and Sustainable Agriculture* by visiting publish.csiro.au/book/7358. This communication has been funded by Horticulture Innovation Australia Limited using the research and development Fresh Potato Levy and funds from the Australian Government.

Project Number: PT15007





A LONG ROAD: TWIN SIBLINGS KEEP FAMILY LEGACY ALIVE IN PITNACREE

Stephen Osborn is a third-generation potato grower who works alongside his twin brother Roger and father Dal at Pitnacree Road Farm in country New South Wales. Stephen spoke to Michelle De'Lisle about the challenges he faces as a grower, the proud history of on-farm sustainability and how this, along with disease-resistant crops, is maintained.

Located on the banks of the Hunter River and a two-hour drive from Sydney is the farming village of Pitnacree, where Stephen Osborn and his twin brother Roger have been growing produce for over 40 years.

Stephen and Roger are third generation farmers. The farm was established by the twins' grandfather Torphin (known as Ted) and was later handed down to their father Dal. Stephen and Roger, along with Dal who still works on the Pitnacree Road Farm, grow Sebago potatoes for the fresh market in Sydney. They also produce pumpkins, watermelons, hybrid seed maize, seed sorghum and lucerne.

The Osborn twins (who are partners in the business) grow 30 acres of crops in the spring/summer harvest and that is downsized to 20 acres in autumn.

"We concentrate on growing and doing everything from picking to irrigating to planting – the whole works," Stephen says.

LABOUR OF LOVE

Stephen says he has never thought about being in any other industry, although he has combined his skills as a grower with a qualification in welding.

"When I finished up at school and was working on the farm, I became qualified as a welder so I've been doing a fair bit of welding and boiler making. I've got my own metal lathe as all machines break down on weekends and public holidays," he says.

Stephen's welding classes were at night, which ensured that he never left the farm.

"I was working on the farm all the time. I got my school certificate and at 16-and-a-half, I left school and the next year I started tech at night. It was good.

"I've never thought about doing anything else."

Stephen enjoys the simple elements of potato growing: Planting the spuds, watching them grow, and then the harvest.

"We're pleased with the quality of the harvesting," he says.

FARM SUSTAINABILITY

Pitnacree Road Farm has been farming the same ground for 80 years, which is a milestone that Stephen is proud of. He says crop rotation and buying fresh, certified potato seed is the key to maintaining disease resistance and the ongoing sustainability of the farm.

"We grow green manure crops of Morgan peas, saia oats and forage sorghum, which makes the following potato crop really fill out and condition the soil," Stephen says.

"Crop rotation is extremely important, and we source our certified seed from Crookwell. We've got very good seed growers down there and the quality is first-class.

"There's still good rotation of all of our crops, so we're fairly disease-resistant."

The Osborn brothers are also using the nearby Hunter River for irrigation, and this has proved fruitful for their growing operation.

"Even though the salinity does get high, we've been able to keep farming and it has been manageable. We've never had to cease to pump because of higher salinity. It's been pretty important doing that, and we're irrigating 24 hours a day."

GROWER CHALLENGES

Looking at the change in production in the wider Maitland region,

there were over 40 producers of potatoes in the 1970s and '80s compared to just three today. The uncertainty of the markets, long payback periods and variable climate conditions are issues that Stephen faces as a grower and, as a result, Pitnacree Road Farm has reduced its production over recent years.

"We cut back a bit and this year – the market was very high and we wish we had a lot more," Stephen explains.

"We've gone to other crops that require less labour and less capital inputs – the returns aren't as great as what we can achieve with potatoes."

Ultimately Stephen believes that if there was more certainty in the markets, this would entice young people to accept jobs in not only the potato sphere but in the broader agriculture industry.

"This land around here can grow any crop you want. If only there was a market in Pitnacree, you'd get people back into the soil growing produce," he says.

LOOKING AHEAD

As there is no succession plan for the farm, Stephen and Roger's aim is to continue growing for as long as possible to keep the business alive.

"My brother and I are getting older and we don't have any succession, so our future's a bit uncertain. Packing 50 kilogram bags does get to you after a while, plus you're trying to strip the soil at night and pack pallets," Stephen says.

"I don't know how the future is going to pan out. I'm hoping we can go for a little while longer."



Photography by Designlane.



NEW INITIATIVE TO PROVIDE A FAIR GO FOR WORKERS AND GROWERS

Growcom's Fair Farms Initiative is set to be rolled out nationally in an effort to improve the reputation of the horticulture industry in relation to the treatment of workers and give growers the tools to prove they are good employers. The launch of this initiative will take place at Hort Connections 2017 at the Adelaide Convention Centre in May.

