| June/July - 2018 |

potatoes australia

| BRITTNEY CARUANA - NEXT GENERATION RESEARCH | NEW RESOURCE - POTATO BIOSECURITY MANUAL |
| SUPPRESSIVE SOILS - A NATURAL WEAPON IN THE FIGHT AGAINST POWDERY SCAB |

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EDITORIAL

There's always plenty to see at a Trade Show, and the upcoming event at Hort Connections 2018 is no exception. Sponsored by Fresh Markets Australia in partnership with the Central Markets Association of Australia, this year's Trade Show has a record number of exhibitors locked in from 18-20 June at the Brisbane Convention Centre, where delegates can forge new connections and learn more about cutting-edge products and services.

You can meet some of the AUSVEG team at our booth throughout the Trade Show, including AUSVEG CEO James Whiteside and our new National Manager – Public Affairs Tyson Cattle. This is a perfect opportunity for growers to raise any advocacy issues that AUSVEG can assist with and discuss the barriers that are affecting your ability to run a productive and profitable business.

There is also plenty on offer from the R&D project coordinators within our Science and Extension department, with National Tomato Potato Psyllid Coordinator Alan Nankivell on-hand to provide an overview of the latest developments in the surveillance and future management of this destructive pest, as well as the road ahead following the conclusion of the Transition to Management plan.

Lisa Brassington and Nikita Chawla will discuss a newly-launched cross-industry project that will develop a mobile plant pest surveillance network, which will tackle the major problem pests facing growers and farmers around the country. In addition, Callum Fletcher and Madeleine Quirk will also share information on implementing robust biosecurity practices on-farm, which play a significant role in protecting your crops from destructive pests and diseases.

Shaun Lindhe and Jarrod Strauch from our communications team will also be based at the booth for the duration of the Trade Show, providing a point of contact for information on our communications materials including InfoVeg resources. You can also sign-up to receive our magazines, e-newsletter and other industry updates.

Finally, if you have ever wondered what it would be like to star on the cover of this magazine or our sister publication *Vegetables Australia*, there will be a chance to test the waters at the AUSVEG booth, so make sure you stop by to check it out.

To prepare for Hort Connections 2018, we recommend having a look at the floor plan for the Trade Show, which can be accessed at hortconnections.com.au/exhibitors. We look forward to seeing you there!

VISIT THE TRADE SHOW AT HORT CONNECTIONS 2018

Monday 18 June: 6:30pm to 9:00pm.
Tuesday 19 June: 10:40am to 6:00pm.
(Happy Hour from 5:00pm).
Wednesday 20 June: 10:40am to 3:00pm.

Australia's biosecurity system received a major boost in the 2018 Federal Budget, providing some peace of mind to Australia's primary producers.

A total of $121.6 million was allocated to biosecurity-related services and activities, including $86.8 million funding over four years to develop national action plans for priority pests and diseases; increase the Commonwealth's response capacity during incursions; strengthen biosecurity import conditions; and trial new technologies to increase the efficiency of biosecurity clearance of freight and passengers.

In 2019-20, an additional $6.6 million will be invested in research and development, national coordination and key infrastructure to manage the impact of established pests and weeds. Meanwhile, $14.8 million over five years will cover the cost of biosecurity clearances to address estimated passenger growth at all international air and sea ports from 2017-18.

AUSVEG welcomes the Federal Government's recognition of the need to maintain strong borders to safeguard Australia's agricultural industry from the ever-growing threat of foreign pests and diseases.

This funding will ensure that the nation's entire biosecurity system is better equipped to prepare for potential pest and disease incursions, regularly monitor our borders and effectively manage any future incursions. In the meantime, AUSVEG will continue working with all levels of government, industry and growers to do our part in maintaining Australia's reputation for producing high quality, clean and fresh produce.

On the topic of biosecurity, this edition of *Potatoes Australia* includes a copy of the *Potato Growers' Biosecurity Manual*, which was developed by Plant Heath Australia and endorsed by AUSVEG.

The manual is divided into six sections of biosecurity practice that will assist potato growers in minimising the risk of pests and diseases affecting their farm, while also providing an in-depth explanation of Australia's biosecurity system from pre-border to post-border procedures. I encourage all potato growers and industry stakeholders to read this manual, which can also be accessed online. More information can be found on page 19.

Finally I'd like to remind all growers that, from 1 July 2018, if you sell your produce at the retail level, your products must be labelled according to the *Country of Origin Food Labelling Information Standard 2016*. This is an important step in providing transparent information to consumers about where their food comes from.

The Australian Competition and Consumer Commission (ACCC) has provided AUSVEG with information about the requirements, which can be found on page 21.

I would also like to take this opportunity to remind growers of their obligation to have a valid Horticulture Produce Agreement in place with each business that buys or sells your produce; if not, you may be trading illegally and the ACCC has the authority to take further action.

W Bulmer

Bill Bulmer
Chairman
AUSVEG

After many months of preparation, the Hort Connections convention is about to arrive.

A joint initiative between AUSVEG and the Produce Marketing Association Australia-New Zealand (PMA A-NZ), Hort Connections 2018 will be held from 18-20 June at the Brisbane Convention Centre.

Encompassing the vegetable, fruit, nut, cut floral and nursery sectors, it is expected to attract over 3,000 local and international delegates to firmly cement its position as Australia's leading horticulture event, and one of the major events on the national agricultural calendar.

One of the highlights of Hort Connections is the Trade Show, which will be located at Exhibition Hall 1/2. In 2018, there will be 190 exhibitors and close to 300 booths, almost double the size of last year – which signals the desire for the supply chain to connect with a range of potential and existing customers in one central location.

There will be plenty of opportunities to network within the Trade Show over the three-day conference. The Trade Show will be open from 10.40am each morning, with a 'Happy Hour' between 5-6pm on Tuesday 19 June, giving every delegate the chance to meet up and discuss the latest on offer in industry technology, innovation and services.

In addition, a range of plenary and industry-focused speaker sessions will be held, where delegates will learn from the industry's leaders on a range of topics. Tuesday's plenary session includes a presentation from global futurist Chris Riddell, who will present delegates with his insights on emerging trends from around the world, while Drew Yancey from the United States will discuss efficiencies in the fresh produce and cold chain industry.

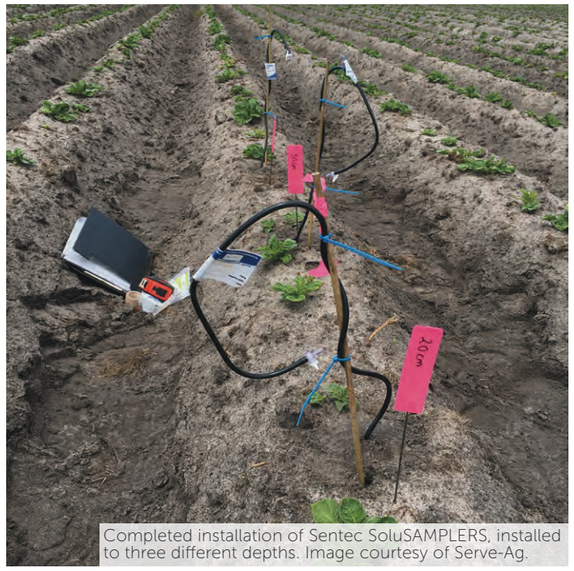
On a personal note, I look forward to joining my PMA A-NZ counterpart Darren Keating, author Julian Cribb and the University of Queensland's Jimmy Botella for a 'State of the Industry' discussion on the key issues facing Australian horticulture during Tuesday's plenary session.

Another important event is the Women in Horticulture presentation and networking session to be held on Wednesday 20 June. This is a celebration of the contribution of the industry's female growers and industry members, and of course all delegates are very welcome to attend.

Finally, I would like to congratulate all of the nominees for the National Awards for Excellence, which will conclude the conference program. The nominees include 69 growers, businesses, researchers and industry representatives across 10 award categories, including the highly-coveted Grower of the Year award. This diverse pool of nominees has been recognised by their peers for their achievements and ongoing commitment to the Australian horticulture industry across many sectors. I wish all nominees the best of luck, and look forward to seeing you at Hort Connections 2018.

James Whiteside

James Whiteside
CEO
AUSVEG



Completed installation of Sentec SoluSAMPLERS, installed to three different depths. Image courtesy of Serve-Ag.

UNDERSTANDING THE IMPACT OF GROUNDWATER ON POTATO CROPS

A new project examining the effect of groundwater quality on nine varieties of potato crops located across South Australia has just completed its first year. Serve-Ag Technical Agronomist and Project Lead Julie Finnigan spoke to *Potatoes Australia* about the findings.

In South Australia, the loss of agricultural production to dry-land salinity is estimated at $47 million per annum. Similarly, salinity threatens groundwater districts, and communities that rely on irrigated farming overlap with South Australia's major potato growing regions.

National average potato crop yields are around 40 tonnes per hectare, however saline- and groundwater-affected areas such as the Mallee in South Australia may struggle to achieve half of this tonnage. To improve potato yields in these marginal areas, it is essential to understand current conditions and practices in order to identify practical and cost-effective management practices that may be recommended to facilitate change.

A project is currently underway to identify regional groundwater variability within three major potato growing regions of South Australia including the Mallee, the South East and the Northern Adelaide Plains. It aims to understand how this, combined with specific site conditions, affects the growth and health of potato plants and associated quality and yields.

Impact of groundwater quality on management of centre pivot grown potato crops (PT16001) is a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds. It is being coordinated by E.E. Muir & Sons, trading as Serve-Ag.

A GROWER FOCUS

Serve-Ag Technical Agronomist and Project Lead Julie Finnigan is working with both fresh and processing potato growers on this project. She said it was initially designed to run for one potato growing season but this could be extended.

"Upon review of the data and recommendations provided, a further two years may follow where implementation of recommended management practices or nutritional programs may be trialled," Ms Finnigan said.

"Ultimately this project hopes to outline the major limiting factors to potato production across the three regions, with the ability to provide practical solutions to overcome or manage these constraints whereby production can be lifted with minimal cost for growers in South Australia. Beyond South Australia, if the project is successful, a similar approach could be used Australia-wide for all potato growing regions in marginal soils and/or with salt-affected irrigation water supplies."

Three growers within each of the three regions were approached to be involved in this project.

For each grower, a set range of data is collected which focuses on irrigation/groundwater quality; soil nutrition and physical parameters; and plant nutrition and health.

"On top of this, current irrigation and fertiliser management practices are discussed with growers to help identify potential areas for change that will help lead to increases in potato yields," Ms Finnigan said.

"All data collected is confidential, so while no specific details will be promoted, potato growers and the wider industry will benefit from regional summaries and the identification of key monitoring and management practices that will flag areas of potato production that could be addressed to help maximise yields and pack out."

All growers across the three regions have now completed their first year of monitoring and assessment.

"While a final first year summary report is yet to be completed, we are seeing regional variations across water quality and site conditions that do affect potato production," Ms Finnigan said.

"As such, tailored nutritional management strategies will be recommended to help maximise plant health and tuber development that should help to increase potato yields. The use of satellite imagery and EM38 mapping has also helped to identify site variability and areas that may be at risk of production loss. General recommendations outlining best monitoring and management practices will provide generic options for many growers to follow."

While this project will enhance the knowledge of local potato growers and provide them with the latest tools and resources to better manage their crop productivity, there will be wider benefits for the industry.

"The results of this project will also contribute to the Potato Processing Strategic Investment Plan vision, through longer term improvements to Australia's productivity and competitiveness in overseas markets," Ms Finnigan said.

"This in turn should help to lower costs via improved strategic management, collectively assisting to lower the ever-increasing level of imports."

INFO R&D

For more information, please contact Julie Finnigan on 03 6391 4650 or at jfinnigan@serve-ag.com.au.

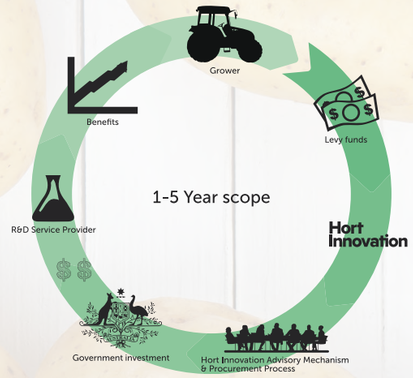
This project has been funded by Hort Innovation using the fresh potato and potato processing research and development levies and contributions from the Australian Government.

Project Number: PT16001

Hort Innovation

THE FRESH POTATO R&D LEVY AT WORK

STRATEGIC LEVY INVESTMENT



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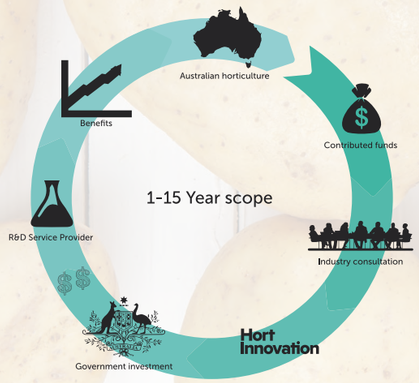


WHO PAYS THE FRESH POTATO R&D LEVY?

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 the 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.**

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).

Hort Innovation Strategic levy investment | POTATO – FRESH FUND

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

RESEARCH SUPPORTS SUSTAINABLE COMMERCIAL POTATO PRODUCTION

The Tasmanian Institute of Agriculture is in the final stages of a one-year, levy-funded research project aimed to enhance the productivity and sustainability of Australia's potato industry through improved soil health management practices. *Potatoes Australia* outlines the key project outcomes and the benefits it will provide to growers.

A research team at the Tasmanian Institute of Agriculture (TIA) has potato soil health in the spotlight. The multidisciplinary research team includes soil scientists, molecular biologists, agronomists, engineers and plant pathologists from TIA, plus Leigh Sparrow (a former TIA senior soil scientist who is now a private consultant). They are critiquing scientific studies and the real world experiences of growers to tease out the best strategies for sustainable soil health and where new research is needed.

TIA scientist Dr Robert Tegg says that while there is an enormous amount of information on soil health, extracting what is relevant to the potato industry is an interesting challenge, partly due to the inherent nature of potato production.

