

| February/March - 2018 |

potatoes

australia



| TONY AND SAM CUMMAUDO - FAMILY BUSINESS AT THE FOREFRONT OF INNOVATION |
| INTERNATIONAL R&D - ELECTRIC NOSE 'SMELLS' SOFT ROTS IN POTATO STORAGE |



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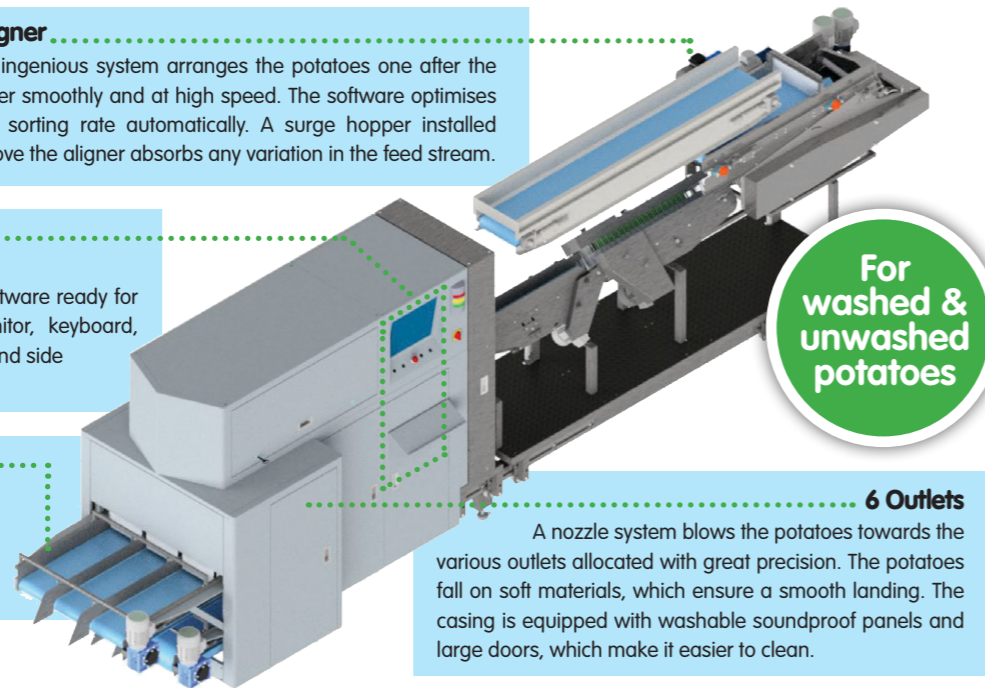
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12



20



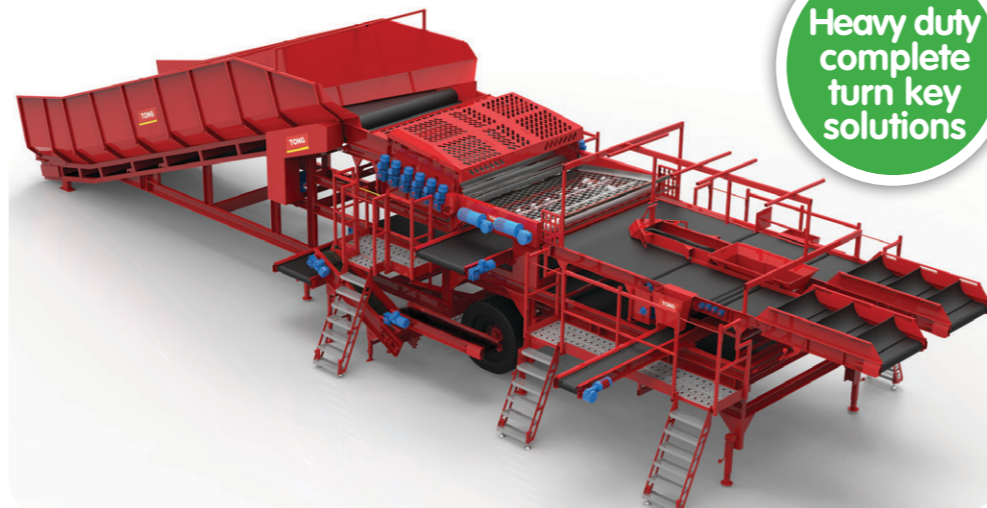
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CONTENTS

REGULARS

- 05 Editorial
- 06 Messages from the Chairman and CEO
- 36 Regional updates
- 38 Young Potato People

FEATURES

- 20 Young grower profile: Christopher Gay
- 28 Grower profile: Tony and Sam Cummaudo

R&D

- 08 Developing an understanding of soil inoculum persistence and management underway in Tassie
- 09 The Fresh Potato R&D Levy at work
- 10 Electronic nose 'smells' soft rots in stores
- 12 A snapshot of the new strategic investment plan for the potato processing industry
- 14 The Front Line: International collaboration – the future for plant biosecurity?
- 16 Literature review unveils potato health benefits
- 18 Biosecurity brief
- 22 Study trip to New Zealand highlights lessons learnt from TPP
- 23 Breakdown of levy projects to date (2017-18)
- 24 Promising results from research trials for TPP
- 27 How to achieve on-farm productivity success
- 30 Fair employment certification pilot underway
- 31 Ask the industry
- 32 Cross-pollination of information helps secure the future of horticulture
- 34 Waste not, want not: Adding value to potato peel
- 35 Minor use permits



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EDITORIAL

It's the start of another new year, and a time when many take the opportunity to reflect, reset and plan for the months ahead.

Following ongoing consultation with our Potato Industry Advisory Committee – which consists of growers and industry members who provide experience and advice on a range of issues facing growers and the wider industry – AUSVEG has reviewed its priorities for the potato industry in 2018.

Much like any sector of horticulture, the road ahead continues to be a challenging, yet rewarding one. To better understand where we are and where we need to go, it's important to set a benchmark to measure the Australian potato industry's costs, productivity and overall performance compared to other potato growing countries in the world. Unfortunately this data is lacking, and AUSVEG is working with industry experts to source the relevant statistics that will help us to create a global industry benchmark.

To ensure the Australian potato industry remains viable and continues producing high quality potatoes well into the future, it must become competitive on the global stage.

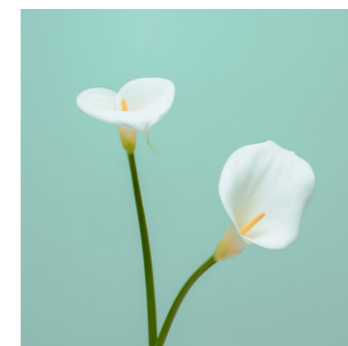
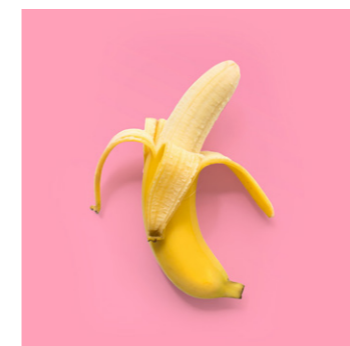
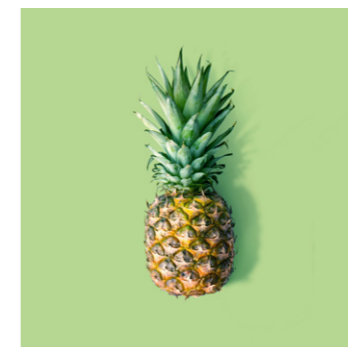
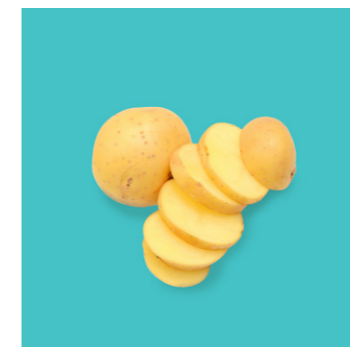
At the moment this isn't exactly the case, due to our extraordinarily high cost of labour and inputs, combined with limited access to water in key growing areas of the country,

but without data it's difficult to build an effective response plan.

It is also clear that one of the biggest threats to the industry remains outside our doorstep in the form of competition from cheaper imports, particularly in the processing sector. Some of these countries have mastered the art of generating low-cost, high-yielding potato crops through economies of scale and, combined with access to a cheaper workforce and lower input costs, this has allowed them to become more cost-competitive compared to other countries, including Australia.

One of the key challenges for the Australian potato industry is to continue to find ways to improve industry profitability by increasing the value of domestic product, tapping into export markets and achieving higher yields that ultimately result in reduced cost of production. To this end, it is imperative to foster innovation and discussion in the potato industry to help achieve these goals.

The potato industry is not alone in dealing with these issues as it affects all sectors of horticulture. In June, Hort Connections 2018 will incorporate the theme of *Doubling productivity and halving waste by 2030*, and we encourage growers to attend to ensure your voices can be heard in this vitally important discussion.



HORT CONNECTIONS 18-20 June 2018
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Bill Bulmer
AUSVEG CHAIRMAN

James Whiteside
AUSVEG CEO

EDITORIAL ENQUIRIES: AUSVEG
Phone: 03 9882 0277
Fax: 03 9882 6722
communications@ausveg.com.au

COVER PHOTOGRAPHY
Photography by Danae Commercial

Shaun Lindhe
COMMUNICATIONS MANAGER

Dimi Kyriakou
SENIOR COMMUNICATIONS OFFICER/EDITOR

ADVERTISING: Marc W. Wilson
Gypsy Media
Phone: 0419 107 143
marc@gypsymedia.com.au

PRINT
RA Printing

Michelle De'Lisle
WRITER/JOURNALIST

Claire Pini
GRAPHIC DESIGNER

CONTRIBUTORS
Heather Briggs
Dr Kevin Clayton-Greene
Stu Jennings
Scott Mathew
Alan Nankivell
Madeleine Quirk
Anne Ramsay



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This project *Potato Industry Communications Program 2016-19* (PT15007) is a strategic levy investment under the Hort Innovation Fresh Potato Fund. Communication of research and development projects has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture. *Potatoes Australia* is produced by AUSVEG Ltd and is free for all national potato levy payers.

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ISSN 1834-2493



A five-year roadmap for the potato growing and processing sectors has been released to help guide Hort Innovation's management of strategic levy investments for the industry as we head towards 2021.

Strategic Investment Plans (SIPs) were developed in close partnership with growers and other industry stakeholders through consultation workshops. Each document identifies the major opportunities and challenges facing the potato industry, as well as the outcomes for R&D to work towards. Essentially, the SIP is in place to drive levy investments in the industry and provide a roadmap for project activities taking place during the next five years.

Four outcomes have been recognised for the fresh potato industry from 2017-12. These incorporate industry profitability; an increase in export markets; improving average yields and reducing the cost of production; and increased innovation and agility in potato businesses. The expected return of investment is estimated at \$34.6 million over the next five years, based on an estimated investment of \$4.96 million during that period.

Many of the major opportunities revolve around the development of new consumer products, technology advances, development of new (non-food) uses to achieve a greater return for waste and by-products and increased adoption of R&D, particularly in precision agriculture.

In the processing sector, five outcomes have been recognised for the industry. More information about the potato processing SIP can be found on page 12. For the fresh potato sector, the SIP can be accessed online at horticulture.com.au/grower-focus/potato.

AUSVEG encourages potato growers to get involved in levy-funded R&D projects to enhance their business profitability and sustainability as well as gain more knowledge about the wider industry, growing practices and the supply chain. This is especially critical given the arrival of the tomato potato psyllid in Western Australia. By getting involved in these projects, growers can ensure that they can gain tangible on-farm benefits from their levy investment.

While increased productivity and waste reduction have been identified as outcomes for the potato industry SIPs, AUSVEG and the Produce Marketing Association Australia-New Zealand (PMA A-NZ) have also recognised these as broader horticulture industry issues, and have incorporated a theme into Hort Connections 2018 – *Doubling productivity and halving waste by 2030*.

Hort Connections 2018 will be held from 18-20 June at the Brisbane Convention Centre. These are just some of the important issues affecting our industry, and I encourage growers and industry members to come along to Hort Connections and learn about the latest in R&D, listen to world-leading speakers (to be announced in the coming weeks) and support the industry's vision for the future.



W Bulmer

Bill Bulmer
Chairman
AUSVEG

In December 2017, AUSVEG began consultation to raise the Emergency Plant Pest Response (EPPR) levies for the vegetable and potato industries to fund contributions to the management response to the tomato potato psyllid (TPP).

This decision was implemented under the Emergency Plant Pest Response Deed, a legally-binding contract between Plant Health Australia, the Federal Government, all states and territories, and national plant industry bodies, including AUSVEG. The Deed covers the management and funding of the response to an emergency plant pest, and AUSVEG is a signatory to ensure adequate representation of potato and vegetable growers.

