

# potatoes

## australia

October/November 2015

**Daniel Taylor**

Growing a future

**The Front Line**  
Effective PCN  
management

**Nathan Daly**  
Young grower

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## AUSVEG Chairman and CEO messages



## Geoff Moar

AUSVEG Chairman

To move forward as an industry, it is imperative for growers across the country to keep abreast of the latest developments in potato research. While I am constantly impressed by the world-leading R&D that is conducted on home soil, it is also essential for these findings to be communicated from the lab to the field.

Throughout the year, the Potato Industry Extension Program (PIEP) hosts a series of workshops in key potato growing areas around Australia to open the channels of communication between researchers, industry and growers. These workshops are a source of invaluable and practical information, as each event features a wide range of presentations from PIEP representatives and industry service providers, as well as leading local and international potato researchers who can help your business thrive into the future.

This year's series of PIEP workshops finished on a very positive note, attracting a high number of growers in Victoria who were keen to find out the latest developments in the industry. PIEP representatives also contributed to a workshop held in Manjimup, hosted by the Department of Agriculture and Food Western Australia, where growers were particularly fortunate to hear from Dr Alexander Karasev, a world-leading Potato virus Y researcher from the University of Idaho in the United States. The attendees benefited greatly from this presentation and their feedback noted how an international perspective on this devastating virus could assist in furthering research on the issue in Australia.

The latest round of PIEP workshops also showed a clear

increase in the number of young potato growers in attendance. This proves that the interest of the next generation in the potato industry is thriving and should be welcomed and encouraged. The passion, drive and dedication of young growers, teamed with the experience and wisdom of their older peers, is an unbeatable combination that will help the Australian potato industry prosper into the future.

On a final note, AUSVEG representatives recently attended the Seed Potato Certification Review in September, which brought together a range of industry members to discuss the opportunities available to develop a consistent, national approach to seed potato certification in Australia. It was certainly a productive and informative meeting that emphasised a positive vision for the potato industry, with communication and transparency highlighted as areas of vital importance.

As good quality, healthy seed forms the cornerstone of the Australian potato industry, it is imperative for these discussions to take place to ensure that potato levy payers receive the best investment possible in seed certification.

Geoff Moar  
Chairman  
AUSVEG



## Richard Mulcahy

AUSVEG Chief Executive Officer

Innovation and continuous development are key to securing the future success of the Australian potato industry, which is ultimately made possible through ongoing investment in the National Potato Levies. Once again, we have witnessed real results from Australian potato growers who have embraced levy-funded initiatives and are now enjoying the benefits of that investment in the 2015 *Potato Grower Success Stories* publication.

The booklet, available with this edition of *Potatoes Australia*, profiles six leading potato growers who have used levy-funded research to their benefit on-farm. This year's edition features growers from across Australia who have introduced strict biosecurity measures to keep their properties free from potential pest and disease threats. In addition, growers who attended the Potato Industry Leadership and Development Missions to the United States and more recently, China, explain how ongoing collaboration and communication with their international peers can ensure their businesses, and the Australian potato industry as a whole, are well-placed to face the future.

The publication also features growers who have successfully implemented industry-funded research initiatives such as the soil-borne disease testing service PreDicta PT and consumer research project, Potato Tracker. Facilitated by market researcher Colmar Brunton, the Potato Tracker project has provided valuable insights into the trends and potato purchasing habits of everyday Australian consumers over the past 12 months. This information, which was

published on a monthly basis, has proved to be an informative way for growers to address these trends and ensure potatoes are a regular addition to the consumer's shopping basket.

Potato Tracker has now published its final waves of results, which are further examined in this edition of *Potatoes Australia*. Feedback from growers has highlighted that this was one of the most valuable levy-funded projects developed for the industry, as it has provided an interesting insight into the mindset of the consumer when purchasing potatoes throughout the year. It signalled when consumers were determined to ensure their potatoes were Australian-grown, or highlighted their lack of knowledge of the range of potato varieties available and their suitability to certain cooking styles. It also provided practical information about the amount of potatoes purchased on average during the month and the type of information they look for in potato packaging.

As yet another levy-funded potato project comes to an end, it is imperative for the Australian potato industry to continue to benefit from ongoing investment in R&D projects to ensure its long-term viability.