The first component of the project included an in-depth literature review aimed at understanding all the interacting components of soil health – the physical, biological and chemical factors – which are all essential in creating robust and productive soils that are able to sustain commercial potato production. The literature review, to be published in an international peer-reviewed journal and included as a component of the final report, was used to inform the workshop components of the project.

Navigating the wealth of soil health information and identification opportunities (PT16003) is a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

PROJECT OUTCOMES DERIVED THROUGH CONSULTATION WITH RESEARCHERS, INDUSTRY AND GROWERS

A key facet of the project was an interactive academic workshop where invited national and international experts and potato industry representatives discussed soil health. Key components on day one included identifying the critical industry priorities and existing knowledge and tools that industry can use, what soil health tools the industry would like and how soil health practices should be best communicated to growers. Day two focused on thinking into the future and identifying tools and technologies that might benefit industry the most, followed by a scoping of potential prospective R&D areas. With many alternative views from the 18 attendees over the two-day workshop, it was good that the group was able to embrace some key recommendations and/or concepts that should drive sustainable potato production into the future.

One of the key guests, Dr Bob Larkin – a renowned soil health expert from Maine in the United States – indicated the "aim towards sustainable production systems was a world-wide problem and a key concept that will also underpin potato research programs being developed in the USA".

Interviews with other industry personnel and a range of growers (fresh, processing and seed) throughout the year consolidated many of the findings and ideas of the workshop and ensured that outcomes would have grower and industry relevance.

Some of the key ideas and talking points out of industry discussions were:

- Growing potatoes is a high input crop and also involves a lot of soil disturbance, particularly at planting and harvest.
- Practices such as cover cropping and reducing tillage and traffic, particularly when soils are wet, can help to improve soil health. These practices are not revolutionary, however the way they are implemented as a 'farming system' concept was essential to long-term soil health. This means that farming practices outside of the potato crop, such as cover crops or long-term pastures, are likely to have the biggest positive impact on soil health.
- Improving physical soil health allows better root growth and more efficient use of nutrients and water. A soil with higher organic matter is more stable and less prone to water and wind erosion, keeping valuable soil on-farm.

HEALTHY OPPORTUNITIES

The project also identified that there can be industry scepticism about soil health practices and therefore barriers to adoption. Demonstrating benefits (including financial) of incorporating soil health practices are essential.

"A healthy soil can offer more opportunities and flexibility for growers. If the soil is more robust and resilient it may allow for shorter rotation times between potato crops, which would be a massive incentive for growers," Dr Tegg said.

"Some of the innovative growers are already experimenting with such approaches. Likewise, robust, healthy soils may give flexibility to increase planting and harvest windows, which provides more options for growers."

A key finding of the project was that grower uptake of soil health practices is increased when farmers are already using and demonstrating the benefits of these practices. The project team has been interviewing potato growers from different regions and farming systems, and will bring their stories of managing soil health to the wider potato growing community.

KEY CONCEPTS FOR FUTURE R&D WORK

According to Dr Tegg, a key recommendation of the project is that, "future soil health research needs to be multidisciplinary (plant pathology, soil science, agronomy, engineering), use a systems approach and track changes over longer time periods".

Additionally, it is important to differentiate between different agro-ecological regions and identify the local drivers of yield and soil decline, as different regions may require different research.

Perhaps the greatest unknown and the area for greatest potential benefit is within the microbiology field. Improved understanding of soil communities and identifying markers of high-yielding, suppressive and healthy soils would have great research and grower benefit.

"Those concepts are only a small snapshot of the overall project recommendations. It will be up to the potato industry to decide if those soil health concepts/projects receive future investment," Dr Tegg said.

KEY OUTCOMES FOR GROWER UPTAKE

Key messages from Project PT16003 will be provided to growers through fact sheets and short grower videos. Some key points include:

- Encourage quick remediation after potato harvest, ripping soils while moist and getting green cover back on the paddock quickly.
- Use grazing as a tool for crop residue removal, but exclude from cropping ground when the soil is wet.
- Build organic matter through the use of cover crops and/or pastures; this aids erosion control, improves workability and makes paddocks easier to prepare, and reduces powered implement demands.
- Reduce compaction: keep grass in headlands and laneways, consider drainage options, direct drill cover crops and keep trucks off paddocks.
- Soil testing and diagnostic tools – monitor levels of organic carbon (OC) over time to see how paddocks are tracking long-term. Likewise, new tools such as PreDicta Pt can be used to track key soil pathogens.
- Think long-term: 5-10 year timeframes for soil improvement and planning.
- Remember that potato cropping is inherently destructive (particularly at planting and harvest) so think of practices outside the potato crop (e.g. cover crops/pasture) that can enhance soil health and provide a head start for your next potato crop in the rotation.

POSSIBLE FINANCIAL BENEFITS FOR GROWERS ADOPTING SOIL HEALTH PRACTICES AND CREATING ROBUST SOILS

- Rotation length between successive potato crops reduced from five to three years (financial benefit).
- Robust, healthy soils may give growers flexibility to increase planting and harvest windows.
- Greater return on leased paddocks that have had prior soil conservation practices compared to degraded, unhealthy, over-cropped sites.
- Value on-farm and throughout the food chain (retailers – image of sustainable practices).

INFO R&D

For more information from this project, please contact Dr Robert Tegg at robert.tegg@utas.edu.au.

This project has been funded by Hort Innovation using the fresh potato and potato processing research and development levies, co-investment from the Tasmanian Institute of Agriculture and contributions from the Australian Government.

Project Number: PT16003

Photography by Iain Bond.

CONTINUING OVER A CENTURY OF FAMILY FARMING

A love of the quiet life has kept potato grower James Zadow on his family's South Australian property for over 30 years. Three years ago, James discovered Integrated Pest Management (IPM) practices which have proved beneficial to his potato growing operation. James speaks to Michelle De'Lisle about IPM, and other measures he has taken to promote on-farm sustainability.

Most days you will find James Zadow working on his 100-acre potato growing operation and enjoying the solitude of living in regional South Australia.

A fourth-generation grower, James runs Kaluna, which is nestled on the banks of the Murray River in Caloote, around 30 kilometres north of Murray Bridge. The farm was originally a wheat and sheep farm, until James' parents Ian and Christine decided to start growing potatoes 30 years ago. And the rest is history.

Today, James – supported by his wife Necia – share farms around 600 acres of grain a year. He also grows about 150 acres of hay annually for a dairy farmer in addition to potatoes.

AN INTEGRATED APPROACH

Three years ago, James attended a workshop facilitated by Dr Paul Horne and Angelica Cameron from IPM Technologies. Integrated Pest Management (IPM) is an effective combination of chemical, cultural (such as farm management practices) and biological methods to keep weeds, insect pest numbers, disease pressure and other crop production problems low enough to prevent significant economic loss.

While James was always mindful to avoid spraying crop protection products often, he says that adopting an IPM approach has been beneficial for his potato growing operation. He uses common beneficial insects such as lacewings and ladybeetles to assist with this process.

"We've always erred on the side of caution when we spray for insects. We were almost doing an IPM plan before we went to the workshop, because it was very rare that we sprayed for insects. We usually spray when we spray off to kill any potato moth that's around," he says.

"It's like any chemical. When you overuse it, it loses its effect. The less that you have to spray, the most effective it is when you do spray.

"Certainly for the last three years, we've been sticking to IPM and it seems to be working. We're certainly not losing any quality in our finished product because we're not spraying for insects earlier."

This approach has also saved James both time and money.

"It's not a huge cost with the amount of spuds that we grow, but any time you save and any money you save is always a bonus."

BUILDING SUSTAINABILITY

While IPM has been an on-farm focus for James, he also maintains the ongoing sustainability of the farm by having regular soil tests and sap tests (testing for nutrients on the plant). A leaf analysis is conducted to record which nutrients his crop may be lacking and which are in abundance.

Other on-farm practices include rotating crops.

"We plant two crops under the one centre pivot (one after the other), and then we don't go back to that ground for six years, giving two crops a six-year break. It's worked for 30 years so hopefully that continues," James says.

Checking potato seed for diseases is another priority, as is making sure machinery and equipment is clean when moving between farms.

"You can only be as careful as you can. The weather can be a big factor – if it just keeps raining or it gets too wet, you can end up with disease in the potatoes through no fault of your own," he says. Fortunately, with only 10-11 inches of rain in the region per year, James usually avoids this issue.

In addition, James regularly walks through the crops with Thomas Foods International Fresh Produce and agronomists from E.E. Muir & Sons – they provide ideas for fertilising and using beneficial insects in the crops.

"Basically you listen and learn as you go along. Even though you've been growing potatoes for 30 years, it doesn't mean you know everything," James says.

FAMILY TRADITION

The 113-year-old family-owned growing operation is set to continue into the future with James's son Jack indicating his willingness to return home to the farm following a three-month stint in Canada working in a vineyard.

James is proud of this rich family heritage, and points to Kaluna's transition from dry land and sheep to where it is today as an achievement.

"That was a big cost to set up all those years ago. I think the fact that we've been able to make the farm viable for 113 years – there wouldn't be too many people in Australia who have done that," he says.

"I'm 50. My son at this stage reckons he's coming home so that would be fantastic. That would be five generations; I guess being able to hang onto the farm as long as we have and make it viable is probably our biggest achievement – not just mine, but my father's and my father's father."

There are no plans to grow any other crops at this stage.

"We've got scope that we can extend and put in a couple more centre pivots with the land that we own," James says.

"If we can keep it small like it is, you don't have to hire people – you keep the profits and they go back to the family.

"We're not looking to be millionaires. We're just looking to be comfortable doing what we're doing – and so far it's working."

WHAT IS INTEGRATED PEST MANAGEMENT?

Integrated Pest Management (IPM) is an ecosystem-based approach that focuses on prevention or suppression of pests through a combination of methods such as biological control, habitat manipulation, modification of cultural practices, use of resistant crop varieties and targeted chemistry.

How to use IPM in potato crops:

- Avoid the use of broad-spectrum insecticides before crop senescence or spray-off.
- Avoid the routine use of any insecticides.
- Utilise naturally-occurring biological control agents (such as lacewings, damsel bugs, hoverflies and parasitoid wasps).
- Learn to assess the impact of beneficial species and monitor these as well as pests.
- Employ cultural controls such as soil and irrigation management and planting of clean seed.
- Apply selective insecticides only when required, based on monitoring.

IPM Technologies is currently delivering a national potato and onion IPM extension project. This four-year program offers hands-on, practical training for potato and onion growers and agronomists in all major production regions around Australia.

An IPM extension program for the potato and onion industries (MT16009) is a strategic levy investment under the Hort Innovation Onion, Fresh Potato and Potato Processing Funds. This project has been funded by Hort Innovation using the onion, fresh potato and potato processing research and development levies and contributions from the Australian Government.

For more information or to get involved in the project, please contact Dr Paul Horne on 0419 891 575 or at paul@ipmtechnologies.com.au.

Planning for next year's potato crop starts now. Image courtesy of Rhys Beattie.

BRINGING THE FUTURE TO THE PRESENT: PLANNING AHEAD

In this edition of *Potatoes Australia*, Simplot Farming Agronomist Angus Galloway discusses what growers can do to prepare for next year's potato crop, including soil testing, inspecting paddocks and developing a suitable planting schedule.

In southern Australia, as the days draw in and the end of harvest approaches, there are a few things that can be done before the cold really sets in that will be helpful in setting up a positive outcome for next year's potato crop. Soil testing, cover cropping, DNA testing, adequate drainage planning and preparation for good soil structure are all steps that can be taken now to minimise risk and contribute to ensuring a worthwhile potato crop next season. Future planning and the implementation of solid management practices are key to the success of next season's potato crop outcomes.

Soil testing is an important part of potato cropping for both nutrition and soil DNA for pathogens. Nutrient testing in the autumn allows any lime or dolomite applications to be applied to get the full benefit by the potato crop. If you also have the ability to select your paddock for the following year's crop, the 2020 crop will also benefit from application this autumn.

DNA testing for soilborne pathogens (PreDicta Pt) is critical for primary producers who are growing a crop of seed potatoes, and also advisable for any growers with a processing end point. This test will give you a risk threshold for common potato diseases and allow you to change management practices accordingly; for example, planting a cover crop to clean up nematodes, or changing variety or plant timing to minimise or eliminate powdery scab.

DRAINAGE DISCUSSIONS

Water logging is a silent killer of potato yields and productivity – whether this occurs through a complete wipe-out due to pink rot or a reduction in yield and quality resulting from powdery scab. The autumn and winter period is the perfect time to inspect next year's paddocks to see where the water is holding and where pastures are struggling from wet feet. Commit these areas to memory and when it comes time to work ground and plant potatoes, leave these as exclusion areas and do not plant them – you will see the benefit in the yield and quality when harvesting next year's crop.

If particularly wet areas of the paddock can be managed through drainage, now is the time to get a plan organised. The planning of drainage is becoming more accurate and effective as technology improves. Drainage planning can be done via EM38 mapping or elevation mapping. If you are already equipped with RTK GPS guidance in your tractors, then you already have the elevation data for your paddocks. There is a great deal of information and assistance available to utilise elevation data to create drainage plans. Ask your local agronomist to help you find a provider in your area and make the most of this valuable data.

Soil structure and drainage are key pillars in a highly productive potato system. During winter, these can easily be compromised by grazing livestock during wet periods and working ground when conditions are not favourable.

PLANNING THE KEY

Snack Brands Australia Agronomist Michael Hicks recommends that for those crisping growers with contracts to supply fresh product over a long period, it pays to develop a planting schedule that's established based on contracted supply timeframes and tonnage. Weather may affect your planting plans, but focus on managing the factors that are in your control.

> The autumn and winter period is the perfect time to inspect next year's paddocks to see where the water is holding and where pastures are struggling from wet feet.

It's also a good time to talk to your seed supplier so they can start planning to meet your requirements.

Finally, potatoes are a high input and high returning crop. By being organised and undertaking the basic management practices now (in the pre-season), you are minimising the risk of avoidable problems and setting yourself up for a highly rewarding potato crop next season.

INFO R&D

For more information, please contact Angus Galloway on 0419 835 290 or at angus.galloway@simplot.com.au. To provide your feedback, contact Anne Ramsay on 0400 368 448 or at ppaa.eo@gmail.com.

L-R: Professor Jonathan Jones and postdoctorate students Kamil Witek and Marina Pais. Images courtesy of Professor Jonathan Jones.

