| October/November - 2017 |

potatoes australia

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AUSVEG

Hort Innovation

EDITORIAL

AUSVEG recently had the opportunity to attend the Australian Women in Agriculture Conference in Brisbane and one comment made by many of the attendees was that there were so many young women at the event, from all areas of the industry and all walks of life.

It was a promising and energising observation that reinforced the fact that despite the somewhat stereotypical image of Australian farming that may come to mind to people outside of the industry, we are making progress in attracting the next generation, including women, to the wonderful world of agriculture – the same sector that is now the biggest contributor to Australia's economic growth.

While many of these young guns may choose beef, sheep, dairy or cropping as their sector of choice, there is also a lot that horticulture has to offer the next generation – developments in robotics and technology are just some examples. One of the issues facing the potato and vegetable industries in particular is the challenge to attract these younger generations to the sector, particularly women who are keen to make their mark in a male-dominated industry.

Looking at the young lady who graces our cover this edition, we'd argue that the challenge is certainly being embraced in the potato industry.

Olivia Ryan is a potato agronomist for McCain, based in Ballarat, Victoria. Despite being heavily entrenched in the sheep, cattle and broad acre cropping sectors of the industry during her childhood and agricultural studies, it was the potato industry that caught Olivia's attention as a graduate.

After completing industry placements with local agronomists who worked with potato growers, this interest was further strengthened to the point where the potato industry became the launching pad of her career.

At just 21 years of age, Olivia has already travelled to China and New Zealand as part of her role. Her enthusiasm and passion for the industry is clearly stated throughout the responses in her profile on page 14, and we can take comfort in the knowledge that the potato and vegetable industries are certainly making a mark in attracting the younger generations to a range of roles, from the field to the lab and beyond.

We wish Olivia all the best in her career, and hopefully there will be more young people who follow in her footsteps to ensure that there is a sustainable future for the Australian potato industry.

The AUSVEG Board held a successful meeting from 13-14 September in Sydney to discuss a range of topics crucial to the future success of AUSVEG and the Australian potato and vegetable industries.

I am very pleased to announce that NT Farmers, the peak body for plant-based industries in the Northern Territory, has resumed its membership of AUSVEG, and as a result we are proud to welcome Michael Quach as the nominated representative for the AUSVEG Board.

Michael is a recognised leader in the industry, and a former finalist for the 2015 ABC Rural Biosecurity Farmer of the Year for his efforts in managing the cucumber green mottle mosaic virus outbreaks in the Northern Territory in 2014 and 2015.

The return of NT Farmers has once again made AUSVEG a truly national representative horticultural body, and we are confident that Australia's potato and vegetable growers will benefit greatly from Michael's contribution to the Board as a leading Vietnamese grower with a keen interest in biosecurity practices.

In recent weeks, AUSVEG also penned a strategic partnership with supermarket chain Woolworths for 2017-18. It is important that the industry has a close relationship with its major buyers, as it not only allows them to have a better relationship with growers, but also so that we can maintain a constructive dialogue to ensure the interests of growers are taken seriously on issues that affect our industry.

The supermarket chain says it is committed to continuing to source fresh, local produce and we look forward to working with Woolworths on a range of industry issues over the coming year in the interests of growers.

Furthermore, planning for Hort Connections 2018 – a joint initiative between AUSVEG and the Produce Marketing Association Australia-New Zealand – is well underway.

The event will take place from 18-20 June 2018 at the Brisbane Convention Centre, and we are pleased to confirm that the Queensland Alliance for Agriculture and Food Innovation (QAAFI) has signed on as a sponsor for the conference and trade show, supporting the pre-Gala Dinner drinks reception.

QAAFI is a world-leading research institute, formed from the combined expertise of researchers from the University of Queensland and the Queensland Government. AUSVEG appreciates QAAFI's support for this premier event in horticulture and we remain committed to partnering with other industry members to create a bigger and better Hort Connections for 2018.

Geoff Moar
Chairman
AUSVEG

As the weather heats up and Western Australia continues its extensive surveillance for tomato potato psyllid (TPP) in the state, AUSVEG has welcomed the approval of the Transition to Management phase to manage the ongoing impacts of TPP and risks of *Candidatus* Liberibacter solanacearum (CLso) in Australia, which causes the serious exotic disease 'zebra chip' in potatoes. At the time of writing, the CLso associated with TPP had not been found in Western Australia.

The National Management Group (NMG) for TPP – comprising all Australian governments, affected industries and Plant Health Australia – facilitated the Transition to Management phase of the response plan, which will conclude in May 2018. The plan will help the horticulture industry to manage TPP and build confidence around the status of CLso in Australia. Activities will include supporting surveillance, market access activities, research and enterprise management planning.

The announcement coincides with the appointment of a dedicated National TPP Coordinator to help the vegetable and potato industries during this response. AUSVEG will manage the project with Alan Nankivell fulfilling the role, which is funded as a result of a strategic levy investment under various Hort Innovation funds including Potato Processing, Fresh Potato and Vegetable.

Alan has an extensive background in horticulture, including previous roles as CEO of Vinehealth Australia and as a Research Coordinator for the Plant Biosecurity Cooperative Research Centre, and he will be based in South Australia. We welcome Alan to the AUSVEG team, and look forward to sharing his expertise with the industry to help coordinate this response and ensure our potato and vegetable industries can effectively manage this pest.

In other news, workshops are being held in key growing regions around Australia that focus on understanding the new Horticulture Code of Conduct, including how it applies to growing operations, ways for growers to ensure their businesses are compliant and their obligations under the Code.

AUSVEG strongly encourages Australian growers and packers to familiarise themselves with the requirements under the new Code, which is regulated by the Australian Competition and Consumer Commission. Keep an eye out for upcoming workshops in your area – it is a worthy investment of your time and can help to make sense of the record-keeping requirements and Horticulture Produce Agreements that form part of the new Code. Most importantly, these workshops will help growers clearly understand their obligations and get the most out of the new Code.

James Whiteside
CEO
AUSVEG


National TPP Coordinator Alan Nankivell.


Symptoms of *Candidatus* Liberibacter solanacearum in potato. Image courtesy of Plant & Food Research New Zealand.

COORDINATING TOMATO POTATO PSYLLID MANAGEMENT ON A NATIONAL SCALE

The newly-launched strategic levy investment MT16018 – *Tomato potato psyllid (TPP) National Program Coordinator* will enable the potato industry, as well as other affected industries, to take a proactive and strategic approach to TPP management in Australia. Alan Nankivell, formerly of the Plant Biosecurity Cooperative Research Centre (PB CRC), began the role of National TPP Coordinator on 16 October.

Early in February, the tomato potato psyllid (TPP) was found in Australia in a Perth vegetable garden. Continued surveillance by the Western Australian Department of Primary Industries and Regional Development (DPIRD) has found the psyllid in agricultural areas surrounding Perth, and also in vegetable and potato growing regions south of Perth.

So far, the associated bacterium (*Candidatus* Liberibacter solanacearum; CLso) has not been detected. Surveillance for the bacterium will continue under a recently approved Transition to Management (T2M) plan, which will span the next 11 months.

On completion of the T2M phase:

- We will know if CLso is carried by our TPP population.
- We will have guidance material to manage TPP at a farm level.
- We will have a national plan to guide management of TPP now, and into the future.
- We will have interstate compliance protocols for produce grown in affected regions.
- We will have begun Australian research on the biology and management of our endemic population.

DPIRD staff who work on the T2M plan will be supported from the industry side by Alan Nankivell, as National TPP Coordinator, who will lead the development of the National Management Plan and contribute to farm management guidance material. The project, *Tomato potato psyllid (TPP) National Program Coordinator* (MT16018) is a strategic levy investment under the Hort Innovation Vegetable, Fresh Potato and Potato Processing Funds. Importantly, this role is funded for three years, ensuring that initiatives that have begun during the T2M phase can be continued by the coordinator throughout the life of the project.

ABOUT ALAN NANKIVELL

During his career, Alan has gained extensive experience in leading and developing national programs across several sectors. While leading biosecurity initiatives in viticulture, he developed innovative, easy-to-use communication tools to aid farm gate hygiene and risk assessment, as well as developing online spatial information to provide stakeholders with up-to-date knowledge of where pests are and where they are not.

"I am looking forward to meeting with growers who have been impacted by the incursion of TPP," Alan said.

"I will seek to learn from them and apply this knowledge to develop tools to maximise the efforts of stakeholders who are affected by TPP. For those regions where it is not known if TPP is present, I will work with stakeholders to 'prepare' as though TPP could arrive."

PROJECT OVERVIEW

The primary function of the role will be ensuring that R&D and management efforts across the various industries and jurisdictions affected by TPP are coordinated, prioritised and strategic. Efforts to effectively manage TPP at the moment are largely directed at Western Australia (uninfected 'at risk' regions and infected regions). However, this is intended to be a national project, with coordination activities seeking to benefit both Western Australia and states that are not yet managing the pest.

This role will reduce double handling and wastage of resources as it will ensure that important initiatives are not repeated by several organisations and aid in directing investments to where R&D is most needed for effective management of TPP. The primary output of the program will be the development of a national TPP management strategy, which will include a national TPP R&D agenda, to be updated annually.

The first workshop for the project was held on 26 September at the PlantSci17 Conference in Brisbane. This workshop targeted government and researchers in order to assess future R&D needs and priorities for management of TPP and CLso, and was the first major output of the project. It will be followed with further industry consultation at various forums in order to develop the TPP R&D agenda that will underpin the national management plan.

THE STEERING COMMITTEE

A steering committee for the project has also been finalised, and includes individuals with experience covering potato processing, fresh potato production, vegetable production, government biosecurity policy, entomology and plant pathology.

R&D priorities identified will be reviewed by the project steering committee and integrated into the national TPP R&D agenda, which will guide future R&D investments on TPP. The steering committee will review and endorse the TPP national plan, and provide independent advice to the coordinator.

The committee will be made up of Nigel Crump (ViCSPA), Callum Fletcher (AUSVEG), Geoff Raven (Primary Industries and Regions South Australia), Michael Hicks (Snack Brands Australia), Simon Moltoni (WA Potatoes) and Troy Cukrov (SupaFresh).

INFO

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

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

Project number: MT16018

Hort Innovation

WHAT WILL HAPPEN IF TOMATO POTATO PSYLLID IS FOUND IN A CURRENTLY UNAFFECTED STATE OR TERRITORY?

Australia's Chief Plant Health Officers, as part of the national Plant Health Committee (PHC), are very aware of industry concerns about the possible impacts of a tomato potato psyllid (TPP) detection beyond Western Australia. PHC is currently working towards an agreed regulator position, in consultation with industry.

Such a case would be reviewed once again by the national committee charged with recommending action during an Emergency Plant Pest incursion. If the decision is made to not undertake eradication, TPP will become a 'managed' pest in the region, state or territory. At that point it is up to the government of that state or territory to let the pest be unregulated and managed by industry best practice, contain the pest to a defined area through regulation, or eradicate the pest without support from the Federal Government.