Richard J Mulcahy  
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**FRONT COVER:**

Daniel Taylor

Photograph by Real Image Photography

Ongoing R&D is the lifeblood of the potato industry's future and there is no shortage of local and international updates in this edition of *Potatoes Australia*.

The Potato Industry Extension Program (PIEP) has wrapped up its last round of workshops for the year in Victoria, where growers turned out in droves to hear about the latest research, products and services available to the potato industry (page 8).

Another potential threat to the quality of Australia's potato crops is the serious disorder, Hollow heart, and we provide an update on the causes and management of the problem on page 16. Meanwhile, the popular Potato Tracker consumer research study has come to an end and the final two waves of findings are a must-read for growers throughout the country (page 30).

In biosecurity news, The Front Line takes a look at recent UK research that focuses on the potential for brassica – in particular, Indian mustard – to control Potato cyst nematodes (page 18). Also from the UK, we summarise the main areas of interest in a newly released guide to field drainage, which provides helpful tips and information for potato growers (page 20).

Over in the United States, the potential power of the purple potato has been a topic of interest to researchers, who have discovered that it produces compounds that can play a major role in the ongoing battle against bowel cancer (page 14).

Finally, turn to page 28 to read about the recent 2015 Potato Industry Leadership and Development Mission to China, where a small group of Australian growers visited key

growing areas and also had the chance to network with their international peers at the World Potato Congress. We also share a report on the main points of discussion during the International Potato Group meeting, which was held in the lead-up to the Congress (page 27).

One participant on the mission to China was 22-year-old Nathan Daly from Tasmania, who shares his thoughts on the future of the potato industry in our Young grower Q&A profile (page 12). We then take you to the west coast of Australia, where Daniel Taylor is the focus of this edition's Grower profile (page 24). The Australian potato industry is fortunate to have attracted the interest and passion of these two young growers and plenty of others throughout the country, who paint a positive picture for the future of the potato industry.



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Nathan Daly



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Daniel Taylor



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# Workshops encourage Victorian growers to look out for pests and diseases

POTATO CYST NEMATODE, ZEBRA CHIP AND THE POTATO SPINDLE TUBER VIROID WERE HOT TOPICS OF DISCUSSION DURING THE FINAL ROUND OF POTATO INDUSTRY EXTENSION PROGRAM (PIEP) WORKSHOPS HELD FOR THE YEAR. PIEP COORDINATOR ALEXANDER MILLER EXPLAINS HOW GROWERS SHOULD CONTINUE TO REMAIN VIGILANT ABOUT THE POTENTIAL THREAT FROM THESE PESTS AND DISEASES.



Victorian potato growers were treated to a raft of local potato R&D at a series of workshops held across the state recently.

Events in the Ballarat and Warragul regions attracted a large turnout of growers, agronomists and industry experts to hear about best growing practices from leading researchers and agronomy specialists.

Pest and disease control was a key theme to the workshops, with speakers Dr Dolf de Boer from the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) and Dr Jessica Lye, AUSVEG National Manager – Scientific Affairs, headlining the roadshow.

## Tackling PCN

Dr de Boer, a Senior Research Scientist at DEDJTR, provided information on the latest research into Potato cyst nematode (PCN) and Late blight – two pest and disease issues that Dr de Boer has dubbed as the “bad boys” of potato production.

Recent research into PCN, which is a highly quarantined pest found around the globe, has focused on the susceptibility and resistance of particular cultivars and their

effect on PCN populations. Atlantic, Crop 13 (marketed as Golden Delight and Moonlight in Australia) and Nicola were identified as resistant cultivars, while Trent, Coliban and Sebago were found to be susceptible.

While it is thought that further research under Australian conditions should be conducted, Dr de Boer believes that rotations and using resistant cultivars are critical tools in managing PCN.

When discussing Late blight, Dr de Boer noted favourable weather conditions for the disease and how these can be monitored to prepare for potential Late blight issues. Moist and muggy weather is believed to be conducive for Late blight, with fungicide identified as a preventative management technique for the disease.