Blight symptoms on a leaf of GM Maris Piper.

Overview of the field with dead control plants next to their resistant GM potatoes.

TAKING STEPS TOWARDS LONG-TERM LATE BLIGHT RESISTANCE

Globally, late blight (*Phytophthora infestans*) is the most destructive pathogen of potatoes, and has been identified as the cause of potato famines in Europe dating back to the 1800s. Professor Jonathan Jones from The Sainsbury Laboratory in Norwich, England is investigating ways that Maris Piper potatoes can be genetically modified to develop late blight resistance. Heather Briggs reports.

Late blight is one of the most destructive diseases of potatoes worldwide, estimated to cause annual losses of 15 per cent of global potato production. According to the Agriculture and Horticulture Development Board (AHDB Potatoes), it costs the British potato industry an estimated £50 million (approximately AUD$87 million) annually in crop protection products in a typical blight pressure season.

According to Professor Jonathan Jones of The Sainsbury Laboratory in Norwich, United Kingdom, genetic modification has real potential to offer growers agronomic benefits, particularly in terms of developing late blight resistance.

Against a background of aggressive potato late blight strains, combined with increasing losses of chemical plant protection tools, crops carrying genes that confer increased disease resistance would help to take the pressure off growers.

These crops would facilitate optimised Integrated Pest Management, and although Professor Jones does not envisage an end to fungicide applications, they may not need to be added at the present rates and frequencies.

FIGHT AGAINST BLIGHT

Professor Jones is leading a team which has developed a new, improved Maris Piper potato with a stack of three genes that confer resistance to late blight.

These lines successfully underwent field trials in the United Kingdom in 2017 and are on track to help fight the new blight strain 37_A2, which has established itself in Northern Europe over the last few years. Fit, aggressive, and insensitive to the fungicide fluazinam, this strain comprised 24 per cent of UK samples identified in 2017 by Dr David Cooke from the James Hutton Institute, who carries out blight monitoring for the levy body AHDB Potatoes' 'Fight Against Blight' campaign. It has also been identified in tuber blight.

"Each blight resistance gene can be considered a mode of action, and relying on just one mode of action is a risky strategy," Professor Jones said.

"As we have successfully inserted three blight resistance genes, there will be three modes of action against the pathogen. Fungicide applications will still be used to control early blight (*Alternaria*), so these will provide a fourth mode of action. As a result, it will be more difficult for the pathogen to mutate so it can evade all of them and break the resistance.

"This combination should confer blight resistance for a good period of time."

He added that deploying blight-resistant genes can be compared to antibiotic use, where reliance on a single mode of action eventually selects for mutations that select for strains that resist the antibiotic.

Moreover, the timeliness of fungicide spraying when blight pressure is high and inoculum is present will not be so crucial, because the grower will be able to wait until the land is dry enough to take the weight of the spraying machinery without risking the loss of valuable crop.

"Even if the pathogen does get onto the crop, it will not be able to multiply as quickly as it would on a non-resistant variety, which will help slow down the speed of spread," Professor Jones said.

MODIFYING A POPULAR VARIETY

One of the benefits of Professor Jones' projects is that the genetically modified potato will be the UK's most-grown variety, Maris Piper – but with these additional traits. This is possible because adding specific genes for resistance does not affect the other characteristics of the variety, Professor Jones explained.

Using similar methods, he aims to incorporate resistance to potato virus Y and bacterial wilt (*Ralstonia solanacearum*), and perhaps even potato cyst nematode.

The modified Maris Piper will also carry traits that will enhance tuber quality; by silencing the chemical compound polyphenol oxidase, these potatoes will be less prone to bruise damage.

"This will make it easier to ensure the potatoes reach customer quality specifications and will help reduce wastage at harvest, particularly in difficult years," Professor Jones said.

In addition, by silencing an invertase gene, the potato will have lowered levels of reducing sugars and cold-induced sweetening, reducing blackening and formation of acrylamide when cooked at high temperatures. Invertase is an enzyme that converts sucrose to a mixture of glucose and fructose.

NATURALLY-OCCURRING GENETICS

This project is not Professor Jones' first work with genetic modification in potatoes. In 2010-12, a blight resistance gene from *Solanum venturii* was inserted into the variety Desiree. This gene conferred resistance in the field and the United States-based company Simplot has licensed this gene for commercialisation in the US.

Professor Jones pointed out that natural genetic modification has been going on for thousands of years.

"*Agrobacterium* has evolved to insert DNA into plant cells, so there is nothing unnatural about a crop that has been transformed by *Agrobacterium*," he explained.

"*Agrobacterium* naturally introduces DNA that alters the plant's hormones and causes galls, and modifies the plant's own metabolism so that it supports the bacterial growth. For example, sweetpotato is the result of a natural event that introduced *Agrobacterium* DNA into the crop plant.

"What we are doing is designing the DNA that goes into the *Agrobacterium* and then using the DNA transfer activity of these bacteria to insert our desired genes into the plant. The technology is easy, but current regulations in Europe mean bringing to market these solutions to crop problems is slower and more expensive than it needs to be."

INFO R&D

For more information, please visit The Sainsbury Laboratory at tsl.ac.uk.

FIGHT AGAINST POTATO DISEASES RECEIVES A HUGE BOOST

There is a new weapon in the battle to control *Alternaria solani*, commonly known as target spot or early blight in potatoes.

In April, Syngenta's new foliar fungicide MIRAVIS® gained registration from the Australian Pesticides and Veterinary Medicines Authority (APVMA) to control target spot (early blight) in potatoes. The product can also be used to control powdery mildew in grapes and black leg in canola.

Syngenta Technical Services Lead Dave Antrobus said the foliar fungicide offers potato growers a chance to "take disease control to a new level".

"During the five years of trialling the fungicide in potatoes, it has shown superior activity to all other products currently on the market for target spot control," he said.

KEY GROWER BENEFITS

1. Control of target spot in potatoes.
2. A reduction of target spot infections, prolonging retention of the green leaf area and helping to maximise yield potential.
3. Rainfast within one hour, allowing growers greater flexibility with irrigation management.
4. Highly compatible, allowing tank mixes to deliver one pass disease and insect control.

Australian and New Zealand potato growers are the first in the world to access MIRAVIS. The active ingredient, pydiflumetofen, has activity against many of the world's most important fungal diseases. This brand is expected to have a large global reach in the coming years with more registrations across many different crops and diseases.

Australian potato growers can now purchase the product through their usual distribution network.

FOCUS ON STORAGE DISEASES

Syngenta also recently gained APVMA registration for its new fungicide seed treatment, VIBRANCE® PREMIUM, which is expected to be available for purchase from September 2018.

A successor to MAXIM® 100FS, this treatment brings activity against six diseases to assist potato growers with early crop establishment. It can be applied pre-storage or pre-planting and offers control of the main storage diseases including dry rot and gangrene, as well as helping to control skin blemish diseases such as black dot, silver scurf, *Rhizoctonia*/black scurf and suppression of common scab.

INFO

For more information, please visit syngenta.com.au.

HAS AUSTRALIA ESCAPED A 'BULLET'?

In this edition, AUSVEG Biosecurity Adviser Dr Kevin Clayton-Greene discusses Australia's natural strengths in the battle to limit the spread of pests and diseases, and outlines how the potato industry can set the right example for the general public to assist in this process.

At the time of writing, it appears that we have not found the 'zebra chip'-causing bacteria (*Candidatus* Liberibacter solanacearum; CLso) in the tomato potato psyllid (TPP) found in Western Australia.

If this is the case, then it is a cause for some relief; however it is also true that there is no guarantee that sometime in the future it may be discovered or arrive by some means. Currently, the confidence that we do not have CLso in Australia in TPP is very high and this is important for future trade prospects. This may also be the case with brown marmorated stink bug.

What is concerning is that among most people with whom I speak, there is often an almost resigned air of expectation that TPP will find its way to the eastern states. This is not only unfortunate, it is also not necessarily a given. There are a number of pests and diseases found in either Western Australia or the eastern states that are not found in both parts of Australia.

A UNIQUE COUNTRY

Compared with other parts of the world, Australia is unusual in that the horticultural production areas on the eastern and western seaboards are separated by a couple of thousand kilometres of semi-desert and thus few natural corridors for pest/disease migration. A case in point is the Mediterranean fruit fly (Medfly) which has been in Western Australia for a number of years, but has still not established in the eastern states. Although incursions are detected in South Australia every year – normally in urban situations, which suggests human-mediated transport – the pest is still not established in South Australia. Of course, the converse occurs for Queensland fruit fly (Qfly). In potatoes we can think of late blight, bacterial wilt and potato cyst nematode which are also not ubiquitous in Australia.

Most other countries in the world do not have this natural barrier and it is something which Australia should cherish.

SETTING THE RIGHT EXAMPLE

The point of this discussion is that there is nothing inevitable about the spread of pests and diseases. While it is appropriate that preparations should be made in case this happens, it is also true that if spread is accepted as inevitable, then a degree of carelessness or lack of rigour could occur. The attitude of 'it will happen anyway, so why should I be bothered?' is a real possibility among the public and also producers. The consequence is a self-fulfilling prophecy.

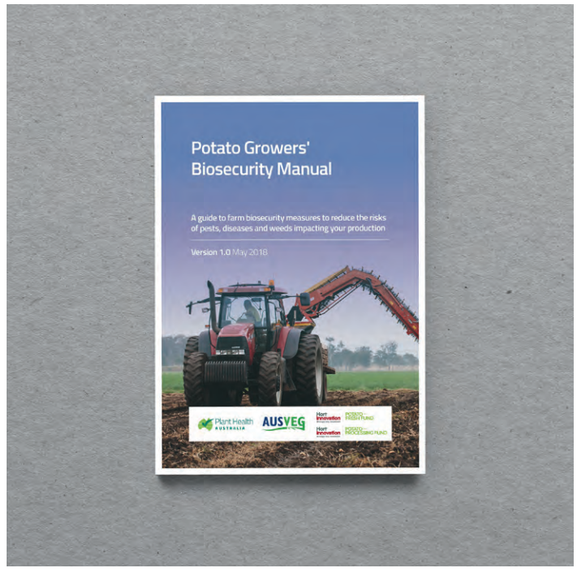
It is therefore important that we do not allow ourselves to be duped by this 'inevitable' prophesising but rather celebrate the fact that so far we are free of CLso. We are doing everything we can to both stop the spread of TPP and also CLso through supporting and maintaining appropriate control measures. If we (in industry) do not act appropriately, we can hardly expect the public to behave otherwise.

While we cannot be responsible for the actions of others, by setting an example, we can help bring biosecurity just that little bit more into the public consciousness.

> The point of this discussion is that there is nothing inevitable about the spread of pests and diseases.

INFO R&D

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



POTATO GROWERS' BIOSECURITY MANUAL: AN ESSENTIAL GUIDE FOR THE POTATO INDUSTRY

The *Potato Growers' Biosecurity Manual* was recently released by Plant Health Australia, supported with funding from Hort Innovation. The manual is a guide to farm biosecurity aimed at all stakeholders in the potato industry. Madeleine Quirk reports.

The *Potato Growers' Biosecurity Manual* is a guide to farm biosecurity measures to reduce the risk of weeds, pests and diseases impacting production. It was developed by Plant Health Australia (PHA) with consultation from AUSVEG as well as potato growers across New South Wales, Victoria and South Australia.

The manual is designed for use by potato growers and their staff, as well as contractors, processors, researchers and consultants working in the potato industry. Specific advice is given on what potato producers need to be aware of, and what measures they should be taking on their farm to reduce biosecurity risks.

The manual is separated into six areas of biosecurity practice that will help potato growers safeguard their farm from biosecurity risks. These are: cleaning equipment and vehicles and restricting movement of vehicles and people from production areas; farm inputs; production practices; farm outputs; feral animals and weeds; and training, planning and recording.

A broader explanation of Australia's biosecurity system, including pre-border, at the border and post-border biosecurity procedures, is also provided in the manual. The Australian Government manages pre-border and at the border procedures and regulations. It is, however, the responsibility of all Australians, including potato growers, to reduce and eliminate the risk of post-border biosecurity threats where possible.

COPIES NOW AVAILABLE

As the Peak Industry Body for vegetable and potato growers, AUSVEG has endorsed the *Potato Growers' Biosecurity Manual* and a copy has been included alongside this edition of *Potatoes Australia*. Additional copies can be made available through AUSVEG by contacting Biosecurity Officer Madeleine Quirk on 03 9882 0277. An electronic copy will also be made available on the Plant Health Australia website (planthealthaustralia.com.au), the Farm Biosecurity website (farmbiosecurity.com.au) and the AUSVEG website (ausveg.com.au).

The project was supported with funding from Hort Innovation using the fresh potato and potato processing research and development levies and contributions from the Australian Government. For further information on the project or the manual itself, please contact Plant Health Australia on 02 6215 7700 or biosecurity@phau.com.au.

INFO R&D

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

For further information, contact AUSVEG Biosecurity Officer Madeleine Quirk on 03 9882 0277 or madeleine.quirk@ausveg.com.au.

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

BUILDING BIOSECURITY CAPACITY IN REGIONAL COMMUNITIES

On Wednesday 2 May 2018, Vegetable Industry Development Officer for Gippsland Shayne Hyman, in collaboration with Hort Innovation, RMCG, Agribusiness Yarra Valley, and AUSVEG, hosted the *Biosecurity Capacity Building in Regional Communities Forum*, an inaugural forum which sought to increase awareness of plant biosecurity and strengthen the role of local government in response to biosecurity threats.

Dr Jessica Lye described the Australian biosecurity system, stages of an emergency plant pest response and the increasing threat of exotic pests coming to Australia's shores as a result of increased globalisation. Lavinia Zirnsak from the Department of Economic Development, Jobs, Transport and Resources, outlined the Victorian Government's role in an incursion response and provided details about the Emergency Plant Pest Response Deed and PLANTPLAN.

Next, AUSVEG Biosecurity Coordinator Callum Fletcher discussed his experiences during the tomato potato psyllid (TPP) incursion in February 2017. Callum highlighted the steps involved in the TPP response: the detection phase, the response phase and the Transition to Management phase.

