GROWER SUCCESS STORIES

REAL RESULTS FROM THE POTATO R&D LEVY
The Australian potato industry continues to be at the forefront of innovative research, with world-leading production practices resulting in increased efficiency and profitability on-farm. The high quality of Australian potato produce is made possible by ongoing investment in research and development (R&D), and this is once again highlighted in the 2017 edition of Grower Success Stories: Real results from the potato R&D levy.

In this edition, you will find examples of growers who have enjoyed real benefits and success as a result of their involvement in strategic levy investment projects under the Hort Innovation Fresh Potato and Potato Processing Funds. Investments from these funds continue to contribute to the ongoing sustainability of the Australian potato industry, and the growers who have embraced R&D have improved the productivity and profitability of their businesses as a result.

Hort Innovation has commissioned a suite of new strategic levy investment projects for the Australian potato industry in 2017, including a research project that focuses on the effect of groundwater on a variety of potato crops. South Australian potato grower Tim Heysen is participating in this project and he outlines how the project will help him to better manage his crops.

Sharing industry knowledge and research is important when dealing with a pest incursion such as the tomato potato psyllid (TPP), which reached Western Australian shores in February 2017. McCain Foods Australia/New Zealand Agriculture Director John Jackson witnessed the devastation it caused in New Zealand over 10 years ago, and he explains how a research project using Integrated Pest Management (IPM) practices can assist in curbing TPP population in a crop.

Biosecurity remains a key focus for the potato industry, particularly in times of exotic plant pest incursions such as TPP. David Nix from the Atherton Tablelands in far-north Queensland shares the rigorous biosecurity practices he has implemented in his growing operation and the importance of maintaining biosecurity preparedness on-farm to protect the wider industry.

There are also long-term benefits that can be gained from visiting international potato industries and learning about production and technical innovations. South Australian potato grower Aaron Haby attended a grower mission to the World Potato Congress and European potato farms, and continues to benefit from the knowledge and networking connections he developed during the mission many years later.

The threat of soil borne disease is also ever-present, and the investment in innovative soil management systems continues to result in healthier, higher yielding potato crops. Tasmanian grower Andrew Wilson reflects on his work with DNA-based soil testing service PreDicta Pt and the success that he has experienced through this strategic levy investment.

Finally, effective communication is vital to raise grower awareness of strategic levy investments in the potato industry. New South Wales grower Matthew Gay has benefited greatly from the outputs within the Potato Industry Communications Program (which includes Potatoes Australia magazine and Weekly Update e-newsletter), which has made relevant and useful information on industry R&D available to growers.

With several new strategic levy investments already underway in the potato industry, I encourage all growers to get involved in this research and keep abreast of the new information available. In doing so, it will keep the Australian potato industry sustainable for many more years to come.

Yours sincerely,
Selwyn Snell
Chairman
Hort Innovation
As Agriculture Director at McCain Foods Australia/New Zealand, John Jackson has witnessed the destruction of the tomato potato psyllid (TPP) and the bacterium it vectors - *Candidatus Liberibacter solanacearum* (CLso), which causes zebra chip disease - in New Zealand's potato industry over the past 11 years.

McCain has potato processing plants in Smithton, Tasmania and Ballarat, Victoria, as well as Timaru on the South Island of New Zealand, which processes potatoes grown in the Canterbury region. When the psyllid arrived in Canterbury in 2006, John and his colleagues at McCain had seen the devastation it had already caused in the upper North Island and were actively seeking advice, ideas or information to control TPP in their potato crops.

### SUMMARY

- Project PT09004 was a three-year collaboration between Plant & Food Research New Zealand and IPM Technologies, and used an Integrated Pest Management (IPM) strategy to control tomato potato psyllid (TPP) in New Zealand.
- McCain Foods Australia/New Zealand Agriculture Director John Jackson was involved in the project and used beneficial insects and ‘soft’ chemistry to control TPP population numbers in potato crops.
- Lessons learnt from this project can be carried over to growers in Australia who are currently managing TPP.
- Control of Potato Psyllid with an IPM Strategy has been funded by Hort Innovation using the fresh potato and potato processing research and development levies and contributions from the Australian Government.

### WHY WOULD YOU WANT TO TRY AND KILL ALL THE BENEFICIAL INSECTS WHEN THEY ARE THE WORKERS THAT ARE GOING TO DO YOUR JOB FOR YOU?