## Biosecurity update

Following Dr de Boer's presentation on issues that have affected the Australian potato industry for many years, Dr Lye discussed biosecurity control and measures for keeping new pests and diseases out of the country, including the Tomato potato psyllid (TPP) and Zebra chip.

Zebra chip has cost the New Zealand potato industry millions

of dollars in recent years and has the potential to have the same impact locally if it reaches Australian shores. Zebra chip can decrease yield and crop health, cause stem death and reduce tuber size and quality.

The TPP – the pest that carries the Zebra chip disease – is also a serious threat to the local potato industry, as it was recently detected on Norfolk Island, approximately 1,000 kilometres east of the Australian coast.

While initiatives have been put in place to restrict the movement of food and plant material between Norfolk Island and Australia, including a ban to import potatoes, it is also important that growers implement their own biosecurity measures to minimise the risk of pest incursions. TPP identification and management techniques used in New Zealand were also discussed.

In addition, Dr Lye outlined a number of practices that growers can implement to improve biosecurity on-farm, including zoning properties to restrict movement of vehicles and people that can carry pests and diseases. The use of gate signs that make visitors aware of biosecurity practices was also recommended as a simple method to reduce the risk of

on-farm incursions. Gate signs are available from the AUSVEG website at [www.ausveg.com.au/biosecurity](http://www.ausveg.com.au/biosecurity).

## PSTVd on the agenda

An update on Potato spindle tuber viroid (PSTVd), which was recently declared endemic in parts of Queensland and Western Australia, was also given by Dr Lye at the workshops. A National Management Strategy for PSTVd is currently being devised, to ensure that it doesn't spread further around the country.

While PSTVd has not been identified in potatoes in Australia for many years, it was noted that it is vitally important for the industry to be proactive and put measures in place to ensure that it does not spread to potato crops.

## Industry developments

Growers were also provided with some of the latest crop protection developments from leading agribusinesses, Syngenta and Bayer CropSciences. Syngenta was represented by Tasmanian-based Wayne Richardson at the Ballarat workshop, who discussed the latest innovations in weed control and pre-emergent herbicides for potato crops. In Warragul, Alistair Beyer from Bayer discussed management techniques for *Rhizoctonia* and new in-furrow fungicides.

Victorian grower Dean Bone also gave an overview of his experience as a participant on the 2015 Industry Leadership and Development Mission to China at the Ballarat workshop, where he discussed farm visits to Harbin in northern China and the World Potato Congress.

For more information about the Potato Industry Extension Program, contact AUSVEG. Phone: (03) 9882 0277 Email: [info@ausveg.com.au](mailto:info@ausveg.com.au) Project Number: PT11004



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## U.S. Potato virus Y expert visits WA



Presenters at the workshop in Manjimup, Western Australia, also visited a potato grower in Busselton.

Western Australian potato growers heard from world-leading Potato virus Y (PVY) expert, Dr Alexander Karasev, at a special workshop in Manjimup in September, hosted by the Department of Agriculture and Food Western Australia (DAFWA).

Dr Karasev, a professor at the University of Idaho in the United States, has a high level of experience in plant virology research and extension and has conducted numerous PVY research programs. During the workshop, Dr Karasev outlined the effects that the virus can have on potato crops, and how he believed it can best be controlled.

PVY is generally spread via

seed potatoes, with Dr Karasev emphasising the importance of buying and planting seed that is free of PVY. To guarantee this, it is important that growers use certified seed potatoes, which have been inspected and cleared of PVY and other diseases. It was also noted that traditional approaches to disease and virus management, such as spraying, can be ineffective in managing PVY.

He also noted that the virus generally affects potato crops in two ways: either by reducing yield, sometimes quite substantially, or by damaging the tuber quality and visual appearance. PVY can also create dark rings on the potato skin, making it unsaleable.

### A global problem

According to Dr Karasev, PVY is the main virus affecting potato crops in the United States, but it is also present in all other potato growing regions around the world to varying degrees.

While PVY has caused issues in Victoria and South Australia in recent times, the Western Australian industry has not experienced such problems. Dr Karasev's presentation provided a timely update to growers and made them aware of the measures that should be put in place to minimise the risk of PVY.

