



GROWER SUCCESS STORIES

REAL RESULTS FROM THE
POTATO R&D LEVIES

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The Australian potato industry continues to enhance its reputation as a global leader, thanks in no small part to the innovative practices embraced by its growers. The high quality of produce being grown has been made possible by ongoing investment in new research and development (R&D), which has put Australian growers at the forefront of cutting-edge potato production.

Every year Horticulture Innovation Australia Limited (HIA, formerly HAL), using the National Fresh and Processed Potato Levies, and funds from the Federal Government, has invested vital funding in grower-driven R&D projects, which have delivered real results for potato producers.

In the pages ahead, you will find examples of growers from around the country who have enjoyed business success as a result of taking on initiatives connected to R&D projects funded by the Fresh and Processed Potato Levies.

The Potato Industry Extension Program (PIEP) has continued to shine, as it disseminates results from industry R&D programs to Australia's potato growers and processors. Key areas of research covered by the program include developments relating to potato viruses and diseases such as Pink rot and Potato virus Y, as well as research findings regarding some of the major global potato pests and diseases. Through this project Australian potato levy payers, such as Darren Long and David Nix, who both feature in this publication, have been able to stay up-to-date with the latest potato industry R&D, and incorporate efficiencies into their operations.

Elsewhere we see Australian growers being given opportunities to learn about production and technical innovations from their international counterparts, and make valuable networking connections as a result of participation in levy-funded industry missions. In recent years, Australian potato levy payers have been given comprehensive insights into the methods and practices utilised by the United States and Canadian potato industries, and invaluable opportunities to observe R&D and business initiatives undertaken in these two countries.

Investment in innovative soil management systems has resulted in real on-farm change and has contributed to more consistent and healthier crops. Victorian grower Greg Murphy, who has been heavily involved with pre-plant DNA soil testing, using PreDicta Pt-brand diagnostic test, is testament to this.

I look forward to seeing many more exciting innovations and developments that will continue to help drive the Australian potato industry forward in the years ahead. I would encourage all potato growers to keep informed of the latest industry R&D, which could bring real benefits to their businesses.

Yours sincerely,
The Hon. Paul Calvert AO
Former Chair of the Potato IACs



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JASON DANIELL

Innovative pest control

Photographs by Iain Bond.

Industry R&D is helping one South Australian grower develop simple strategies to minimise the risk of an aphid-borne virus that has the potential to hit potato growers in the hip pocket.

Jason Daniell is implementing the latest R&D findings into Potato virus Y (PVY), to help his business' bottom line.

Benefitting business

"Depending on the symptoms it shows, it can affect anywhere from zero to 100 per cent of your crop yield so if your cost to grow is \$3,000-\$4,000 per acre, it can really add up," Jason said.

"Keeping up to date with the latest R&D can only make our business better. The strategies that help reduce PVY are the same that can help reduce other diseases so any improvements in the way we manage our crops will be of benefit."

Jason started farming a 1,000 acre property close to Murray Bridge - about an hour east of Adelaide - in 2005, having been involved in horticulture for 20 years. Half of his product is sold to fresh markets and the other half is designated for the certified seed market.

Early in 2014 he took part in a Potato Industry Extension Program Workshop (PT11004), which aimed to highlight R&D activities to potato growers and processors, during an ongoing series of seminars around the country.

In the lead up to the workshops he received an on-farm visit from Department of Agriculture and Food Western Australia plant virologist, Brenda Coutts, who has

conducted extensive research into PVY, including a scoping study (PT13006). Jason said the visit allowed him to better understand PVY and develop a risk minimisation strategy.

"That was a great experience to talk one-on-one and for the scientist to see how you do things on your farm - because sometimes it can be hard to visualise and everyone has different soils, climates and temperatures," Jason explained.

PVY is an aphid-borne disease that causes yield losses and tuber quality defects in commercial potato crops.

Some varieties of potatoes are more susceptible to the disease than others.

Minimising risk

Until PVY can be eradicated, Jason says the key to minimising risk is being proactive and always using certified seed.

"Controlling your volunteer potatoes is a big thing we need to do, because they can carry the disease and then it continues to spread," he said.

"We are trying to push our rotation out a bit further between crops.

"We're also planting barrier crops so the aphids can feed on the way through and clean their beak so they don't spread the virus. We've planted a 10m strip of Triticale at the edge of the pivot - it grows up higher than the potatoes and the hope is that the bugs feed on that instead."

Jason says R&D results suggest there will be clear financial and productivity benefits after making the simple changes.