Enter Paul Horne from IPM Technologies, who travelled from Australia to New Zealand as part of the project Control of Potato Psyllid with an IPM Strategy (PT09004), a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

Dr Horne’s approach of using Integrated Pest Management (IPM) as a strategy to combat TPP was communicated to growers at field days as well as Plant & Food Research New Zealand, which collaborated with IPM Technologies on the project.

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

John says TPP is extremely difficult to control because of its rapid growth stages – for instance, nymphs and adults can be present in a crop at the same time. Given this, the introduction of beneficial insects can help curb the TPP population in a crop.

“You’re really looking at what you’ve got in your arsenal to try and control the psyllids,” he says.

“IPM just seemed to make a lot of sense: Why would you want to try and kill all the beneficial insects when they are the workers that are going to do your job for you?”

“We were looking at it from that point of view. Along with trying to control the psyllid, we also use the beneficial insects to help.”

While this project was delivered during 2010-12, the knowledge gained during this time has greatly assisted New Zealand’s potato growers to control TPP.

### SHARING RESOURCES

In February 2017, Australia’s potato industry received the news it never wanted to hear: TPP had been discovered in Western Australia, in a Perth backyard. However, Australian growers can learn from New Zealand’s experiences of combating the psyllid over the last decade, particularly through the findings of this strategic levy investment.

“There’s a massive amount of data, and there’s expertise in Australia or New Zealand and everyone’s very happy to share it,” John says.

“There’s a real opportunity to take the R&D to the next step by actually sharing resources to do that.”

John remains optimistic about the Australian and New Zealand potato industries, despite the presence of the psyllid in both countries. At the time of writing, CLso had not been detected in Australia.

“There’s definitely life after psyllids and there’s life after CLso. Canterbury’s a great example. In 2016, Canterbury had a lot of psyllid pressure and some CLso pressure, but it probably had one of the best yielding potato crops it’s had for quite a number of years,” he says.

“It’s not the end of the world – it’s just a management process of how to use the technology to deal with it.”

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**J O H N  J A C K S O N**

INTERNATIONAL COLLABORATION TO COMBAT TPP

**Photograph supplied by John Jackson.**
As South Australian potato grower Aaron Haby reflects on his 2012 tour to Belgium and the United Kingdom, it’s Queen Elizabeth II, quality and networking that stick uppermost in his mind – but not necessarily in that order.

The General Manager of Forster Hill left the heart of Murray River country, about 100 kilometres north-east of Adelaide, and was soon surrounded by the pomp of the Queen’s 60th anniversary celebrations in London.

After visiting farms, markets and a research station in Belgium, the 10-day tour continued by train to London and then to Edinburgh for the triennial World Potato Congress.

World Potato Congress Grower Tour – Scotland 2012 (PT10702) was a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

Comparing farming practices was hard, he said, considering European farmers grow their potatoes ‘dry land’ in a paddock using only rain – a far cheaper alternative to irrigation in Australia.

Factor in also that the European potato crop is solely a summer crop as the ground is too hard in winter, and the fact potato consumption is among the highest per capita in the world. European potato growers have access to 700 million potential customers, compared to Australia’s 22 million.

“In Scotland, they store their potatoes over winter and can’t make any more or less so they manage to sell everything they produce. Our product here we dig it weekly, fresh, and if it’s not up to spec, you’re in trouble as it halves your profit if it becomes second grade,” Aaron says.

“We learnt a bit about storage when we were there and certainly got some tips on how to look after our potato seed better.

“Economies of scale were a big thing. The biggest paddocks we saw are somewhere around four or five hectares. We came back here and it’s 30 hectares. I feel we are pretty blessed when we got home.”

A REWARDING EXPERIENCE

In many ways Aaron said the tour, which provided an insight into the retail, R&D and production aspects of the European industry, highlighted that Australian potato growers were doing plenty of things right.

“It’s hard to quantify exactly how much I did learn, but it was a good experience overall,” he says.

“Any time you go somewhere else and look at what people are doing, you feel privileged. You learn different ways of doing things and soon discover whether you’re doing things the right way or the wrong way.”

Aaron would recommend a grower tour to colleagues as the networking alone among the touring group continues to reap rewards down the track in terms of exchanging ideas, collaborating and diversifying.

“All farmers have a great attention to detail, so by talking with others you’ll pick up ideas and small things you can use,” he says. “I still talk with people from the tour and we help each other out.