This decision is often influenced by several factors, including:

- the value of the affected industry in that state;
- resourcing available within the particular government department;
- geography of the region; and
- the view of members from the affected industry.

PROACTIVE APPROACH

The action that will follow such a detection is as yet uncertain. During 2017, interstate compliance agreements for certifying produce from TPP-affected areas have been developed and accepted by several states. This work provides a platform for managing any trade issues as quickly as possible. Additionally, our industry has been pre-emptive in employing a National TPP Coordinator to lead preparations for the spread and long-term management of the psyllid.

Regardless of the determination by state or territory governments, AUSVEG will work with the Department of Primary Industry of the affected state with the aim of facilitating communication between government and industry, as well as activities that will support the long-term health of our sector.

DPIRD officers Kate Newman and Darryl Hardie with traps for the plant pest, tomato potato psyllid, in Western Australia.

TOMATO POTATO PSYLLID SURVEILLANCE CONTINUES IN WA

Surveillance efforts against the tomato potato psyllid will gain further momentum over the next couple of months as summer approaches. The Western Australian Department of Primary Industries and Regional Development provides an update.

Trapping for the tomato potato psyllid (TPP) has ramped up during spring, with the warmer weather conducive to increased insect activity.

Trapping and surveillance led by the Western Australian Department of Primary Industries and Regional Development (DPIRD) is part of a national Transition to Management plan supported by industry and government to help industry effectively manage the destructive pest.

TPP feeds on tomato, potato, capsicum, chilli, goji berry, tamarillo, eggplant and sweetpotato, leading to loss of plant vigor and yield. Uncontrolled weeds such as nightshade and tree tobacco can also harbour the pest.

STRENGTHENING SURVEILLANCE

DPIRD Irrigated Agriculture Executive Director John Ruprecht said the psyllid had significantly impacted Western Australian growers since its detection in February, limiting interstate trade for a range of plants and produce.

"This national plan will support improved management of TPP and build confidence around the status of the bacterium *Candidatus* Liberibacter solanacearum (CLso), which can be associated with the psyllid but has not been detected in Australia," Mr Ruprecht said.

"The eight-month plan will involve national surveillance, ongoing market access work, increased research on pest management and development of on-farm management plans."

Mr Ruprecht said surveillance for the pest in Western Australia will resume in late spring.

"The department will work closely with landholders in metropolitan and regional areas to trap psyllids," Mr Ruprecht said.

"We have had great support from landholders in supporting surveillance activities since the pest was first detected.

"As part of the response to date, surveillance has been carried out across more than 1,600 properties, involving the deployment of more than 10,000 traps."

Other states will also implement surveillance plans for the pest.

The department will lead new research including examining chemical control options, post-harvest disinfestation trials and assessing biological control options using predator species.

Residents across the Perth metropolitan area have also been encouraged to host a 'sticky trap' in their backyard to help combat TPP.

"We are calling on the Perth community to support our surveillance efforts by 'adopting-a-trap' in their garden during spring," DPIRD Senior Research Officer Darryl Hardie said.

"We are looking for home gardeners from across the Perth metropolitan area, as well Wanneroo, Serpentine-Jarrahdale, Mundaring, Mandurah, Gingin, Chittering and Murray, who grow potatoes, capsicums, tomatoes or chillies in their gardens.

"This dedicated trapping program will build our knowledge about this insect and its presence in Western Australia to support our valuable horticulture industry in managing this new pest."

WESTERN AUSTRALIA'S TPP COORDINATOR APPOINTED

Dr Ian Wilkinson has been appointed to coordinate the tomato potato psyllid (TPP) Transition to Management phase in Western Australia. Ian will be working with the state's horticultural industry as well as the National TPP Coordinator to implement the nationally-agreed Transition to Management plan over the next eight months.

Ian is a Senior Research Officer with the Western Australian Department of Primary Industries and Regional Development, based in Bunbury. Ian has broad experience in research and project management in irrigated agriculture and biosecurity. He successfully managed the 2016 green snail incident, working with Western Australian strawberry growers and industry to limit the impact of the declared pest. He has contributed to a number of other areas of horticulture, including apple management and the management of stable fly.

Ian is supported by a dedicated team from the department, including surveillance, entomology and laboratory staff, to put the plan into action.

INFO

Growers who suspect that tomato potato psyllid may be present in their crop need to report this to their state or territory department of agriculture or primary industries by phoning the Exotic Plant Pest Hotline on 1800 084 881.

In Western Australia, growers can also use the DPIRD reporting app. Details about how to access and use the app are available at agric.wa.gov.au/apps/mypestguide-reporter.

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

Project Number: PT15007

THE DICKEYA DIANTHICOLA RESPONSE IN WA

Confirmation of the bacteria *Dickeya dianthicola* in Western Australian commercial potato crops has been difficult news for the state's potato industry, which is still facing trade restrictions due to the detection of tomato potato psyllid earlier this year.

Dickeya dianthicola has been confirmed in seed potato crops and dahlia tubers in Western Australia, and in freesia bulbs imported from Victoria. The pathogen has also been detected on dahlia tubers grown on a commercial property located in Victoria.

Western Australian Department of Primary Industries and Regional Development (DPIRD) Irrigated Agriculture Executive Director John Ruprecht said *Dickeya dianthicola* has a large potential host range, including not only potatoes but a range of ornamental flowers, as well as artichoke and chicory.

It can persist in the soil for up to 12 months, and in Western Australia it has appeared to move from dahlia to potato, proving that it can transfer between different host crops.

"From the very beginning the department made tracing a priority to not only determine the extent of the outbreak, but to also identify potential pathways and the source of the disease," Mr Ruprecht said.

"Twenty-seven properties were sampled, and there were tracing activities to some 64 properties. The end result was a complicated trail of potato seed and dahlia movement not only throughout Western Australia, but also to and from other states."

In response to these results, other states have been asked to also survey and test for the pathogen.

LOOKING AHEAD

DPIRD has lifted quarantine restrictions on five Western Australian properties and will be working with industry to develop management options through Western Australia's potato seed certification scheme, on-farm biosecurity and best management practices to minimise the impact of this bacteria.

"Of critical importance is to provide growers with information on farm biosecurity measures that are effective in protecting their crops from *Dickeya dianthicola* infection," he said.

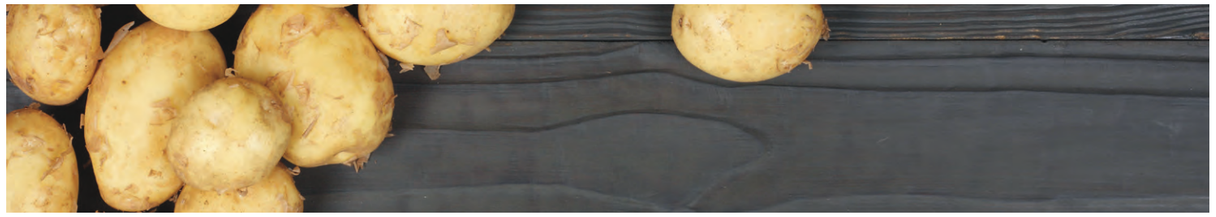
At the time of writing, Mr Ruprecht said there were no additional trade restrictions imposed on Western Australia potatoes other than what is already in place in response to the tomato potato psyllid.

INFO

Dickeya dianthicola and biosecurity information sheets can be downloaded from agric.wa.gov.au/ddianthicola.

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

Project Number: PT15007



FUNDING BOOST TO HELP AMERICAN POTATO GROWERS IN THE FIGHT AGAINST BLACKLEG

Bacterial blackleg is a serious disease in potatoes, which has caused crippling crop losses in United States' growing regions over the past three years. A recent funding boost to Colorado State University to study the spread of pathogens that can cause blackleg in American potato crops may provide some useful insights to Australian growers who are currently fighting the disease.

Potato growers in the United States have been battling against bacterial blackleg in their crops since 2014.

In June this year, the United States Department of Agriculture (USDA) provided a grant of US$264,000 to Colorado State University to fund a project that aims to help growers manage bacterial blackleg in potato crops and quickly address any emerging problems.

Bacterial blackleg has caused severe crop losses in the United States, estimated to be worth millions of dollars in some potato growing regions. Multiple bacterial species can cause blackleg in potato, but in the United States, the most severe cases are tied to *Dickeya dianthicola (D. dianthicola)*, which was also detected in Western Australia earlier this year.

At the time of writing, Colorado State University was testing a range of management methods suggested by potato growers. The majority of the funds received from the USDA will be used to support the salary of a postdoctoral researcher and the supplies required for this research, as well as support extension and engagement efforts. This will allow the research team, led by Dr Amy Charkowski – head of Colorado State University's Department of Bioagricultural Sciences and Pest Management – to reach as many farmers as possible with new information about *D. dianthicola*.

The team is part of a larger group of researchers from other parts of the United States, who are all studying different aspects of this disease.

RAPID SPREAD

According to Dr Charkowski, *D. dianthicol*a pathogens can spread very quickly around the country if they are not detected.

"Growers in the United States only use seed potato lots from American or Canadian sources. However, seed potato lots are sometimes distributed very widely across the continent," she said.

"For example, it is not unheard of for a single seed lot to be split up and sold to multiple farms in 10 or more states. If this lot has pathogens such as *D. dianthicola*, the pathogen very quickly spreads across the agricultural landscape.

"In addition, pathogens that infect potato can also infect other crops, so even though potato growers do not import seed from other continents, imported seeds and flowers from Europe, Africa and South America pose some phytosanitary risk to potato in North America."

A DESTRUCTIVE DISEASE

D. dianthicola can cause seed tubers to rot in the ground, resulting in very low emergence of the crop, Dr Charkowski explained.

"Growers have seen as little as 20-30 per cent of their crop emerge when planting an infected seed lot. It also causes blackleg, which can kill the plants, especially in warm and humid weather. Growers have seen losses of 30 per cent or more of their plants to blackleg," she said.

"We commonly see *Pectobacterium* in association with *D. dianthicola*, particularly at the end of the growing season. Both of these pathogens can cause damage to stored potatoes."

Dr Charkowski said it is very difficult to control the spread of the pathogens.

"Growers have no options for treating diseased plants or for treating latently-infected plants. The pathogen can spread in irrigation water and survive in volunteer potatoes. Sanitation at every step in potato production helps, however, with *D. dianthicola* and with other potato pathogens," she said.

INTERNATIONAL COLLABORATION

According to Dr Charkowski, the American and Australian potato industries have the capability to learn from each other.

"In the United States, most potatoes are grown in the intermountain west in regions that are relatively limited in water. I think that researchers and farmers from the United States and Australia likely have much to learn from each other on all aspects of growing potato in dry regions.