Summary:

- **The Potato Industry Extension Program** (HIA Project PT11004) aims to highlight industry R&D news and activities.
- **By participating** in a recent workshop, South Australian grower Jason Daniell was able to meet with plant virologist Brenda Coutts and develop risk minimisation strategies for Potato virus Y.
- **Simple strategies** such as correct rotation, controlling volunteer growth, always using certified seed and planting barrier crops can help prevent disease such as PVY.
- **Utilising correct procedures** could save thousands of dollars in lost production.



DANIEL MAHER

A global perspective

A focus on reducing labour costs and using more efficient irrigation technology are the key outcomes of one Victorian grower's overseas study mission.

Daniel Maher visited the United States and Canada in 2013 on a 10-day industry mission (PT12704) and says that he has started implementing new R&D on-farm as a result of what he learned overseas.

Mr Maher, 32, farms at Dean, near Ballarat, on leased farmland, including property owned by his father Brian, who previously took over from Daniel's grandfather, Basil.

He grows 100ha of Innovator and Atlantic potatoes for the processing market, also farming canola, wheat, barley and sheep.

Global perspectives

Mr Maher said there are big differences between Australian growers and their US counterparts.

"When you look at it, Australia's production and consumption of potatoes is minimal compared to the USA," he said.

"US consumers are happy to eat their processing varieties so their main table spud is Russet Burbank, which means farmers there can get rid of their excess.

"I think we need to promote the benefits of Australian grown produce here more, label the packaging better and build new markets."

Cheaper input costs, such as electricity, diesel and labour, also make the US industry considerably more profitable, according to Mr Maher.

While growers have no control over the Australian dollar or oil prices, he says something needs to be done about the financial expenses associated with labour at both farm level and through the production process.

According to Mr Maher, scale is also another factor the Americans have on their side, and farm efficiency has become a big focus since his return from North America.

“I have changed a few things on my farm since the trip. I've gone from gun irrigation into some centre pivots which is less labour intensive and will hopefully improve productivity”

"They don't mess around when it's time to plant and harvest over there," he said.

"Spuds go in six rows at a time and we didn't see any single row harvesters - it's six, ten or twelve rows at a time when they are harvesting.

"Up until last year we were only doing single row, but we are now going to two rows to give us a bit more capacity and to allow us to work on our efficiency."

Business investment

Mr Maher said he was most interested in the irrigation technology being used on farms the grower mission visited.

"We didn't see any old travelling guns like we have. It was all pivots, pivoting laterals or solid set," he said.

"As a result, I have changed a few things on my farm since the trip. I've gone from gun irrigation into some centre pivots which is less labour intensive and will hopefully improve productivity.

"I intend to get more pivot irrigation with better GPS technology as we can afford it."

As for R&D study missions, Mr Maher says he is a big supporter of them and encourages other farmers to get involved in a bid to learn about new technologies and improve their own on-farm structures.



Summary:

- **HIA Project PT12704** aimed to give growers insight into the methods and practices used by potato industries overseas.
- **Mr Maher** said there are big differences between Australian growers and their US counterparts, including higher consumption in the US and cheaper running costs.
- **Mr Maher** was very interested in the irrigation technology being used on farms that the study mission visited and, as a result, is moving from using gun irrigation into using some centre pivots.



DARREN LONG

Integrated farming approach sparks boom in potato production

Photographs by Belle Young.

Darren Long's commitment to on-farm innovation has been pivotal in steering his business, MG Produce, in a profitable direction.

With a working philosophy of "farming for the future", the Tasmanian-based potato grower has successfully implemented biofumigation systems within his operations to manage some of the most troublesome diseases in potato crops.

Innovative practice

Though the benefits of biofumigation, and its suitability for all growing operations remains the subject of some debate in the industry, Mr Long has found the set-up works for him.

"Using biofumigation as an integrated method has changed our entire approach to potato growing," Mr Long said.

"After 10 to 15 years of research - and a lot of trial and error - we have been able to establish biofumigation on our property at Sheffield (in the state's north west) as an effective disease control measure."

Environmental benefits

Biofumigation is an environmentally-friendly approach to crop protection in which plant chemicals are used to fight soil-borne diseases.

It works by harnessing the natural chemical agents of a plant to suppress

“ Biofumigation really comes down to soil health and soil conditioning ”

weed, fungal pathogens and nematodes.

Mr Long uses a variety of brassica called "caliente" - a mustard green "with the highest glucosinolate release currently tested."

"Biofumigation really comes down to soil health and soil conditioning," he said.

"There are no real pests associated with it and it has provided us with a safer growing environment that is suited to what we are doing."