Having AUSVEG as a signatory to the Deed is also the most effective mechanism growers have to secure meaningful contributions from federal and state governments for pest incursion responses, maximising the resources available to successfully manage exotic plant pests.

A 12-month Transition to Management (T2M) plan is underway, which will improve the capacity of the horticulture sector to manage TPP, and build confidence around the status of the bacterium *Candidatus Liberibacter solanacearum* (CLso) associated with TPP. The funding for this response plan is cost-shared between government and industry at a ratio of 80:20, meaning that federal and state governments are covering the vast majority of the costs for the management of TPP.

While the T2M activities will be undertaken in Western Australia, it is important that vegetable and potato growers across Australia recognise the opportunity provided by undertaking T2M activities before the psyllid spreads to other states and territories.

The vegetable and fresh potato industries' EPPR levies are currently set at zero for vegetables and potatoes. AUSVEG intends to request that the EPPR levies are raised to a positive rate of 0.01 per cent for vegetables and 10 cents per tonne for fresh potatoes. This will mean the vegetable industry will pay 53.5 per cent (approx. \$187,000 per year) and the potato industry will pay 46.5 per cent (approx. \$130,000 per year) of our industry's contributions.

Once these funds have been accrued, which is likely to take between two and three years, these levies will be reset at zero. If you would like to comment on this proposal or want more information, please visit our website (ausveg.com.au/tpp-response). AUSVEG encourages vegetable and potato growers to support the raising of the EPPR levies, and adopt this short-term proposal to safeguard the future of the industry.

However, TPP is just one issue affecting our industry. AUSVEG has established a Potato Industry Advisory Committee to advise us on the broad range of issues currently affecting potato growers, such as labour access and cost, and the rising cost of energy and water.

We strongly encourage this feedback to ensure potato growers have effective representation on issues that matter to them.



James Whiteside

James Whiteside
CEO
AUSVEG



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CARES FOR WHAT MATTERS MOST



Tasmanian Institute of Agriculture (TIA) PhD student Jonathan Amponsah is studying powdery scab disease and its triggers. Image courtesy of TIA.

DEVELOPING AN UNDERSTANDING OF SOIL INOCULUM PERSISTENCE AND MANAGEMENT UNDERWAY IN TASSIE

Spongospora subterranea is a devastating pathogen that causes both root infection and the blemish disease powdery scab, which affects the Australian ware, seed potato and potato processing industries. Tasmanian Institute of Agriculture PhD student Jonathan Amponsah is completing a study into the disease and its triggers in an attempt to identify a form of control.

Spongospora, which induces both root infection and powdery scab disease, poses a serious threat to the potato industry in Australia, particularly in Tasmania, which is noted to possess very high soil inoculum loads and environmental conditions favourable to the spread of the disease. Root infection is known to reduce plant growth, development and yield by reducing root function.

Tasmanian Institute of Agriculture PhD student Jonathan Amponsah is currently undertaking a project on sustainable management of the disease. He said the causative agent of the disease is known to produce thousands of resting spores, which are very stable, and can remain dormant in the soil for over 10 years. They can be stimulated to germinate by natural compounds released by potato roots into the soil.

“Upon germination the zoospores rely again on these root exudate compounds to find and infect potato roots,” Jonathan explained.

However, Jonathan describes the germinated zoospores as the disease’s “weakest link” that survive for only a few hours after release. If release is stimulated in the absence of a host plant, they will perish without causing infection.

FURTHER INVESTIGATION

The objectives of Jonathan’s study are to:

1. Develop proof of concept for a ‘germinate to exterminate’ model to eliminate or reduce root infection and potato powdery scab disease through the reduction of pathogen inoculum in the soil prior to planting. This involves the pre-plant application of *Spongospora* spore germination stimulants, and/or fungicide to pre-infected soils and monitoring over time.
2. Investigate the factors that are involved in *Spongospora* resting spore dormancy and germination.
3. Investigate the effect of ion scavengers and inhibitors on zoospore recognition of root exudate chemical signals and further explore how this has the potential to protect potato against powdery scab by confusing the zoospores to divert from the potato plant.

PRELIMINARY RESULTS

Work to date has confirmed specific root exudate compounds will stimulate zoospore release from the *Spongospora* resting spores, with released zoospores then attracted to these compounds. The application of stimulants to soil in test systems in the absence of potato plants appears to result in inoculum decline, which offers promise for field treatment.

Study of the factors around the biology of resting spore dormancy and zoospore chemical attraction are being investigated, with the aim of improving control over dormancy breaking and disruption of zoospore root recognition.

“Considering the financial burden that growers have had to endure as a result of powdery scab, a solution to this problem will bring them a lot of financial relief,” Jonathan said.

In the meantime, the PhD student advises growers to remain vigilant when looking at reducing inoculum load.

“I think growers are doing well with their efforts at rotation to control disease intensity, but they should promptly remove and destroy volunteer potato plants because even a few stray potato plants can multiply the pathogen and maintain or build soil inoculum in the field that will transmit powdery scab in future potato crops.”

INFO

For more information, please contact jonathan.amponsah@utas.edu.au. This work was supported by the Tasmanian Postgraduate Scholarship Award from the University of Tasmania and in-kind support from the Tasmanian Institute of Agriculture, a joint venture of the University of Tasmania and the Tasmanian Government.

This project work supports the activities of, but is not funded by, Project PT14002 *Spongospora* infection of potato roots – ecology, epidemiology & control, a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds with voluntary contributions from McCain Foods Australia and Simplot Australia.

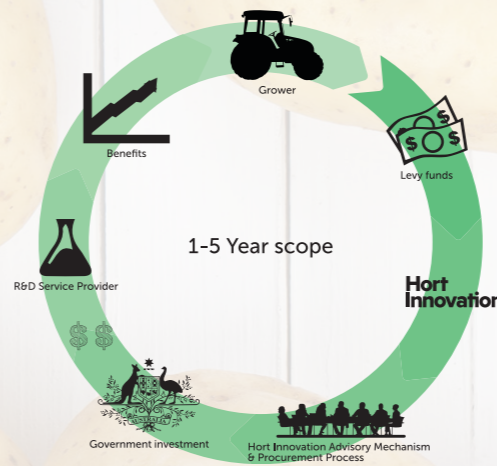
This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007



THE FRESH POTATO R&D LEVY AT WORK

STRATEGIC LEVY INVESTMENT



WHO PAYS THE FRESH POTATO R&D LEVY?

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

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

HOW IS LEVY MONEY INVESTED?

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

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

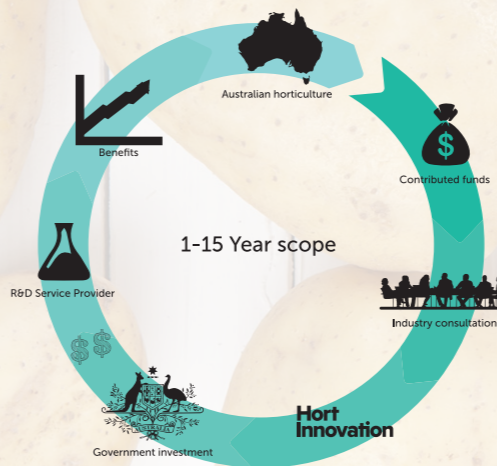
Strategic levy investments have a one- to five-year scope and the R&D is designed to directly benefit growers in the potato industry. Project topics range from pest and disease management to biosecurity matters, with findings communicated through a variety of channels, including *Potatoes Australia*.

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

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

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

HORT FRONTIERS



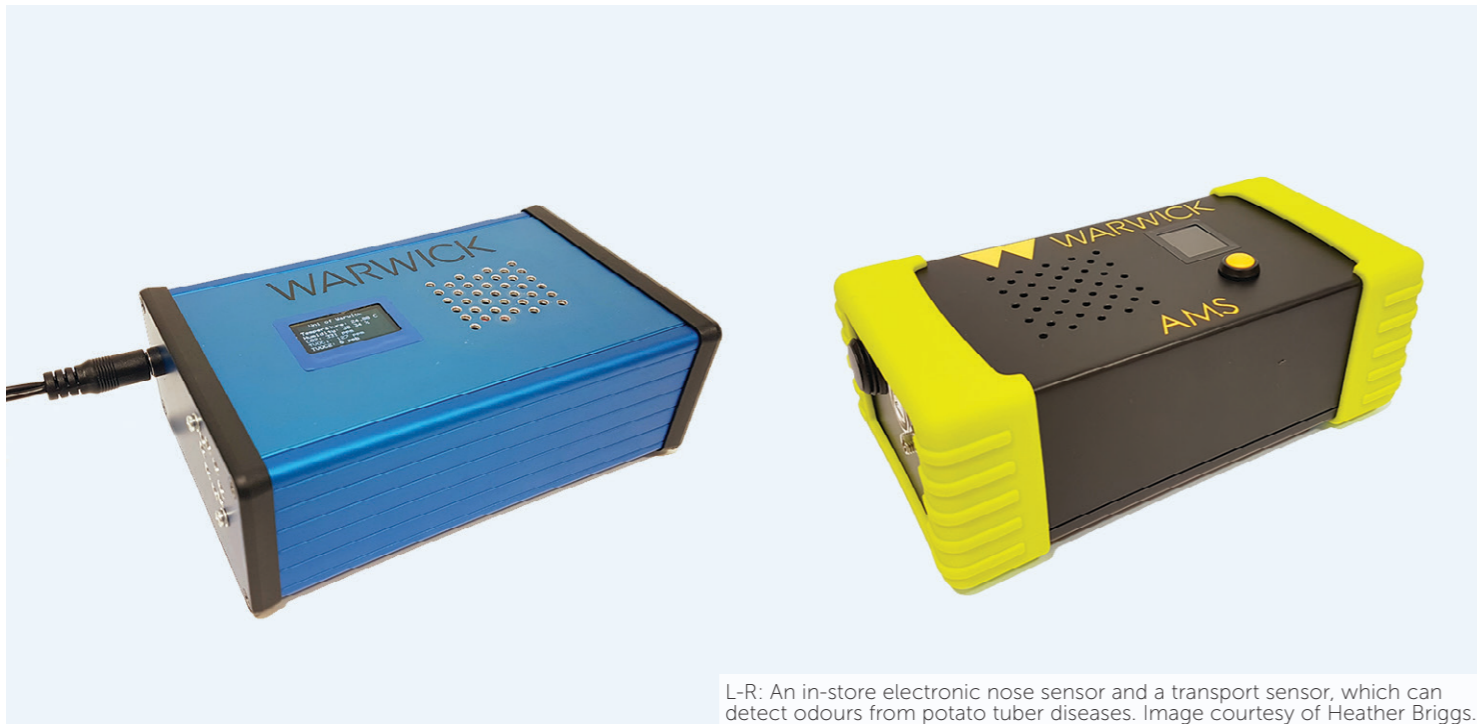
HOW CAN GROWERS GET INVOLVED?

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

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



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



L-R: An in-store electronic nose sensor and a transport sensor, which can detect odours from potato tuber diseases. Image courtesy of Heather Briggs.



ELECTRONIC NOSE 'SMELLS' SOFT ROTTS IN STORES

Early identification of soft rots in potato stores may soon become easier thanks to a newly-developed electronic nose. The University of Warwick in the United Kingdom has developed a new tool which replicates the function of the human nose and is capable of detecting odours released by these rots. Heather Briggs spoke to project lead Dr James Covington and storage specialist Dr Glyn Harper from Sutton Bridge Crop Storage Research about this novel technology.

Rots are one of the biggest in-store challenges for potatoes and if they remain undetected, they can quickly pass on from one potato to another. This means timely decisions need to be made before the disease becomes established as consignments may be rejected, resulting in significant financial losses.

The first signs of rot are normally perceived by the store manager's nose, once a rot has started. However, a system which is sufficiently sensitive to detect these odours well below the human level – and perhaps even before symptoms occur – may provide more opportunities for action to be taken in the store to prevent its spread.

MODELLING THE HUMAN NOSE

University of Warwick School of Engineering Associate Professor Dr James Covington explained that the electronic nose instrument works by sampling the store air and then using an array of gas sensors that respond to different odours produced, which together can detect bacterial infection from other odours in store.

"These instruments could be deployed anywhere in store to identify the location of the problem," Dr Covington said.

His idea is to optimise off-the-shelf commercial gas sensors to reduce the development time of the electric nose instrument

for detecting rots. Commercial sensors in his electronic nose instrument have been trialled in store environments.

Dr Covington and his team looked at detection throughout different stages of soft rot development in a laboratory environment, collecting and analysing data to help choose the best type of gas sensors from the many which are already commercially available.

Results from the work were successful, and they found an instrument which is capable of detecting differences between diseased and infected tubers.