"I hope that the results from our work are useful for Australian growers and our research group would appreciate insight and opportunities to collaborate with Australian researchers on management of *D. dianthicola*."

INFO

For more information, please contact Dr Amy Charkowski at Amy.Charkowski@colostate.edu.

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

Project Number: PT15007

Hort Innovation Strategic levy investment | POTATO – FRESH FUND

TASMANIAN TRADE EXPO AND FORUM AIMS TO EDUCATE GROWERS

Over 120 growers and industry members gathered at Ulverstone in northern Tasmania for the 2017 Roberts Potato and Vegetable Industry Trade Expo and Forum on 27 July, a networking event which focused on communicating an array of new R&D and industry updates.

During the event, many of Roberts' main potato and vegetable industry supply chain partners conducted trade and machinery displays and demonstrations to provide growers with the opportunity to view goods and services available to the potato and vegetable industries.

EDUCATING GROWERS

Forum organiser and Roberts Limited State Agronomy Manager Stuart Millwood said the tomato potato psyllid (TPP) was a focus for potato growers and industry members.

"Our potato industry is well aware of the potential risk of TPP entering the state," he said.

"We need to be well-educated and equipped with an industry strategy as growers, agronomists and processors if it arrives. If we are not, it could potentially devastate our potato industry in Tasmania."

As part of this industry education process, entomologist Paul Horne from IPM Technologies presented to the audience on the possibility of using an Integrated Pest Management (IPM) approach. IPM is the successful integration of all available methods of controlling pests, rather than relying solely on pesticides.

In addition, the Tasmanian University of Agriculture's James Hills presented on practical precision agriculture, and outlined his findings on variable rate irrigation in different regions of the state.

Internationally renowned potato agronomist John Sarup was also a special guest of the event. Mr Sarup was in Tasmania visiting potato processor Simplot, and he presented on potato production in the United Kingdom (turn to page 22 for more).

GROWING INTEREST

The Roberts Potato and Vegetable Industry Trade Expo and Forum has increased in size each year, providing a strong platform for the industry to network.

"The forum is an opportunity for potato and vegetable growers to keep abreast of the latest technology, R&D and product solutions entering the industry," Mr Millwood explained.

"It is all about new information exchange and helping the transition to the field for production gains. Growers get an understanding of what is new in the industry and an opportunity to talk one-on-one with suppliers, guest speakers and other industry stakeholders."

INFO

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

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

Project Number: PT15007

Hort Innovation Strategic levy investment | POTATO – FRESH FUND

A YOUNG STAR ON THE INDUSTRY HORIZON

NAME: Olivia Ryan
AGE: 21
LOCATION: Ballarat, VIC
WORKS: McCain Foods Ballarat

HOW DID YOU FIRST BECOME INVOLVED IN THE POTATO INDUSTRY?

I first became involved in the potato industry with McCain in June 2016. Prior to this I had completed industry placement during my time at Longerenong Agricultural College in Victoria with local agronomists who worked with potato growers and found this very interesting. When I saw the job advertised at McCain I did not hesitate once about applying for it and have never looked back. Coming from a sheep and cattle property and studying mainly broad acre cropping, getting a job in the potato industry was a massive step for me in my career and I have loved every day of it.

WHAT DOES YOUR ROLE AS AN AGRONOMIST AT MCCAIN INVOLVE, AND WHAT ARE YOUR RESPONSIBILITIES?

- Communicating with all McCain growers in Victoria and South Australia to help deliver the best quality raw product to the factory.
- Helping with variety trials and product trials.

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

I enjoy working in the potato industry as it is a challenge for me and it is something that I am pretty new to. I hope that I can meet and exceed any goals set for me by McCain and the growers.

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

During my time at McCain, I haven't faced any really big challenges so far. It has been very easy to step into my role as the growers have been very easy to get along with and to work alongside.

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

I receive help and advice from my colleagues at McCain as well as other local agronomists. Also I have completed training through McCain.

WHAT DID YOU LEARN FROM YOUR STUDIES AT LONGERENONG AGRICULTURAL COLLEGE AND HOW HAS THIS HELPED IN YOUR CURRENT ROLE?

During my time at Longerenong College I completed an Advanced Diploma in Agriculture and a Diploma in Agronomy. During this I learnt numerous things that helped me to achieve what I have today. As Longy isn't your typical university-type learning, I felt it suited me very well as it was more of a practical, 'hands-on' type learning. As it is in the heart of the Wimmera, we never learnt about potatoes and it was mostly broad acre cropping enterprises and some livestock. The basic background knowledge of soil health and nutrition, as well as other areas of study, are very similar to that of growing potatoes which has helped give me a good base to step into the potato industry.

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

Research is extremely important in the potato industry. To McCain, research into new varieties is very important as this comes with a lot of other benefits such as disease resistance, improved quality and lower inputs.

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

At McCain we are always looking for and trialling new and different ways to help increase quality and efficiencies with our growers.

YOU RECENTLY TRAVELLED TO CHINA AND EARLIER THIS YEAR TO NEW ZEALAND AS A MCCAIN REPRESENTATIVE. WHAT WAS THE PURPOSE OF THESE TRIPS, AND WHAT DID YOU LEARN AS A RESULT?

During my trip to New Zealand in February, I was taken around with other McCain agronomists and looked at how they harvest, trials and also the tomato potato psyllid in the field. During my visit to China, I helped with their raw potato testing/grading before storage and learnt about what issues they face compared to Australia and how these are overcome and if we can implement anything from China back in Australia.

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

The main growth in the potato industry will come from research and development into varieties, products and technology, and will help growers to produce a more efficiently grown potato to the standards that are required.

WHERE DO YOU SEE YOURSELF IN FIVE YEARS?

At McCain in the same role I am in today as I thoroughly enjoy it. I hope to learn as much as I can about the industry to help McCain growers perform to their best ability.

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

I think the key point here is exposure to the potato industry as it is a smaller industry in Australia compared to grain production etc. I think a lot of people don't understand how much is involved in growing and producing potatoes as they are not aware of how many tonnes are actually produced here in Australia. It is a very specialised industry with plenty of room for growth in Australia.

USING HINDSIGHT TO BETTER PREPARE FOR THE FUTURE

In the wake of the tomato potato psyllid incursion, an opportunity has been identified to review the response to the incursion under the Emergency Plant Pest Response Deed. AUSVEG Biosecurity Adviser Dr Kevin Clayton-Greene explains more.

The tomato potato psyllid (TPP) incursion in Western Australia has been one of the most significant biosecurity events in Australia. It has provided a strong test of many aspects of the Emergency Plant Pest Response Deed (EPPRD).

As mentioned in previous *Biosecurity brief* articles, every incursion is a new learning exercise. Due to its current and potential future impact, the TPP incursion has provided more opportunity than most for evaluation of Deed signatories' responses to a serious incursion.

Although it is a practice to regularly debrief after an incursion, it has been decided that the TPP incursion provides an opportunity for a thorough dissection of the response and the role of all parties. This will take place over a couple of days before the year's end.

This will provide an opportunity for all parties to review how they performed and identify areas that worked well, and areas where improvement may be effected.

AN EVOLVING DEED

The EPPRD is a substantial document that is continually being reviewed and revised as a consequence of operational experience. To support the parties and their use of the EPPRD, there is another slightly smaller document also available on the Plant Health Australia (PHA) website known as Plantplan (you can view it at planthealthaustralia.com.au/biosecurity/incursion-management/plantplan).

Plantplan defines the roles of all parties including industry. These are outlined below.

The main responsibilities of the Affected Industry Parties are:

- Undertake reasonable steps to ensure industry members and other relevant stakeholders report suspect Emergency Plant Pests (EPPs) to the relevant state/territory department.
- Provide advice on the affected industry (such as size, distribution, sources of supply, marketing practices, industry organisation and other factors which may affect the eradication program) and the Response Plan.
- Provide Industry Liaison Coordinator (ILC) and Industry Liaison Officer (ILO) personnel as required.
- Implement relevant aspects of the approved Response Plan.
- Participate in the National Communication Network (NCN) to ensure nationally consistent information, implement the agreed communication strategy and help ensure that nationally agreed information is distributed to their industry.

Plantplan also defines the roles and responsibilities of committees such as the Consultative Committee on Emergency Plant Pests (CCEPP) and the National Management Group (NMG). For most of the activities defined under the Deed and interpreted by Plantplan, there are job cards which clearly articulate who does what where and to whom they report. These job cards can also be accessed publicly on the PHA website at the same URL as listed earlier.

INDUSTRY COHESION

This system is agreed by all Deed parties and underpins the EPPRD at the operational level. While it may sound somewhat bureaucratic, it also must be remembered that in the event of any incursion there are a minimum of nine parties involved (all states and territories plus the Federal Government and at least one affected industry party) and they are not all acting from the same base. Therefore, a system needs to be developed to avoid a response falling into chaos.

It is important that we, at the industry level (particularly at the state level) are familiar with our roles and also those of other parties as this becomes very important when we are helping the 'combat state' prepare a Response Plan or a Transition to Management Plan (T2M).

In the next *Biosecurity brief*, I will look at some of the factors that industry must consider when it is asked for input.

INFO

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

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

Project Number: PT15007

NEW COOLSTORE TECHNOLOGY TO IMPROVE QUALITY OF TASSIE SEED POTATOES

Potato growers are set to benefit from a new seed potato coolstore in Tasmania, which has the ability to store around 8,000 tonnes of seed potatoes. *Potatoes Australia* finds out more about the technology and how it can benefit the industry.

The challenge to improve the high quality of seed potatoes during storage has been strengthened with the opening of a new coolstore in the heart of Tasmania's potato growing region.

Seed potato producer Agronico operates the coolstore, which was officially opened on 26 July in Spreyton, near Devonport. The company produces about 250,000 minitubers each year through its ViCSPA-accredited tissue laboratory, which holds about 150 potato varieties. Over 8,000 tonnes of certified seed potatoes are grown each year for Tasmanian and interstate potato processors, as well as fresh market growers across eastern Australia.

To meet its growing demand for seed potatoes and ultimately increase local and export potato seed production, Agronico developed the new coolstore storage facilities to ensure it could better service its customers by providing ideal storage conditions for potatoes prior to shipping.

"Agronico previously stored the seed potatoes off-site from the grading and cutting factory and was storing just under 5,000 tonnes. A growth in sales meant that by 2017 there would not be enough storage space," Agronico Chief Executive Officer Robert Graham said.

"Developing the coolstore at the factory site has eliminated about 500 truck movements a year and now there is capacity to store over 8,000 tonnes of seed potatoes.

"The coolstore maximises the opportunity for high quality seed, which is vital for high yield and therefore valuable for our farmers."

INSIDE THE COOLSTORE

A study tour to Europe sparked the discovery of the coolstore technology, developed by Dutch company Tolsma. For maximum efficiency, the storage shed has been built next to Agronico's grading and cutting lines, and stage one consists of 10 sections that can hold 800 tonnes of produce each. This allows for varietal control and manageable volumes of seed.