Using the system on his farm has seen Mr Long markedly reduce his crop rotations.

"Ten years ago we had one crop of potatoes in a seven-year rotation," he said.

"Today, we have brought that back to one in three which has helped to increase our crop yield to 24 - 25 tonnes per acre on a pack-out once-a-year."

As he continues to reap the benefits of his labour, Mr Long said he was committed to sharing his progress and knowledge with the wider growing community.

"I have been fortunate to participate in the Potato Industry Extension Program (PT11004) which has allowed me to discuss ideas, meet industry representatives and stay up-to-date with the latest developments in the Australian potato industry," he said.

"Talking to other growers during these workshops has helped to open up links to valuable people in the industry, including processors, agronomists, researchers and supply chain representatives.

"Another great outcome has been sharing our growing practices and management techniques which we hope other local producers can use to benefit their own operations in the long-run."



Summary:

- **For more than a decade**, Darren Long's fresh market enterprise, MG Produce, has trialled a range of farming methods and tools to boost crop yields, reduce cropping rotations and produce the highest quality potatoes.
- **In doing so**, Mr Long has improved soil carbon levels and changed the suite of soil-borne pathogens present in his soil.
- **Through his regular participation** in the Potato Industry Extension Program, he has gained valuable insights into new industry R&D while also sharing his own knowledge with the Australian growing community.



GREG MURPHY

DNA testing informs potato growers of disease risk



Photographs by Ian Wilson.



Diagnostic tests for soil-borne pathogens are helping potato growers like Greg Murphy manage their potato crops for maximum profit.

PreDicta Pt (PT09023) is a soil DNA testing service developed by the South Australian Research and Development Institute (SARDI) that assesses the risk of common disease pathogens which can lead to reduced yield and tuber quality caused by powdery scab, root knot nematode, rhizoctonia and common scab.

The award-winning system developed as part of the Australian Potato Research Program - Phase 2 was launched commercially in August 2013.

Since its development, it has received widespread support from growers, processors and agronomists across Australia, and has been adopted on a number of farming properties, including four of Mr Murphy's paddocks in Dunnstown, in the Central Highlands of Victoria.

Effective control

The third generation potato grower said the test was an efficient and cost-effective way to manage disease and make informed decisions before planting.

"The project gives Australian growers a 'snapshot' of the risks that pathogens harbouring in the soil pose to potato crops," he said.

"Soil-borne diseases in potatoes lead to poor-quality crops, reduced yield and wastage.

“ Knowing each field’s disease risks helps us to make educated decisions on what crop variety we should plant - and where ”

"Knowing each field's disease risks helps us to make educated decisions on what crop variety we should plant - and where."

Making the right decision

Mr Murphy said the system was also useful for determining the various soil treatment and seed treatment options to be used.

"If there were high levels of disease found in one area, for instance, then we would treat the soil accordingly to reduce the incidence of disease prior to planting," he said.

"Something I found very interesting was that the testing did not only give us the disease level at harvest but calculated the impact of the disease in dollar value (percentage of yield loss delivered to the factory)."

The development of the testing service has involved linking pre-plant test results with disease levels measured in commercial crops to ensure that growers are able to integrate test results into their pre-planting decision-making process.

The service is accompanied by a training program and an advisor manual that provides key information on the diseases,

what the test results mean, and suggestions on strategies to consider before planting, particularly if the risk of disease is high.

Potato growers can access PreDicta Pt via agronomists accredited by SARDI to interpret the results and provide advice on management options to reduce the risk of losing crop to disease.

The service is likely to include testing for additional potato diseases in the future.

Summary:

- **PreDicta PT** aims to use soil DNA diagnostics to provide an indication of disease risk.
- **The South Australian Research and Development Institute (SARDI)** has developed a unique method of determining the risks of crop diseases in fields (or part of fields) with the PreDicta Pt diagnostic test.
- **Knowledge of each field's** disease risk will help growers make informed decisions on planting plans and management practices to minimise the impact these diseases pose to yield and quality.
- **Greg Murphy** is one of the many Australian growers to benefit from this project through his liaison with agronomists and members of the Department of Environment and Primary Industries Victoria.

PETER PARKER

Planting the seed for industry development



Peter Parker has been involved in the potato industry since he was a child. The 56-year-old grew up on the family farm, spent 28 years as a harvesting and planting contractor and has worked as a farm hand on his brother Alan's 65 hectare property at Manjimup for the past four years.

Forty per cent of the potatoes produced on the Parker's property are used for seed production, with the rest used for crisping and French fries.