"What is really important is that it can detect these chemical signature changes before physical or olfactory signs of rot appear," Dr Covington said.

However, he cautions, this initial work was conducted under laboratory conditions rather than in a large potato store.

FURTHER DEVELOPMENTS

Dr Covington and his team then worked on developing a new prototype instrument which could make early detection of rots, testing it at the Sutton Bridge Crop Storage Research (SBCSR) facility. The SBCSR is owned by the Agriculture & Horticulture Development Board (AHDB) and is operated by the Research Division under the 'AHDB Potatoes' banner.

Potato storage specialist and plant pathologist Dr Glyn Harper, who was in charge of testing at SBCSR, noted that in a commercial store the electronic noses can be placed within the circulating ventilation system, in boxes or between the stacks or even within the bulk pile.

"This means that the detectors can work in both box and bulk stores. Moreover, they may be able to collect other important information on the storage environment, such as temperature, humidity, carbon dioxide levels, as well as other parameters such as light, noise and particles," Dr Harper said.

Trials then moved on to looking at larger scale stores to

to fulfil other store needs, such as bacterial load at harvest, or to monitor sprouting, so a timely top-up application of sprout control can be made before sprouting occurs," Dr Covington said.

"Processing systems depend on technology and sensors that are already being used in stores to monitor temperature, carbon dioxide and humidity to fine-tune environmental control. This could be an additional system that will help the potato industry keep on top of its game."

He goes on to point out that the instrument has useful potential for transport of seed potatoes as the electronic nose could also play a role when infection occurs during storage and transit.

The sensors not only detected the presence of a rot but also the location within the store, providing store managers with useful information on which area to deal with as a priority.

find out how well they fitted into commercial store management systems with very positive results, according to Dr Covington.

"The sensors not only detected the presence of a rot but also the location within the store, providing store managers with useful information on which area to deal with as a priority," he said.

Dr Harper added that increasing ventilation, changing the environment or even deciding to take the crop out of store sooner than originally planned and sell it before the rots set in, may also be useful strategies to take.

WIDESPREAD BENEFITS

Dr Covington said that the sensors have the potential to detect odours from other tuber diseases and conditions.

"There is the possibility that alternative gas sensors could be used

"The main concern of importers is that rots appear post-inspection after arrival at their destination. These can degrade rapidly and, in some cases, result in total loss. Therefore, following the current pre-shipment testing with molecular and microbial detectors to monitor the crop throughout the time spent in transit, it would facilitate the right management decisions."

INFO

For more information, please visit warwick.ac.uk or potatoes.ahdb.org.uk/storage/about-sutton-bridge-csr.

This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007



A SNAPSHOT OF THE NEW STRATEGIC INVESTMENT PLAN FOR THE POTATO PROCESSING INDUSTRY

Hort Innovation began developing a new Strategic Investment Plan (SIP) for the potato processing industry in 2016, with consultation events taking place in key growing regions across the country. As a result, the potato processing SIP for the next five years has been released to the industry.

The Strategic Investment Plan (SIP) for the potato processing industry is the roadmap that will help guide Hort Innovation's management of investment programs for the industry over the next five years. It lays the foundation for decision-making in levy investments and represents the balanced interests of the industry.

The very important function of the SIP is to ensure levy investment decisions in the Hort Innovation Potato – Processing Fund align with industry priorities.

The SIP has been developed in close partnership with processors and other industry stakeholders and Hort Innovation thanks all those who have contributed their valuable time and ideas.

INDUSTRY SNAPSHOT

The potential impact of this plan is \$12 million, based on an estimated investment of \$3.59 million over the next five years.

In 2014-15 there were approximately 50 processors in Australia, with the majority based in South Australia (38 per cent), followed by Tasmania (24 per cent), Victoria (21 per cent), New South Wales (eight per cent), Western Australia (five per cent) and Queensland (four per cent).

The potato supply chain was valued at \$660 million in 2014-15 and produced 1,332,769 tonnes – about 64 per cent of this was in processing, around 34 per cent in fresh supply and approximately two per cent in fresh export.

INVESTMENT OUTCOMES

Following consultations with growers and industry stakeholders, the SIP identified five key outcomes for the potato processing industry over the next five years. These are:

- **Industry has access to the world's best agronomic information and networks**, resulting in increased productivity.
- **Growers are serviced by professional agronomists with best practice potato expertise**, resulting in improved industry skills and knowledge.
- **Losses from pest and disease are reduced**, resulting in improved quality and increased marketable yield.
- **Precision agriculture and related technologies/systems become standard practice**, resulting in reduced cost of production.
- **Collaboration across the supply chain to achieve cultural change** has resulted in improved economic sustainability.

Each outcome includes a list of strategies for the industry to implement to achieve these targets.

MAJOR OPPORTUNITIES

A range of opportunities have been identified for Australia's potato processors over the next five years. These include:

- To take advantage of the world's best scientific knowledge in potato agronomy and pest and disease management.
- The growing demand for potato products in nearby south-east Asian markets.
- The potential to leverage Australia's horticultural levy system to grow skills.

INDUSTRY CHALLENGES

The SIP also outlines a number of barriers facing the industry. These include:

- Biosecurity incursions.
- Global oversupply and dumping in the Australian market, eroding prices.
- Appreciation of the Australian dollar, which will drive imports.
- Decreased consumption due to greater awareness of health risks.
- Higher input costs in all categories relative to competing countries.
- Lower and more variable yield than competitors.
- Lack of economies of scale and capital utilisation.
- Some resistance by growers to better position themselves for the developing global realities of the sector.
- Inconsistency in the quality of agronomic advice.
- Business and whole-of-farm management skills.
- Lack of profitability constraining re-investment.

To read the full potato processing Strategic Investment Plan, please visit horticulture.com.au/grower-focus/potato-processing.

Strategic Investment Plan is a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

INFO

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

Project Number: MT15033



Christian Patterson
Relationship Manager
Hort Innovation

Meet the fresh potato industry Relationship Manager and see how he can support you.

Christian is keen to chat with you. He is your link to the latest R&D developments and how these can help your business grow. It's easy to request a phone call – just go to the 'Contact Me' form at horticulture.com.au/contact-me. Alternatively, call 02 8295 2300 or email membership@horticulture.com.au and let us know you would like Christian to call you.

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INTERNATIONAL COLLABORATION: THE FUTURE FOR PLANT BIOSECURITY?

Australia is free from many damaging plant pests and diseases, but as globalisation continues to draw countries closer together, it is not a matter of *if*, but *when* these pests and diseases will reach us. In this edition of *The Front Line*, the spotlight is on biosecurity initiatives established in the United States. AUSVEG Biosecurity Officer Madeleine Quirk reports.

Australia is in a position to strengthen plant biosecurity by learning from the experiences of countries around the world. In July 2017, AUSVEG National Manager – Science and Extension Dr Jessica Lye undertook a study tour to the United States with the intention of strengthening international linkages and understanding overseas initiatives that could benefit the Australian vegetable and potato industries. Many programs have been implemented by state governments and universities across America to target pests and diseases.

STAND-OUT PROGRAMS ACROSS THE UNITED STATES

WSU Potato Pest Alerts

The Washington State University (WSU) Potato Pest Alerts is a tool that aims to assist potato growers within the Columbia Basin of Washington, United States. *The Front Line* spoke to WSU Associate Professor/Regional Specialist – Potato, Vegetable and Seed Crops Dr Carrie Wohleb about the extension tool.

The tool was established in 2009 as a website-based regional insect monitoring program. In 2010, Dr Wohleb and her colleagues began sending the information in the form of an email newsletter to share findings of weekly insect pest monitoring in a way that was convenient and accessible.

Since its establishment, Dr Wohleb has seen major growth in the use of the tool.

“The subscriber list, which started with 180 growers and crop advisers in 2010, has now grown to 780 subscribers. This growth is due, largely, to the appearance of zebra chip disease in the Columbia Basin in 2011. There are also subscribers from outside of the Columbia Basin,” she said.

In 2012, potato psyllids were added to the system’s monitoring network. Dr Wohleb highlighted that potato growers and crop consultants within the Columbia Basin benefit most from the alerts.

“The alerts help them know what to look for when they are scouting potato fields. They use it as an early warning system,” she said.

The WSU Potato Pest Alerts are a source of information that industry members around the Columbia Basin can trust.

“They include more than just the pest-related information, but that is the main attraction,” Dr Wohleb said.

Concurrently, Dr Wohleb and her colleagues are working on a web-based decision-support tool for potato growers.

“The tool will make site-based predictions for insect pest populations that combine our monitoring information with temperature-based insect phenology models,” she said.

Last year, the team at WSU initiated ‘WSU Onion Alerts’ for onion growers. In the future, Dr Wohleb plans to continue implementing strategies to minimise pest outbreaks across the region.

OTHER PROGRAMS OF INTEREST

Master Gardener Program

The United States ‘Master Gardener’ program is a long-standing, national volunteer program run by land grant universities. In the early days of the program, qualified Master Gardeners would receive training to provide horticultural advice to urban gardeners. However, in the face of global pest spread and the role that urban areas play in harbouring economically-damaging pests, the program has now evolved to have an increased focus on plant biosecurity. The Master Gardeners receive regular training from agricultural university personnel on exotic pests of concern and are valuable citizen scientists within urban areas.

First Detector Program

The United States has a National Plant Diagnostic Network (NPDN), which is divided into five regions. The NPDN plays a role in extension via the First Detector program, which it has

managed since 2003. According to the program, first detectors are “anyone who may encounter a potential invasive species during the course of their daily lives”. The program provides the following modules for participants: monitoring for high risk pests; diagnosing plant problems: arthropods and plant diseases; submitting diagnostic samples; and photography for diagnosis, disease and pest scenarios. Training is provided through an e-learning platform.

‘Don’t Pack a Pest’ campaign

An initiative of the United States Department of Agriculture (USDA) and the Florida Department of Agriculture and Consumer Services, the ‘Don’t Pack a Pest’ campaign is now in its seventh year. The program was launched in an effort to educate travellers about the biosecurity risks that they pose by bringing food, plants or other items into the state. The message is simply: “When you travel, declare agricultural items, don’t pack a pest.” Through the program mascot, Linus the Detector Dog, the program uses videos and airport signage to convey the message to incoming and outgoing passengers.

These programs are in place to help safeguard the vegetable and potato industries in the United States. However, in the future, they might act as useful case studies for the Australian industry.

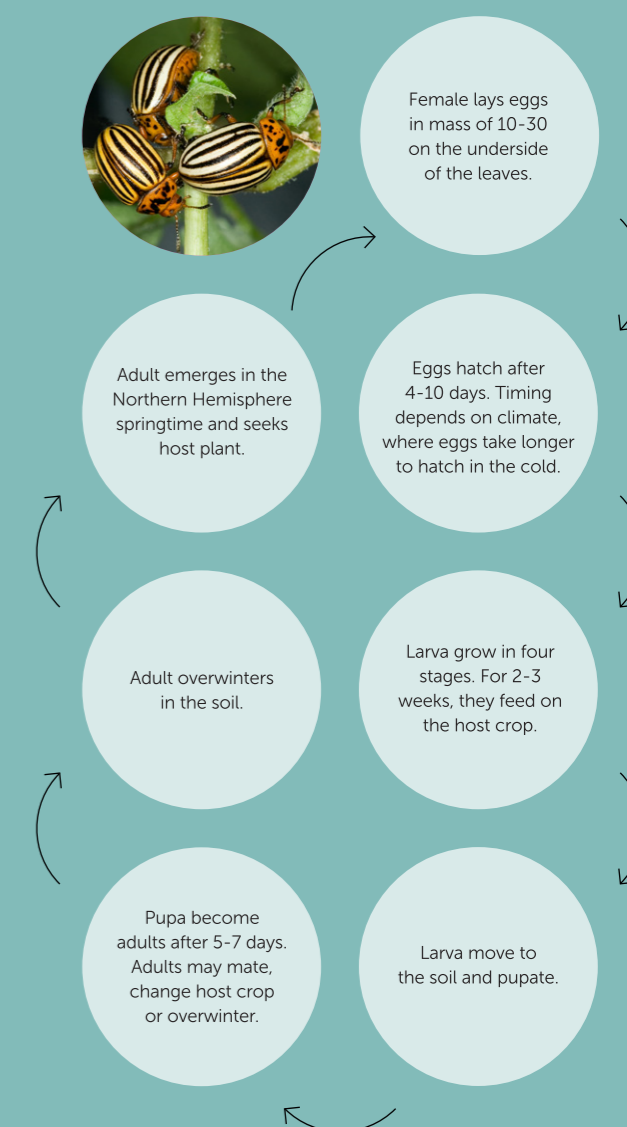
You can access the final report, *Knowledge brokering in biosecurity: How international linkages and learnings can help us build a better system*, at agrifutures.com.au/wp-content/uploads/2017/12/Knowledge-brokering-in-biosecurity-AgriFutures-RWA-Project-Report-JLYE-2017.pdf.