While it is acknowledged that the majority of growers do treat their workers fairly and are compliant with workplace legislation, sadly, the actions of a few are getting significant media coverage and tarnishing the reputation of the industry as a whole.

To combat this, Growcom will launch its Fair Farms Initiative at Hort Connections 2017 during the Workplace Relations Symposium, which will be held on 17 May at the Adelaide Convention Centre.

"The focus of the Fair Farms Initiative is to ensure that growers not only have the tools and knowledge to treat their workers fairly, but can also demonstrate that to their customers and the wider community," Growcom Chief Advocate Rachel Mackenzie said.

"The initiative is significantly funded through the Fair Work Ombudsman's Community Engagement Grants Program and has an initial focus on vulnerable workers, however it is our goal that the program will benefit all workers and growers in the longer term."

INITIATIVE FOCUS

The Fair Farms Initiative has five main components, as outlined below.

- A series of informative articles on key workplace relations issues for publication in an array of industry magazines including *Fruit and Vegetable News*, *Vegetables Australia*, *Potatoes Australia* and other regional and industry publications.
- The rollout of the Hort360 Workplace Relations best management practice (BMP) module nationally over the next four years, to enable growers to conduct a confidential risk assessment of their current practice and identify areas for improvement.
- Targeted regional seminars throughout Australia focusing on key areas of non-compliance.

- The development, through Freshcare, of a voluntary third-party Audited Certification for growers to enable them to demonstrate compliance.
- Development of a pathway to qualifications in Human Resources for interested growers.

"These activities will be supported by a strong presence at Hort Connections 2017 in May. Come and visit us at the Workplace Relations Hub at the Trade Show or come along to the Workplace Relations Symposium covering off on issues such as the Horticulture Award and the certification scheme," Ms Mackenzie said.

The Workplace Relations Symposium will be held on Wednesday 17 May from 11:20am-12:40pm at the Adelaide Convention Centre.

INTRODUCING THE FAIR FARMS INITIATIVE TEAM

- Donna Mogg – Horticulture Workplace Relations Specialist
 - Annabel Hutch – Growcom Workplace Relations Advisor
 - Rachel Mackenzie – Growcom Chief Advocate
 - Clare Hamilton-Bate – Freshcare Executive Officer
 - Jane Muller – Growcom Senior Project and Policy Officer
- Keep an eye out for articles on the Fair Farms Initiative in future editions of *Potatoes Australia*. For more information, please contact Workplace Relations Advisor Annabel Hutch on 07 3620 3844 or email wrtteam@growcom.com.au.

INFO

For more information about the Fair Farms Initiative Workplace Relations Symposium, please visit bit.ly/FairFarmsInitiative.

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

Project Number: PT15007



Members from the lab made a wedge, a rosette and a mashed potato from some of the 2017 selections at the Potato Release Open House for guests to try. Image courtesy of Agriculture and Agri-Food Canada.

INTRODUCING NEW POTATO VARIETIES TO CANADA THROUGH AN OPEN HOUSE

Every February, Agriculture and Agri-Food Canada (AAFC) hosts the Potato Release Open House, which allows potato growers to view new variety selections developed by the organisation. AAFC head potato breeder Dr Benoit Bizimungu spoke to *Potatoes Australia* about the program and the opportunities it provides to growers and industry.

The importance of industry involvement in the development of new potato varieties is demonstrated in the annual Potato Release Open House initiative, hosted by Agriculture and Agri-Food Canada (AAFC) through its Accelerated Release Program, which began in 1998.

This year's Open House was held on 15 February at the Fredericton Research and Development Centre in New Brunswick, Canada. Concurrent sessions were also held at two satellite sites in the country: Lethbridge Research and Development Centre in Alberta and the Guelph Research and Development Centre in Ontario.

AAFC Potato Breeder and Gene Resources Curator Dr Benoit Bizimungu explained the aim of the program.

"The ultimate goal is to improve the rate of adoption of new varieties and reduce the time to commercialisation by involving the industry early in the process of variety development," Dr Bizimungu said.

Each year, participants can view new selections available to industry for evaluation, discuss and provide feedback to researchers and listen to presentations by potato industry and research specialists.

DEVELOPING NEW VARIETIES

According to Dr Bizimungu, the development of new potato varieties is necessary to improve many traits that are required to address the demands and expectations of the global supply chain from 'farm to fork'.

"This includes plant characteristics related to productivity, resistance to diseases, pests and abiotic stresses, ability to withstand mechanical harvest, storage, culinary and processing qualities, as well as nutritional properties," he said.