The final speaker, Yarra Valley Regional Fruit Fly Coordinator Bronwyn Koll, explained why the Queensland fruit fly is a threat to the Yarra Valley and the difference between exotic and endemic cases of fruit fly. The forum was a valuable opportunity for growers and representatives from local councils and the Victorian Government to learn about biosecurity threats, and to discuss future preparedness with other likeminded individuals. Events such as these help to strengthen the capabilities of regional communities, and AUSVEG is keen to be involved in similar events in the future.

Symptoms of *Dickeya* in a potato crop. Image courtesy of Michigan State University.

Symptoms of *Dickeya* in a potato crop. Image courtesy of Michigan State University.

Severe symptoms of *Dickeya* in a potato crop. Image courtesy of the Western Australian Department of Primary Industries and Regional Development.

ROLE OF CERTIFIED SEED IN PREVENTING BLACKLEG

Around the world, blackleg of potato is caused by several species of bacteria that can be carried and transmitted through seed tubers. So, to manage this disease it is essential to have a good seed potato certification scheme and to use clean seed to prevent this disease. *Potatoes Australia* spoke to Agriculture Victoria Research Scientist Dr Rachel Mann and ViCSPA General Manager Dr Nigel Crump about the presence of *Pectobacterium* in Australia, and how potato growers can identify and manage blackleg disease.

Bacteria such as *Pectobacteriu*m and *Dickeya* spp. were previously known as *Erwinia* spp. and are associated with soft rot of potato tubers.

Blackleg disease can cause significant economic losses to the potato crop. The occurrence of blackleg depends very much on the growing conditions, with moist conditions favouring the disease.

SYMPTOMS OF BLACKLEG OF POTATOES – WHAT TO LOOK FOR

The main causal agent of blackleg in Australia is *Pectobacterium atrosepticum* although another bacterium known as *Dickeya dianthicola* was discovered in Western Australia in 2017. Dr Rachel Mann, a Research Scientist in the Microbiology Group at Agriculture Victoria, has been assisting with the traceback of the disease.

Although the disease symptoms caused by the various blackleg-causing bacteria are, for the most part, indistinguishable, the bacteria differ in their biochemical and physiological characteristics which can only be determined in laboratory tests.

"Blackleg is something that people can readily identify in the field, although it is not possible to determine which bacteria is causing it," Dr Mann said.

On the plant, blackleg symptoms can be seen on the lower stem near the soil when it becomes blackened, and decayed, often with a soggy appearance. Infected plants in the field generally wilt and collapse. Early disease symptoms may involve plants yellowing and showing signs of stress. Tubers that are infected will often develop rots, but infected tubers can be also be produced that have no visual symptoms of disease, yet they may be infected with the bacteria.

MANAGEMENT OF BLACKLEG

Seed tubers are the most important source of inoculum in the blackleg disease cycle. Therefore, management of the disease largely relies on the use of certified seed. The development of certification schemes around the world originally was largely done to reduce the prevalence of blackleg in seed.

Seed certification has been extremely successful in managing this disease. The inclusion of tissue culture to produce clean seed potato stocks has reduced the build-up of infected seed stocks. This, coupled with the production of certified seed with limited generations (five generations) and robust field inspections, has significantly decreased the incidence of blackleg in Australia.

Dr Nigel Crump, General Manager of ViCSPA (an independent provider of seed potato certification) said there were very few cases of blackleg recorded in the ViCSPA certification scheme last year.

"The occurrence of blackleg tends to be seasonal and dependant of climatic conditions. Due to the use of clean seed, blackleg is not very prevalent in Australia," he said.

During harvest and storage operations, rotten tubers with blackleg can spread the disease to other tubers on rollers and conveyors. Tubers with wounds are susceptible to infection by the pathogen and free moisture on the surface of tubers can enhance the potential for rots to develop in the store. Therefore, good storage is essential to prevent rots in store. Allowing for wound healing, with the right temperature and humidity conditions, early in the storage period assists in preventing the occurrences of rots.

"As an industry, we have become better at managing blackleg as our handling and storage practices have improved," Dr Crump said.

But there is no room to become complacent; once a crop is infected there is not much that can be done. Prevention is the best and most cost-effective cure for blackleg and using clean certified seed potatoes is a key method of prevention.

"It can be a seasonal issue and the seed certification officers are well-trained in finding it. In this past season, we have been taking samples of plants showing signs of blackleg and have found that all samples, so far, have been diagnosed with the old common species of *Pectobacterium atrosepticum* which is not surprising," Dr Crump said.

"ViCSPA will continue to keep a close eye on blackleg and ensure that our certification system is using world's best practice for addressing blackleg."

Hygiene when cutting seed is vital in managing blackleg. All grading and seed cutting equipment should be cleaned and disinfected between seed lots and any rotten tubers should be graded out of the seed lots prior to cutting to reduce the spread and cross contamination within seed lots.

To reduce the risk of blackleg, it is important for growers to maintain a good on-farm crop rotation program. The blackleg pathogens generally have a short lifespan in the soil. Survival in the soil can be longer in association with plant material, including volunteers, but Dr Mann said the bacteria cannot survive in a crop rotation system of 3-8 years.

INFO R&D

For more information, please contact Dr Brendan Rodoni on 03 9032 7319 or brendan.rodoni@ecodev.vic.gov.au or Dr Nigel Crump on 03 5962 0000 or nigel.crump@vicspa.org.au

The topic for this article was selected following the results of the project, *A review of knowledge gaps and compilation of R&D outputs from the Australian Potato Research Program* (PT13013), a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

COUNTRY OF ORIGIN LABELLING: WHAT YOU NEED TO KNOW

In Australia, if you sell food at the retail level, your products must be labelled according to the *Country of Origin Food Labelling Information Standard 2016* (Standard) by 1 July 2018. The new country of origin labelling requirements are designed to help consumers make informed decisions about the foods they buy.

Under the Standard, the new 'standard mark' labels must be used for 'priority' foods that are grown, produced or made in Australia (and for priority foods that are packed in Australia). This includes fresh vegetables.

To comply with the Standard, labels on 'priority' foods must clearly show the percentage of Australian-grown or produced ingredients in the food product. The labels must also state whether the food was 'grown', 'produced', 'made' or 'packed' in Australia and include the kangaroo logo (note that the kangaroo logo cannot be used for food packed in Australia or for food grown, produced or made in other countries).

TIPS FOR PRODUCERS

- A food may only carry a 'Grown in Australia' or 'Produced in Australia' standard mark label if it contains exclusively Australian ingredients.
- Unpackaged foods, including fresh fruit and vegetables, don't need to be individually labelled with country of origin information. It will be sufficient if the appropriate label is displayed close to the product, for example, on a hanging sign or display card.
- Fresh fruit and vegetables in transparent packaging (e.g. plastic wrap or netting) can have their country of origin labels on the pack or displayed close to the product.
- Keep adequate records to back-up the claims you make about the origin of your products. You are required to keep records supporting a country of origin claim for 12 months after the sale of a packaged food item.
- Your product suppliers are required to provide you with origin information if you request it from them.
- Packaged foods that are suitable for retail sale without any further processing, packaging or labelling should have country of origin labels attached when they are supplied to you.

INFO

A range of resources designed to assist businesses to comply with the new requirements are available on the ACCC website: accc.gov.au. A style guide, labelling tool and other useful resources are also available at business.gov.au.

ADVERTISEMENT

The Australian Taxation Office (ATO) and other law enforcement agencies are warning Australian growers about illegal phoenix companies.

The phrase is borrowed from mythology and describes a bird which erupts into flame when it dies, only to arise from the ashes. It's an apt description for a phoenix company which systematically accrues debts only to deliberately liquidate to avoid paying them. The company then sets up shop again under a new name—completely debt free.

Companies who engage in this behaviour do so to evade tax, debts to suppliers, clients, employers, and other businesses. This behaviour allows them to undercut honest competition and destroy livelihoods.

The practice has a profound effect on the local and national economy and is particularly prevalent in the labour hire industry. Since most growers use labour hire companies, this means they are exposed to the impact of illegal phoenix behaviour.

Phoenix companies aren't just about 'hiding a bit from the taxman'. They are often involved in exploitation of staff through underpayment of wages and super and pressuring employees to accept unsafe working practices.

The multi-agency Phoenix Taskforce, headed by the ATO, was formed to enable a whole-of-government approach to wiping out phoenix behaviour, by sharing information and strengthening connections to identify phoenix operators and take action against perpetrators.

It's not just employees and creditors who have to worry. Growers engaged with a phoenix operator to supply labour are at serious risk of being held liable for a phoenix operator's debts and could face civil and criminal sanctions.

The consequences include:

- fines of up to $63,000 for individuals and $315,000 for businesses;
- liability for an employee injured on your workplace where the labour hire company does not have insurance;
- liability for premiums the labour hire business has failed to pay; and
- liability for foreign workers breaching visa conditions - potentially resulting in up to five years' imprisonment.

There are plenty of signs which point to the possibility of dealing with a phoenix operator:

- they are able to significantly underquote compared to similar businesses;
- the company requests payment to a new company;
- the directors may have been involved with other liquidated entities; and
- the company directors and the name of the company may change, but staff, managers, and phone numbers remain the same.

These are some things growers should be doing to protect themselves, and their businesses from being caught up in this illegal behaviour:

- ask for proof the company is registered;
- checking if directors or the people in control have ever been bankrupt;
- keep records of all contract workers, as well as their visa details; and
- ask for proof of superannuation fund registration and copies of their WorkCover or Insurance Certificate of Currency.

If you suspect you are involved with a phoenix company, you can lodge a report through the Tax Evasion Reporting Form on the ATO's website or by visiting **ato.gov.au/phoenix**

Australian Government
Australian Taxation Office

You can also contact us on **1800 060 062** or visit **ato.gov.au/reportevasion**

Report illegal phoenix behaviour **www.fairwork.gov.au/tipoff**

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Figure 1: The greenhouse pot trial, seven weeks after planting seed tubers. Image courtesy of Peter Wright.

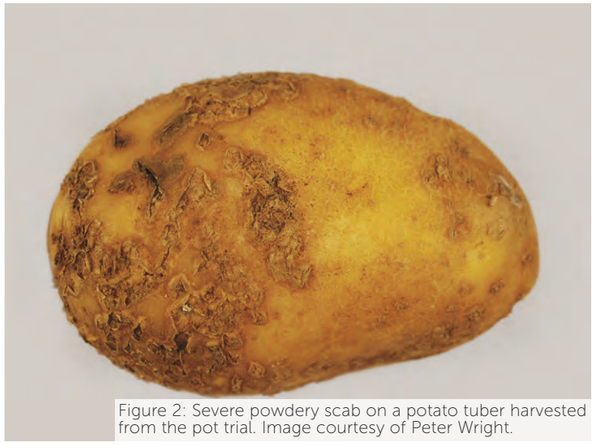


Figure 2: Severe powdery scab on a potato tuber harvested from the pot trial. Image courtesy of Peter Wright.

Figure 3: *Spongospora* root galls on a field-grown potato plant. Image courtesy of Richard Falloon.

DO SOME POTATO-GROWING SOILS SUPPRESS POWDERY SCAB?

A research project in New Zealand is determining if different field soils affect the development of powdery scab on potatoes, and whether soil physical, chemical and/or biological characteristics influence this important potato disease. The project is developing new knowledge that may provide a basis for manipulating soil factors to reduce the harmful effects of the powdery scab pathogen. Project Lead Professor Richard Falloon reports.

Powdery scab can severely reduce the quality and marketability of seed, fresh market and processing potatoes (see Figure 2). The powdery scab pathogen (*Spongospora subterranea*) also reduces tuber yields by disrupting root function (water and nutrient uptake) in actively-growing potato plants, and causes severe galling on roots (see Figure 3).

A research initiative that began in March 2016 aims to identify soil factors that influence the development of powdery scab in potato crops. The study involves scientists at the New Zealand Institute for Plant & Food Research Limited, and is funded as project PT16002 – 'Exploring *Spongospora* suppressive soils in potato production' by Hort Innovation and Potatoes New Zealand Incorporated. This project is a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

Previous results from a long-term potato/onion trial carried out in the Pukekohe vegetable-growing region near Auckland, New Zealand, indicated that continuous potato cropping over 10 growing seasons (years) did not result in increased incidence or severity of powdery scab on harvested potatoes. This suggested that the trial site soil was "suppressive" to the powdery scab pathogen. Multiple potato cropping is usually associated with severe outbreaks of powdery scab, particularly in potato cultivars that are susceptible to the disease and to *Spongospora* root infection (see Figure 3).

PHASE ONE

A cross-discipline team is working on the project, including plant pathologists, soil scientists and molecular biologists. In the study's first phase, 12 field soils (including the soil from the 10-year Pukekohe trial site) have been evaluated for disease "conduciveness", and their physical, chemical and biological characteristics are being determined. The soils have been chosen to represent different soil types, and differences in potential to support or suppress soilborne pathogens of potato.

An extensive greenhouse pot trial (see Figure 1) has been completed, where the different soils were each placed in large (35-litre) pots which were then either inoculated with *Spongospora* or left uninoculated. The pots were each planted with a seed tuber of a powdery scab-susceptible potato cultivar. Root galling and powdery scab on harvested tubers, and plant productivity measurements (shoot growth and tuber yields), were assessed during the following 20 weeks to crop maturity.

The 12 field soils were also assessed in detail for their physical and chemical characteristics, using standard soil science methods. Samples were also tested for potential soilborne potato pathogens using the PreDicta Pt service provided by the South Australian Research and Development Institute (SARDI) and DNA has been extracted from samples of the soils. This is being characterised using gene sequencing technologies to determine the microbial population profile of each soil.

The 12 soils differed for several physical and chemical factors. Soil texture was different (clay content ranged from 10-60 per cent), and organic matter content also varied (soil carbon ranged from 2-14 per cent). The soils differed in fertility and nutrient availability (e.g. Olsen tests for phosphate availability gave results from 30-260 mg of phosphorus per kilogram of soil).

In the pot trial, root galls occurred only on inoculated plants, and mean numbers of root galls on these plants ranged from less than one up to 11. Mean marketable tuber yields varied from 0.64 kg per plant from one *Spongospora*-inoculated soil, to 1.73 kg per plant from a different, non-inoculated soil. *Spongospora* inoculation influenced the severity of powdery scab on tubers harvested from some of the soils, but had little or no effects for others. The soil containing the greatest amounts of pre-planting *Spongospora* DNA (PreDicta Pt test) gave the most powdery scab on harvested tubers.