Specially designed aeration systems allow fresh air to be circulated through each section when carbon dioxide levels are too high. A large drive-through corridor in the centre of the storage shed also allows trucks to be loaded undercover if needed.

"The new coolstore means potatoes can be transported direct from Tasmanian paddocks for grading and then to the facility for storage in optimum conditions. This minimises the ageing of seed through handling processes, leading to good stem count per sett," Mr Graham explained.

"Typically, we store the seed potatoes for up to eight months and with the new coolstore they are stored at the right temperature and without the detrimental impact of carbon dioxide build-up. The temperature, carbon dioxide levels and humidity will be monitored 24/7 and held at optimum levels."

There is also opportunity for the coolstore technology to store other horticultural products such as onions, carrots and broccoli.

INDUSTRY BENEFITS

Mr Graham said the purpose-built factory will improve the viability and quality of seed that is kept in the coolstore, which will provide flow-on benefits to potato growers.

"We believe there is a big opportunity for seed potatoes in Tasmania," he said.

"Tasmania is clean and green in regard to certain potato diseases – it is free from potato virus Y and potato cyst nematode. This allows for introduction of clean early generation seed into mainland Australia that can help minimise the impact of endemic potato disease problems that are present in certain areas of mainland states.

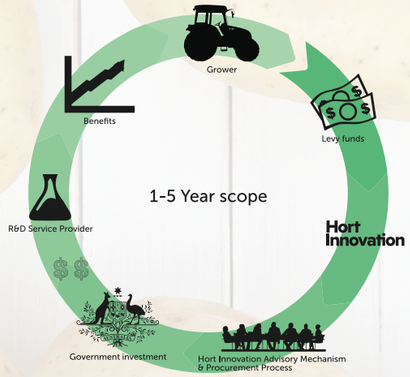
"It also shows our commitment to improving our product and providing opportunities for growers and contractors in Tasmania."

INFO

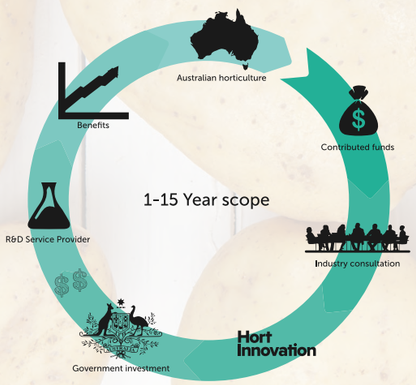
For more information, please visit agronico.com.au.

THE FRESH POTATO R&D LEVY AT WORK

STRATEGIC LEVY INVESTMENT



HORT FRONTIERS



WHO PAYS THE FRESH POTATO R&D LEVY?

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

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

HOW IS LEVY MONEY INVESTED?

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

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

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

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

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

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

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

THE IMPACT OF HIGHER ENERGY PRICES ON POTATO PROCESSORS

Rising energy prices have dominated political discussions recently, as Australian growers and consumers continue to feel its impact on their bottom lines. The potato processing industry is not immune to this issue, having witnessed a triple digit increase to energy costs in the sector. *Potatoes Australia* spoke to three potato processors about their response to rising energy prices in Australia.

MCCAIN FOODS: SKYROCKETING COSTS

Josh Opas from McCain Foods in Ballarat, Victoria said the company has experienced an approximate 200 per cent increase on energy prices in the past 12 months.

He said this added cost has large repercussions for processors as they are a major user of gas and electricity, while growers are mainly affected through irrigation.

"The vast majority of processing crops are irrigated with pumps, either diesel or electricity. When diesel was cost-prohibitive many years ago, there was a big conversion to electricity and big spend by growers. They are now swapping back," Mr Opas said.

"The more it costs per kilogram to process raw into frozen products, the greater the pressure it puts on other inputs such as potatoes, oil and packaging. If pricing of finished products cannot be adjusted, then profitability is impacted. Whatever the case is, our industry becomes uncompetitive."

Mr Opas added that currently in Europe, the market or free-buy price to purchase raw potatoes is approximately $60 per tonne (around six times less than what it costs Australian processors to purchase potatoes).

"There are one million tonnes of market potatoes for processors to purchase and make into cheap products to export around the world. Currently, over 100,000 tonnes of fries are imported into Australia per year, which is the equivalent of one large processing plant in Australia," he said.

"So Australian producers become uncompetitive and if that trend continues, they may shrink in output, affecting the whole industry supply chain."

This had led McCain to look at sourcing renewable technology to increase use efficiency and absorb costs as much as possible.

"For example, we are investing approximately $60 million at our Ballarat facility – in new, more efficient technology to try and remain competitive," Mr Opas said.

MARVEL PACKERS: CHALLENGING TIMES

As with many manufacturers, Paul McBeth says Marvel Packers has experienced tremendous increases in both gas and electricity costs.

"Our energy supply contracts are being renewed at much greater per cent increases than domestic consumers are facing. However, it is the impact on household bills that seems to be receiving all the media attention," he said.

"Manufacturing frozen French fries is an energy-intensive process. Energy costs are a significant input cost for our industry and any increase presents challenges to our business."

Marvel has invested heavily in a modern efficient plant and Mr McBeth said it will continue to do so to remain as efficient as possible.

"Further investments in energy recovery systems are being investigated, though it is unfortunate we do not enjoy the same level of government support that many competing manufacturers overseas receive for similar projects," he said.

According to Mr McBeth, imported frozen product remains a significant threat, particularly to larger manufacturers.

"If Australia becomes an uncompetitive region to produce, it is likely the foreign-owned multinational players will simply shift production to one of the many other regions where they have more competitive operations," he said.

SNACK BRANDS AUSTRALIA: MINOR CHANGES IMPLEMENTED

Michael Hicks from Snack Brands Australia reported a continuing rise in energy prices over recent months. This trend has continued over the last few years and has forced the processor to implement changes to negate the impact.

"A lot of work goes into the way we buy energy to try and secure the best possible prices. The business has invested into lots of energy efficiency projects across all sites, resulting in some reductions in energy consumption," he said.

"It's difficult to reduce energy requirements on our infrastructure responsible for most of the energy consumption."

Mr Hicks said that the potato processing industry is a low margin industry, similar to potato growing.

"To date the added costs have had to be absorbed by the processors and growers, making them even lower margin industries," he explained.

> The more it costs per kilogram to process raw into frozen products, the greater the pressure it puts on other inputs...

"Our own business is probably less impacted as we don't compete for international Quick Service Restaurant (QSR) contracts and we produce a unique quality product that differs from imports. However, I'd like to see the industry as a whole remain strong and growing."

Mr McBeth said that Australian grown and processed potato products are very high in quality compared to the rest of the world.

"It would be a terrible shame to see consumers left with an inferior imported offering as a result of poorly managed energy policy by governments," he concluded.

"It wasn't that long ago when growers were replacing diesel pumps with variable drive electric pumps when diesel was more expensive. These were big investments and due to the huge rise in electricity prices, they aren't getting the returns they were expecting and in some cases they would have been much better off with their old diesel pumps."

INFO

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

UK potato agronomist John Sarup.

A ladybird on biofumigant crop Caliente 99. Images courtesy of Heather Briggs.

UK POTATO EXPERT ENLIGHTENS AUSTRALIAN GROWERS WITH INTERNATIONAL PERSPECTIVE

A potato agronomist from the United Kingdom, John Sarup presented to over 120 local growers and industry members at the 2017 Roberts Potato and Vegetable Industry Expo and Forum in Tasmania. He spoke about the risks of potato cyst nematode, how it affects the United Kingdom's potato industry and the cover crop trials that are taking place in potato fields.

Potato cyst nematode (PCN) is a serious pest that affects over 40 per cent of potato fields in the United Kingdom. It can have a major impact on yield with a full rate nematicide adding £440 (approximately AU$700) per hectare to the cost of production.

The pest was a major focus of a presentation from John Sarup, an internationally-renowned potato agronomist from the United Kingdom, who was a guest speaker at the 2017 Roberts Potato and Vegetable Industry Expo and Forum on 27 July at Ulverstone in northern Tasmania. During the event, Mr Sarup also gave an overview of potato production in the United Kingdom and discussed PCN control and the use of cover crops, as well as precision farming for potatoes.

Mr Sarup established SPUD Agronomy & Consultancy Ltd in 2012, and his business has some influence on approximately 4,400 hectares of seed, processing and table potatoes. This ranges from occasional consultancy visits to full agronomy packages that are tailored to individual grower needs.

EARLY DETECTION

Mr Sarup reiterated how crucial it is for potato growers to control pests such as PCN.

"It is important to understand that there will be 3.8 million cysts already in the field before you have a chance of taking a soil sample and finding one cyst. Once you start to find them it is too late," he said.

"My advice is to sample soil from underneath the grader for each field for presence of cysts, as populations are always going to be at their highest straight after the year of production."

It is claimed that some cover crops, particularly those that produce high concentrations of the chemical group isothiocyanate when macerated, reduce PCN populations.

However, Mr Sarup said he is yet to see this in practice.

"Indeed under conditions in the United Kingdom, the timing of incorporation is done in late autumn when soils are too wet for cultivation, resulting in poor soil conditions going into the spring," he said.

"Therefore the best way of managing PCN is length of rotation, control of volunteer potatoes in subsequent rotations, resistant varieties and, as a last resort, a nematicide."

USING COVER CROPS

Mr Sarup acknowledged that the use of cover crops does have an important place in the rotation of potato crops.

"It is crucial to decide exactly what you want to achieve – is it organic matter, is it just green cover to compete with weeds, is it to retain soil nutrients, or is it for soil structure improvement?

"A lot of research has gone in to the latter and there is an increase in the use of cover crops now in the United Kingdom prior to potato production, mainly to dry soils out so that they can be cultivated in better conditions and more cost effectively, often reducing the number of passes and minimising the use of powered rotary cultivators."

Mr Sarup added that research has shown that cultivating soils when they are too wet, beyond the 'plastic' limit, results in considerable compaction and loss of yield.

The choice of cover crop is also important.

"Most use mixtures of oats to avoid the risk of take-all (a disease of wheat, rye, barley and oats); a legume to fix nitrogen and oil radish, which is not a brassica and therefore does not cause a problem with club root," he said.

KNOWLEDGE IS KEY

Mr Sarup added that events such as the Roberts Potato and Vegetable Industry Expo and Forum are valuable for the potato industry, both in Australia and internationally.

"Knowledge exchange is fundamental if we are to maximise production, profitably and sustainably to feed the ever-increasing world population," he explained.

"However, it is crucial that the people delivering the knowledge exchange are able to put it across in such a way that growers can see how it might fit into their situation practically as well as financially."

INFO

For more information, please contact John Sarup at jsarup@spudagronomy.com.