FEATURED PEST – COLORADO POTATO BEETLE

The Colorado potato beetle (CPB; *Leptinotarsa decemlineata*) is a pest of major concern in the United States. The CPB was found for the first time in the United States in the 19th Century. This beetle has distinctive yellow and black stripes and a solanaceous host range including potato, tomato, eggplant and capsicum. They defoliate the host leaves and feed on the stems.

Figure 1 shows the life stages of the CPB, from egg to adult. It is important to note that the beetle overwinters in the soil, making it difficult to detect and control. This poses a major challenge for growers when they are managing the pest. The beetle also impacts growers through rapidly developing resistance to insecticides. The CPB is not currently found in Australia. **Have you seen this beetle? If so, call the Exotic Plant Pest Hotline on 1800 084 881.**

FIGURE 1: THE LIFECYCLE OF THE COLORADO POTATO BEETLE



Source: CABI 2018; Virginia Cooperative Extension 2009

ADDITIONAL RESOURCES

- planthealthaustralia.com.au/wp-content/uploads/2013/01/Colorado-potato-beetle-FS.pdf
- cabi.org/isc/datasheet/30380
- pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/444/444-012/444-012_pdf.pdf

INFO

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

For further information, contact AUSVEG National Manager – Science and Extension Dr Jessica Lye at jessica.lye@ausveg.com.au or AUSVEG Biosecurity Officer Madeleine Quirk on 03 9882 0277 or madeleine.quirk@ausveg.com.au. The Vegetable and Potato Biosecurity Program is funded by the Plant Health Levy.

This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project number: PT15007





LITERATURE REVIEW UNVEILS POTATO HEALTH BENEFITS

Potatoes often have a reputation among consumers as being an ‘unhealthy’ vegetable, however researchers Professor Derek Stewart and Dr Mark Taylor from Scotland’s James Hutton Institute aimed to dispel this myth in their literature review, which focused on human nutrition and health benefits.

The potato is often referred to as a ‘humble spud’ – a maligned vegetable that over the course of generations has been associated with carbohydrates and weight gain.

However, a literature review, which has been undertaken in the United Kingdom, found that the potato has a definite place in the human diet. Due to its nature as a food staple, potatoes are a significant source of vitamin C, vitamin B6 (pyroxidine), vitamin B9 (folate) and a host of macro- and micro-minerals.

The review also identified that the macro- and micro-minerals and, to a lesser extent, the vitamins, can survive processing and cooking methods.

Entitled *A basis for human nutrition and health benefits*, the review was commissioned by the Agriculture and Horticulture Development Board (AHDB) and completed by Professor Derek Stewart and Dr Mark Taylor from the James Hutton Institute in Scotland.

ENHANCING AN IMAGE

Dr Taylor, a Senior Researcher at the James Hutton Institute’s Cell and Molecular Sciences group, spoke to *Potatoes Australia* about the review, which was published online in November 2017.

“Potato has, at best, a neutral image when it comes to health and we wished to look at the scientific evidence and see if this was justified or whether more could be made of the nutritional quality of potato,” Dr Taylor said.

Professor Stewart is AgriFood Business Sector Leader at the James Hutton Institute. He co-authored the review with Dr Taylor, and the pair divided the areas they considered most important and scoured the literature to provide a balanced picture of potato nutrition.

“Both of us have worked in this area for some time so we were familiar with the research – nevertheless I think we both enjoyed the opportunity to assemble a detailed report,” Dr Taylor said.

Recent reviews of clinical intervention and observational studies centred on potatoes came to the conclusion that there wasn’t convincing evidence to suggest an association between intake of potatoes and risks of obesity, Type 2 diabetes or cardiovascular disease. In terms of the elderly, early intervention studies have found that potato intake was strongly associated with enhanced cognitive function.

INDUSTRY OPPORTUNITIES

Dr Taylor said that fresh consumption of potatoes is generally in decline in Europe, although processed products continue to increase in market share. He added that major opportunities exist for potato in new markets, particularly in China and India.

“I think the overriding message is that the review identifies that, in opposition to general public opinion, potato has a definite place in the diet and is associated with good nutrition and health,” he said.

“For many of the valuable nutrients in potatoes such as vitamins, minerals, carotenoids, flavonoids etc., there is considerable genetic variation in different potato germplasm. We are well-poised to take advantage of recent advances in genetics and genomics to start developing new varieties with even better nutritional profiles.”

Dr Taylor said it is hoped that the review is balanced and objective and will emphasise the health benefits of potatoes. He added that the information has the potential to translate into key messages when marketing potatoes, particularly in the fresh sector.

He also believes that the findings could extend to the Australian potato industry.

“As a health-conscious society, I am sure the positive messages about the nutritional value of potato will be of benefit when promoting potatoes in Australia,” Dr Taylor said.

“I think it is always worth understanding consumer preferences and the priorities of the target market. For potato breeders in Australia, this may identify that it is worth giving more priority to nutritional traits in breeding programs.

“I would urge all connected with the potato industry to take a quick look at the review and start getting the message out about the nutritional value of potatoes.”

INFO

For more information, please contact Dr Mark Taylor at mark.taylor@hutton.ac.uk or visit potatoes.ahdb.org.uk.

This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007



PREPARING PLANTING HARVESTING



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TOMATO POTATO PSYLLID INCURSION: WHAT HAVE WE LEARNT?

On 5-6 December 2017, all government and industry parties involved in the tomato potato psyllid incursion in Western Australia gathered to debrief the incident. AUSVEG Biosecurity Adviser Dr Kevin Clayton-Greene attended the session, and has provided a snapshot of what was discussed.

AUSVEG, Nursery & Garden Industry Australia (NGIA) and the Australian Processing Tomato Research Council joined senior biosecurity personnel from all jurisdictions, including the Commonwealth, for a two-day debriefing session which focused on the tomato potato psyllid (TPP) incursion in Western Australia in February 2017.

Held from 5-6 December 2017, the first part of the two-day session also involved local (i.e. Western Australian) industries providing a frank assessment as to how the incident was handled and how it affected them. All parties were made very aware of the impact that this incursion has had upon each of the affected industries, and it was a valuable session that provided a personal insight into the impact of an incursion and the associated response upon individuals and their businesses.

The debrief covered the entire incursion including those areas affected, but not directly covered, by the Emergency Plant Pest

Committee on Emergency Plant Pests (CCEPP) has resulted in a much closer relationship, and this helps regulators understand practices that may assist in trade.

Understanding standard industry practice allows regulators to avoid unnecessary regulation. In other words, if standard industry practice was already addressing the problem, then as long as this is followed, there is no need for further regulation. For example, a washing step, as occurs with many post-harvest procedures, would be sufficient to reduce the risk of insects that may merely 'roost/rest' on a particular line of produce.

INDUSTRY INVOLVEMENT

While it is acknowledged that it took some time to get to this point in the TPP incursion, it is nonetheless a positive outcome that there is now a much greater recognition of the role that

industry can play in smoothing the path of trade, and addressing plant health concerns by getting industry involved earlier rather than later in the process. This is also now reflected in an increasing willingness on the part of the Plant Health Committee and its associated Sub-committee on Domestic Quarantine and Market Access (SDQMA) to engage with industry at an early stage to ensure that market access is maintained or disrupted as little as possible.

There is also beginning to be a more proactive approach to developing market access protocols for pests that are yet to arrive, but which may have a substantial impact should they do so. There is also an increasing recognition among regulators that for industry, harmonisation of regulations among jurisdictions is crucial. This latter point is one which is of particular concern to all those involved in interstate trade. These small but important steps are part of developing a far more responsive and uniform approach to plant health and movement conditions.

Although there is more to be done, the increasing partnership between AUSVEG and governments in improving the biosecurity system will yield a better outcome for levy payers in the future.

Response Deed (EPPRD). By the time this *Biosecurity brief* is published, there will no doubt have been a substantial public release of the outcomes from the two-day session.

However, one area that merits comment and has clearly been a source of confusion is the perceived relationship between the EPPRD and market access and trade.

CLARIFYING THE CONFUSION

With a severe incursion it is inevitable that there will be market access and trade issues, but it is important to note that this process is outside of the EPPRD and handled by jurisdictions. Thus, any market access issues which arise from an incursion will occur irrespective of whether there was an EPPRD operating or not.

A side benefit of the EPPRD is that the interaction of industry with all plant health officers through the Consultative

LESSONS LEARNT

While these improvements may be of little comfort to those caught up in past events, it does, however, indicate a willingness on the part of all involved to learn from past events to improve the future.

As an example, there are already steps being taken to ensure there is a uniform and minimally disruptive procedure in place should TPP arrive in the eastern states. This process initiated by Plant Health Australia marks a new degree of cooperation between regulators and industry.

It is also not stretching the truth to note that without the very active involvement of AUSVEG in this area, as well as other industry parties (particularly NGIA), such an approach may have taken a lot longer to evolve.

The potato industry can take some pride in the fact that its views are now sought by governments at all levels on matters

pertaining to biosecurity. This is a substantial change from where the industry was some years ago. Although there is more to be done, the increasing partnership between AUSVEG and governments in improving the biosecurity system will yield a better outcome for levy payers in the future.

This is not something to be taken for granted, but will require continual commitment by all parties.

INFO

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

This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007



CALENDAR

12 MAY 2018: CROOKWELL POTATO FESTIVAL

Where: Crookwell, New South Wales

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

Further information: crookwellpotatofestival.com.au

27-31 MAY 2018: WORLD POTATO CONGRESS

Where: Peru, South America

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

Further information: potatocongress.org

18-20 JUNE 2018: HORT CONNECTIONS 2018

Where: Brisbane Convention Centre, Queensland

What: A joint initiative between AUSVEG and the Produce Marketing Association Australia-New Zealand, Hort Connections is set to deliver another world-class event to growers and the supply chain. Co-hosts include Apple and Pear Australia Limited, Australian Organic, the Australian Horticultural Exporters' and Importers' Association, Growcom, Nursery and Garden Industry Australia and Onions Australia. The Trade Show will be sponsored by Fresh Markets Australia in partnership with the Central Markets Association of Australia.

Further information: hortconnections.com.au

12-14 AUGUST 2018: VICSPA 2018 POTATO INDUSTRY CONFERENCE

Where: Melbourne, Victoria

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

Further information: vicspa.org.au



Christopher Gay (right) and his father Matthew (left) on their potato farm in Crookwell, New South Wales.



Photography by Kim Shirley.



PASSING ON THE BATON TO THE NEXT GENERATION



NAME: Christopher Gay
AGE: 26
LOCATION: Crookwell, New South Wales
WORKS: "Valleyview," Kialla
GROWS: Potatoes

HOW DID YOU FIRST BECOME INVOLVED IN THE POTATO INDUSTRY?

I've been a part of the farm on and off for most of my teenage years, helping Dad (Matthew) when needed but have been permanently on the farm for two years.

WHAT DOES YOUR ROLE AT VALLEYVIEW INVOLVE, AND WHAT ARE YOUR RESPONSIBILITIES?

My role involves anything to do on the farm such as fencing, ploughing, feeding stock and managing stock through to planting, harvesting and grading potatoes.

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

I enjoy the satisfying feeling of helping put good produce into the community; a good crop of potatoes is rewarding especially knowing how much hard work goes into the potato crop, which also keeps my enthusiasm up.

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

Mother Nature! It's the biggest challenge. There isn't much you can do except have steps in place for any sort of weather change. We are looking at more intensive ground preparation when the conditions are suitable; this helps make sure we can get the crop in when we want. It has been noticed by both myself and my father that over the last number of years, the weather is longer in its pattern change. In our area, it has prolonged dry events followed by a moderate to extreme wet period. So our strategy is that we are ready to act with man and machine to utilise good soil conditions whenever they become available.

Looking at the future challenge of renewing and maintaining machinery is also a bit concerning, but my background as a boiler-maker is very handy in the maintenance side of things.

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

I receive most of my information and practice from my Dad and also from other local growers, not to mention the internet and *Potatoes Australia*.

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

It would be great to see research into potato variety specification; that is, research into getting older, traditional varieties to perform

like the new varieties. This would suit our eastern seaboard market and promote more sales for the older varieties that we feel cook and taste better, but can't match it with the yield or growing speed of the new varieties.

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

We have been running trials with in-furrow spray application and trying to improve tuber numbers. Selling oversize potatoes in paper bags and smaller lots while attending farmers' markets has helped with value-adding to our business as well.

WHERE DO YOU SEE YOURSELF IN FIVE YEARS?

Hopefully still running the farm with more responsibilities. My father has always encouraged me to have appropriate plans in place to ensure the ongoing viability and sustainability of the farm into the future.