THE NEXT STAGE

Data gathered from these different analyses will be integrated to determine if individual or combinations of soil physical, chemical or biological characteristics are associated with suppression of *Spongospora* diseases.

The next phase of the project will determine details of the microbial populations in the soils, and will then identify individual disease-affecting soil factors that could be manipulated to reduce disease. These will then be tested for effects on powdery scab and associated root diseases.

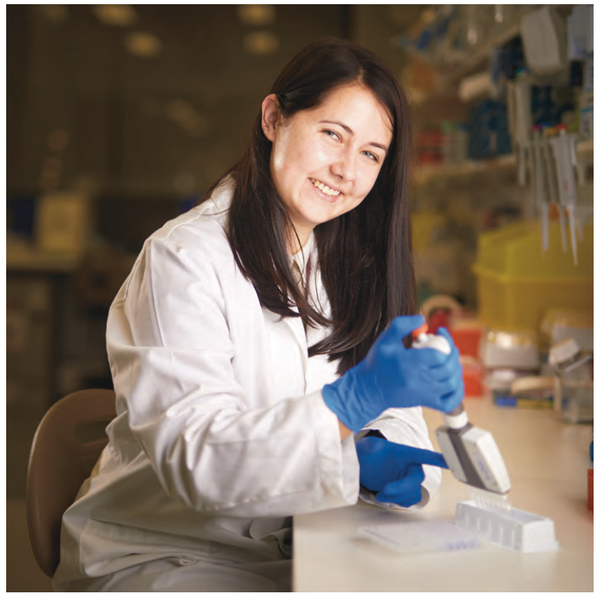
The key outcome from this project will be new knowledge of which soil factors affect powdery scab in potato crops. This could form the basis for future research initiatives to test new practical methods for management of root and tuber diseases caused by the powdery scab pathogen. Manipulating soil nutrients or microbial populations could be used to enhance suppression of these key potato diseases.

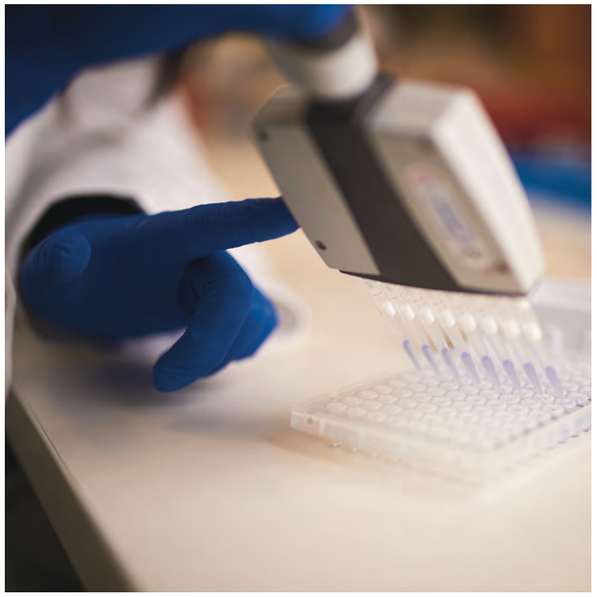
INFO R&D

For more information, please contact Professor Richard Falloon at richard.falloon@plantandfood.co.nz.

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: PT16002





NEXT GENERATION RESEARCH HITS THE LABORATORY

NAME: Brittney Caruana
AGE: 23
UNIVERSITY: La Trobe University, Bundoora campus, Victoria
STUDYING: Applied genomics for advanced breeding and improved disease prevention in potatoes

PLEASE PROVIDE A BRIEF BACKGROUND OF YOURSELF AND YOUR STUDIES SO FAR.

I completed my Bachelor of Animal and Veterinary Biosciences with Honours at La Trobe University in 2014. My Honours project involved investigating the potential of parasitic proteins as vaccine candidates against liver fluke in cattle. Following that, I was offered a PhD in disease resistance in potatoes with a breeding focus.

YOU ARE A PHD CANDIDATE AT LA TROBE UNIVERSITY'S AGRIBIO FACILITY, TELL US MORE ABOUT YOUR CURRENT RESEARCH.

We are testing the potential of a breeding technique called genomic selection on potato. This has already been demonstrated to dramatically decrease the time it takes to complete a breeding cycle in other crops and forages including pulses, grasses and cereals. We are also improving our selection of potatoes for breeding by developing markers for genes of interest (like disease resistance) that are more reliable than the current ones in use. We are also developing targeted assays to more quickly and accurately diagnose resistant or susceptible plants than the current ones in use. Another topic we are considering is an earlier disease detection method. I'm hoping that by using imaging techniques like hyperspectral cameras, we can detect virus infection in crops much earlier than the physical symptoms present.

WHY DID YOU CHOOSE TO PURSUE A PHD RELATING TO POTATO RESEARCH?

This project aligned with my interests in microbiology and was a great opportunity to test novel techniques in the potato. The prospect of being able to undertake research at a university while simultaneously working with industry and government was also appealing.

WHICH TEAMS DO YOU WORK WITH, AND HOW DO THEY ASSIST WITH YOUR DAY-TO-DAY ACTIVITIES?

I work with the Molecular Genetics and Microbiology groups within Agriculture Victoria at AgriBio. This involves getting advice from microbiologists, computational scientists, bioinformaticians, geneticists, molecular scientists and plant breeders. All the people I work with are crucial for experimental design and determining the appropriate analysis of my data.

WHY ARE YOU CONDUCTING THIS RESEARCH?

There are many beneficial reasons why this research should be done to help the industry, but overall it is to improve our current breeding practices. Potato is the world's fourth most important crop and is a staple in many households. The current growth rate of the world's population is becoming progressively hard to keep up with in terms of meeting food demands. On top of that, if we were to encounter a new biosecurity threat which had potential to eliminate our potato crops, it would take a decade or more to breed a resistant plant that could withstand the disease.

WHAT DOES THIS RESEARCH MEAN FOR THE AUSTRALIAN POTATO INDUSTRY, AND GROWERS IN PARTICULAR?

For industry it means we can breed tailored varieties to address concerns much quicker than we used to, creating a more solid foundation for the industry to rely on. For growers, it means that a wider selection of new varieties will be available faster or we can improve more traditional varieties that may be performing well in some traits but might be lacking in others, such as yield, for example.

WHAT CHALLENGES HAVE YOU FACED WHILE CONDUCTING THIS RESEARCH?

Besides nature being uncontrollable, I've been lucky. The only challenge I've faced is the steep learning curve and skills I've needed to develop during the PhD, from growing and crossing virus-free plants to genome sequencing and computational analysis.

HAVE YOU RECORDED ANY RESULTS SO FAR? IF SO, WHAT HAVE YOU FOUND?

So far we have profiled the genomes of nearly 200 varieties so we can develop new genomic-based prediction for some traits. The population structure of our breeding population has been elucidated and identified a new marker for potato virus Y resistance.

> There are many beneficial reasons why this research should be done to help the industry, but overall it is to improve our current breeding practices. Potato is the world's fourth most important crop and is a staple in many households.

WHAT MOTIVATED YOU TO UNDERTAKE THIS RESEARCH?

The chance to acquire new skills and work with industry and government bodies. It was an excellent opportunity and the impacts of the research were clear and positive.

WHAT ARE YOU ENJOYING THE MOST ABOUT YOUR RESEARCH PROJECT?

I enjoy the skills that I'm developing and the opportunities the project has presented, especially meeting new colleagues and travelling to present my research.

WHEN WILL YOU COMPLETE YOUR PHD?

If all goes according to plan, no later than March 2019.

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

Put the computational and breeding skills I've developed to good use by applying what we have investigated in this project to our potato breeding programs.

Photography by Luka Kauzlaric.

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

Tomato potato psyllid nymphs on a potato plant.

LOOKING FORWARD, LOOKING BACK

As the Transition to Management plan for tomato potato psyllid (TPP) has come to an end, National TPP Coordinator Alan Nankivell reports on industry plans to effectively manage the psyllid moving forward.

Following the detection of tomato potato psyllid (TPP) in February 2017, the initial emergency response aimed to understand the spread of the incursion to determine if TPP could be eradicated. TPP was found over an extensive area and, as a result, a Transition to Management (T2M) phase was implemented by the Western Australian Government. T2M commenced in September 2017 and was completed in May 2018.

The major tasks of the T2M included gaining a further understanding of TPP; learning more about the effects of chemical sprays on the lifecycle of the psyllid; identifying effective predator insects that help control TPP numbers; determining whether or not the TPP population is infected with *Candidatus* Liberibacter solanacearum (CLso) which causes the 'zebra chip' complex in potatoes, and preparing for any further incursions (turn to page 30 for more information on the T2M plan).

At the time of writing, the final results from the T2M plan were yet to be made public. The initial testing of chemical sprays and predator insects has shown promise at the laboratory and glasshouse levels, while further research into the efficacy and effectiveness of some chemicals and predators is recommended through field trials. This will be taken up in the research and development plan that is currently being prepared for consideration by Hort Innovation.

PHASE ONE

The T2M Phase One project focused on the preparation of Enterprise Management Plans for the potato, tomato and nursery industries. It is anticipated that these will be completed by the end of June 2018, and will be made available through a TPP portal that is currently in development on the AUSVEG website.

Testing of the psyllid has found that no CLso was present during the 2017-18 growing season. This information is currently before the members of the Consultative Committee on Emergency Plant Pests (CCEPP) for consideration. The outcomes of these deliberations will shape market access to other jurisdictions for the Western Australian potato industry.

Given the decision that TPP could not be eradicated, everyone in Western Australia who grows potato, tomato, eggplant, capsicum, chilli, tamarillo or sweetpotato should check their plants for the psyllid. It does not matter if you are a commercial grower or only keep a few plants in your backyard.

It is important to control the psyllid and prevent its spread to non-infested areas. It can spread through the movement of tomato, capsicum, eggplant, tamarillo and other solanaceous plant material. It can also occur on other hosts including the convolvulaceae plant family, which includes sweetpotato, and can disperse through natural pathways (such as through the wind).

BE ALERT!

With TPP now established on Australian soil, it is important that all Australians are vigilant and keep a look out for the psyllid. To this end, potato industry stakeholders in the eastern states of Queensland, New South Wales, Victoria and South Australia have been working towards establishing common trade access arrangements across state borders to ensure business continuity. These arrangements are underpinned by the requirement to know where TPP is and where it isn't (area of freedom). Therefore, a comprehensive TPP monitoring program which covers all of the commercial growing regions will be a necessary addition. Concepts on how best to achieve a cost-effective national monitoring program are being prepared, with the aim of having a national data capture and analysis capability in place for the next growing season.

To achieve an effective national monitoring program it will require all stakeholders, growers and regulators to constructively work together to know where TPP is – and where it isn't.

INFO R&D

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

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

Project Number: MT16018

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

TOMATO POTATO PSYLLID TRANSITION TO MANAGEMENT (T2M) PLAN COMPLETE

The next stage in the response to the tomato potato psyllid has recently wrapped up, with the completion of the Transition to Management plan. The Western Australian Department of Primary Industries and Regional Development provides an update.

Transition to Management (T2M) followed national agreement that the tomato potato psyllid (TPP) could not be eradicated, and that efforts should focus on developing strategies to help industry and government effectively manage the pest.

The plan aimed to improve the capacity of Australia's horticulture sector to manage TPP, and build confidence around the status of the bacterium *Candidatus* Liberibacter solanacearum (CLso). The bacterium is associated with TPP in other parts of the world and causes the serious 'zebra chip' disease in potato.

CLso has not been detected in Australia to date.

Led by the Western Australian Department of Primary Industries and Regional Development (DPIRD) on behalf of industry and state and federal governments, the plan included:

- Targeted surveillance for TPP/CLso complex during spring 2017 and autumn 2018 in Western Australia.
- Scientific research to improve the understanding of TPP, its biology and options for control.
- Development of National and Enterprise Management Plans.
- Market access and trade.

Results of the T2M plan are currently being finalised and will be made available to growers through state and national industry and government bodies.

In addition, T2M outcomes will inform future TPP/CLso research and management strategies through the development of a National Management Plan for TPP, led by AUSVEG through the role of the National TPP Coordinator.

The T2M plan was funded by Australian and state governments, and industry.

LAYING THE GROUNDWORK FOR TPP RESEARCH

The TPP R&D program was a major component of the T2M plan (see page 31). DPIRD Assistant Director for Horticulture Rohan Prince said R&D is critical to increase our understanding of TPP and improve the capacity of growers to manage the pest.

"Developing our scientific understanding of TPP means we can assess what management options are most effective for Australian growing conditions," Mr Prince said.

DPIRD managed the research program which included:

- Screening toxicity of conventional and biorational chemicals registered in Australia for other pest species, for use in TPP.
- Screening the potential of commercially-available biological control agents (BCAs).
- Evaluating the efficacy of insecticides in conjunction with BCAs.
- Evaluating effectiveness of ethyl formate against TPP and phytotoxicity on host fruits which require disinfestation for interstate and international market access.
- A review of available literature to identify practical management strategies currently used where TPP is present elsewhere in the world, and to identify R&D knowledge gaps relevant to Australia.

"While we have positive results from the desktop studies, and laboratory and glasshouse trials, further work in the field is needed to validate research," Mr Prince said.

"The T2M phase has provided a boost to the TPP R&D knowledge base in Australia, and will continue to grow as the national R&D program is progressed."

SURVEILLANCE UPDATE

The DPIRD has completed autumn surveillance for TPP, with no detections of the CLso bacterium associated with the pest.

Mr Prince said it marked completion of the third surveillance round in Western Australia.

"We tested more than 10,000 psyllids with no detections of the bacterium. This provides us with a high level of confidence that CLso is not present in Western Australia," Mr Prince said.

"We will be presenting these results to other states through the Consultative Committee on Emergency Plant Pests."

The detection of TPP has impacted on trade of a range of host plants and produce to other states, in particular potatoes which have been unable to enter these markets due to concerns about the status of CLso.