DAFWA experts Dr Roger Jones and David Tooke also presented at the workshop, discussing varietal reactions

to PVY and potato certification respectively. AUSVEG National Manager – Scientific Affairs, Dr Jessica Lye provided information on biosecurity best practices for potato growers, while AUSVEG representatives also discussed additional industry R&D and the Potato Industry Extension Program.

The workshop provided growers with information on the risks of PVY, how it can be managed and what practices can be put in place to minimise the spread of the virus.



More information on Dr Karasev and a selected list of his research publications can be found at <http://www.uidaho.edu>.

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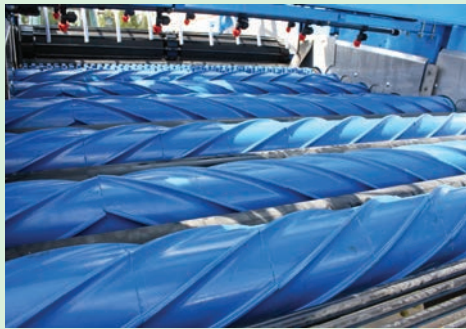
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# Q&A Young grower profile



**Name:** Nathan Daly

**Age:** 22

**Location:** Dunalley and Buckland, Tasmania

**Works:** GP & SJ Daly Pty Ltd

**Grows:** Nicola, Pink Eye, Red Rascals



Photography by Peter Jarvis.

## How did you first become involved in the potato industry?

My parents have grown potatoes for 30 years so I grew up in a farming environment. I was driving tractors and helping out around the farm from a young age but didn't really plan to become part of the business. After completing a building apprenticeship, I was looking for a change and, given my history, this seemed like a good fit.

## What is your role in the business?

At the moment I'm still learning the business from the ground up. This involves work in the field and packing shed, as well as management and decision making. I don't think they've given me an official title as yet, but the rest of the crew have given me a few suggestions!

## How would you describe your average day at work?

One of the enjoyable things about farming is that there are no "average" days. It varies quite a bit from day to day depending on the time of the year, the weather and other circumstances. It could be soil preparation one day, spraying the next and harvesting the next. I also help with the packing side of things if necessary. Once a week we try to meet to share information about how the business as a whole is going.

## What do you most enjoy about working in the potato industry?

I like being outside and the variety in this job is great. I'm working at different sites in different conditions every day. It's really important to me to feel a sense of achievement with the work I do and I get that in this business. It's also frustrating at times, but that's to be expected in farming.

## What are the biggest challenges you face working in the industry?

On a day-to-day basis, it's the weather. In the medium-term, rising costs are always a problem. Largely, the price we're getting for potatoes doesn't change from one year to the next, but input costs continue to rise on a fairly regular basis.

## What do you see as some of the greatest threats facing the Australian potato industry?

As an industry we have to face decreasing demand as consumers continue to substitute rice and pasta for

potatoes – we need to promote the nutritional value of potatoes more.

## Where do you see opportunities for growth in the Australian potato industry?

Getting people to eat more vegetables would be a good start. The product we're selling is excellent; we just have to get the message through to the consumer. Potatoes are very nutritious vegetables but if you asked a layman, all they would say is that potatoes are fattening.

## You recently participated in the 2015 Potato

## Industry Leadership and Development Mission to China. What did you gain from this experience?

It was really good to meet other growers from around Australia and exchange ideas and experiences both professionally and socially. It was also very interesting to see how other countries tackle the challenges particular to their environment, climate and economics.

## What was the highlight of the 2015 Potato Mission for you and why?

The overall experience was truly memorable and, I thought, very worthwhile. You read a lot

about China but to experience it first hand is remarkable and I believe the associations I made with other growers will be really helpful in the future.

## How do you think more young people could be encouraged to take up jobs in the potato industry?

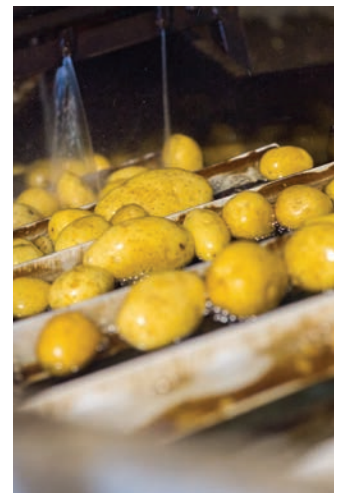
We've just got to continue to sell the positive aspects of potato farming. There always seems to be a lot of negative press about the exodus of young people moving away from farming, to the point where it becomes a self-fulfilling prophecy. Farming has got a lot going for it and that's the way it should be sold.