“Luck and crossing your fingers isn’t good enough nowadays, so it’s vital that we stay informed if we want to make a living and make it work now and for the next generation.”

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IMPORTANT LESSONS

Aaron says he was thankful to attend the tour but for all the cultural experiences he acquired, the opportunity made him realise “we do grow the world’s best product” in terms of quality and “our standards are so high that we’re probably our own worst enemy”.

SUMMARY

• Project PT10702 provided Australian potato growers with a chance to attend seminars and workshops in Belgium, England and Scotland, and strengthen relationships between Australian growers and international counterparts.

• Aaron Haby from Forster Hill Farm in South Australia says the benefits of networking and strengthening his industry knowledge have helped diversify his business and increase his potato farming five-fold from ‘humble beginnings’.

• World Potato Congress Grower Tour – Scotland 2012 was funded by Hort Innovation using the fresh potato and potato processing research and development levies, voluntary contributions from potato growing operations and contributions from the Australian Government.
Prevention is always better than cure at David Nix’s Atherton Tablelands farm.

After all, the arrival of an unwanted pest or disease can instantly devastate the far-north Queensland potato grower’s livelihood – together with those of his neighbours, and regional and state colleagues if quarantine restrictions are imposed.

That threat looms large every day, David says, with tomato potato psyllid (TPP), fire ants, fruit flies and golden cyst nematode among the pests he wants to avoid at all costs.

Therefore, maintaining strict biosecurity practices is essential for growers to play their part in protecting Australia from exotic pests that could impact productivity, the national economy and our way of life.

CLEAR AND PRESENT DANGER

Farm biosecurity involves putting in place practices to mitigate the risk of pests spreading onto your property, within your property or from your property.

“We’ve got some terrifying pests and major diseases out there that are right at our back door and could devastate our industry – as it has in New Zealand with zebra chip or the new strain of late blight in Papua New Guinea,” David explains.

“It’s a constant fear that tomorrow some nasty will turn up. But having the precautions and processes in place bring peace of mind, knowing that you won’t introduce or spread any disease. It’s your practices that make the difference.”

Producing about 1,000 tonnes of potatoes across 28 hectares, David and his small staff of permanent and casual employees at NixPax are ever vigilant.

Filling the niche when other areas can’t grow potatoes (NixPax plants from April until August, and harvests from July to December), David says growing a winter crop in 16 weeks with fewer hours of sunlight and surprisingly cold conditions already had its challenges, without the prospect of unwanted visitors.

And in a market increasingly characterised by small margins and big volumes, David says it’s vital for the financial bottom line that preventive biosecurity practices are strictly maintained.

CLEAN SWEEP

The first step towards maintaining biosecurity measures on David’s farm is buying certified seed, predominantly from Victoria. Second is paddock rotation and a goal to rarely, if ever, grow a crop twice in the same paddock in a five-year period.

This is complemented by weekly spraying (booms and aerial) and the agronomist-assisted introduction of beneficial species, such as parasitic wasps and lady beetles, to control the aphids and other “bad bugs”.

Another protection is iodine, which is used in the packing shed before shipping to Mitchell Foods for use in Lite n’ Easy products. Two computer-controlled systems control the doses of iodine in the washing water – an expensive but necessary practice that is “the best disinfectant you can get”.

Thinking ahead, David suggests a compensation scheme could be introduced for growers inadvertently caught in an outbreak.

“We are clean in comparison with a lot of other countries, including America, and miles cleaner disease-wise. But we’ve got to remain vigilant to keep it that way,” David says.

“Biosecurity comes in with a big hammer, which is understandable as the consequences of disease or pests escaping us are enormous.

“That’s why it’s so important to realise that biosecurity affects us all, and that we take whatever steps we can to prevent any outbreaks.”

OTHER ON-FARM BIOSECURITY PRACTICES

- Maintain vehicle and equipment clean-down facilities at dedicated areas on-site, away from growing areas.
- Direct traffic with gate signs and inform visitors about property access points.
- Do not reuse cardboard packaging materials to limit the spread of pests and diseases.
- Maintain cleaning facilities (footbaths, brushes etc), making sure they are accessible for visitors and staff.
- Store waste away from growing areas/water sources.
- Source planting material from reputable suppliers.
- Carry out regular pest surveillance in crops and surrounding vegetation.