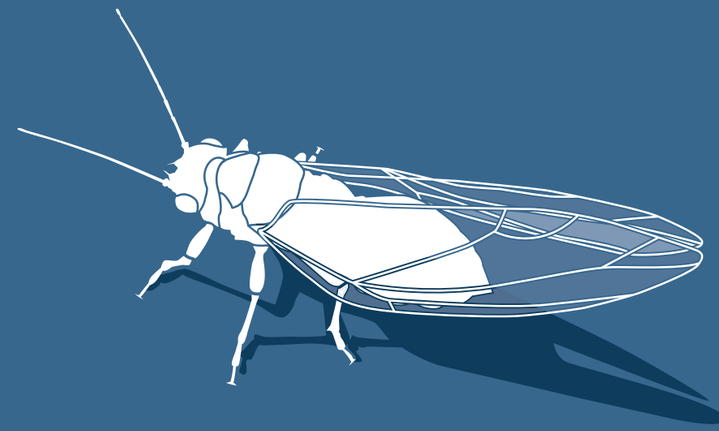
The department is continuing to work as a priority with government and industry partners to assist the assessment and recognition process for proof of absence of CLso.

INFO R&D

Visit your local state department website for more information about TPP, including how to identify the pest, options for control and how you can report suspect symptoms. For more details, please visit agric.wa.gov.au/tpp.

This article is an initiative of the national TPP Transition to Management plan.

Illustration on page 31 supplied by DPIRD.



T2M: SNAPSHOT OF TPP R&D RESULTS

1. Insecticides – laboratory trials

- A list of 15 potential insecticides including abamectin (Vertimec®), cyantraniliprole (Benevia®), spirotetramat (Movento®), flonicamid (Mainman®), spinetoram (Success®), sulfoxaflor (Transform™), methidathion (Suprathion), methomyl (Methomyl 225), chlorpyrifos (Chlorpyrifos 500EC), DC-164 (experimental chemical of Bayer CropScience), imidacloprid (Confidor® 200SC), Eco-Oil®, AGRI-50NF, paraffinic oil (SACOA BioPest) and azadirachtin (Azamax) were tested in laboratory bioassays for their toxicity against TPP life stages (eggs, nymphs and adults) in capsicum, tomato and potato.
- These chemicals are registered in Australia for use against other sucking insect pests in capsicum, tomato, potatoes and other crops, but are not currently registered for control of TPP. Field data will be required to support registration by the Australian Pesticides and Veterinary Medicines Authority.
- Fourteen insecticides were tested as foliar applications, and one (imidacloprid) was tested as soil drench.
- Abamectin, spinetoram, methidathion, methomyl, chlorpyrifos, cyantraniliprole, DC-164 (experimental chemical) and sulfoxaflor are very toxic and caused 100 per cent mortality to the TPP life stages.
- Spirotetramat is a slow acting chemical requiring longer time to cause significant TPP mortality.
- Cyantraniliprole and flonicamid are less toxic to TPP young nymphs (1st-2nd instar).
- All plant-based derivatives (azadirachtin, Eco-Oil, AGRI-50 and paraffinic oil) are the least toxic to TPP matured nymphs (3rd-5th instar).
- Azadirachtin is very toxic to TPP adults. Spirotetramat, flonicamid, paraffinic oil, AGRI-50 and Eco-Oil in potato and capsicum are less toxic to TPP adults. Egg laying was observed with AGRI-50, Eco-Oil, paraffinic oil, flonicamid and spirotetramat in all plant types but none hatched after seven days.
- Of 13 chemicals tested against eggs, hatching was observed with spirotetramat, abamectin, methomyl, chlorpyrifos, Eco-oil, paraffinic oil and azadirachtin, but none developed to adult.
- Imidacloprid soil drench is toxic to TPP life stages causing significant mortality for up to 10 days post drench.
- To prevent insecticide resistance from developing in TPP populations, insecticides from different chemical classes need to be used in rotation.
- Growers should contact their chemical advisers to talk through an appropriate Insecticide Resistance Management strategy for their business.
- Insecticides are only effective against TPP and do not prevent the spread of *Candidatus* Liberibacter solanacearum (CLso).

2. Biological control agents (BCAs) – laboratory trials

- Nine species of commercially-available BCAs were trialled, including six species of ladybird, an anthocorid bug, a mirid and a lacewing.
- The trials indicate all BCAs will feed on TPP, but that some are more voracious feeders than others.
- Initial results indicate more research is required to determine the most suitable biological control agents for TPP in different crops and growing conditions.

3. Efficacy of insecticides with BCAs against TPP in capsicum, tomato and potato – glasshouse trials

- Three applications, at 21-day intervals, of abamectin, cyantraniliprole and spirotetramat in capsicum, tomato and potato, and flonicamid in tomato effectively suppressed TPP populations.
- Three releases, at 21-day intervals, of mirid bug (*Nesidiocoris tenuis*) in tomato effectively suppressed TPP populations in the glasshouse trial.

4. Post-harvest disinfestation – laboratory trials

- The Western Australian Department of Primary Industries and Regional Development has identified a potential benefit in combining post-harvest disinfestation treatment for Mediterranean fruit fly and TPP for tomato, capsicum and eggplant.
- Ethyl formate controlled eggs, nymphs and adults of TPP. Eggs were the most tolerant, requiring a higher concentration of 0.5-2 per cent ethyl formate.
- Ethyl formate did not cause phytotoxicity to chilli, cherry or round tomato, eggplant or capsicum at the maximum rate of two per cent.

DIRT ALERT: PROTECTING SEED POTATOES IN THE POTATO SHED

From 1999-2002, a project that focused on potentially contaminated dust in the potato shed, and hygiene practices that could eliminate the risk of this occurring, was undertaken by a team of Victorian researchers. Dr Dolf de Boer spoke to *Potatoes Australia* about the project and the importance of maintaining good hygiene practices for seed potatoes.

The importance of clean potato seed has been highlighted through Australia's Seed Certification Scheme and a number of research projects undertaken by the wider potato industry.

One project, completed in 2002, turned its attention to the potato shed. It investigated how seed potatoes could become contaminated with pathogens, as well as the disease profiles they can develop, as they progress from tissue culture (lab) and minitubers (glasshouse) through the different field grown generations (up to five).

At the time of the project, there was a trend for seed potato growers to lease new ground (for example, dairy pastures that were not previously used for potato production) to grow seed potatoes. It became clear that this new ground had different disease profiles to land that had a long history of potato production (old ground). There was also a concern that growers were transferring equipment used on old ground to the new ground without cleaning it, and were also grading and storing potatoes from new ground in their old sheds.

Given this, the research project examined the presence of dirt in potato sheds and the coolstore, and the likelihood that the dust could be contaminated with spores of the various pathogens that could impact seed potatoes. Once the pathogens were identified, the focus then shifted to the cleaning of potato sheds, ways of reducing dust loads, and products that could help in disinfecting surfaces (e.g. potato boxes).

Cleaning and disinfestation practices for potato farms (PT98018) was a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds. It was facilitated by the Department of Primary Industries Victoria, now known as the Victorian Department of Economic Development, Jobs, Transport and Resources (DEDJTR).

RAISING AWARENESS

Dr Dolf de Boer, who now works for DEDJTR at La Trobe University's AgriBio facility, led this three-year project. He said it focused on seed potato growers due to the strict health criteria they must follow to on-sell their product, and the fact that diseases were becoming an issue in storage.

"We knew there were some diseases linked to dust contamination (e.g. pathogen causing powdery scab) and some to a build-up of spores in the coolstore (e.g. pathogen causing silver scurf) as coolstores were opened frequently towards the start of the planting season resulting from increased humidity in the store," Dr de Boer said.

"We also knew that you could contaminate potatoes when dust from the shed coated the healthier earlier generation potatoes. The dust carried spores of potato pathogens.

"We wanted to look at the process of a grower following some sort of hygiene practice within the shed and the coolstore that would minimise this risk."

DUST ALERT

Dr de Boer explained the risks associated with dust in the potato shed.

"With the first generation of potatoes, some growers will start from the very beginning which is minitubers (the potatoes that are produced from tissue culture plantlets). They are produced in a glasshouse environment and are clean and healthy. But once they bring them into their shed, they're at risk of being contaminated with the soil dust coating the floors and every other surface in potato sheds. We had already recognised that the shed and coolstore could be a source of contamination for diseases such as powdery scab, silver scurf and black dot."

To investigate, the project team collected dust samples from potato sheds and then conducted bioassays of those dust samples by planting potato plantlets and recording the diseases that were detected in those samples from the sheds.

Grower workshops and seminars were also held during the project, including presentations from international guest speaker Stuart Wale (Scottish Agricultural College, Aberdeen) who was working on a similar issue in Scotland.

"It reinforced what we were doing by having an overseas expert share the experiences of UK potato growers," Dr de Boer said.

FOCUS ON DISINFECTION

Once the contaminated or dirty surfaces were established, the next step was to identify the most effective disinfection practices for on-farm equipment. This included potato graders, harvesters and boxes that the potatoes were loaded into.

"We did some very detailed studies of the process of cleaning and disinfection, and worked out the first and most important thing to do was wash all the dirt off the equipment," Dr de Boer said.

"That was a 99 per cent management tool so once you removed the dirt that carried the various pathogens and spores of the pathogens, you had done most of the job. But sometimes you need be able to disinfect as well so we tested a range of different types of disinfectants to see how well they worked against those various potato pathogens.

"We tested a range of disinfectants on clean and dirty surfaces, porous and non-porous surfaces (wood, metal and plastic) and tested different concentrations to determine what rates would kill the common potato pathogens, some of which have very tough spores."

All of the commercially-available sanitisers were effective when used on clean, non-porous surfaces such as metal and plastic, but wood and dirty surfaces were much more difficult to disinfect. The tough-walled spores of the silver scurf fungus also proved very challenging. Two chemicals tested – a phenolic detergent/sanitiser and a peroxygen sanitiser – were the most effective against all pathogen/surface combinations tested at label rates.

In addition, the project team conducted a hazard-type analysis of the various risks of the whole process, including the shed and its hygiene. The recommendation was for growers to 'zone' their operations to protect minitubers from contamination and separate grading of early and older field grown seed generations.

"We also encouraged growers to vacuum and sweep, and some of them were starting to do that – they would clean all the dust from their sheds at the end of a particular session of grading potatoes," Dr de Boer said.

FURTHER RESEARCH

Since 2003, strategic levy investments have focused on protocols for potato storage and maintenance including *Seed potatoes: a best practice handling and storage guide for growers and store operators* (PT01030) which was completed by Dr Doris Blaesing in 2004.

Applied research was also conducted in Britain, including the risk of contamination of seed potatoes during the grading process and in the coolstores. Scientists at the Scottish Agricultural College in Aberdeen also looked at drying potatoes immediately after harvest to limit the development of rots, a problem in their much wetter environment.

"The Scottish researchers were doing similar work to what we were doing, including testing disinfectants. They also recognised the need to limit dust contamination and the need to conduct cleaning in the shed, and identified effective follow-up disinfectant treatments suitable for the potato shed environment," Dr de Boer said.

He added that during the 16 years since the project ended, the core on-farm biosecurity principles have remained the same for potato growers.

"Now, growers have a few more tools to test their paddocks, such as DNA-type testing, so they've got an idea about what the risks are, paddock to paddock. The principles are all the same though," Dr de Boer said.

BIOSECURITY MATTERS!

On-farm biosecurity is crucial for producing healthy potato crops, accessing global or interstate markets, protecting your farm against quarantine measures and overall farm productivity.

There are a number of practices that potato growers can implement to safeguard their farms.

- Instruct visitors to clean their footwear before they enter your farm.
- Implement designated vehicle cleaning and wash-down facilities.
- Restrict vehicle movement.
- Control access of personnel to different areas of the farm.
- Source clean seed.
- Monitor and record plant pest observations.
- Transport seed potatoes in clean boxes or bags.

Cross-contamination between farms still poses a significant threat. It's important to start work in the cleanest paddocks first with clean equipment so that you don't cross-contaminate new fields with equipment that has been used in fields with a higher disease risk. If land is contracted, make sure cultivating, planting and harvesting equipment is clean before it is used on the new ground.

To access biosecurity planning resources specific to the potato industry, or for any biosecurity enquiries, visit ausveg.com.au/biosecurity or contact AUSVEG Biosecurity Officer Madeleine Quirk on 03 9882 0277.

More information can be found in the *Potato Growers' Biosecurity Manual* developed by Plant Health Australia, distributed with this edition of *Potatoes Australia*.

INFO R&D

For more information, please contact Dr Dolf de Boer at dolf.deboer@ecodev.vic.gov.au.

The final report for this project is available on InfoVeg. Readers can search 'PT98018' on the InfoVeg database: ausveg.com.au/infoveg/infoveg-database.

This project has been funded by Hort Innovation using the fresh potato and potato processing research and development levies, co-investment from the Victorian Department of Economic Development, Jobs, Transport and Resources and contributions from the Australian Government.

Project Number: PT98018

Macquarie University Department of Biology Senior Lecturer Dr Linda Beaumont is involved in the 'Which Plant Where?' project, as part of the Hort Frontiers Green Cities Fund.

DRIVING GREEN URBAN SPACE TO DELIVER A HEALTHIER FUTURE

The Green Cities Fund is one of seven funds developed under Hort Frontiers, a strategic partnership initiative led by Hort Innovation that facilitates collaborative, cross-horticulture projects. Hort Innovation R&D Manager for the Hort Frontiers Green Cities Fund Byron de Kock spoke to *Potatoes Australia* about the fund and how it can benefit not only vegetable and potato growers, but society as a whole.

To complement traditional strategic levy investment, Hort Innovation has developed the Hort Frontiers strategic partnership initiative to deliver transformational investments that will benefit the wider horticulture industry.

The Hort Frontiers strategic partnership can invest funds from both the broader research and supply chain, and grower levy funds alongside contributions from the Australian Government. The diversity of investors may include organisations from along the value chain, non-horticulture commercial organisations, universities, public and private research institutes, and state government agencies. Horticulture levy funds may be invested in Hort Frontiers should the appropriate advice be received. While the individual goals of co-investment partners may differ, investment outcomes need to benefit all of horticulture to be considered.

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

GOING GREEN

As Australia's urban population increases, and the health benefits of green spaces becomes clearer, urban developers and governments are becoming increasingly interested in creating greener communities. However, the impact of green space in a range of environments needs further research. To address this, Hort Innovation has developed the Green Cities Fund to help uncover science-based answers to these questions and inform business decisions regarding urban development.