These future plans revolve mainly around soil health. We are currently undertaking a more scientific approach to this to ensure the higher productivity that we need to help us maximise our profits. At the end of the day, we all want to make money, so if our soil is not healthy then the system is straight away let down. I would also be keen to expand the area of our farm, but land prices are making that part difficult.

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

I think the government should get behind the farmers/potato industry more to encourage young people to get on board with benefits. I feel that farming and horticultural endeavours such as potato farming should be recognised as a trade. With other trades you get paid while you learn, and the government subsidises 'Tools of the Trade' and gives financial help to the employer. This would entice farmers to employ people, especially family members, knowing that there is a

I feel that farming and horticultural endeavours such as potato farming should be recognised as a trade ... this would entice farmers to employ people, especially family members, knowing that there is a real future there.

real future there with government help and recognition in the workforce. If the government does not go down this path soon, most young people will continue to obtain other careers that will keep them away from the land.

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

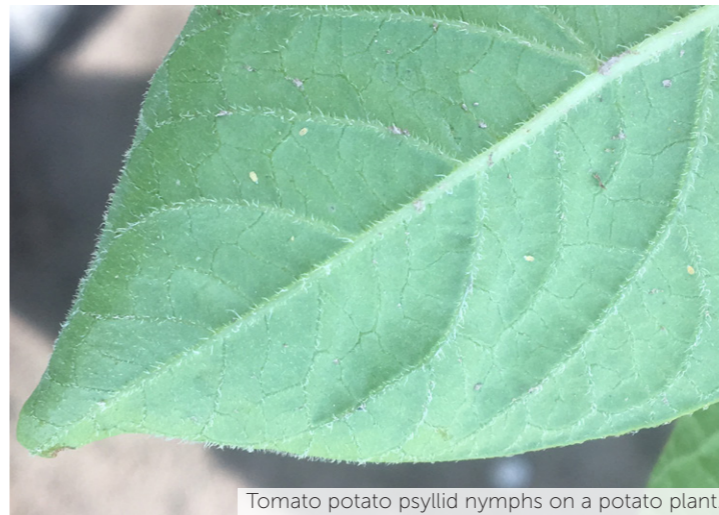
I think that talking to consumers about eating potatoes and their cooking quality is most important. They love the traditional varieties and they seem to be making a comeback in the commercial industry, so pushing forward with new traditional strains could be a growth opportunity.



A field in New Zealand infected by *Candidatus Liberibacter solanacearum* (a variety trial).



L-R: New Zealand potato grower Bryan Hart and National TPP Coordinator Alan Nankivell.



Tomato potato psyllid nymphs on a potato plant.

STUDY TRIP TO NEW ZEALAND HIGHLIGHTS LESSONS LEARNT FROM TPP

New Zealand has been battling the tomato potato psyllid (TPP) for over 10 years. As part of his role as National TPP Coordinator, Alan Nankivell undertook a six-day study trip across the ditch to examine the psyllid management practices that growers have put in place. Project MT16018 is a strategic levy investment under the Hort Innovation Vegetable, Fresh Potato and Potato Processing Funds.

In 2006, New Zealand first detected the tomato potato psyllid (TPP; *Bactericera cockerelli*) on the North Island not far from Auckland. Initially there was no *Candidatus Liberibacter solanacearum* (CLso) detected. After two years, TPP was found on the South Island and it has since spread to all parts of New Zealand.

CLso was eventually detected about two years after the TPP incursion. This bacterium is associated with TPP and causes zebra chip disease in potatoes.

The first response from potato growers was to spray extensively with strong chemicals in an attempt to eradicate or at least control TPP. This approach persisted as TPP continued to spread.

After several years of a strong spray approach, growers became aware that TPP resistance was growing and their properties experienced a significant loss of predator insects. Yields also continued to decline and costs of spraying continued to rise. The impact was that some potato growers chose to leave the industry.

BUILDING KNOWLEDGE

In response to industry feedback, initial research conducted by Plant & Food Research New Zealand (PFR) focused on identifying the best pesticides to use.

There was work completed on CLso, which identified how little was known about it. There were calls for further work on understanding the role of hosts and just how CLso is transmitted, where it affects the plant and to understand the haphazard nature of its impact on plants and tubers.

With 11 years' experience of living with TPP and CLso, the New Zealand potato sector has developed a strong understanding of how to manage TPP by applying the knowledge gained, but more importantly it has been honing its understanding of what further knowledge is required to better understand and manage both the pest and the bacterium across the supply chain.

Seed production has been challenging. The introduction of fine

nets to keep TPP out of first-generation seed appears to have had good results in the field. However, the cost of netting large areas is prohibitive and not realistic from a management perspective.

WHERE IS THE NEW ZEALAND INDUSTRY NOW?

1. It is still producing potatoes and growing the industry!
2. Growers and industry members acknowledge that there is no one single approach to field management, however the "essential" requirement is for TPP and CLso monitoring with traps and field scouting. The build-up of TPP will vary according to seasonal and locational variations.
3. Knowing where TPP is and where it isn't and the size of psyllid populations assists growers in making informed decisions about the management strategies they employ.
4. Factors that need to be taken into account include day temperatures, TPP lifecycle, encouragement of TPP predators and careful use of spray pesticides, starting "soft" and increasing as TPP numbers increase.
5. If possible, plant earlier varieties that mature before TPP is a problem.
6. Treat every field as unique, applying the principles that every field has different location characteristics.
7. Keep detailed records of trap numbers, what type of spray, how much and when it was used, as well as the fertiliser levels, water usage and planting and harvesting times. The feedback from growers was that this information, kept all in one place, has assisted them greatly in gaining control of the pest.
8. On the processing side, technology has assisted with reducing the discoloured CLso potato product getting through to consumers, which has resulted in an increased cost of production due to diseased losses. New Zealand processors remain focused on reducing losses in their feed stock.

9. As part of the supply chain, seed potato management is seen as essential. As a general rule, there is no seed used past fourth-generation, however there is no hard and fast ruling on this at this stage.
10. New Zealand growers acknowledged that the introduction of TPP (while frustrating) has brought their industry together, and there is greater sharing of information among growers and between growers and processors.
11. As one grower explained, the impact of TPP has provided growers with the opportunity to become more professional in their approach to growing potatoes.
12. Growers are increasing the use of independent agronomists to advise on management strategies, not just to sell spray product.
13. Research has moved from any sprays to "soft" ones.
14. There is ongoing research on the use of predators.
15. There is initial research on TPP/CLso resistant varieties.
16. There is research on understanding the way CLso spreads in potato plants and tubers, which is funded by Hort Innovation. This is being conducted in collaboration with AgriBio in Victoria, SARDI in South Australia and Plant & Food Research New Zealand (PT17000).

In conclusion, there is much that we in Australia can learn from our industry friends in New Zealand. They were generous with their time and I see there is great benefit in growers visiting New Zealand and seeing where they have come in their journey with TPP/CLso. Their experience will assist the Australian industry in avoiding the same mistakes, and learning from their experience.

There may well be collaborative research opportunities (especially around the understanding of CLso) that can be developed in the coming months and opportunities for grower visits to observe the way the New Zealand potato industry has learnt to live with TPP/CLso.

In particular thanks to Callum Fletcher, Peter Wright, Rebekah Frampton and Duncan McLeod for arranging meetings with scientists, growers and processors. A special thanks to potato growers and processors who funded the trip to New Zealand and provided me with the issues they are seeking answers for.

INFO

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

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

Project Number: MT16018



LEVY PROJECTS TO DATE

RECENT INVESTMENTS 2017-18

PROJECT NUMBER	PROJECT TITLE
PT15008	Extension of the Predicta Pt potato diagnostic service
PT16000	Extension activities for the Australian potato industry – pest and disease app
PT16000	Extension activities for the Australian potato industry – literature review and survey
PT16001	Impact of ground water quality on management of centre pivot grown potato crops
PT16005	Potato industry minor use program
PT16006	Incursion response funding (PT)
PT17000	Diagnostic capability to detect <i>Candidatus Liberibacter solanacearum</i> (CLso)
MT16003	Women's leadership forum
MT16016	Surveillance of tomato potato psyllid in the Eastern States and South Australia

ONGOING INVESTMENTS 2017-18

PROJECT NUMBER	PROJECT TITLE
PT14001	Monitoring psyllids and psyllid predators in Australian potato crops [^]
PT14002	Spongospora infection of potato roots – ecology epidemiology and control [^]
PT15002	Potato industry extension program*
PT15007	Potato industry communication program 2016-2019 (fresh potato industry levy only)
PT16002	Exploring Spongospora suppressive soils in potato production
PT16003	Navigating the wealth of soil health information and identification of opportunities
PT16004	Review of the national biosecurity plan for the potato industry and development of a biosecurity manual for potato producers
MT10029	Managing pesticide access in horticulture (continued from AH04009 and MT07029)
MT14055	Driving collaboration in Australian horticultural research
MT15032	Monitoring and evaluation framework for the industry Strategic Investment Plan
MT15033	Strategic Investment Plan
MT16009	An IPM extension program for the potato and onion industries
MT16018	National tomato potato psyllid (TPP) program coordinator

[^]These flagged projects did not involve the potato processing industry levy, and were instead funded by Hort Innovation using voluntary contributions and Australian Government funding. They were carried over from the original Horticulture Australia Limited (HAL).

* This project was contracted to coordinate extension activities for the potato industry through 2018, but was terminated during 2016-17 in order to re-scope the specific extension needs of industry.



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



Ladybird feeding on tomato potato psyllid adults. Image courtesy of DPIRD.



Lacewing larva feeding on tomato potato psyllid nymphs. Image courtesy of DPIRD.

PROMISING RESULTS FROM RESEARCH TRIALS FOR TOMATO POTATO PSYLLID

The Western Australian Department of Primary Industries and Regional Development is currently leading a Transition to Management plan for tomato potato psyllid under the Emergency Plant Pest Response Deed. Acting Chief Plant Biosecurity Officer Dr Sonya Broughton spoke to *Potatoes Australia* about the activities undertaken so far, including glasshouse trials on the performance of registered insecticides and biological agents on psyllid-affected crops.

The discovery of the tomato potato psyllid (TPP; *Bactericera cockerelli*) in 2017 prompted a comprehensive biosecurity response by Western Australian industry and government to minimise the impact on the state's growing operations.

A Transition to Management (T2M) plan is being undertaken to ensure growers and industry are supported in psyllid management. The T2M is cost-shared between government and industry at a ratio of 80:20 respectively. While Western Australia is leading the T2M plan, the outcomes of this work will extend to other states in preparation for the potential spread of TPP.

Western Australian Department of Primary Industries and Regional Development (DPIRD) Acting Chief Plant Biosecurity Officer Dr Sonya Broughton said the plan aims to develop the science, biosecurity and business systems to support growers and industry to manage the psyllid.

"There are a few different components, including surveillance and diagnostics to determine if the *Candidatus Liberibacter solanacearum* (CLso) bacterium is present or absent, as well as maintaining grower market access to interstate markets," she said.

FOCUS ON R&D

In terms of the research component of the T2M, a literature review is in progress to identify the gaps in knowledge about the psyllid.

Psyllid diagnostics are being undertaken by University of Adelaide Research Associate Dr Gary Taylor. The aim of this project is to establish what Australian species of psyllid are present and to develop a taxonomic key to separate TPP. A key is also being developed for any exotic psyllid species that has the potential to

arrive, such as the Asian citrus psyllid and the carrot psyllid. These psyllids vector different diseases, which affect different crops, and are spreading throughout the world.

In addition, DPIRD, led by Dr Broughton and Brenda Coutts, recently conducted glasshouse trials with integrated pest management (IPM) company Biological Services to determine the efficacy of insecticides in Australia that are registered for use on TPP-affected crops, including tomatoes, capsicums and potatoes.

In the recent glasshouse trial, whole potato, tomato and capsicum plants were infected with psyllids, allowing populations to develop on plants before spraying a certain number of times with different insecticides. At the same time, biological trial agents were also released to compare the efficiency of insecticides versus a biological-only approach.

Further trials are being conducted at the department's glasshouse facility over a nine-month period, with results due to be released by May 2018 on a wider range of TPP hosts.

"These spray trials are chemical bioassays; so we look at the eggs, all the different instars and the adults, and then we're doing what we call leaf bioassays. We have leaves of the different plants – they can affect how the insecticide works. If you have a hairier leaf, that will work differently to a smooth leaf – that's the kind of thing that we're looking at with those chemical bioassays and from that, we hope to determine what's actually going to be effective in the field," Dr Broughton said.

The trials aimed to screen the effectiveness of currently available insecticides including older chemistry such as organophosphates, and newer chemistry which is more targeted. Laboratory bioassays are also being run for over six species of commercially-available beneficial insect. This

includes several species of ladybird, brown lace wings, a predatory mirid bug and an anthocorid bug.