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

Project Number: PT15007

Hort Innovation Strategic levy investment | POTATO – FRESH FUND

An example of a value-added product using potatoes.

Potatoes South Australia CEO Robbie Davis.

The Australian potato industry is a significant contributor to horticulture production waste. Image supplied by Robbie Davis.

THE CHALLENGE TO DECREASE HORTICULTURAL WASTE INSIDE THE AUSTRALIAN FARM GATE

Potatoes South Australia CEO Robbie Davis was named AgriFutures Australia (formerly RIRDC) Rural Women's Award winner for South Australia in 2016. As a result, Robbie embarked upon a European study tour to research her project that aimed to increase productivity by reducing waste and loss in the value chain, particularly at the farm gate.

Potatoes are the world's third largest food crop, and the biggest contributor to horticulture in Australia.

However potatoes have another (unwanted) mantle – the Australian potato industry is the most significant but disproportionate contributor to horticulture production waste.

Over the past four years of working in the industry, Potatoes South Australia CEO Robbie Davis became abundantly aware of this fact, with wastage currently sitting between 20-40 per cent.

Robbie decided to take action, entering the 2016 AgriFutures (formerly RIRDC) Rural Women's Award with her project entitled *Increasing productivity through decreasing food waste and loss in the value chain, particularly pre-farm gate.* Subsequently, Robbie was named South Australia's Rural Woman of the Year.

In October 2016, Robbie embarked upon a month-long European study tour, which enabled the direct discovery of many European practices in the value-add of graded-out/waste horticultural product pre-farm gate.

PROJECT BACKGROUND

Robbie first noticed that waste in the potato industry wasn't re-graded to be used for higher, value-added products.

"I thought that we had to really do something with this waste because the input costs for waste are exactly the same as they are for premium product," she said.

"This project came from two angles – one was to increase the bottom line and margins for primary producers, and secondly it was almost an ethical and moral responsibility to convert what is considered waste into something else."

Robbie said that in Europe, waste is a resource that is recycled, transformed and valorised into a product of higher value.

"Also, if you think about the statistics on starvation and the high level of hungry people in our country, I think we have a responsibility to do something about it," she said.

According to Robbie, Europe is 20 years ahead of Australia when it comes to valorising waste.

"I didn't want to reinvent the wheel with this project. I wanted to be very aware of the technology that was being used in the Northern Hemisphere so we can transfer some of that knowledge in an economical way."

EUROPEAN INNOVATION

Robbie's study tour included visits to France, Belgium, the Netherlands, England, Northern Ireland, Denmark and Finland, where she witnessed the very latest in food waste innovations.

She visited Wageningen University in the Netherlands, where she spoke to researchers about two major programs facilitated by the university: REFRESH (Resource Efficient Food and dRink for the Entire Supply cHain) and FUSIONS (Food Use for Social Innovation by Optimising waste prevention Strategies).

Another highlight was a visit to Lamb Weston/Meijer, the world's second largest potato processor. Robbie was able to gain an insight into its waste issues, and how they overcome them. The company's objectives are to have zero waste to landfill by 2020 and to reuse (to maximum effect) all by-products and wastage and increase the use of the potatoes by 10 per cent.

Robbie was also a guest of the European Commission while in Belgium, and she met with Anne-Laure Gassin who is a Policy Officer at the European Commission, Health and Food Safety Directorate General.

"That concerned the 'circular economy' – which is the expression for not having any waste leave the value chain," she said.

"It is about total resource preservation."

The European Commission's focus is on achieving the United Nations' 2030 Sustainable Development Goals, and the goal Robbie is interested in is number 12.3: *By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.*

In addition, Robbie presented to the Organisation for Economic Cooperation and Development (OECD) in Paris. She spoke about her project, and was able to listen to valuable discussions about food waste in the value chain.

The United Kingdom was also an eye-opening experience for the study tour.

"If we go to any supermarket in Australia, there are fresh potatoes, potatoes in bags and in the refrigerated section. There might be perhaps a couple of metres at most of potatoes," Robbie said.

"In England, if you go to a high-end supermarket like Marks and Spencer or Tesco, there will be 10-15 metres of refrigerated space for potatoes that are value-added, in the most extraordinary ways. Things like spinach and mint potatoes, maple roasted winter vegetables and potato mashed with kale or cabbage.

"It was just brilliant to see."

ONGOING DISCUSSIONS

Since her tour, Robbie has kept in contact with people she met and maintained her focus on the food waste sector. In June 2017, she was invited to participate in a three-day Meeting of Agricultural Chief Scientists-G20 Food Losses and Waste workshop and conference in Berlin, where the radical reduction of food losses and waste was discussed. Robbie returned from the event with a greater appreciation of the global response to the issue of food waste.

Just recently, she attended a meeting attached to the 72nd Session of the General Assembly at the United Nations Headquarters in New York. *Championing SDG 12.3 and the Pathway to Zero Hunger* concerned reducing food loss and waste, achieving a triple bottom line for people, planet and profits, strengthening livelihoods for farmers and families, saving precious natural resources and reducing inefficiencies for businesses.

It was a dynamic discussion among key global leaders to energise and focus this important work including Rockefeller Foundation President Rajiv Shah, Food and Agriculture Organisation Director-General José Graziano da Silva, International Fund for Agricultural Development President Gilbert Houngbo, World Food Programme Executive Director David Beasley, Mars Food Global President Fiona Dawson, World Resources Institute Director for Food Loss and Waste Liz Goodwin and officials from the German Government.

APPLICATION OF LEARNINGS

Robbie believes that there are significant economic opportunities to transform waste here in Australia.

"It's a behavioural thing – in Europe it's legislated top down; here it has to be driven by industry and the Australian Government is only looking at it now with its National Food Waste Strategy, but that is still focused post farm-gate; on the consumer. There's very little focus at the other end and it's pretty obvious that's what we need to be focusing on as well," she said.

Potatoes South Australia has committed to the Fight Food Waste and Fraud Cooperative Research Centre, which, at the time of writing, had submitted a bid to the Federal Government to implement a 10-year, multi-million dollar project which focuses on two streams that are entirely dedicated to transforming food and agricultural waste: waste transformation and innovation in packaging. This is being led by Dr Steve Lapidge, Director of the Food Innovation Taskforce with the Department of Primary Industries and Regions, South Australia (PIRSA).

Robbie also reflected on her previous work with the South Australian River Murray Sustainability Program. Robbie was chair of the committee for the two-year federally-funded project, which looked into food loss and waste on the River Murray systems.

"We had a lot of trouble with primary producers admitting that they had waste. It's a word that has such a strong, negative connotation so it was very difficult to work with real numbers. It's also become acceptable that it's just how it is, and it's not acceptable," Robbie said.

"The trigger is not the environment; the trigger is increased margins. You have to convince people through strong research and well-document evidence and real-life cases that there is money to be made through a better understanding of the potential of waste."

SIX RECOMMENDATIONS TO PREVENT FOOD WASTE

The following recommendations were put forward in the project *Increasing productivity through decreasing food waste and loss in the value chain, particularly pre-farm gate*, which was conducted by Potatoes South Australia CEO Robbie Davis as part of the 2016 AgriFutures (formerly RIRDC) Rural Women's Award.

1. Use clever packaging to extend shelf life.
2. Value-add second grade produce and offcuts to make ready meals (turn something of no value into high net worth).
3. Starch, high value protein and fibre processing.
4. Biofuel and fertiliser production (by-products).
5. In the fresh sector, extend the value chain to include processing where waste is transformed onsite.
6. Introduce European initiatives such as the Resource Efficient Food and dRink for the Entire Supply cHain (REFRESH) and involve the Federal Government.

"These recommendations concern pre-farm gate loss rather than consumer waste, because that's already handled well and will continue to be handled well," Robbie said.

"Our issues are at the primary production end as well as the value chain through to the consumer. I feel very lucky to be working in this space."

INFO

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

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

Project Number: PT15007

Hort Innovation Strategic levy investment | POTATO – FRESH FUND

Farmer cooperative growing seed in Ethiopia. Images courtesy of Dr Nigel Crump.

A seed store that was built as part of the aid project.

ACTION ON POVERTY: THE ROLE OF CERTIFIED SEED POTATOES

As a potato crop specialist, ViCSPA General Manager Dr Nigel Crump was recently involved in a seed potato capacity building meeting in Bahir Da, Ethiopia, as part of a larger aid project. In this article, Dr Crump explains the benefits that Australia's knowledge of certified seed potato production will provide to potato growing regions in eastern Africa.

The seed potato capacity building meeting was facilitated by Action on Poverty, a Sydney-based international organisation working in food security, water, sanitation and hygiene, health and governance. The seed potato capacity building is being conducted in conjunction with a larger aid program, in part, funded by the Australian Government through the Department of Foreign Affairs and Trade (DFAT). The meeting was attended by a representative from the Australian Embassy in Ethiopia.

Specifically, the aid funding provided assistance to work with groups in Ethiopia, Zimbabwe, Mozambique and Malawi to improve seed potato production. Representatives from all of these countries attended the meeting.

The aid project is enabling local farmers to successfully grow potatoes to generate income, as potatoes can be sold as a food staple. The Australian aid has enabled local innovation through grower cooperatives building seed potato storage facilities to better store seed. This innovation is being supported through local agricultural science agencies, which are using tissue culture methods to improve the production of foundation seed potato material, which ultimately supplies farmers.

The tissue culture science being used in Ethiopia is the same that is utilised by the tissue culture laboratories in Australia. During the meeting, ideas and experiences were exchanged between myself and the tissue culture team leader.

> The Australian aid has enabled local innovation through grower cooperatives building seed potato storage facilities to better store seed.

STRENGTHENING FOOD SECURITY

A major challenge for the region is the reliable production of high health seed potatoes. It is clear that the aid funding has made significant advances in improving seed potato production in these regions. Although the aid project is only in the early stages, the production of high health, disease-free seed potatoes has significantly increased the yield per hectare and is contributing to food security.

It was heartening to see first-hand the advances being made possible with Australian aid and the great work being done by Action on Poverty.

SHARING RESOURCES

While attending the meeting in Ethiopia, I provided expert advice and support to the project team. Importantly a commitment, outside of the existing aid program, was made to exchange potato germplasm from the Australian National in vitro collection.

The public tissue culture collection, consisting of over 100 potato cultivars, is maintained and funded by ViCSPA for the Australian potato industry. There is a diverse range of potato varieties maintained in the Australian collection, some of which are suitable for fresh and/or processing production.

As Ethiopia has limited access to potato cultivars, the ViCSPA commitment will provide the region with ongoing access to potato cultivars, which will potentially suit the climate and soils of the region, and dietary needs.

AN IMPORTANT MISSION

The experience in Ethiopia and surrounding regions emphasises the importance of high health certified seed in Australia. An effective seed potato production program is essential to provide seed that meets the requirements of the commercial potato industry.