A significant portion of the horticulture industry is non-edible horticulture, and both the turf and nursery industries have significant strategic levy investment programs in place to address industry needs. Green Cities Fund R&D Manager Byron de Kock said the fund is the vehicle for transformational investment to complement these existing industry-focused investment programs.

A range of research projects are already underway as part of the Green Cities Fund. These include investigating the link between greener cities and healthier lives; the suitability of different plant species in an urban environment; expanding the living architecture industry in Australia; investigating the performance of green roofs and walls on temporary buildings; and measuring Australia's green space asset.

CO-INVESTMENT PROJECTS

The Greener cities, healthier lives project (GC15005) will provide the first systemic evidence of the health benefits of green spaces throughout a person's lifetime. This project, in partnership with the University of Wollongong, will provide industry and policy makers with evidence-based research on the minimum threshold of the local green space necessary for favourable health and societal outcomes.

A first of its kind, the '*Which Plant Where?*' project (GC15002) brings together a consortium of researchers from Macquarie University and Western Sydney University to investigate the suitability of various plants species under current and future climate scenarios. It will culminate in an online interactive tool that will map the distribution of suitable habitats for various plant species across Australia.

The fund will also address how temporary accommodation can potentially benefit from green infrastructure, through mitigating external temperature fluctuations and noise variability, improved aesthetic characteristics and as a potential food production utility. However, there is currently no evidence to demonstrate whether the benefits of installing green infrastructure on temporary buildings exceed the costs. In light of this, a project established under the Green Cities Fund will overcome this research gap by connecting academia with a large construction company to investigate the benefits of green infrastructure (green roofs and green walls) on demountable buildings (GC16000).

Another project (GC15004), co-funded by the University of Technology Sydney and the Hort Innovation Nursery and Turf Funds, will address two key research questions:

1. What existing tools and methods are available around the world for mapping, monitoring and reporting on urban green space?
2. To what extent are these tools suitable for application in Australia, and what modifications would be required?

The project will undertake a three-phase approach to the research, including consultation with stakeholders, a scientific literature review and the development of a 'blueprint' for an Australian set of metrics for urban green space.

Cities such as Toronto in Canada and Singapore have mandated green roofs and walls in their planning legislation to increase the amount of green infrastructure and make their cities more liveable in an era of increasing temperatures and rapidly growing urbanisation.

In contrast, Australia has no national policy on green roofs and green walls. To address this, Hort Innovation has invested funding into a project (GC15001) which will explore whether a mandatory approach to green roofs and walls is feasible and appropriate for Australia. The 12-month project will reference case studies from Canada, Singapore, the United Kingdom and Australia to illustrate new build and retrofit case study examples of green walls.

While the Green Cities Fund aims to uncover the science-based answers to key urban greening questions, Hort Innovation's *202020 Vision and Plant Life Balance* initiatives are charged with marketing the vision and utilising the research for public engagement. The *202020 Vision Green Light Tour* is currently travelling around the country, engaging government, commercial, research and community groups to look at best practice to implement national green infrastructure policies. The Plant Life Balance App available on iTunes has been a huge success.

THE BOTTOM LINE

According to Mr de Kock, if the Green Cities Fund was not undertaken, there would be a decline in tree canopy cover and green infrastructure in Australia's urban areas as well as an absence of critical research that could help to address the decline and demonstrate the value of this green space.

On the flip side, the introduction of 'green cities' projects could benefit Australia's vegetable and potato growers.

"The appreciation shown by the urban community for vegetation and a healthy environment could complement the need to consume healthy nutritious food, and a large portion of which would be Australian-grown fresh vegetables and potatoes," Mr de Kock said.

INFO R&D

For more information, please visit hortfrontiers.com.au or contact Byron de Kock at byron.dekock@horticulture.com.au or 03 9691 3524.

To submit an idea for a future project, visit Hort Innovation's Concept Proposal Form at edms.horticulture.com.au/Forms/ConceptFormV2.

Potatoes Australia will profile each Hort Frontiers Fund in further detail in future editions of the magazine.

These projects have been funded by the Hort Frontiers Green Cities 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.

hort frontiers Strategic partnership initiative | GREEN CITIES FUND

CURRENT PROJECTS UNDER THE HORT FRONTIERS – GREEN CITIES FUND

PROJECT CODE	PROJECT TITLE	SERVICE PROVIDER
GC15001	Expanding the living architecture industry in Australia	University of Technology Sydney
GC15002	Which Plant Where?	Macquarie University, Western Sydney University, New South Wales Office of Environment and Heritage
GC15004	Measuring Australia's green space asset	University of Technology Sydney
GC15005	Greener cities, healthier lives	University of Wollongong
GC16000	Investigating the performance of green roofs and walls on temporary buildings	Queensland University of Technology

CALENDAR

22-26 JULY: POTATO ASSOCIATION OF AMERICA 102ND ANNUAL MEETING 2018

Where: Boise, Idaho, United States

What: The Annual Meeting of The Potato Association of America is the premier educational and networking opportunity for those interested in the North American potato industry. This event includes updates from the latest in potato research and numerous tours of the local industry. Attendees will have the opportunity to network with the diverse range of potato industry representatives while attending sessions built around improving the potato industry as a whole.

Further information: potatoassociation.org

12-14 AUGUST: VICSPA 2018 POTATO INDUSTRY CONFERENCE

Where: Melbourne, Victoria

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

Further information: vicspa.org.au

Rhizoctonia solani on a potato crop. Image courtesy of Howard F. Schwartz, Colorado State University, Bugwood.org.

REDUCING THE IMPACT OF BLACK SCURF

Rhizoctonia solani causes a number of common disease symptoms found in potato crops including black scurf, leading to skin disfiguration, stunted plants and restricted stem and plant growth. Syngenta Technical Services Lead Dave Antrobus examines the best management practices potato growers can undertake to minimise the damage caused by this disease.

Rhizoctonia solani was first observed and described by Julius Kühn back in the mid-1800s and ever since it has proven to be a resilient and persistent adversary. Since the discovery, many different strains of *R. solani* (called anastomosis groups; AG) have been recognised. Spread throughout the world, they collectively infect an enormous range of plants – both crops and weeds.

The common strain to infect potatoes is AG3. It causes black scurf, which is a good descriptive name that best matches the appearance of tubers when *R. solani* sclerotia form on the potato surface. *R. solani* can survive for many years as small (one to three millimetres in diameter) sclerotia in the soil and on plant tissue. Along with skin disfiguration, the AG3 strain is hard at work underground, causing the less obvious effects of poor stands and stunted plants, restricted stem and plant growth, reduced tuber number and size. The economic impact to growers can be devastating, with reports of more than 30 per cent yield loss in badly affected crops.

There are specific conditions that help AG3 to survive and thrive. Its impact on potato crops depends largely on soil conditions at, and soon after, planting. Cool, wet soils typical of this time of year can often result in significant economic damage.

The thing to remember with this disease is that complete control is not possible, however the severity of the pathogen can be limited to a relatively small impact with best practice management. Below, I've listed a number of decisions and actions growers can take at the different stages of the crop.

Before planting:

- Choose paddocks where black scurf has not been recorded previously.
- Make sure there are no volunteer potatoes growing or weeds like nightshade that are known to host the disease.
- Select paddocks with good drainage; they are less likely to become waterlogged and the soil will tend to warm up faster. Avoid cold, wet soils.
- Adding well-composted organic matter will encourage other microbes to grow in the soil that can compete with and even help control *R. solani.*

At planting:

- Plant disease-free certified seed.
- Apply a seed treatment fungicide or in-furrow fungicide to assist in reducing the impact of the disease. Thorough coverage is critical with registered seed treatment fungicides. Ensure spray nozzles for in-furrow fungicides are positioned correctly so that soil in the growing zone is fully treated. Syngenta has customised in-furrow nozzles for use on planters, and access to well setup seed tuber application units to apply fungicides. Growers are invited to contact their local Syngenta Territory Sales Manager if they're unsure about the accuracy of their fungicide application.
- Plant seed in warmer soil and encourage shoots to emerge quickly; this will help minimise damage. Make sure planting depth of the seed is not too deep; this should increase the speed of emergence, encourage early shoot growth and reduce the time available for the fungus to infect.

At harvest:

- Harvest as soon as the vines are desiccated because the sclerotia tend to form late and become larger over time.
- Do not leave tubers in the soil. They become 'volunteers', increasing the number and size of sclerotia, and provide a source of disease for the next crop.

After harvest

- The time interval between potato crops should be at least three years. Break crops from the AG3 strain of *R. solani* include maize, onions, grasses or cereals (e.g. barley). Mustard grown and then ploughed into the soil (just before flowering) may be beneficial.
- Prepare land early to enable crop remains to rot down before planting.

INFO R&D

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.

L-R: Foodbank Program Manager – National Food Jacqui Payne, Mitolo Managing Director Frank Mitolo and Foodbank General Manager – National Supply Chain Michael Davidson.

ESTABLISHING HUNGER AS A NATIONAL CRISIS IN AUSTRALIA

With 652,000 Australians now receiving food relief from Foodbank's charity partners each month, it is vital for Australia's largest hunger relief organisation to maintain a national presence. This could not be achieved without the assistance of its generous national donors that distribute produce to Foodbank warehouses, wholesale markets or hubs around the country.

The Foodbank Fruit and Vegetable Program gives the horticulture industry the opportunity to donate fruit and vegetables to families who are doing it tough. The most in-demand items are potatoes, onions, pumpkin, broccoli, carrots, tomatoes, lettuce, bananas, apples and pears, but Foodbank appreciates any produce that is surplus, not to specification, incorrectly labelled or rejected from wholesalers and retailers – as long as it is still fit for human consumption.

Major donors to Foodbank include Mitolo Group, Perfection Fresh, Costa Group, OneHarvest, A&G Lamattina & Sons Pty Ltd and Montague. *Potatoes Australia* spoke to the businesses that donate on a national scale about why they joined Foodbank in the fight against hunger.

OVERCOMING FOOD INSECURITY AND CONQUERING WASTE

Mitolo Group has partnered with Foodbank South Australia for almost two decades and currently donates value-added washed/bagged potatoes and bagged onions on a weekly basis. The company also helps to organise pro-bono freight to Foodbank's fresh produce warehouse.

"Foodbank allows hort businesses like ours to concentrate on their core business, in knowledge the charity has the logistics, cold-chain capacity and operational infrastructure to receive bulk donations of fresh produce and redistribute it to food-insecure families," Mitolo Managing Director Frank Mitolo said.

"There's a lot of product that would be thrown out based on cosmetic reasons, which is simply a waste. Donating this produce doesn't have a significant financial impact on us as a business but the positive impact on those who receive it is big."

To help vulnerable Australians gain access to fresh produce in times of need, Perfection Fresh partnered with Foodbank to not only help end hunger in Australia, but also reduce the amount of food waste across the country.

Perfection Fresh provides Foodbank with a variety of fresh produce including tomatoes, broccoli, lettuce, asparagus, cucumbers and fruit salad from its nation-wide network.

"Perfection Fresh aims to be socially and environmentally conscious across all areas of our packaging, products and processes in our business," CEO Michael Simonetta said.

"The thought that we supplied over 30,000 meals last year alone to those in need, is great for our moral and social conscience."

Costa Group has been a national donor to Foodbank since 2011/12 and the company donates products from across its range in almost every state.

Costa Group Corporate Affairs Manager Michael Toby described the ease in which produce can be donated.

"One of the benefits of partnering with Foodbank is that it has the capacity and scale to collect and transport product from all over the country. This works well for Costa because we have multiple production sites across all states and we know that Foodbank has the logistical capability to match our footprint."

OneHarvest became an official partner of Foodbank in August 2017, and in that year donated 45,800 meals to Australians in need. The initial donations were arranged by OneHarvest's Brisbane team, however this was soon extended to its sites in Sydney, Perth and Bairnsdale in Victoria.

"We're pleased to see that our excess food is no longer going to waste. But more than that, the benefit comes in knowing that our donations are helping to provide relief to more than 650,000 food insecure Australians every month," OneHarvest General Manager Andrew Francey said.

"Foodbank is an initiative that provides significant benefits to the community, and the best part is that donating is so simple."

Based in Victoria, A&G Lamattina & Sons Pty Ltd has proudly supplied Foodbank since January 2017. Angelo Lamattina said as a national supplier to all major supermarkets in Australia, their resources reach all states allowing Lamattina to provide national supply – currently celery and parsnips – through various outlets.

Foodbank believes that no one company in the horticulture sector can solve the food insecurity that disadvantaged Australians experience – but by donating a little regularly to Foodbank, this can have a very positive industry influence on outcomes.

INFO

If you're not already dealing with Foodbank either locally or nationally but would like more information or to find out how you can donate, please visit foodbank.org.au.

Soil moisture and NDVI measurement using a sensor in potato fields. Image courtesy of Dr Aitazaz Farooque.

SMART FARMING: THE PATHWAY TO A SUSTAINABLE AGRICULTURAL FUTURE

The University of Prince Edward Island is currently undertaking a five-year research program to develop and implement precision agriculture technologies in eastern Canada's potato growing regions. Program Leader Dr Aitazaz Farooque spoke to *Potatoes Australia* about the research and the importance of 'smart farming' practices in the potato industry.

Precision agriculture or 'smart farming' is the focus of a five-year research program developed by the University of Prince Edward Island's School of Sustainable Design Engineering.

The university is situated in a leading potato producing province of Canada, providing an opportunity to develop and implement precision agriculture technologies for the sector. The research program, led by the university's Assistant Professor Dr Aitazaz Farooque, aims to improve crop productivity and soil health, reduce agrochemical use by implementing site-specific applications based on soil and crop needs, increase profit margins for growers and ensure environmental sustainability.

PRECISION IN POTATOES

The research will be conducted at lab and commercial scales of potato fields in Maritime provinces of Canada using different sensors, positioning devices, geographical information systems, control systems, fertigation systems, electromagnetic induction methods, variable rate spreader and yield monitoring.

"We will develop intelligent variable rate technologies for site-specific application of agrochemicals based on soil and crop needs," Dr Farooque explained.

"The potential benefits of intelligent irrigation systems on potato production in eastern Canada will also be explored. Yield monitoring systems, soil and crop sensing, and variable rate seeding will be studied over the next five years to facilitate effective management decisions.