SUMMARY

- It is vital that preventive biosecurity practices are strictly maintained on-farm to protect Australia from exotic pests that could impact productivity and profitability.
- Potato grower David Nix uses certified seed and paddock rotation, as well as water-controlled iodine, crop spraying and beneficial insects to enhance biosecurity practices on his Atherton Tablelands farm in far-north Queensland.
- Many biosecurity activities in the potato industry are funded by the fresh potato research and development levy and contributions from the Australian Government, including Tomato potato psyllid (TPP) National Program Coordinator (MT16018).
A strategic levy investment conducted by the South Australian Research and Development Institute (SARDI) has benefited productivity of Australia’s $500 million potato industry.

This is largely due to PreDicta Pt, a DNA-based soil testing service, which allows growers to test fortnightly samples of their soils from mid-June to the end of October every year. This timeframe helps growers with paddock and disease-management planning.

PreDicta Pt testing identifies whether soil borne pathogens pose a major risk to potato crops prior to planting. The testing includes an indication of the risk of powdery scab (Spongospora subterranea); black dot (Colletotrichum coccodes); and root-knot nematode (Meloidogyne fallax).

One seed grower who wouldn’t be without the testing is Andrew Wilson, a fourth-generation potato seed producer from Mount Seymour in the Tasmanian southern midlands.

“It really is an invaluable tool for us as seed growers, because we rely on our product to be of a very high quality,” Andrew says.

PreDicta Pt soil testing technology (PT09023) is a strategic levy investment under the Hort Innovation Fresh Potato and Potato Processing Funds.

MINIMISING RISK

Andrew says that the need for soil to be as disease-free as possible is paramount for his thriving family-run business of almost 800 hectares, Wilson Agricultural, which was established in 1933 by his great-grandfather Cyril Wilson. The rotations on Andrew’s property are lengthy, from eight to 10 years between potato crops, so any potential disease-ridden outcomes would be heartbreaking. He also leases land to lessen the risk of disease.

Half of Wilson Agricultural’s annual seed produce of 1,400-1,600 tonnes is grown on Andrew’s farm.

He supplies to processor Simplot Australia, which introduced Andrew to the testing service when it was launched in 2013. PreDicta Pt has since achieved widespread support from Australian growers, processors and agronomists.

Andrew says it’s not just about finding what is in the paddock, but also dispelling any pre-conceived problems.

PreDicta Pt provides this peace of mind for Andrew, as it gives the “heads up on what may be there as far as disease goes”. It also provides the opportunity to change paddocks, crop protection products or the variety of potatoes grown.

IT REALLY IS AN INVALUABLE TOOL FOR US AS SEED GROWERS, BECAUSE WE RELY ON OUR PRODUCT TO BE OF A VERY HIGH QUALITY.

As an example, Andrew endorses the disease-resistance and sturdiness of Nicola and Moonlight varieties on his soil.

Wilson Agricultural also grows a range of Ranger Russet and Russet Burbank potatoes. These are more susceptible to powdery scab, which Andrew says is the number one problem that potato growers face, Australia-wide.

“The problem you have, especially on a lease farm, is that you don’t know the history of the paddock; you don’t know what’s been grown and what diseases they may have faced.”

PreDicta Pt testing opens up growers’ eyes to previous challenges and removes the guesswork involved in future growth yields. Like most potato growers, Wilson Agricultural outlays vast sums of money annually in fertiliser, seed and water supplies.

“To do all that and end up with a poor result is something you can’t afford,” Andrew says.

“Without the testing, we’d be flying blind, especially on an older farm that’s grown a lot of potatoes.”

Wilson Agricultural has rarely failed to pass stringent certification procedures in crop quality. Andrew believes this is largely a result of adopting the PreDicta Pt testing.

“All our potatoes are transported in bulk trailers of about 24 tonnes per trailer and, in the past four years, there would only be two or three trailers that haven’t passed out of thousands of tonnes, because of knowing what’s going on.”

SUMMARY

• PreDicta Pt is a DNA-based soil testing service that helps growers with paddock and disease-management planning. The testing identifies whether soil borne pathogens pose a major risk to potato crops prior to planting.

• Tasmanian seed potato grower Andrew Wilson has been using the testing service since 2013, and it has given him the confidence and peace of mind to manage existing crops and plan for future growth. It has not only identified potential disease borne soil, but allowed Andrew to switch potato varieties better suited to his soil.

• Project PT09023 was funded by Hort Innovation using the fresh potato and potato processing research and development levies and contributions from the Australian Government.
When Matthew Gay started farming with his father in 1980, the best place to find out what was happening in the industry was over a quiet beer on a Friday night.