ViCSPA continues to maintain a world-leading seed certification scheme, and in doing so, has exchanged applied knowledge and experience with others. The involvement in the aid project in Ethiopia was an example of the benefit that can be achieved.

ViCSPA prides itself on being a good corporate citizen. Playing a role in the delivery of the aid program has been both a professionally rewarding and personally satisfying experience to see Australian aid supporting farmers and communities in a developing country. Through this visit, it is hoped that there will be further opportunities for collaboration and exchange to enhance global capacity and food security.

INFO

For more information, please contact Dr Nigel Crump on 03 5962 0000 or nigel.crump@vicspa.org.au.

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

Project Number: PT15007

Hort Innovation Strategic levy investment | POTATO – FRESH FUND

A Fair Farms workshop in Kununurra, Western Australia. Image courtesy of Growcom.

HORT360 CUTS THROUGH COMPLEXITY OF FAIR WORK COMPLIANCE

The Fair Farms Initiative aims to foster good employment practices in the Australian horticulture industry. Growcom's Hort360 program, which helps growers gain a holistic insight into their farm business operations, provides a key tool within the initiative. Growcom Workplace Relations Advisor Annabel Hutch outlines how the workplace relations module of the program can help growers understand the legal requirements and industry standards they must adhere to.

Employment matters and industrial relations laws are highly complex, making it challenging for farm business owners to ensure their employment systems and practices comply with all legal requirements.

"The majority of growers strive to do the right thing – but, in the busyness of farm life, it is easy to let record keeping slip or overlook an important step in an induction process," Growcom Workplace Relations Advisor Annabel Hutch said.

"Workplaces that cannot demonstrate compliance with employment laws risk on-the-spot fines or enforcement notices from a fair work inspector. If a grower has underpaid their workers, they will need to cover back-pay and possibly, compensation. For serious breaches, businesses face prosecution and high penalties."

UNDERSTANDING BEST PRACTICE

To help farm business owners navigate their way through their legal requirements, Growcom has developed a workplace relations module within its Hort360 program. Hort360 is a best management practice program for horticulture that can help growers gain a 360 degree view of their farm business operations.

"The workplace relations module steps growers through all aspects of their legal requirements and industry standards," Ms Hutch explained.

"The process involves me sitting with a grower to review the practices and systems currently in place in the business against all of the matters required by law. We talk through the fine detail of each topic area if necessary so that the grower is confident they understand it completely – including the records they need to keep and the policies and procedures they need to have in place.

"At the end of the process, the business will have a comprehensive risk assessment and action plan outlining matters that need to be addressed to achieve full compliance with Australian Fair Work laws."

The module covers matters such as:

- Does the business keep a copy of all the industrial instruments (such as Awards) relevant to the workplace, and ensure these are accessible and available to employees?
- Does the employer understand their "accessorial liability" when using labour hire companies to provide workers?
- Do employees receive a written contract of employment that sets out their wages and conditions of employment?
- Does the employer understand the steps they are required to take to fairly dismiss an employee under the Fair Work Act?

Through the Fair Farms Initiative, at least 120 growers across Australia will be fully subsidised to work with Ms Hutch to complete Growcom's Hort360 workplace relations module.

FAIR FARMS INITIATIVE UPDATE

Fair Farms is a national project that aims to ensure that workers are treated fairly while they are employed on horticulture farms and pack houses. Funded by the Fair Work Ombudsman, the initiative supports growers with the tools and knowledge to implement good employment practices, and demonstrate this to customers and the wider community.

"Businesses that complete the Hort360 workplace relations module and implement its recommended actions will be well placed to proceed to audit for the new Fair Employment certification that is being developed by Freshcare as part of the Fair Farms Initiative," Ms Hutch said.

GETTING INVOLVED

Another way for growers to get up-to-speed on their legal requirements is to attend a Fair Farms seminar. In August, around 30 growers participated in seminars delivered in northern Australia by horticulture industrial relations specialist Donna Mogg. Seminars will be offered in all states over the four years of the project, and the next round is planned for Western Australia early in 2018.

Grower feedback from the seminars in Katherine, Darwin and Kununurra was positive, with participants reporting that they were very informative and a useful way to review whether their current business practices were up-to-date.

INFO

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

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

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

Project Number: PT15007

RAINFASTNESS THAT'S AS RIGHT AS RAIN

In this edition of *Potatoes Australia*, Syngenta Technical Services Lead Scott Mathew discusses rainfastness of crop protection products and how it impacts a crop when rain falls shortly after application.

Rainfastness of crop protection products is one of the more frequent phone calls I receive. It is often because growers are applying products shortly before periods of rain to protect their crops against diseases, and frequently the rain comes either before they finish spraying or shortly after they have put the boom away.

WHAT IS THE RAINFAST PERIOD OF A CROP PROTECTION PRODUCT?

I like to refer to the rainfast period of a crop protection product as the time period after application at which rainfall or irrigation has the least impact on the performance of the product. For example, with protectant fungicides like mancozeb/copper, it is generally when the spray deposits have dried; or with a product like SCORE® Foliar Fungicide, it is when the active ingredient has absorbed into the plant and cannot be washed off.

WHAT FACTORS CAN IMPACT THE RAINFAST PERIOD OF A CROP PROTECTION PRODUCT?

There are several factors that can impact the rainfast period.

This includes the time after the application when the rainfall occurs. For some products, this time period will be stated on the label. For example, the SCORE label states: *The effect of SCORE could be diminished if rain falls within two hours of application.*

If you are unable to find any reference on the label to the rainfast period, contact your chemical reseller. If you still cannot find the answer, a good general rule is that a period of three to six hours without rain after an application is needed for systemic fungicides to penetrate the leaf tissues and for protectant fungicides to stick to the leaf surface. As normal, you should always check the product label for full direction of use.

The intensity of the rainfall, not necessarily the duration of the rainfall event, is another factor. For example, some fungicides like chlorothalonil (e.g. BRAVO® WEATHERSTIK®) and azoxystrobin (e.g. AMISTAR®) may actually benefit from light rain (rainfall that does not result in droplets running off the plant) by improving the redistribution of the fungicide over more of the plant surface.

If the rainfall event, however, is heavy enough to cause the droplets to wash off the plant before the product is considered rainfast, it is likely to reduce the performance of the product.

DO SPRAY ADJUVANTS IMPROVE THE RAINFASTNESS OF CROP PROTECTION PRODUCTS?

The use of spray adjuvants can certainly improve the rainfastness of crop protection products, particularly those products designed to improve the retention, penetration or spread across the plant surface. It is important to note that you should only add an adjuvant to a crop protection product when the label expressly tells you to do so. Adding an adjuvant when not directed could potentially reduce the rainfastness of a crop protection product and its performance.

INFO

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

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

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

Project Number: PT15007

Troy 'Fred' Bensley with his son Rory.

Photography by Kim Shirley.

FAMILY TIES BINDING A SUCCESSFUL SEED GROWING OPERATION

Troy Bensley – or Fred as he is better known – runs Stillbrook Potato and Pastoral Company, a certified seed growing operation in Crookwell, New South Wales. Fred spoke to Michelle De'Lisle about his role in the business, its venture into exporting spuds to Fiji and the challenges he faces alongside the wider potato industry.

A fourth generation potato grower, Troy 'Fred' Bensley fondly recalls watching his father John working tirelessly on the family farm at Crookwell, a small town located in the Southern Tablelands of New South Wales.

"I remember the days when Dad used to be ploughing and I'd have my own little toy tractor, dragging the bucket around behind me," Fred says.

"It was like playing around in the dirt but I just didn't realise where it'd all end up one day."

Wind the clock forward to 2017 and Fred, in partnership with his father John, mother Sandra and wife Nicky, oversees Stillbrook Potato and Pastoral Company, a mixed farming operation which produces several certified seed potato varieties, including Atlantic, Carisma, Pontiac, Sebago, Snowden and AG90 (otherwise known as Lusa).

The business also encompasses a poll merino stud, prime lambs and cereal crops when the Bensleys are finished with the potato paddocks.

Fred describes his average day at work as "hectic", particularly at harvesting time when the days stretch into the night as he tries to get as many potatoes out of the ground before the wet weather sets in.

In addition, the certified seed potato grower is kept busy at home – he and Nicky have three children: Chloe, 6, Charlotte, 4, and Rory, 3.

A LUCRATIVE MARKET

Stillbrook's spuds are sold around the country including Virginia in South Australia, the Atherton Tablelands, Gatton and Bundaberg in Queensland and the New South Wales towns of Maitland, Robertson, Bathurst, Dorrigo, Cowra, Orange, Robertson, Windsor and Narrandera.

However the biggest breakthrough for the business occurred around five years ago when Fred was contacted by BGP International Export Sales Manager Patrick McGreesh, who was enquiring whether Stillbrook grew Pontiac potatoes and if they would be interested in exporting them to Fiji.

The family obliged, and Fred is proud of his business' ability to crack the international potato market.

"A lot of people have tried to get into those markets and they usually get one go at it or it just falls over, but we've managed to be able to sustain it for five years – and they're talking about continuing to import these potatoes for a few more years yet," he says.

ONGOING CHALLENGES

Fred nominates water security as the biggest challenge that his growing operation faces.

"We're not located on a river system or anything like that. At the end of the day, we can only rely on what falls into our own catchments and dams," he says.

"We prepare by digging bores, just to try and get a little bit of water security. But it is our biggest challenge."

Pests and diseases are another threat facing all potato growers in the region.

"In Crookwell, we've got our own Quality Assurance (QA) system. We abide by our own rules that we've come up with and also the standard rules that are nation-wide," he says.

"We all try to do the best that we possibly can but it's hard to keep everything within your control."

Fred also works closely with an agronomist, Tally Matthews, who assists with soil testing and monitoring pH levels, the supply of crop protection products and what fungicides to use as well as communicating the latest products.

TIGHT-KNIT COMMUNITY

Fred says the most enjoyable aspect of his job is meeting others within the potato industry.

"It's nice to see how other people grow potatoes and it's good to pick up different ideas and ways that make it become easier," he says.

"Being your own boss is another thing. You're in charge of what you do and at the end of the day, you're producing a product that hopefully the people at the other end are happy with – and that's probably where you get the most satisfaction."

There are four other potato growers in Crookwell, and Fred says they talk among themselves to generate ideas and help each other out as much as possible.

"We also talk to people when we sell interstate, and get some ideas about the different climates and the different ways they combat things. We've got contacts pretty much all around Australia, which is very helpful."

There used to be countless numbers of both certified seed and commercial potato growers in Crookwell, and the decline reflects another challenge of encouraging young people to take up jobs within the industry. It is a question that Fred has been asked many times.

"I was born into the potato industry which makes it easier. I've got children too and whether they'll ever be interested, I don't know. I think the biggest problem is that it's just so expensive to get into if you were never brought up in it," Fred says.