"Additionally, this research program will evaluate the environmental and economic benefits of precision agriculture systems over traditional potato production."

According to Dr Farooque, precision agriculture technologies have great potential to reduce crop growing inputs if they are applied based on soil and crop needs, rather than a uniform approach.

"Application of crop inputs based on need can reduce production cost and increase farm profitability for potato growers. Additionally, these technologies can reduce sub-surface water contaminations, lower surface runoff of nutrients in water bodies and improve air quality.

"Sensor and control systems can differentiate between disease and weed infestations within potato fields for targeted application of pesticides; it can also address irrigation, yield monitoring and environmental aspects of potato production."

Over the next five years, the provincial potato boards in Atlantic Canada, as well as growers and processors will be involved in this research along with university students, post doctoral fellows and research assistants. There will also be extensive consultation with stakeholders to develop technology that is practical and can be implemented on a commercial scale.

INTERNATIONAL IMPACT

Dr Farooque said that precision agriculture technologies are evolving with time and continually improving in practicality for different cropping systems.

"These technologies must continue to be extensively tested and evaluated in lab and field environments before they are available for commercial use. From my point of view, farmers need to be involved during the early development stages to make sure growers understand the importance and benefits of precision agriculture systems."

He added that these systems (once developed, tested and extensively evaluated in Canadian growing conditions) could be applied to Australia "with slight modifications".

The research team is still in the early stages of this research, and only have one year's worth of data so far. It would be five to 10 years before these technologies can be used on a commercial scale on-farm.

Despite the lengthy wait, Dr. Farooque recommends Australia undertake a similar program due to its economic and environmental benefits.

"I truly believe that smart farming is the future of agriculture around the globe to achieve sustainability of resources, keeping in view the urbanisation and shrinkage of agricultural land," Dr Farooque said.

"Academia, industry and growers should work collaboratively to develop smart farming strategies to achieve food security in an economically and environmentally sustainable fashion. We also need to collaborate across the borders to come up with applied and innovative solutions for the problems being faced by the agricultural sector.

"In my opinion, precision agriculture is the future of agriculture because of its economic and environmental benefits."

INFO R&D

For more information, please contact Dr Aitazaz Farooque at afarooque@upei.ca.

SUPPORTING FARM BUSINESSES IN FAIR EMPLOYMENT PRACTICES

The Fair Farms Initiative fosters good employment practices across the Australian horticulture industry to ensure that workers are treated fairly while they are employed in fruit or vegetable farms and pack houses. Facilitated by Growcom, the initiative is now in its second year.

Growcom's Fair Farms Initiative supports growers with the tools and knowledge to ensure their employment systems comply fully with workplace relations laws – and demonstrate this to customers and the wider community.

Fair Farms delivers grower workshops and provides informative articles for industry magazines. The team is also working towards a market recognition scheme for fair employers. A national award to celebrate and showcase employment excellence in the industry is planned, commencing in 2019.

ARE YOU ACROSS YOUR LEGAL REQUIREMENTS AS AN EMPLOYER?

So far this year, growers in Victoria, the Northern Territory and Western Australia have attended Fair Farms workshops, delivered by Horticulture Workplace Relations Specialist Donna Mogg.

The workshops provide growers with a comprehensive overview of their legal requirements as employers under federal and state laws and how to put this into practice in their farm business. Past participants have consistently rated the sessions as a nine or 10 out of 10.

The interactive sessions help grower-employers understand their legal obligations and level of compliance, and provide an opportunity to discuss specific risks and solutions.

The workshops also look at practical ways to manage employment issues that commonly arise in fruit or vegetable businesses, such as applying a robust induction process, encouraging workplace safety, ensuring fairness and equity in all staff dealings, and how to avoid unfair dismissal claims.

INDUSTRY STAKEHOLDERS HELP SHAPE FAIR FARMS MARKET RECOGNITION SCHEME

An important element of the Fair Farms initiative is the development of a mechanism for fresh produce production and packing businesses to demonstrate to their customers that their employment practices are fair and comply with Australia's Fair Work laws.

The Fair Farms team is working closely with industry stakeholders to build a practical market recognition scheme for fair employers.

The development of the scheme is timely. There is an increasing global public focus on ethical supply chains and 'modern slavery'. In Australia, there has been significant media coverage of underpayment, exploitation or mistreatment of workers on farms and food packing or processing facilities. Social media also provides a forum for current and past farm workers to share their experiences.

Australian retailers have responded by adopting responsible or ethical sourcing policies and are considering how these will be implemented with their fresh produce suppliers.

We are liaising with Coles, Woolworths and ALDI to ensure the proposed Fair Farms market recognition scheme clearly aligns with their requirements. The retailers have indicated their willingness to collaborate with industry towards the development and piloting of the Fair Farms scheme as a means for fresh produce suppliers to demonstrate their sound employment practices.

Currently, the Code of Practice for the scheme is being finalised. Growcom's Hort360 Workplace Relations module, which addresses Australia's Fair Work laws and relevant Awards, provides the foundation for the Code. Further elements to address priority matters identified within retailers' policy statements will also be included.

The scheme is likely to include a range of training options including individual business consultation, group training or customised sessions for growers who work with major suppliers. Online or e-learning may also be offered.

Options for verifying on-farm practices are being worked through with stakeholders. The scheme and the on-farm verification process will be piloted with a number of farm businesses to ensure it delivers fairness for workers, assurance to customers and the community, and a practical and affordable process for growers.

INFO R&D

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

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

REGIONAL UPDATES

Jordan Brooke-Barnett
AUSVEG SA
State Manager
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AUSVEG SA was proud to host around 250 South Australian growers and industry members at our 2018 AUSVEG SA and William Buck Vegetable Industry Dinner and Awards for Excellence on 11 April, held at the Arkaba Hotel in Adelaide.

Award winners were announced across a number of categories, with Scott Samwell of Eastbrook Farms taking out Grower of the Year and Daniel Quattrocchi of Monika's Organics receiving the Young Grower of the Year accolade. We were also fortunate to have Federal Assistant Minister for Agriculture and Water Resources, Senator the Hon. Anne Ruston and new South Australian Minister for Agriculture, the Hon. Tim Whetstone MP discuss their plans for horticulture in South Australia.

With a new government, we are grateful for the support shown towards our organisation and look forward to advocating on industry issues with the incoming government. In the coming months, AUSVEG SA will instigate a significant membership drive to bring more growers on board with our organisation and we plan to significantly increase our presence in growing regions such as the Riverland. We hope to engage with a greater number of growers to build our strong membership base and help to take on more issues on behalf of the growers of South Australia.

In program news, AUSVEG SA now has a dedicated Export Manager working for our growers a few days a month. The goal of this position is to increase the amount of horticultural exports from the state and work with growers on a one-on-one basis to develop export capability in their business. As always growers can call us anytime or visit our offices at the South Australian Produce Markets to get involved in these programs.

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The harvest season is well underway and is almost finished for some commercial growers. This season has been excessively dry and, as in any dry year, the grubs/weevils – you name it, they're all out there – are eating their way through the spud crops. However, the quality of crops is good.

In years such as this (with the unseasonably dry conditions and problems arising as a result), many seed growers will be feeling the pinch. Most seed growers operate under the conditions of their individual contracts and agreements with customers and provide seed potatoes according to ViCSPA standards. While this has become the new norm and provides a framework for ongoing relationships with customers, the downward price pressure that customers face is passed to suppliers. Growers are a resilient and optimistic lot, and will no doubt find a way to continue. SPV has new stock of seed sizing templates (our standard sizing template for your shed) as well as the new field templates. The field template is a set of 13 individual template sizes (from 30 millimetres to 90 millimetres) to cover both seed and commercial sizing. The templates are held together on a bolt, so you can keep all 13 sizes or personalise sizes for your own operation.

Check out our long-awaited new website for a picture of both templates and prices. Growers looking for potato sizing templates can give Pauline a call on 03 5623 4788.

The stress of this excessively dry year and the extra work it adds to growers has meant that the SPV committee had to move the April meeting to 18 May.

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VGA trading as AUSVEG VIC

The AUSVEG VIC and Wolfdene Awards for Excellence was held at Kooyong Tennis Club on Friday 13 April. There were over 190 people in attendance to celebrate the important contributions of members of the state's vegetable, potato and wider horticulture industry, and showcase their leadership, dedication and innovation.

The AUSVEG VIC and Wolfdene Awards for Excellence is an important event on the Victorian vegetable and potato industries' calendars. It plays an instrumental role in building the industry through recognising the achievements of individuals and businesses and congratulating industry leaders throughout Victoria.

The Awards for Excellence are a great way to bring everyone together in a social setting to recognise and celebrate the work that has been achieved throughout the year. Congratulations to Michael Bogicevic from Coolibah Herbs who took out the Grower of the Year award and Daniel Hammond from Bulmer Farms who received the Young Grower of the Year award.

The award winners went on to represent Victoria at the National Awards for Excellence at Hort Connections 2018 in Brisbane.

The AUSVEG VIC Executive Committee would like to congratulate all of the nominees and winners, and thank them for attending the awards night.

Matthew Gay
Crookwell Potato Growers' Association
President
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At present, we are experiencing a long dry spell. This is making harvesting difficult due to the need to irrigate to dig, but the dry weather has allowed a lot of potatoes to be lifted and stored. All growers are probably ahead of schedule.

Crookwell hosted the Crookwell Potato Festival on 12 May. Although it had been dry prior to this week and dry after, the weather did turn nasty on the main day with cold blustery conditions and about 20 millimetres of rain. However, this did not dampen the public's enthusiasm to attend and learn all about potatoes in Crookwell.

A big draw card was the Festival Ambassador Costa Georgiadis who carried out a range of activities in Crookwell over the weekend.

The Crookwell Potato Association once again had a stand and displayed many different varieties for people to look at. As a charitable gesture, our association made fresh potatoes available to the public for a gold coin donation. This was good value and well patronised, with all money going to a local charity.

Growers and members of the Crookwell Potato Association were on hand to answer all questions on the day. Callum Fletcher from AUSVEG answered questions relating to pest and diseases in potato crops – his focus was on tomato potato psyllid, which is of great concern, and much discussion was based around this particular insect. A special thank you to Callum for dedicating his time and effort on the day. Everyone appreciated his input and learnt a great deal.

Also sharing our spot on the day was Bev Zurbo from the New South Wales Department of Primary Industries. Bev was on hand to explain the importance of biosecurity on farms, and in particular the quarantine requirements for the local potato industry. Thanks to Bev for her support of our industry and for enduring the icy conditions.

After a successful weekend, all growers are back in the potato paddocks making the most of the moisture received during the Potato Festival.

Most varieties of seed stock have been sold with only some of the Dutch Cream remaining to be placed. Growers may have some seed available once paddocks are completely harvested. It is good to see such high demand for seed and this keeps growers' confidence in our industry high.

Simon Moltoni
WA Potatoes
Executive Officer
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Growers' resilience continues to be tested as prolonged difficult market conditions remain for the fresh and seed potato markets in Western Australia. The Manjimup/Pemberton summer harvest has been completed and growers generally have struggled for profitability. Anecdotally there have been less potatoes ploughed in than last season as growers make adjustments to plantings in a post-deregulation/tomato potato psyllid (TPP) environment.

As the harvest moves north into the Busselton/Myalup regions, we are hopeful for improved returns for our members.

Slight increases in export seed production have been offset by reduced plantings of certified seed for the east coast market due to the TPP incursion.

In more positive news, congratulations are due to the four successful applicants who received funding from the Potato Industry Assistance Grants program (part of the broader Horticultural Research Recovery Fund) that will lead to increased markets and efficiencies to stimulate the Western Australian potato industry.

It's been wonderful to welcome Georgia Thomas to the team here at WA Potatoes. Georgia joins as project manager for the multiple components of the Industry Adjustment Package. Georgia's extensive experience, particularly in marketing, adds significantly to the performance of WA Potatoes.

The Seed for Schools project is underway thanks to the efforts of Morena Perdec. This project is a great promotion of our industry to the families in our community, and it will also provide content for our Todatoes campaign.

As the new financial year kicks in, Morena and Georgia will start planning for the upcoming Perth Royal Show. Watch this space for updates.

Market access to the east coast is of course the most important current issue. As it stands, the Department of Primary Industries and Regional Development has requested that the Consultative Committee on Emergency Plant Pests endorse our claim of area freedom from *Candidatus* Liberibacter solanacearum (CLso). This request comes after the surveillance and testing component of the Transition to Management plan has failed to return a positive test for CLso. This is a great result for all of industry nationally, and we look forward to more positive steps in the near future.

YOUNG POTATO PEOPLE

G'day again,

I hope things in your part of the world are treating you well.

If you managed to make it to Hort Connections, then I hope you have been paying attention and learning things that help you in your daily enterprise. Not all of us have the time to get to such an event and if you have never been to a convention like Hort Connections, I would recommend getting to at least one. You would be amazed at the information presented, but also the 'connections' you make within the industry.

Information is a valuable thing in any walk of life. Information is so readily available, and it is so quick and easy to get access to that we expect everything in life to be right there in front of us. At times we lose our heads a bit if something takes longer than a couple of seconds. Look at Millennials for example: a younger generation that wants instant feedback on everything they do. They have grown up in a world where everything is at their fingertips – they are so used to having everything available to them that technology isn't just something they use, but it is part of them.

It is these newer generations that we, as an industry, will need to understand more about going into the future. They not only want to know where the food they eat comes from, but also what is in it. They also don't want anything 'boring'; they want you to serve up something amazing to them in everything they eat (it's as if all the meals they eat need to be Instagrammable).

I call this the 'MasterChef effect': a television show that pushed the idea that the way food looks is more important than the taste, or at least as important.

We will need to start promoting our products in new ways that cater to the massive changes in society. Potatoes get a bad rap for being unhealthy, but that opinion can be changed – it's good marketing of the facts.

Hopefully the next time a Millennial gets their Google personal assistant to order some food for a meal, they will take photos in a perfectly lit room with a white background. They will order some potatoes that they can then present in an unusual way that is very photogenic.

Cheers,
Stu

@youngpotatopeps facebook.com/groups/youngpotatopeople Proudly supported by Adama

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For more information, contact:

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