## If you weren't working in the potato industry what would you be doing?

Probably building – working outside at different sites, with a sense of achievement. It has a few similarities to spud growing.

## Where do you see yourself in five years?

I'd like to have more of a hand in the running of the business. I'm not sure how much more time I could spend in meetings, though.



# Research highlights purple potato power in fight against bowel cancer

A TEAM OF RESEARCHERS IN THE UNITED STATES HAS FOUND THAT COMPOUNDS IN PURPLE-FLESHED POTATOES MAY HELP TO KILL BOWEL CANCER STEM CELLS AND LIMIT THE SPREAD OF THE CANCER. *POTATOES AUSTRALIA* EXAMINES THE ENCOURAGING FINDING FOR THE GLOBAL POTATO INDUSTRY.



Some of Australia's potato growers have already tried their hand at growing purple potatoes. While they are undoubtedly appealing to the eye – after all, a purple potato mash makes quite a statement on the dinner table – researchers in the United States have found that this particular type of potato could have some

impressive health benefits too.

According to research conducted by Penn State and the University of Colorado, published in the *Journal of Nutritional Biochemistry*, a compound in purple-fleshed potatoes was found to suppress the growth of bowel cancer in petri dishes and in mice with bowel cancer. This compound targeted the cancer's stem cells, which the researchers said was an effective way to prevent cancer development.

This is undoubtedly welcome news for potato growers and Australian consumers, given that bowel cancer is the second most

common cancer affecting people in Australia, with around 14,000 people diagnosed every year.

The research found that the purple potato may contain several substances that work simultaneously to kill bowel cancer stem cells. This includes anthocyanins and chlorogenic acid – a resistant starch – which serves as a food for gut bacteria to regulate immune function in the stomach, suppress chronic inflammation and possibly cause cancer cells to self-destruct.

In addition, the researchers claimed the same colour compounds that give potatoes and other fruit and vegetables their vibrant colours may be effective in suppressing cancer growth.

## Baked, not fried

A baked purple potato was used in the study to ensure the vegetable could maintain its anti-cancer properties after cooking, as potatoes are widely consumed in this form.

In the initial laboratory study, the researchers found that the baked potato extract would be equivalent to a human eating one large purple-fleshed potato a day. The researchers suggested that purple potatoes could potentially be used to stop the initial attack of cancer, as well as help patients in remission to remain cancer-free. This type of cancer prevention strategy could also be used to complement current and future anti-cancer drug therapies.

While the findings of this research are certainly encouraging, the next stage of research may focus on testing the effect of purple potato consumption in humans for disease prevention and treatment strategies. The researchers also plan to test the effectiveness of purple potatoes in other forms of cancer.



The United States Department of Agriculture supported this research. For more information, please visit [www.jnutbio.com](http://www.jnutbio.com).

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# The importance of a healthy heart