"It's one of those things: You're either born into it or you've got somebody very close within family ties or friends that get you interested. I suppose every industry's the same – to start from scratch would be difficult and it's very hard to bring somebody into it that's never had anything to do with potato growing."

FUTURE PLANS

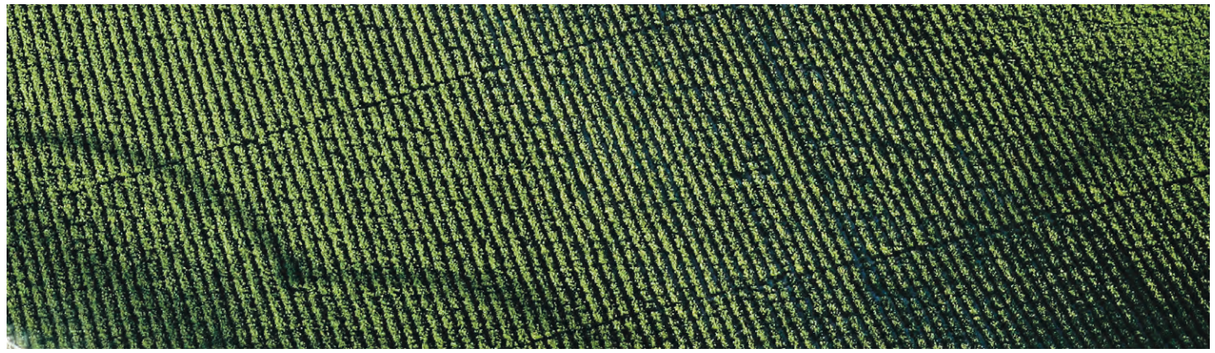
While Stillbrook Potato and Pastoral Company continues to be a success thanks to a lot of hard work from Fred and his family, the long-term future of the business remains unclear.

"At the moment, it's fine with mum and dad helping but they're heading towards 70 now so they're getting older," Fred says.

The business' future depends on whether Fred can employ reliable workers who could assist him in doubling the amount of certified seed potatoes currently grown.

"The demand outstrips supply at the moment. People seem to be looking for seed everywhere – we could quite easily grow twice as much but it comes back to the man hours and reliable staff. At the end of the day, if somebody doesn't know what they're doing, it probably costs you more than it's worth," Fred says.

"I think there is a huge future in agriculture but it's important to keep the young people interested in it enough before it gets to a point where it probably can get too far away from us."



NEW EXPORT MARKET OPPORTUNITIES FOR WA SEED POTATOES

In this seed certification program update, Peter Dawson from the Western Australian Department of Primary Industries and Regional Development discusses potential new markets for Australian seed potato growers who are looking to export.

Over the previous 17 years there has been a steady decline in fresh potato production in Australia as well as many other developed countries, while fresh potato production in developing countries is growing faster than population growth.

One growth opportunity available to the Australian potato industry is seed for export markets.

Several Western Australian seed potato entities have been pursuing seed potato exports over the last decade. Western Australia now leads Australian seed potato exports with a share of 79 per cent, however the maximum exported was around 4,500 tonnes in 2011. Western Australian exports received a price premium of 73 per cent in the global front.

The major markets are Indonesia, Mauritius and Thailand. These markets have grown over the last decade but are now reaching capacity, so there is a need to look for new seed potato markets.

GLOBAL OUTLOOK

According to World Potato Markets Issue 311, global trade in seed potatoes amounted to 1.5 million tonnes in 2016. This trade is dominated by the Netherlands with 60 per cent of the market (around 900,000 tonnes), followed by France, United Kingdom (Scotland), Canada, Germany, Denmark and Belgium – all of which export more than 50,000 tonnes of seed.

The main season for these seed potato exports is from October to May, with a peak between November and December. June to September could be a seasonal window for Australian exports where other major suppliers are not very active in the trade market.

Australian seed potatoes will have suitable physiological age for vigorous growth at times of the year when the European seed is dormant or senile.

NEW MARKETS

The Western Australian Department of Primary Industries and Regional Development has produced a report entitled *Markets for Western Australian seed potatoes*, which investigates potential new export market opportunities for the state's seed potatoes. A market attractiveness index was developed and calculated for 77 countries which import more than USD$1 million worth of seed potatoes annually. These countries were ranked according to indicators of market access and market demand.

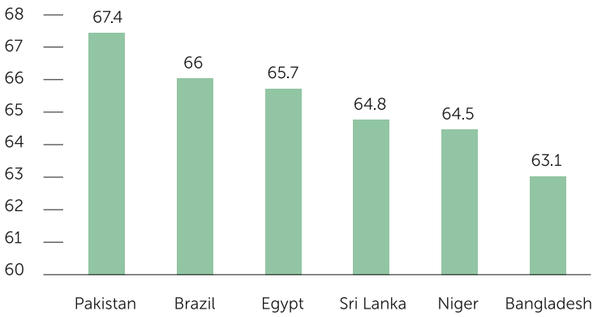
The Market Access Index used three sub-indices including the indicators of difference in average and bilateral tariffs (tariff for Australia); difference in average distance of all importing countries and distance between Australia and the importing country; and total Australian trade with that importing country.

The Market Demand Index was based on seven sub-indices, using the indicators of import value growth, market size, unit value of import, trade balance, change in trade balance and future growth in Gross Domestic Product (GDP).

Different indicators in their raw form can't be used for comparison purposes, so the indicators were normalised; combining the normalised market access and market demand indices gave a Market Attractiveness Index (MAI). A final non-economic evaluation of countries was then done to exclude obvious problems, such as war zones.

Pakistan, Brazil, Egypt, Sri Lanka, Niger and Bangladesh were selected as potential markets for Western Australian seed potatoes. Their MAI can be compared in Figure 1.

FIGURE 1: MARKET ATTRACTIVENESS INDEX OF POTENTIAL SEED POTATO MARKETS



Source: Western Australian Department of Primary Industries and Regional Development.

FUTURE POTENTIAL

As there are only minor differences between the MAI of the six selected countries, it would be more appropriate to consider this as a group of countries with good potential, rather than ranking within them. However, some observations on differences will be discussed.

Market demand was highest for Egypt among the top rated countries. Egypt is the major market in terms of market size but in terms of market growth, it ranks second from the bottom. However, market size is very large for Egypt compared to the other markets, hence a small portion of the Egyptian market may create a big opportunity for exports. Market growth is highest for Niger, however the size of the market is very small.

Egypt and Brazil have a value of 100 in market size and market premium respectively. This means that among all the importers of seed potato (203 countries), Egypt ranks first in market size and Brazil ranks first in market premium.

Details on each country were compiled and are available in the full report which can be found at agric.wa.gov.au/export-markets-wa-seed-potato.

INFO

For more information, please visit agric.wa.gov.au.

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

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Hort Innovation Strategic levy investment | POTATO – FRESH FUND

Root-knot nematode effects on potato. Images courtesy of Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org.

The effects of root-knot nematode on a plant's root system.

DON'T LET THIS NEMATODE TIE YOUR CROPS IN A KNOT

In this edition of *The Front Line*, the root-knot nematode – a pest that affects many horticultural crops, including potatoes and vegetables – comes under the microscope. AUSVEG Biosecurity Officer Madeleine Quirk discusses the life cycle of this pest, the damage it can cause and the best ways of managing it in potato crops.

The root-knot nematode (*Meloidogyne spp.*) is a plant-parasitic nematode that inhabits the soil. It has a broad host range, feeding on potatoes, vegetables, ornamentals, pastures and various weeds. There are five species of *Meloidogyne* currently found in Australia: *M. arenaria, M. javanica, M. incognita, M. hapla* and *M. fallax*.

BIOLOGY AND LIFE CYCLE

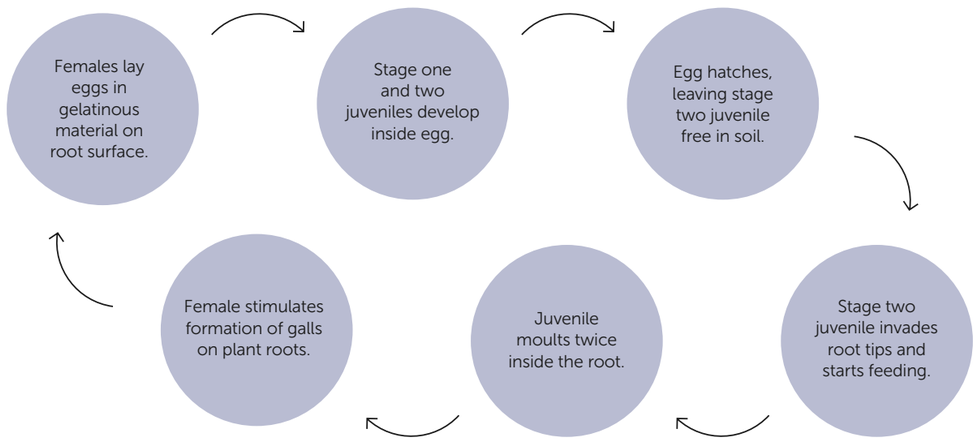
According to the 2014 Tasmanian Institute of Agriculture (TIA) report *Management of Root-knot nematode in vegetable crops, M. arenaria, M. javanica* and *M. incognita* prefer warm environments and can be found across the mainland of Australia, while *M. fallax* and *M. hapla* thrive in cooler climates and as such, they prefer Tasmania and the southern growing regions of Victoria and South Australia. The report also stated that *M. hapla* is found in tropical regions of high elevation. In the absence of a host, the pest cannot survive.

The root-knot nematode has an intricate life cycle (see Figure 1). It begins its life as an egg which is typically 0.1mm long. Inside the egg, stage one and two juveniles develop and once the egg hatches, the stage two juvenile invades root tips.

As outlined in the *Journal of Insect Physiology* 84, enlarged cells – termed 'giant cells' – are formed as a result of re-differentiation of the vascular root cells, and swelling of the cells surrounding the giant cell stimulates gall development.

Juveniles feed on nutrients provided by the host, leaving a limited supply of nutrients for the rest of the plant. At the adult stage, female nematodes will remain in the root while males will exit. In optimal conditions, a female nematode will lay her eggs (often up to 1,000 per cycle) within three to four weeks of infiltration.

FIGURE 1: THE ROOT-KNOT NEMATODE LIFE CYCLE



Sources: Queensland Department of Agriculture and Fisheries; Western Australian Department of Primary Industries and Regional Development; and Tasmanian Institute of Agriculture

ENVIRONMENTAL CONDITIONS AND DEVELOPMENT

Root-knot nematodes rely on favourable soil textures, adequate soil moisture and optimal soil temperature. The nematode thrives in sandy and porous soils and relies on sufficiently moist soils in order to hatch, move and invade plant roots.