PRELIMINARY FINDINGS

As a result of the glasshouse spray trials conducted with Biological Services, it was found that the active pymetrozine wasn't very effective on the capsicum, potato and tomato crops.

"Abamectin was very effective (similar to the results from research in New Zealand) as were cyantraniliprole, flocinamid and spirotetramat*," Dr Broughton added.

"The next step is to chart these active ingredients against the crops they're registered for use in. If it's not registered, then we need to consider getting a registration permit in the interim."

As for the biological component, Dr Broughton said that a ladybird species has performed quite well in the laboratory. These, along with brown lacewings, are naturally occurring in some growing areas of Australia.

"We know that both of those beneficial species do eat psyllids,

so there might be options out there already that are capable of at least exerting some control over the psyllid. They will need to be incorporated into IPM programs, and that's something that New Zealand has been looking at. We will need further research in the future across Australia," Dr Broughton said.

INFO

*To find the chemical products that incorporate the active ingredients mentioned in this article, visit portal.apvma.gov.au/pubcris and search the active ingredient.

For more information, please contact the Western Australian Department of Primary Industries and Regional Development Acting Chief Plant Biosecurity Officer Dr Sonya Broughton on 08 9368 3271 or sonya.broughton@dpiird.wa.gov.au.

More information, including signs and symptoms of TPP and control options, is available at agric.wa.gov.au/tpp.

This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007



WESTERN AUSTRALIA TPP/CLSO SPRING SURVEILLANCE UPDATE

The Western Australian Department of Primary Industries and Regional Development has completed the spring round of surveillance for tomato potato psyllid (TPP), which included testing TPP for *Candidatus Liberibacter solanacearum* (CLso). TPP can carry the bacterium CLso which is associated with zebra chip disease in potato.

Over 4,000 TPP were tested for CLso with no positive detections of the bacterium.

The significant surveillance campaign, targeting known populations of TPP across the Perth metropolitan area and surrounds, was undertaken as part of the nationally-agreed Transition to Management plan. The Western Australian community has shown great support for horticultural industries by offering to host a sticky trap at more than 1,000 sites.

PREPARING FOR AUTUMN SURVEILLANCE

A further round of surveillance in Western Australia will begin in early autumn. Following this surveillance period, the state's CLso status will be assessed.

Some interstate markets require proof of area freedom from CLso. No positive detection of CLso under the agreed surveillance program will provide a high level of confidence of Western Australia's area freedom.

The department, in collaboration with national and state government and industry partners, continues to progress other work under the Transition to Management plan including the development of enterprise management plans for affected industries.



DPIRD Technical Officer (entomology). Image courtesy of DPIRD.

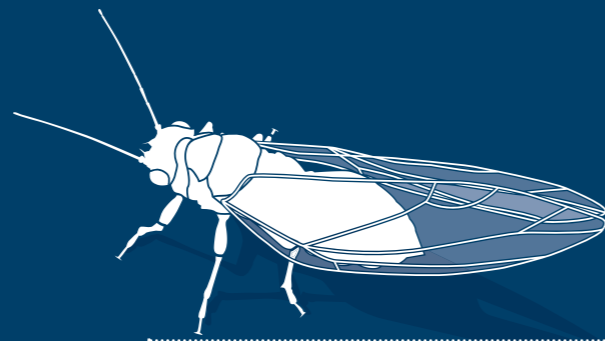


Department of
Primary Industries and
Regional Development

Tomato potato psyllid (TPP)

Transition to management plan

- September 2017 to May 2018
- Proactive approach to managing TPP in Australia
- Transition to management activities led by Western Australia
- Determine presence/absence of *Candidatus Liberibacter solanacearum* (CLso) bacteria associated with TPP



Adult tomato potato psyllid (*Bactericera cockerelli*)
~ 3.0mm long



About TPP

Found in WA in February 2017 – first time in Australia

Tiny insect pest which feeds on tomato, potato, capsicum, chilli, goji berry, tamarillo, eggplant and sweetpotato

Can cause significant yield loss in host crops

TPP can carry CLso bacteria which causes zebra chip disease in potatoes

CLso bacteria not found in WA



Looking for TPP

Surveillance in Western Australia to target known populations of TPP

Testing to determine presence/absence of CLso in TPP population

TPP tested for CLso

Other states/territories to also undertake TPP surveillance



Scientific R&D

Australian research on biology and management of TPP

Develop options to help growers control TPP

Biological control trials with ladybirds, brown lacewings and mirid bug

Pre-harvest treatment trials

Post-harvest treatment trials



National & enterprise management plans

Development of national plan to guide management of TPP now and into the future

National TPP Coordinator appointed

Enterprise management plans for affected industries (vegetables, potatoes, nursery industries)

ID TPP and its risk pathways on farm

Biosecurity awareness

Post farm-gate management



Market access & trade

Mitigate the risk of spread of TPP through appropriate movement controls

Develop nationally harmonised protocols for interstate trade

Maintain confidence of international partners that TPP is being effectively managed in Australia

agric.wa.gov.au/tpp



Potato grower John Doyle and PPAA Deputy Chair Allan Smith in Berrigan, New South Wales. Image courtesy of Michael Hicks.

HOW TO ACHIEVE ON-FARM PRODUCTIVITY SUCCESS

In this edition of *Potatoes Australia*, two potato processors – Simplot and Snackbrands – reflect on the features of their suppliers that are achieving annual productivity gains and keeping ahead of the cost price squeeze. Potato Processors Association of Australia (PPAA) Executive Officer Anne Ramsay reports.

Simplot's Tasmanian-based production team recently surveyed growers in each of their growing regions and identified key themes among those growers who are achieving annual productivity growth. These themes are broadly grouped as: getting the basics right, long-term system planning, focusing on intensive production with high yields, and finally, strong relationships along the supply chain.

Top growers have soil health and structure as a priority and success is associated with longer rotations that involve as much grass as possible. Ground preparation and planting are carefully planned and implemented, and generally headland areas and irrigation runs are only planted if economical and can be handled by the harvester.

Crop monitoring is vital to success for these growers, so they spend as much time as possible in the paddock. Irrigation is carefully managed and monitored across paddocks through regular digging to ensure even and adequate watering. These growers understand the importance of watering at the right times during the crop to optimise yield and reduce disease.

Pest and disease risks are identified early, and crop protection products are applied on time using the property's own equipment or through a good relationship with a reliable contractor. Harvest is completed on time either with their own equipment or once again through a relationship with a reliable contractor.

In all aspects of production, these growers are prepared to slow down and not rush to deliver a good outcome.

As touched on above, good businesses tended to have strong relationships within their teams and have researched and developed relationships with the best suppliers and service providers. This includes having a good relationship with their seed growers to ensure that high quality seed is used and is handled well to optimise the return on the investment. Good fertiliser advice is also valued and sought such that the right rates, timing and type facilitates optimal yield potential.

Financially, success is more often realised for the growers that are focusing on increasing production on a more intensive scale rather than achieving lower yields across a broader production system. And finally, the survey showed that the longer-term planners are constantly thinking about their next crop and in doing so are yielding greater production efficiencies.

BUILDING RELATIONSHIPS

Unlike Simplot's Tasmanian-based production, Snackbrands has growers spread across the eastern states of Australia, facing a

broad range of environments and growing conditions. However, with little influence over retail prices, on-farm profitability is driven largely through increased productivity improvements on-farm. The principles outlined by the Simplot survey are relevant and important.

Growers that have made the connection between a good seed supply chain and production are finding their crops are producing more consistent and higher yields. Good quality seed that is handled and aged well is often undervalued but has the capacity to offer significant returns on investment. This can be easier said than done, and it can be a significant challenge to source suitably aged seed, particularly for summer and autumn plantings.

The connection across the entire supply chain will continue to be critically important, and not only from seed to commercial grower. A good working relationship and mutual understanding between grower and factory is also required.

THE BIGGER PICTURE

Growers achieving ongoing production gains are generally approaching their farm as a system, whereby all units are interrelated. Soil health and nutrient interactions are paramount, and business sustainability is key.

The broad spread of supply can present some unique challenges to yield and productivity. A support network of information is important – through other growers, online information and agronomic service providers. Actively seeking quality information and data allows the producers to manage their inputs to meet needs and challenges that can be unique from season to season. This allows the growers to manage real risks rather than following standard growing conventions.

These are just some of the themes around improved productivity. What works well for you? What are the basics in your business that you could focus on?

INFO

For more information or to provide your feedback, please contact Anne Ramsay on 0400 368 448 or email ppaa.eo@gmail.com.

This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007





L-R: Tony and Sam Cummaudo.



Photography by Danae Commercial.

FAMILY BUSINESS AT THE FOREFRONT OF HORTICULTURE INDUSTRY INNOVATION

Nestled in Gippsland’s Strzelecki Ranges, the Victorian town of Mirboo North is home to a number of leading Australian potato and vegetable growing operations, including Cummaudo Farms. Michelle De’Lisle spoke to second-generation potato grower Tony Cummaudo about the flourishing family business, and the growing practices he has implemented to ensure it remains sustainable into the future.

Innovation and embracing cutting-edge growing practices are always at the forefront of potato grower Tony Cummaudo’s mind.

It has to be – Cummaudo Farms is a 1,600 acre growing operation located at Mirboo North in Victoria’s Gippsland region, and the business supplies wholesale potatoes to Coles and independent supermarkets around Australia. To keep up with supply and demand of consumers, Tony and his employees must ensure that quality standards are met so the business remains sustainable for years to come.

Cummaudo Farms was established by Tony’s father, Tom, almost 60 years ago. These days, Tom has taken a step back in the running of the business and it is now being overseen by Tony and his brother Sam. They employ nine full-time and 17 part-time employees off-season, with an additional 50 casual employees joining the team during peak times.

Tony’s role is predominantly focused on the agronomy and administration side of the business, while Sam is involved in the quality, packing sector, harvesting and transport of the final product. The brothers meet every day and compare notes on the priorities for the day ahead.

Additionally, the third-generation has shifted onto the farm. Sam’s children are currently following in their family’s footsteps,

and it is hoped that some of Tony’s five children will do the same as they grow older.

GROWER CHALLENGES

There are many issues facing potato growers, however Tony believes the main priority should be keeping consumers eating fresh potatoes.

“That’s our number one goal. We don’t want to see the decline in potatoes, we want people to still be eating them. Getting the fresh sector in the potato industry to work as a group to promote potatoes is a challenge,” he says.

“I think something needs to happen – from our point of view, we need to market the potatoes on our own level but really we simply need to promote the benefits of potatoes. The hard calls are I think in the industry itself – there’s washed versus brushed; we have the fresh sector versus processing and the seed sector so it’s probably hard to come to an agreement on how we should promote potatoes.

“Everyone’s got their own agenda I suppose when it comes to promotion – people say to just promote their own products and others will say to work as a group, but I think it does need another layer, or a lot more presence.”

Tony says that other challenges include the cost of production and finding ways to keep that as minimal as possible; sourcing experienced staff; and implementing the best farming practices for the environment.

ENVIRONMENT IN FOCUS

Tony stresses the importance of working with agronomists to assist with growing efficiencies, including the effective selection and application of crop protection products.

“Just having someone in the industry who lives and breathes potatoes and is helping your efficiencies is a tremendous source,” he says.

In an attempt to understand the lifecycle of insects and how crops react to various crop protection products, Cummaudo Farms has worked with Dr Paul Horne and Angelica Cameron from IPM Technologies in recent years. Using an integrated pest management (IPM) approach has proved extremely beneficial, as Tony explains.

“Looking at the way some of the chemicals work when applied to your crop, they might not be appropriate. Some do more damage than good, so the timing of application and the collection of beneficial insects to use if and when needed was probably the most important thing we got out of it.

“We have to be open to new ideas. We can’t just say ‘this is the way we grow potatoes’ for the rest of our lives. We need to be thinking.”

There are other innovations in environmental practices being implemented on Cummaudo Farms in 2018, including a weather station.

“We want to start trying to forecast outbreaks of blight, so we’re getting the best bang for our buck on applying fungicides. If we can predict a high risk of late blight or early blight before we see it on the plants, we can apply the appropriate fungicides, as opposed to when we think we should put them on,” Tony says.

“We also do soil testing of every hectare and look at variation in paddocks. Some areas in the paddocks may be low on nutrients and others might be high, so that helps in applying fertiliser.”

ONGOING SUSTAINABILITY

Planting certified seed assists with maintaining on-farm disease resistance. The business also uses mini-tubers grown by ViCSPA and conducts trial work with new varieties.

“It’s certainly relevant to the business. Mini-tubers help us to get a first-hand look at new varieties before they are available to the public, or to other people, just to see how they grow on your property,” Tony says.