An international perspective

In 2014, Mr Parker embarked on an industry funded grower mission to the United States and Canada (PT13704) to gain insight into the methods and practices used by the potato industries overseas.

Mr Parker said the highlights included a visit to Idaho to explore Simplot growing operations, as well as a tour of seed production facilities on Prince Edward Island, Canada.

The mission enabled Mr Parker to gain a new understanding of the North American potato industry and develop his own skills.

"I would do it again and recommend this opportunity to any potato or vegetable growers," he said.

"I learnt so much about the US and Canadian farming system, but also learnt a great deal just from talking to the other growers from Australia on the trip."

Moving forward

Mr Parker said that insights into the storage of fresh potatoes at North American supermarkets was a key piece of knowledge that he gained from his visit. He added he would like to see some American initiatives trialled within the Australian industry.

"Even though I'm not in the fresh potato industry, I used to be a harvest contractor



so I am still interested in that part of the industry," he said.

"Instead of them selling their spuds in clear plastic bags where they can potentially sweat, the (North American) markets predominantly use brown paper bags with a mesh window to allow the customer to see the product.

"I've given a sample to my brother to pass on to the wash packers and I'm going to follow it up because I think it would be a good idea."

Another industry change that Mr Parker believed would help Australia remain competitive was better seed systems and more stringent biosecurity protocols.

"The hygiene and traceability I saw overseas was excellent - I was very impressed," he said.

"The chance of contaminated seed being sold and on grown is almost nil. The US and Canadian systems are incredibly thorough; right from the hot houses where they are growing the mini tubers to the truck drivers.

"We are lucky not to have many exotic diseases in Australia, but we can't become complacent.

"As far as I am concerned, the cleaner the seed, the better the crop. The better the crop, the more money you make!"



Photographs by Victoria Baker.

Summary:

- **Project PT13704** aimed to give growers insight into the methods and practices used by potato industries overseas.
- **The mission enabled** Western Australian grower Peter Parker to gain a new understanding of the North American potato growing industry and develop his own farming skills.
- **Key findings** from the mission included insights into storage and packaging of fresh potatoes at supermarkets and the need for Australia to remain competitive through strong seed and biosecurity systems.



DAVID NIX

Field day shines spotlight on top potato research



Photographs by Michael Petersen.



North Queensland potato grower David Nix is turning heads in the industry for his role in developing an innovative bulk-bag-lifter paddock trailer.

The award winning technology has since been taken up by other growers who have adopted the initiative into their own production systems.

Along with his technological achievements, a major highlight of Mr Nix's past year was hosting growers, and attending the inaugural Potato Field Day, held in conjunction with the Potato Industry Extension Program (PT11004).

The special event brought together leading potato growers, processors and technical experts from across the nation for visits and informative presentations at three growing operations in the Atherton Tablelands region.

Sharing knowledge

Mr Nix's property was one of the operations visited during the tour, which built upon the comprehensive work communicating valuable industry research and development (R&D) carried out within the Potato Industry Extension Program.

"The day was extremely well received among growers," he said.

"We all walked away with a great deal of knowledge - mostly gained through picking the brains of scientists and technical experts, who discussed research and agronomic issues like crop management

and nutrition practices.

"It was also great to learn about the latest innovations and practices in the farming sector while networking and exchanging experiences with fellow members in the industry."

Mr Nix said growers were educated on developments relating to potato viruses and diseases such as Pink rot and Potato virus Y (PVY).

"We recently had a case of PVY that significantly affected a line of our potato crops," he said.

"But we've learned to identify and manage it through an integrated approach, which isn't solely reliant on insecticide use but looks at testing the seed, which is where the biggest problem lies."

R&D findings

Attendees at the field day were also informed of research findings regarding some of the major global potato pests and diseases, including Late blight, Tomato-potato psyllid and Zebra chip.

"Another highlight was learning about fertiliser application practices to increase quality control and reduce application costs and wastage," Mr Nix said.

The Potato Industry Extension Program is a three-year initiative funded by the Australian potato industry through the National Potato Levies (fresh and processed).

Summary:

- **Leading Atherton Tablelands potato grower David Nix** has been heavily involved in the potato growing community for many years as an active participant on committees, including the Fresh Potato IAC and Enviroveg.
- **Through his participation** in the Potato Industry Extension Program (PIEP) Mr Nix has been able to gain valuable insights into new industry research and development (R&D) while at the same time, sharing his knowledge and innovations with the wider growing community.
- **As part of the program**, he attended and hosted a potato R&D workshop and field day in Atherton, Queensland, which built upon the comprehensive work carried out by the PIEP communicating valuable industry R&D.