According to the 2014 TIA report, optimal temperatures differ depending on the species. However, the root-knot nematode will become inactive if the soil temperature is below a certain threshold. These ranges are shown in Table 1.

TABLE 1: OPTIMAL SOIL TEMPERATURES AND TEMPERATURES OF INACTIVITY FOR FIVE SPECIES OF *MELOIDOGYNE*

SPECIES OF *MELOIDOGYNE*	OPTIMAL SOIL TEMPERATURE RANGE (°C)	SOIL TEMPERATURE OF INACTIVITY (°C)
M. javanica	24-32	15
M. incognita	24-32	15
M. arenaria	24-32	15
M. hapla	15-25	8.5
M. fallax	15-25	8.5

SYMPTOMS, INFECTION AND DAMAGE

Root-knot nematode feeding results in stunted plant growth, wilting, individual plant collapse and leaf yellowing. On their own, root-knot nematodes move slowly, travelling less than one metre per year on average. They are most commonly spread by machinery, animals, footwear, water and by planting infected seeds, tubers or young plants. Therefore, infestation is generally quite patchy within a paddock.

Root-knot nematodes can cause considerable damage to potato tubers, reducing quality, size and number. The exterior of the potato blisters and swells, creating an unattractive outward appearance. This may negatively affect potato marketability. Likewise, the flesh will often display discolouration and brown spots.

PEST MANAGEMENT

The Western Australian Department of Primary Industries and Regional Development has outlined the following management strategies that can be implemented to prevent extensive root-knot nematode damage to potato crops.

- **Crop rotation:** Potato growers can alternate susceptible plants with plants tolerant to root-knot nematode such as Jumbo sorghum, Concord ryegrass and Katambora Rhodes.
- **Monitoring:** Prior to harvesting, monitor paddocks for the presence of root-knot nematode.
- **Good farm biosecurity practices:** Sanitise cropping machinery and equipment, implement a farm biosecurity plan and ensure visitors do not assist in spreading pests to your farm.
- **Clean seed:** It is crucial to source clean seed potatoes from reputable suppliers.
- **Timely planting and harvesting:** In winter, crops should be planted when soil temperatures are low, and harvested before soil temperatures increase again. Summer crops should be planted early in order to delay root infection.
- **Biofumigants and nematicides:** This will provide some control for root-knot nematode, however they will not eliminate root-knot nematode populations. Crop protection products are best used in conjunction with other management methods. Visit the Australian Pesticides and Veterinary Medicines Authority website at apvma.gov.au for information on available chemicals.

INFO

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

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

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

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Hort Innovation Strategic levy investment | POTATO – FRESH FUND

CALENDAR

10-12 JANUARY 2018: POTATO EXPO

Where: Orlando, Florida, United States

What: Potato Expo is the largest conference and trade show for the potato industry in North America. It offers an educational program that covers the key issues facing the industry, networking opportunities with key decision makers and the latest products and services for potato production and distribution.

Further information: potato-expo.com

18-20 JUNE 2018: HORT CONNECTIONS 2018

Where: Brisbane Convention Centre, Queensland

What: A joint initiative between AUSVEG and the Produce Marketing Association Australia-New Zealand (PMA A-NZ), Hort Connections is returning in 2018. A combination of the National Horticulture Convention and PMA Fresh Connections, this premier event of two of horticulture's leading organisations is set to deliver another world-class program and trade show to growers and whole-of-supply-chain companies alike.

Stay tuned for more information at hortconnections.com.au.

REGIONAL UPDATES

Crookwell Potato Association Incorporated

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

The 2017 potato season is now behind us and all growers are now preparing ground for the 2018 season. Conditions are very dry and an early fallow is the trick in these conditions.

Crookwell certified seed growers had a full clearance of seed and orders are already being placed for next season's harvest. At this point, production area may increase slightly to try and help supply a growing market. From a seed grower's perspective, the industry is moving forward and more demand for quality seed has been noticed.

A lot depends on Mother Nature from here on in as ground moisture is only adequate and stored water is average to low. A complete opposite to this time last year.

Recently, the Crookwell Potato Association hosted an Integrated Pest Management (IPM) Extension program. This program was well attended and drew growers from Bathurst, Marulan, Robertson and Fitzroy Falls as well as Crookwell. The IPM strategy system was well received and professionally delivered by IPM Technologies.

Getting a group of potato growers from New South Wales was a great way to network as well as hear what other areas within the state are experiencing. Everyone had a positive attitude at the workshop and with some young growers in attendance, it was pleasing to see youth and experience mixing well.

At the time of writing this update, we are still experiencing heavy frosts. I know this helps limit a number of diseases to thrive and so helps us provide disease-free potato seed, but it still tests the blood flow in us humans, especially if you're working with steel. Hopefully the warm weather coming will trigger a few storms and put some much-needed moisture into the seed beds, readying us for planting the 2018 season crops.

AUSVEG VIC

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VGA trading as AUSVEG VIC

Throughout September, Acting AUSVEG VIC State Manager Tom Cohen has been visiting growers throughout regional Victoria while working closely with Robert Nicholson from KMH/pitt&sherry. Tom and Robert have been talking about the joint Energy Efficiency Capabilities project that they are working on to deliver reduced costs for the Victorian vegetable industry.

AUSVEG VIC was granted the Energy Efficiency Capabilities project through Sustainability Victoria in July, and is looking for 15 small and medium-sized enterprises across Victoria that are interested in lowering their energy costs. AUSVEG VIC and KMH/pitt&sherry are working closely to deliver the program, and the results of the assessments will allow for the implementation of groundbreaking technology to growers' businesses.

Tom also recently attended a policy strategy meeting, which was held at the AUSVEG national offices in Melbourne. Leading horticulture state bodies were invited to attend the meeting, which discussed the political issues that are being raised at state level and helped to create a more uniform national approach to issues that overlap state jurisdictions.

The meeting was constructive and has been used to give the national peak industry body AUSVEG better direction for dealing with political matters that are common across all states. It marked the first time that all attending state organisations sat down together to talk about policies for the wider industry and create a voice that will be heard through AUSVEG nationally. AUSVEG VIC looks forward to being involved in future collaborative decision-making about national policy, which is pivotal to the success of the wider vegetable industry.

Wayne Johnston
Tasmanian Farmers & Graziers Association
President
Cnr Cimitiere and Charles Streets Launceston, TAS 7250
Phone: 03 6332 1800

After a difficult 2016-17 season which saw late plantings, difficult ground preparation, crop loss due to wet, cool weather and difficulty with some seed, a relatively positive outcome for many was not to be expected. This meant that the overall crop yield was down as crops didn't bulk as well as they would normally, but it was not bad news for all.

Processors have reported a relatively good year considering the conditions, with a high quality of potatoes being delivered. Due to the smaller than expected 2016-17 crop yields, extra hectares are being planted this year by both major processors. This extra crop will be used to bolster high value reserve processed stocks. These extra contracted hectares will be of great benefit to many growers throughout the potato growing regions of Tasmania.

Tomato potato psyllid (TPP) has been the buzz word within the Tasmanian potato industry since its identification in Australia. Growers, processors, Biosecurity Tasmania, other stakeholders and the Tasmanian Institute of Agriculture have been working diligently to trap insects. A major focus of this effort is to identify beneficial insects, as well as its use as an early warning system for the industry. The local industry is being proactive in seeking information in its efforts to deal with an incursion, should this occur. The TFGA will continue to work with members and stakeholders when and where it can through this issue.

It is sometimes difficult to see, in light of the devastating potential and reality of TPP and the difficult weather conditions that have been experienced, that Tasmania has a strong and buoyant potato industry. It is difficult not to be positive about the potential of the coming year. Conditions in the major potato growing areas have thus far been very positive, and with good moisture levels and access to irrigation, the potential for the 2017-18 crop is outstanding.

AUSVEG SA

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A number of industry groups including AUSVEG SA, Hortex and Potatoes South Australia have recently joined to negotiate a fairer deal for growers looking to access the Northern Adelaide Irrigation Scheme (NAIS). SA Water recently released indicative pricing at around three times the existing market rate, which are not viable for horticulture production across a wide variety of commodities. A NAIS industry committee has been established with representations from industry groups and growers to enter group negotiations with SA Water and get the price down. We are hopeful that with further industry-wide negotiation, we will be able to get a revised deal in line with existing costs. AUSVEG SA and other industry groups will work with growers interested in the new water to fill in expressions of interest and we will engage closely with the government on a fairer deal.

As we move closer to the first anniversary of the 2016 Northern Adelaide Floods, AUSVEG SA is leading a campaign to secure $27 million in flood mitigation works for the region. This investment would see upgrades to the Gawler River to protect landowners and reduce the frequency of damaging flooding in the region. These investments are essential to the ongoing profitability of the region, however they have been held hostage to jurisdictional squabbling about who pays. AUSVEG SA calls on the federal and state government to show leadership and fund these critical investments which will protect over $350 million of horticulture production in the region.

YOUNG POTATO PEOPLE

G'day again,

Activity on the farm seems to increase as we head out of winter and into spring. Potatoes are being planted around our area, paddocks are being turned over and worked up all around the place, and this means long hours sitting on your posterior in the tractor.

If it's not you sitting in the cab, it's someone you have paid to do the job. This is a part of our industry that has never really changed – no matter what we grow or how we grow it, we've always needed people to be involved. Even when all our irrigation becomes automated and we have Terminator driving the tractor for us, farms will still need people to make decisions and manage the crop.

Although they can be one of our highest costs and sometimes lead to headaches, people are a necessary part of our businesses and a necessary consideration in our farm management decision-making. We don't intentionally ignore that somebody has to do the job of sitting in the tractor at this time of year, it's just that we know managing people can be more complex than managing the tractor itself. People are, after all, people – every one is different, and every one requires slightly different management. For example, we know that some employees have family or other responsibilities which require them to leave a bit earlier. For us managing the farm, if an employee has to leave at 4pm with an hour and a half of work left in the paddock, we will work that extra hour and a half to make sure the job gets done.

We tend not to consider our own time like we do an employee's, and that seems to be a necessary evil in farming. When things need to be done we have to do it. That is the way things happen on a farm.

On the flipside, we do have some flexibility in our commitments and when a farm in the next town over is having a clearing sale, we have the ability to go and have a sticky beak. It is amazing that when something interesting comes around, we suddenly find the time and have the ability to stop working quite so hard for a short while.

Sometimes we need to make time for ourselves to get to the 'interesting things', like clearing sales. Getting off farm and out and about not only helps settle the crazy, but it can also be very educational when we learn about a new piece of gear or a practice another farmer has tried that could change the way we do things.

I'm a big fan of getting out and talking to people as I believe it's the best way to learn things. As they say, you learn something new every day, so why not make the thing you learn each day a worthwhile thing.

Hope you have a good time at the next clearing sale you attend, and that the prospect of a Terminator driving your tractor doesn't scare you too much.

Cheers,
Stu

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