"Since it is practically impossible to combine all desirable traits

in a single breeding cycle or program, genetic improvement is usually a long-term endeavour and involves incremental steps based on breeding priorities.

"The process from the initial cross to variety registration takes about 10-12 years."

GROWER INTERACTION

Annually, the Open House displays between 10-15 of AAFC's top potato varieties. Growers can attend in person at one of the three locations – Fredericton, Alberta and Ontario – to view available selections. They can also review selection descriptions online to identify and request selections of interest for testing under an evaluation agreement.

Selections will be available for non-exclusive testing agreement for two years, followed by a cash-bid submission to conduct exclusive testing for up to three years, with an option to negotiate a licensing agreement. This includes variety registration and protection.

"Through an open and equitable process, growers get a first-hand look and access to new and improved varieties to keep up with changing market, environment and consumer demands," Dr Bizimungu said.

INFO

For more information about Agriculture and Agri-Food Canada's Accelerated Potato Release Program or the Potato Release Open House, please visit agr.gc.ca/potato-cultivars.

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REGIONAL UPDATES



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DK's Purple Potato Chips: A good news story of one certified seed grower's persistence with breeding a purple potato that would make great crispy kettle-style chips.

Peter Scott has been growing certified seed potatoes and breeding (some might say experimenting) with his own varieties and varieties from Agriculture Victoria for many years. His latest, DK's Purple Potato, which is an Agriculture Victoria cultivar, has taken six years of hard slog to finally make it to a chip packet!

A trial run of 12,000 packets were produced last winter, and they sold out in five weeks. Sales from a subsequent batch of 91,000 have also sold out, and Peter is now waiting on his turn in the factory's production run for the next 100,000. Peter is keen to keep control over ingredients

and cooking methods, and chooses to manage distribution and stockists according to his own design. You will find the chips at selected small boutique outlets including LaManna supermarket in Essendon Fields, and Toscano's greengrocers in Kew along with 12 other stores around the Otways in Victoria.

Never one to stop working, Peter also has red varieties he is working on for red chips and continues to experiment with other coloured varieties for potato wedges and French fry lines.

The Scott family has been growing potatoes in the Barwon Downs area for many years, including certified seed, and we are witnessing the exact type of innovation and lateral thinking that will carry the Scotts and the wider industry forward. Well done Scotty.

With the recent detection of tomato-potato psyllid in Western Australia, I would like to take this opportunity to remind Victorian potato growers of the importance of implementing on-farm biosecurity measures.

While Australia is fortunate to enjoy relative geographical isolation, increasing global freight and passenger movement means that Australia is not immune to incursions of exotic plant pests or diseases, as starkly demonstrated by recent incidences of cucumber green mottle mosaic virus and tomato-potato psyllid.

All growers have a responsibility to monitor for pests and diseases and report any suspect detections via the Exotic Plant Pest Hotline on 1800 084 881.

The AUSVEG website (ausveg.com.au/biosecurity) includes useful resources designed

to assist growers to implement best practice biosecurity measures on-farm. These measures can decrease the likelihood of being impacted by, or spreading, an exotic plant pest or disease.

In other news, AUSVEG VIC is currently developing its policy positions in the lead-up to the 2018 Victorian election. Labour issues continue to dominate the political landscape and will remain a priority for our advocacy activities; however, we would like to hear from you regarding the issues you feel will be important in the next 1-3 years and beyond.

If you have any suggestions for policy changes and/or infrastructure projects that will benefit the Victorian potato industry, please contact AUSVEG VIC Executive Officer Kurt Hermann on 0437 037 613.

The certified potato seed growing season in Crookwell has been a difficult one. Our summer was extremely hot, with limited rain events, dry nights and very low humidity.

Our potato paddocks are grown throughout our shire straddling the Great Divide. Some paddocks are even grown with half the paddock in eastern running slope, and the other half on western running. With storms, some crops got rain and others didn't – with varying amounts in between. Hail damage was reported, but not extreme. Not to mention a frost which singed a few potato tops in the lower country. Yes, Crookwell will not let you rest easy when it comes to out-of-season weather.

At this point in time, crops are either slashed off or nearing the end of maturity. Pest pressure has been moderate, with all growers regularly monitoring their crops for damage. They are also aware of tomato-potato psyllid which, thankfully, has not been found in the area.

Growers understand the importance of insect pressure and the impact they can have on crops through vectoring disease. When we have a hot, dry season, this pressure automatically increases.