Fast forward almost 40 years and the President of the Crookwell Potato Growers’ Association in New South Wales is thankful for the advances made in industry communications.

“Years ago we might have had a field day or met up at the pub to have a chat about what was going on and that was how we learnt,” Matthew says.

“But now, if my son Chris asks me a question, I can straight away research it on the internet. I can give him an initial answer and then get a more definitive answer online. In many ways, you’ve now got a back-up program for your learning and teaching. It’s no longer second-hand, over-the-fence learning but so much more professional.”

“The transfer of knowledge between generations is critical. You can’t beat experience and the enthusiasm of youth to keep driving forward. If you can work together and communicate well, both generations are learning. There’s nothing like a fresh set of eyes saying, ‘Can we try it this way?’”

Thankfully, a lot has changed over the years. There is always something new or a better way of doing things. It’s difficult to network, so it’s great to be able to sit down anytime in the day or night and access relevant and accurate information. This is probably our best tool on the farm.

“As he’s just starting out, I’ll be encouraging Chris to read as much as he can. It will be in his best interests.”

VITAL INFORMATION

Among other things, Matthew’s farm benefits from communication materials within the project that provide certification system updates, pest and disease projects and their outcomes, as well as information about new strains and varieties. He has even played his part in sharing the knowledge, featuring in the December 2016/January 2017 edition of Potatoes Australia to discuss Crookwell’s nationally endorsed quality assurance program.

“There are many positive farm outcomes because Potatoes Australia covers every aspect of our industry – certification, mini-tuber production, pest and diseases, soil analysis, not to mention grower profiles – it’s a total coverage. To keep up, we need these tools. It’s not only important but necessary,” Matthew says.

SUMMARY

• The Potato Industry Communications Program 2016-19 increases grower awareness of strategic levy investments in the potato industry through materials such as Potatoes Australia, the Weekly Update e-newsletter, InfoVeg services and social media.

• Crookwell Potato Growers’ Association President Matthew Gay says the regular communication updates – across print, digital and social media – has helped both himself and his son Chris, among many others, stay up-to-date with tomato potato psyllid (TPP) and various farming practices to assist the certified seed potato industry.

• Project PT15007 is funded by Hort Innovation using the fresh potato research and development levy and contributions from the Australian Government.
“Our aim is to find the magnitude of the problem in the area, then suggest changes or solutions to what can be done. It’s an exciting prospect because no one has previously tried to quantify how bad the issue is, and any knowledge we acquire is to be shared with other growers.”

Its expected outcome is an improvement to sustainable irrigation management and water efficiency at a local and regional level. The project will also assist growers in making well-informed decisions as to what, when and how much fertiliser to use as part of an integrated management plan.

DIGGING DEEP

The obvious focus would be the groundwater’s interaction with soil and in turn, the potatoes, Tim said.

Other variables could include the depth of clay, soil issues, fertiliser practice (such as what works best and when) and irrigation management, such as whether frequent small applications of watering reaps premium results or if fewer applications of large volumes of water is preferential.

There’s also the matter of growers and their individual practices — some only grow a summer crop, planting in October or November and harvesting from February to May. Others in northern areas of the state generally plant in August and also in February.

DETAILED PLAN

The complexity, scope and detail into which the project will delve is what sets it apart as a strategic levy investment.

Tim said a project officer would monitor water quality through the season at the various farms, where it would be business as usual for participants.

“In South Australia we’ve all been dealing with a less-than-ideal water scenario, but this is about us all taking our product to the next level,” Tim said.

“It’s about examining each piece of the jigsaw puzzle and putting in place the best practices and strategies, and then sharing that information for the ultimate aim of creating higher yielding crops.”

Tim said it may be up to three years before definitive findings can be made, but he was confident the methodical process would unearth better and more efficient methods of growing potatoes.

SUMMARY

• Project PT16001 is a three-year project that will examine the effect of groundwater on nine varieties of potato crops located across South Australia.
• In collaboration with a project officer and other growers, Tim Heysen from Kalangadoo will study how his Ranger Russet and Innovator potato crops can be better managed.
• The project is likely to improve sustainable irrigation management and water efficiency at a local and regional level, and will assist growers to make well-informed decisions.
• Impact of groundwater quality on the management of centre pivot-grown potato crops is funded by Hort Innovation using the fresh potato and potato processing research and development levies and contributions from the Australian Government.

Photography by Tanya Ewen.