“It’s a huge benefit for seed and disease resistance, and yield and taste – you can have a high-yielding potato but if it doesn’t taste any good, it’s no good. With production, obviously we’re trying to source varieties which are high-yielding but I guess we still don’t want to compromise quality when it comes to yield. Quality is foremost, then we look at yield.”

Cummaudo Farms is also certified by the Safe Quality Foods Institute, which means that it participates in a globally-recognised food safety management system.

“It’s a standard we need to have; you need to be making sure everyone is doing the right job in the line and continuously improving,” Tony says.

LOOKING AHEAD

Tony and his family have plenty to be proud of as potato growers, including being successful in a tough environment over the past five decades.

“I’ve had to ride out the tough times. We’ve done the hard yards. My father’s definitely gone through harder times than ourselves but we’ve still had our own fair share of them,” Tony says.

“I enjoy the satisfaction that we get from supplying fresh produce around the country, and we’re still doing it.”

The second-generation grower has two simple wishes for the future of the business: to see increased potato production and for the third generation to continue the family legacy.

“My children have potentially shown interest. I have five children so I guess if I could get one or two into the business, that’d be great.”



Symptoms of target spot, or early blight, (*Alternaria solani*) in a potato crop. Image courtesy of Howard F. Schwartz, Colorado State University, Bugwood.org.

FAIR EMPLOYMENT CERTIFICATION PILOT UNDERWAY

Since its commencement in March 2017, the Fair Farms Initiative has delivered seminars and workshops to growers to foster improved employment practices across the Australian horticulture industry. The workplace relations module within Growcom's Hort360 program is a key tool to help growers achieve compliance with Australia's Fair Work laws. Growcom is currently working with Freshcare to translate the module into a new auditable code to certify fair employment within farm businesses.

The need to demonstrate fair employment practices has emerged as a significant challenge for a growing number of potato producers.

Driven by negative media about the exploitation of farm workers, many of Australia's major retailers have moved to implement SEDEX-based self-assessments or audits with their major suppliers. These retailers have indicated that within the next two years, they will seek verification of worker welfare from the growers who supply their major suppliers.

A key element of the Fair Farms Initiative is putting in place a means for Australian horticulture producers to certify to their customers that their workers are treated fairly and that their employment practices meet all requirements under the Fair Work Act.

To achieve this, the workplace relations module of Growcom's Hort360 program has been translated into an auditable fair employment standard under Freshcare.

Over the last year, the Fair Farms Initiative team has been working closely with the Produce Marketing Association (PMA) behind the scenes to negotiate with retailers that this offers a more practical approach to verifying fair and ethical employment in Australia's fresh produce supply chains. The key benefit of the Freshcare-based approach is its specific focus on Australian issues and compliance with Australian employment laws.

The new Freshcare code has been drafted and the training, audit and certification process is being piloted over the coming months with horticulture businesses in Queensland, Western Australia and northern New South Wales.

The team aims to ensure that Freshcare Fair Employment certification will become available to the industry by mid-2018. Stay up-to-date with progress on discussions with retailers through this column.

INITIATIVE ACTIVITIES

Since it commenced in March last year, the Fair Farms Initiative has worked to raise the profile of fair employment within Australia's horticulture sector and provide practical assistance and information to growers. The initiative was formally launched by Assistant Minister for Agriculture and Water Resources Senator the Hon. Anne Ruston at Hort Connections 2017 in Adelaide. In its first year, the initiative supported growers in Queensland, the Northern Territory and South Australia to work through the Hort360 workplace relations module. Workplace relations specialist Donna Mogg delivered seminars for growers in Adelaide, Darwin, Katherine and Kununurra, as well as the Queensland Workplace Essentials workshops.

The work continues this year, with seminars planned for Western Australia early in 2018 and the inaugural Fair Employer Award to be established. The team will also work with organisations such as the Salvation Army and regional councils to tackle persistent problems such as the availability and quality of accommodation for farm workers in regional areas.

INFO

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

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

This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007



TARGETING A WIDESPREAD POTATO DISEASE

Target spot, or early blight, is caused by the fungal pathogen *Alternaria solani* and it is one of the most common potato diseases which attacks the leaves and stems of potatoes. Syngenta Technical Services Lead Scott Mathew explains what methods potato growers can use to control target spot in their crops.

Traversing the South Australian countryside over the summer period, I am always amazed at how easy it is to find target spot or early blight (*Alternaria solani*) in potato crops.

WHY DO I GENERALLY LOCATE TARGET SPOT IN WEAKER AREAS OF THE CROP?

Target spot is considered a weak pathogen and generally attacks plants that lack vigour or are under some level of stress. Areas of the crop that are affected by low leaf nitrogen levels, over- or under-irrigation stress, mechanical damage, or other pests and diseases are more susceptible to infection.

Ensure your potatoes have adequate nutrition and water and are kept free from other pests and diseases so they are less prone to infection.

WHAT IS DIFFERENT ABOUT TARGET SPOT THAT MAKES IT HARDER TO CONTROL?

The target spot fungus survives between seasons in the soil on old plant material. When spores are produced and dispersed by wind, rain and insects the following season, they may deposit on potato leaves where they remain on the surface until conditions are favourable.

The primary infection of target spot generally occurs on older leaves that are found lower in the crop canopy. Within the canopy there is less airflow, the humidity tends to be a little higher and the leaves take longer to dry out. These conditions are ideal for the development of target spot.

WHY ARE FUNGICIDE APPLICATIONS PRIOR TO ROW CLOSURE SO CRITICAL?

Given that target spot generally infects the lower leaves, it is critical that you get fungicide to those lower leaves in the

canopy. Fungicide applications prior to row closure can greatly assist in slowing the development of disease by keeping inoculum levels low, reducing the likelihood of infection.

WHAT MAKES AN EFFECTIVE PESTICIDE APPLICATION TO CONTROL TARGET SPOT?

Potato plants (pre-row closure) provide good access for fungicide sprays to the lower leaves. However, just getting the fungicide down there is often not enough. You need to achieve good coverage and spray penetration into the lower canopy.

Several important factors make for a successful spray application. These include choosing the correct product, applying at the optimum time, using the recommended dose and achieving the required spray coverage for the target. The first point goes without saying, however the remaining three are very much tied back to spray application and your ability to deliver the required chemical dose from the spray nozzle evenly across the target surface. This can be achieved by correctly setting up and calibrating your spray equipment. You should continue to check your equipment regularly through the season to ensure the correct rate is always applied.

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 Potatoes Australia: 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 Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007





A bee balloon, used to map bee populations in farms across Australia. Image courtesy of Hort Innovation.

CROSS-POLLINATION OF INFORMATION HELPS SECURE THE FUTURE OF HORTICULTURE

The Pollination Fund is one seven funds developed under Hort Frontiers, a strategic partnership initiative led by Hort Innovation that facilitates collaborative, cross-horticulture projects. *Potatoes Australia* spoke to Hort Innovation R&D Lead Dr Anthony Kachenko about the fund, its current projects and the benefits that cross-collaboration provides to the horticulture industry.



The European honeybee.

A focus on longer-term, complex and traditionally underinvested themes identified as critical for Australian horticulture in 2025 has led Hort Innovation to develop the Hort Frontiers strategic partnership initiative.

The Hort Frontiers funding model has been expanded to better equip Australian horticulture for the future. It incorporates seven funds that facilitate collaborative projects from a range of co-investors.

After extensive consultation within industry groups around the key areas for cross-industry horticulture investment, seven dedicated funds were announced: Advanced Production Systems; Asian Markets; Fruit Fly; Green Cities; Health, Nutrition and Food Safety; Leadership; and Pollination.

FOCUS ON POLLINATION

The Hort Frontiers Pollination Fund was developed to create a sustainable and resilient horticultural industry through improved pollination options and services, as pollination is considered a priority for most horticulture industries. The fund aims to enhance and support existing pollinators and identify the most effective pollination methods for various horticulture crop types.

Pollination is the transfer of pollen grains from one flower to another, and is critical in 60 per cent of agricultural production. It helps the growth of many fruits, vegetables, nut and flower species, and in some instances, can increase crop yield. In Australia, it is estimated that pollination-dependent crops are worth over \$4.3 billion per annum, with a direct contribution from honeybees estimated to be over \$1.6 billion.

Hort Innovation R&D Lead Dr Anthony Kachenko said there are three areas of strategic intent for the Pollination Fund: managing European honeybee; optimising crop pollination efficiency; and identifying alternative crop pollinators.

“Our program aims to invest evenly across the three investment themes. We have two foundation projects that are dealing with the management of the European honeybee as well as understanding a bit more about what pollinators are in the crop and what’s doing the work for each industry,” Dr Kachenko said.

Safeguarding Australian horticulture from various shared challenges within the honeybee industry, including the threat of varroa mite, is another focus of the Pollination Fund. This mite is believed to be a major factor behind widespread European honeybee colony collapses in countries such as the



Image courtesy of Hort Innovation.

United States, Canada and Japan. Moving into 2018, Australia is the last country in the world to be free of varroa mite.

CROSS-COLLABORATION: A MAJOR THEME

Many stakeholders are involved in the Pollination Fund, with 24 out of the 34 horticulture industry members representing industries that rely on pollination to achieve higher yields and secure the profitability of growing operations.

As part of the fund, Hort Innovation has invested in research projects including the National Bee Pest Surveillance Program, a project supported by Plant Health Australia with co-investment from the honeybee and grains industries.

“The National Bee Pest Surveillance Program is a biosecurity program across Australia to stop the incursion of varroa mite, one of the biggest threats to the industry, as well as 13 other high priority pests,” Dr Kachenko said.

Another project within the Hort Innovation Pollination Fund focuses on the effect of plant nutrition on the ability for a crop to be pollinated, and in-field methods to enable growers to determine the nutrient status and chemical composition of leaves and fruits, which is supported by the University of the Sunshine Coast.

The stingless bee as an alternative pollinator is also a key focus of a project that has been developed in conjunction with Western Sydney University. This will investigate the use of stingless bees to ease Australia’s dependency on the European honeybee – a pollinator that is vulnerable to threats, particularly varroa mite.

“The stingless bee is a native Australian bee but we really don’t know much about its effectiveness in a range of crops.

“In particular, we will be looking at some vegetable crops such as cucumber and capsicum, and using them in different environments (field versus glasshouse),” Dr Kachenko said.

“One of our big partners is Western Sydney University and this project works well with its new National Vegetable Protected Cropping Centre.”

The Pollination Fund is also contributing to larger programs such as the Rural R&D for Profit Program, ‘Securing Pollination’, being led by AgriFutures Australia. This includes research into smarter farming practices to increase the profitability and security of production and pollination-dependent crops in Australia, as well as exploring the delivery of sustainable pollination services for Australian crops by improving the understanding of pollination requirements.

A focus of many projects within the Pollination Fund is collaboration with international organisations, including Plant & Food Research New Zealand and organisations in India, to maximise benefits for Australia.

“It’s a great time for collaboration between Australia and overseas. The collaboration with Plant & Food Research New Zealand helps us to understand varroa mite a bit more and allows us to conduct research on a pest not currently in Australia,” Dr Kachenko said.

“A lot of our work with Western Sydney University has been using collaborators in India, as there are a lot of stingless bee populations that are in the same family as ours being utilised for crop pollination. We have built projects that utilise concurrent programs – so we don’t fund the work overseas – but the researchers work together, so it’s a nice way to share results and gain more knowledge.”

INDUSTRY BENEFITS

Dr Kachenko said that Australian horticulture was in a great place to invest in research and technologies that can help the industry prepare for the future and secure pollination options and services. However, there are other areas that need to be addressed.

“It’s a unique issue for Australia as there are different regions that have different issues, such as Tasmania having bumble bees while mainland Australia doesn’t. We have our own issues that we need to address that can’t be dependent on international sources,” Dr Kachenko said.

“I encourage growers to watch this space. Now that projects have been up and running for a little while in the Pollination Fund, we’ll start seeing some tangible outcomes and there will be a lot of grower outreach. It’s about making sure that growers know what’s happening so they are able to pick up the results of the work.”

CURRENT PROJECTS UNDER THE HORT FRONTIERS – POLLINATION FUND

PROJECT NUMBER	PROJECT TITLE	SERVICE PROVIDER
MT16005	Enhanced National Bee Pest Surveillance Program 2016-2021	Plant Health Australia
PH15000	Strengthening and Enabling Effective Pollination for Australia	Plant & Food Research New Zealand
PH15001	Healthy bee populations for sustainable pollination in horticulture	Western Sydney University
PH16000	Stingless Bees Effective Managed Pollinators for Australian Horticulture	Professor James Cook, Western Sydney University
PH16001	Increasing yield and quality in tropical horticulture with better pollination, fruit retention and nutrient distribution	University of the Sunshine Coast
PH16004	Securing pollination for productive agriculture: guidelines for effective pollinator management and stakeholder adoption	AgriFutures Australia

INFO

To learn more about the Pollination Fund and submit an idea for a future project, visit horticulture.com.au/co-investment-fund/pollination-fund. *Potatoes Australia* will profile each Hort Frontiers Fund in further detail in future editions of the magazine.