All crops tested so far have come back free of all viruses, which is testament to good farm hygiene and crop protocol management. Orders for the 2017 season are very strong and I would predict that Crookwell will sell out of certified seed earlier than usual. Growers have not forgotten last season, with its dry start to digging then a long, wet difficult winter. They will be keen to lift as much crop as possible, as soon as possible. Leaving water in dams to irrigate for digging is a smart idea, but hopefully not needed.

Therefore, with crops virtually grown and harvesting all but underway, Crookwell is once again in a position to provide quality, virus-free, certified seed potatoes to our growing clientele for 2017.



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AUSVEG SA remains concerned about implications resulting from the spread of tomato-potato psyllid in Western Australia in early February, and continues to work with both our national office and BiosecuritySA to keep up-to-date with the state and national response.

We thank the dedicated team of people at BiosecuritySA for their close work with industry and growers to date and are thankful for the strong surveillance program in the state. That being said, industry is very concerned about the implications of the psyllid and the ramifications for South Australia's vegetable industry.

We understand that a number of growers are now seeking advice on the South Australian Government response, including trade-related issues and further clarification on proposed response activities. AUSVEG SA and other industry parties have been regularly distributing this information throughout the South Australian industry and will continue to do so, but growers

are also encouraged to contact PIRSA Plant Health Operations Manager Nick Secomb on 0428 831 896 or nick.secomb@sa.gov.au to discuss any trade or response issues specific to their business.

Over the coming months, AUSVEG SA and other groups will work closely with the South Australian Government to provide input into the state's response. It is heartening to note that feedback from senior BiosecuritySA management indicates that the psyllid is being treated as a critical issue and is being resourced accordingly.

In addition to the South Australian response, AUSVEG SA also has regular contact with AUSVEG national staff who are providing industry input into the national response to the psyllid. As such, AUSVEG SA will continue to play a role in distributing information and are happy to be contacted with any relevant information or questions regarding the psyllid response efforts.



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CALENDAR

15-17 MAY 2017:
HORT CONNECTIONS

Where: Adelaide Convention Centre, South Australia

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

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

9-14 JULY 2017:
20TH TRIENNIAL CONFERENCE OF THE EUROPEAN ASSOCIATION FOR POTATO RESEARCH

Where: Paris, France

What: Despite global challenges such as population increase and environmental constraints, the potato crop still has many valuable resources to face the future. This potato research conference aims to look ahead by providing sustainable solutions and determining the top priority areas for the potato industry in the medium-term.

Further information: eapr2017.com.

7-9 AUGUST 2017:
FRESHCARE FORUM AND FRESH PRODUCE SAFETY CENTRE CONFERENCE

Where: Sydney, New South Wales

What: The Freshcare Forum will deliver technical and program updates on food safety, quality and environmental assurance, with social and networking opportunities. The Fresh Produce Safety Centre (FPSC) provides an event for a wider fresh produce food safety audience, reporting on research outcomes, innovation and industry opportunities. The theme for the fourth annual conference is *Science + Culture = Safe Food*.

Further information: freshproducesafety-anz.com.

YOUNG POTATO PEOPLE

G'day again Potato People,

It seems like only yesterday that we were celebrating the new year, and now we are more than a quarter of the way through. It's amazing how time seems to speed up whenever you think you are finally getting on top of things.

Two years ago, Thorpdale revamped its Potato Festival. Three to four thousand people were expected, and 9,000 turned up on the day. This made for a somewhat stressful day for all those involved, with a massive traffic jam and a bit of a food shortage. The Thorpdale Potato Festival was held again this year on 12 March. It seemed like a very short two years between the Festivals, but we managed to learn from the first one by arranging more than double the amount of food stalls, and having a much more organised car parking area.

After a slow start to the day due to the odd passing shower of rain, about 9,000 people again flooded into our small town, as expected this time. They were greeted by over 100 market stalls, the Quick Shear, a photo competition, a sheep dog trial display, heaps of free kids activities and, of course, the potato events. Personally, I don't think picking up spuds by hand as fast as possible is much fun, but the spectators loved it. The Festival also included a very unique event, Hessians on the Field, which showcased designer clothes made from hessian, of all things. It's hard to believe that what has been used for many years to transport potatoes to market could also be transformed into some amazing pieces of clothing.

It was a huge day again, and raised much-needed funds for local community groups while also raising the profile of the humble spud. The Festival is all about helping a small town to keep rolling on. Without a bit of a cash injection every now and then, small towns will slowly disappear.

If you ever get the chance to go to the local country town fair, or a potato festival, go along and help them out by spending a small amount of money. You'll also enjoy a great day out.



All the best,
Stu Jennings



@youngpotatopeps



facebook.com/groups/youngpotatopeople



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