For more information, please visit horticulture.com.au or contact Pollination Fund R&D Manager Ashley Zamek on 02 8295 2388 or ashley.zamek@horticulture.com.au.

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





WASTE NOT, WANT NOT: ADDING VALUE TO POTATO PEEL

A desire to combat food waste has led Potatoes South Australia, University of Adelaide and Adelaide Hills Distillery to join forces to make vodka from potato peel. If successful, this project could have far-reaching benefits to both growers, processors and the South Australian food and beverage industry.

The transformation of food waste with limited value to a premium product with high value is on the agenda through a project being undertaken by Potatoes South Australia, University of Adelaide and Adelaide Hills Distillery.

While potatoes are traditionally used to make vodka in many parts of the world, the three organisations are looking into the feasibility of making vodka from potato skins. Potatoes SA received \$30,000 for this project from the South Australian Government through its Small Advanced Food Manufacturing Grants Program, and the project is expected to finish by June 2018.

Potatoes SA Chief Executive Robbie Davis and University of Adelaide lecturer in fermentation and process engineering Dr Richard Muhlack spoke to *Potatoes Australia* about this novel concept.

PROJECT STAGES

The research and technical elements of this project, including the comparison of potato varieties, are being undertaken by the University of Adelaide, while Potatoes SA is working with Adelaide Hills Distillery to look at the distilling of the product.

“The university’s role is to develop the most effective technique to create vodka from peel. That means expertise in analytical chemistry, wine science and sensory science, segmentations and starch profiling and then sampling those during the potato distillation,” Ms Davis explained.

The research capabilities from the university will be combined with the expertise of Adelaide Hills Distillery and its head distiller Sacha La Forgia.

“Peelings from processing potatoes aren’t a huge waste for the industry, unlike the waste for the fresh sector,” Ms Davis said.

“We know that in the process, these potatoes are washed – there’s a lot of starch that goes into that water so we’re recovering the starch from the water as well as the peelings.”

Dr Muhlack said the filtered starch and peelings will offer the best yield of fermentable sugars that are then processed into beverage spirit.

“Results have also shown pre-treatment and fermentation conditions need to be carefully managed in order to optimise production efficiency, in terms of both extraction of starch into solution, conversion of starch into fermentable sugar and then into alcohol,” he said.

“Batch trials and sensory analysis are planned for the next phase of the project.”

The project is also comparing fresh potato peel with processing potato peel to see which is more suitable for the vodka making process, with the latter showing the most potential.

A NOVEL IDEA

Dr Muhlack said that international research has been conducted in turning waste such as potato peel into an ethanol spirit, but not into a higher value spirit that would be suitable for consumption as a food beverage.

The key to this project is thinking outside the square, Ms Davis added.

“If something like this has been proven to be done, economically it makes commercial sense – we would commercialise this product so it would be branded. There could be huge export potential if we can get this right because it’s so novel.”

Both Ms Davis and Dr Muhlack agreed that this project is about one major component: value-adding.

“This project is quite unique because it’s actually looking to add value by creating a new, innovative and high value food product – particularly in South Australia where there is a lot of activity happening in the food sector, and the state is known for its high quality food and beverage product,” Dr Muhlack said.

“This is really a way in which we can further add to that reputation and prestige.”

Ms Davis highlighted the recent incursion of tomato potato psyllid in Western Australia, and how it has affected the potato industry.

“There have to be other ways of value-adding and using potatoes because they’re nutrient-dense,” she said.

“This project is about novelty. I think it opens the door to thinking differently about what you throw out, what you throw away and what you consider to be waste, because suddenly peelings aren’t waste anymore.

“The take home message is: let’s look at the whole value chain; let’s look at where we can intercept it and value-add to increase returns.”

INFO

For more information, please contact Robbie Davis at robbiedavis@potatoessa.com.au.

This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.

Project Number: PT15007



PERMIT NUMBER	CROP	PESTICIDE GROUP	ACTIVE	PEST/ PLANT DISEASE/ TARGET WEED	DATE ISSUED	EXPIRY DATE	STATES
PER84757	Fruiting vegetables (except cucurbits), including peppers, tomato and eggplant (except sweet corn); root and tuber vegetables	Insecticide	Spinetoram	Tomato potato psyllid (<i>Bactericera cockerelli</i>)	28-Nov-17	30-Nov-20	All states except Vic
PER84805	Fruiting vegetables including peppers, tomato and eggplant (except sweet corn), potato and sweetpotato	Insecticide	Cyantraniliprole	Tomato potato psyllid	06-Dec-17	31-Dec-22	All states except Vic
PER84555	Post-harvest fumigation of fruits, vegetables and cut flowers <i>Can only be used by Fumigators licenced to use ethyl formate by the WA Department</i>	Fumigant	Ethyl formate	Tomato potato psyllid	12-May-17	30-Jun-19	WA only
PER84442	Vegetables	Organic insecticide	Pyrethrin	Tomato potato psyllid	17-May-17	31-May-19	WA only
PER84229	Tomato, eggplant, capsicum, chilli pepper and nursery stock (non-food)	Insecticide	Abamectin (field and protected cropping), bifenthrin (field only), methomyl (field only)	Tomato potato psyllid	07-Apr-17	28-Feb-20	All states
PER84245	Potato, sweetpotato, tomato, capsicum, chilli pepper and eggplant (field and protected cropping)	Insecticide	Spirotetramat	Tomato potato psyllid	07-Apr-17	28-Feb-20	All states
PER84249	Potato and sweetpotato	Miticide/ insecticide	For full details, please search the APVMA website.	Tomato potato psyllid	16-Jun-17	31-Jul-20	All states except Vic

Western Australian Department of Primary Industries and Regional Development is the permit holder for PER84555 and PER84442. New South Wales Department of Primary Industries Orange is the permit holder for PER84229, PER84249 and PER84245. Bayer initiated PER84245 and is seeking the use for label registration. Hort Innovation is the permit holder for all other permits listed. All efforts have been made to provide the most current, complete and accurate information on these permits, however we recommend that you confirm the details of these permits at: apvma.gov.au/permits/search.php. This communication has been funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government. Project Number: PT15007.





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REGIONAL UPDATES



Tom Cohen
AUSVEG VIC
State Manager
Level 2, 273 Camberwell Road
Camberwell VIC 3124
Phone: 0437 037 613
Email: info@ausvegvic.com.au



VGA trading as AUSVEG VIC

The AUSVEG VIC Executive Committee would like to say thank you for the support from all of the members and key strategic partners who have been involved with AUSVEG VIC throughout 2017. AUSVEG VIC is looking forward to 2018 and working with all of the members and key strategic partners, especially as the appetite for potatoes is now higher than it has ever been on the local market and on international markets. AUSVEG VIC looks forward to helping more Victorian growers achieve the best results in the coming year.

During December, two tomato potato psyllid (TPP) workshops were held in Creswick and Thorpdale to inform growers in both districts about the threat of TPP and how its potential arrival could affect trade between the 'eastern bloc' of mainland states. Work is being done to resolve the issues regarding possible trade restrictions between state borders if TPP is found. Trapping has taken place throughout the winter and summer months, with no confirmations of the psyllid being present in Victoria at the time of writing. Growers are urged to keep an eye on crops to protect the Victorian industry. To find out more information please visit ausveg.com.au/

[app/uploads/2017/11/Fact-Sheet-Tomato-Potato-Psyllid.pdf](#).

The annual AUSVEG VIC Awards for Excellence will be held on Friday 13 April 2018 at Kooyong Tennis Club. The event revolves around a number of awards being presented to the deserving growers and researchers of the Victorian industry to recognise their achievements throughout the past year. Previous events have been very successful in offering growers and key suppliers an opportunity to network and form new relationships. The process for nominations is open, and growers and industry suppliers are encouraged to contact the State Manager to acquire the nomination forms.

AUSVEG VIC will be launching a new website in the coming months to feature new research and development in the industry and will allow growers easier access to critical information that will help develop and change the growing environment of Victoria.

If you would like to hear more about the website or the Awards for Excellence, or express your opinion about the direction that AUSVEG VIC should be moving in, please contact State Manager Tom Cohen.



Jordan Brooke-Barnett
AUSVEG SA
State Manager
South Australian Produce
Markets, Burma Road
Pooraka, SA 5095
Phone: 08 8221 5220

Please note we have moved to a new address.

In the lead-up to the South Australian election, AUSVEG SA is working with other horticulture groups as part of the Horticulture Coalition of South Australia to bring industry issues to the forefront. We have been actively engaging politicians from all major parties, and have released our Horticulture Blueprint to guide the policy platforms of major parties.

Also prior to the election, AUSVEG SA will work with the Horticulture Coalition to highlight issues in areas such as water infrastructure investment; securing an economic pricing model for the new Northern Adelaide Irrigation Scheme (NAIS); propose

reforms to decrease the cost of doing business; and call for the maintenance of biosecurity budgets. As a \$1 billion industry providing much-needed employment in the state economy, we hope that politicians across the major parties address key horticulture issues post-election.



Matthew Gay
Crookwell Potato
Growers' Association
President
169 Goulburn Street
Crookwell, NSW 2583
Phone: 02 4832 1800
Website: seedpotatoes.com.au

Crookwell certified seed planting is now finalised. Some plantings were delayed due to excessive wet weather. Area planting is around the same to a little more than previous years to try and keep up with demand. All growers are excited about the season and it looks to be a good one at this point in time.

The Crookwell Potato Association (CPA) recently had its Christmas party; it was however a Christmas party with a difference. It was also a surprise occasion for David and Barbara Carter to recognise many years of involvement in the seed potato industry. David and Barbara are retiring from mini-tuber propagation after many years of delivering top quality mini-tubers to growers all over Australia.

David has been involved in the potato industry for over 50 years. This was recognised with an award presented by David Montgomery, who spoke about David's involvement in the industry, not only in Crookwell but also at state, national and international levels. David and Barbara contributed hugely to mini-tuber production in this time with up to 60,000 mini-tubers

and some 30 different varieties being grown in their annual operation.

Geoff Fahey also presented David Carter with an Honorary Life Membership to CPA, recognising more than 30 years of involvement and dedication to the association. Mr Fahey was the first President of the CPA and he described how David's dedication and professional attitude drove him to succeed in a satisfying but sometimes hard industry.

Garry Kadwell then presented David and Barbara with a travel voucher and spoke about Barbara's involvement as a director, labourer, cook and hirer. Garry stated that their success in the industry was a direct result of a great partnership and that CPA members were like a big family where the older experienced members readily passed on information to younger growers, which is invaluable.

We all wish David and Barbara good luck in the future and thank them for all their tireless work and enthusiasm towards the potato industry. David and Barbara will still be active members within CPA and also at state level for the seed potato industry.

SEND US YOUR STORY IDEAS!

If you have a great idea for a potential article about local and international potato R&D projects, leading growers or industry news, let us know!

Contact us on 03 9882 0277 or communications@ausveg.com.au.

YOUNG POTATO PEOPLE

G'day again,

I hope things are going well for you and whatever stage of your season this finds you.

As the harvest season is starting to heat up in the Thorpdale area in Victoria, people are poised for the "busy" time of year. In saying that, it is sort of busier than the rest of the year.

This is a time where the number of workers increase around the area four-fold. The locals push to sell their produce, and get everything out before the cold winter hits and makes it impossible to get machinery into the paddock.

This is possibly the worst time of year to get sick. As I write this, I am recovering from a throat infection. I've almost completed a round of antibiotics, and I wouldn't pass a random drug test at a local sporting event after the amount of pain killers I've had to ingest to keep the body moving.

Our health seems to be something we take for granted until we find ourselves struggling to get out of bed one day. I know I'm guilty of eating poorly, and lacking in the exercise department at times. We all have the excuses that work comes first, and we don't have the time. Yet somehow we manage to get out fishing at times. Or manage to get down to the local for a few lemonades, and catch up on the gossip from around the area.

Your health is something that you need to take care of, and with the ageing farming population, it's something that will require more attention. It might be intimidating heading to the doctor's office to say that something has been bothering you, but it will be worth it when they sort you out. The best advice I ever heard for this instance was if you're a bloke, get a female doctor because they won't put up with your excuses.



If you know someone who really should go and get a check-up, don't be afraid to encourage them to do so. It doesn't mean you have to hold their hand while they are in the nurse's office, but it's important to start the conversation. Us blokes seem to be able to talk about anything, as long as it doesn't involve our health.

Stu.



@youngpotatopeps



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



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