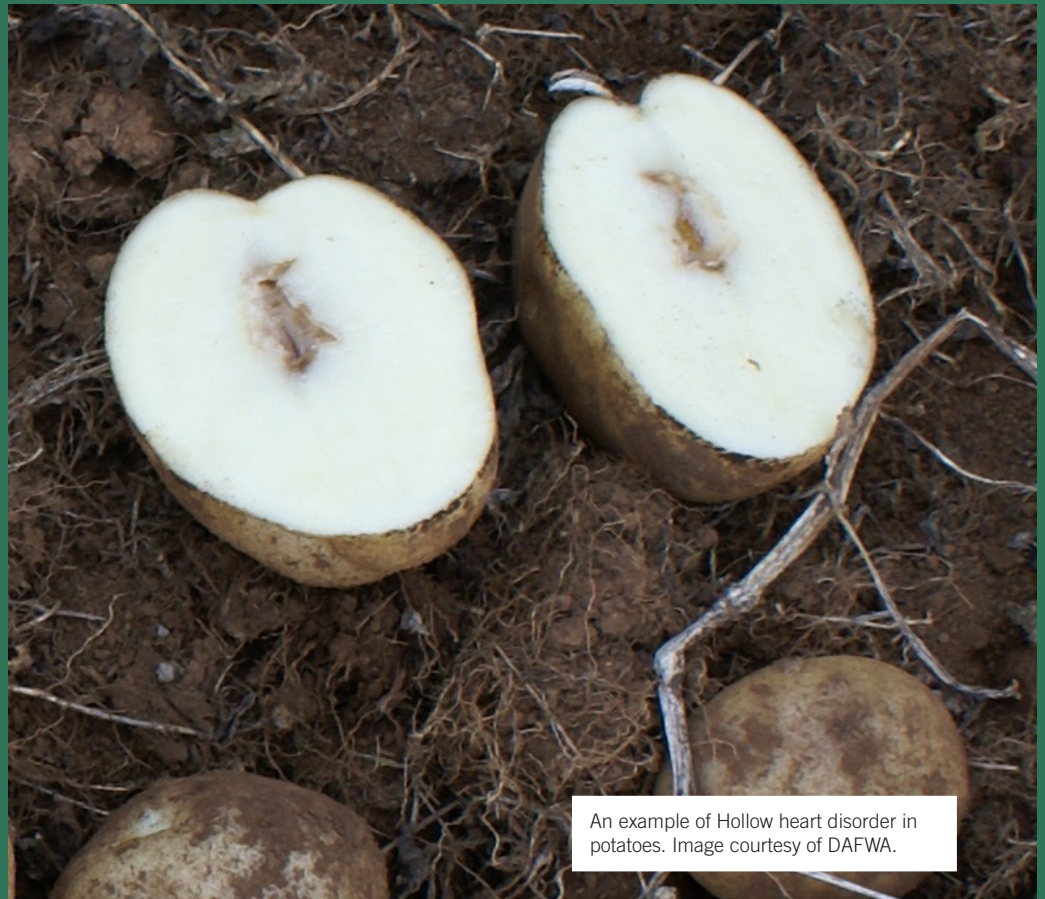
MUCH RESEARCH HAS BEEN CONDUCTED OVER THE YEARS ON HOLLOW HEART IN POTATO TUBERS. *POTATOES AUSTRALIA* SUMMARISES THE KEY MANAGEMENT TECHNIQUES THAT GROWERS CAN PUT INTO PLACE TO AVOID THE PROBLEM, AS OUTLINED BY THE DEPARTMENT OF AGRICULTURE AND FOOD WESTERN AUSTRALIA.

**H**ollow heart is an internal disorder in potato tubers and, while it doesn't involve an infectious agent or link to a disease, it can cause significant problems for fresh and processed potato growers as it can reduce payments from processors and washer-packers.

The disorder is typically characterised by a cavity in the shape of a lens or a star, which appears in the centre or 'heart' of the tuber. While some varieties such as Atlantic and Russet Burbank are more susceptible to developing the Hollow heart disorder, most varieties can be affected if the right environmental conditions are present.

The development of Hollow heart is believed to result from poor management during the growing process. This is especially evident when the rate of tuber growth is changed abruptly after a period of stress, which is why it can affect both susceptible and tolerant varieties.

If environmental conditions fluctuate rapidly during the tuber development process, the disorder is more likely to be present. Stressors including inconsistent watering, large fertiliser applications, highly variable soil temperatures and calcium deficiency (particularly where there are brown areas or dead cells in the tuber) can increase the development of Hollow heart.



An example of Hollow heart disorder in potatoes. Image courtesy of DAFWA.

However, it is not all bad news for growers, as the key to minimising the risk of Hollow heart development is to create and maintain a consistent growing environment. In particular, growers should consider three factors including irrigation management, crop management and fertiliser management.

## Irrigation management

Following a consistent watering schedule and correctly using soil moisture monitoring equipment is essential to maintain a consistent level of soil moisture in a potato crop and prevent over- or under-irrigation.

It is recommended that growers calibrate their irrigation equipment at the start of the potato growing season, as this can help to ensure an accurate and even application of water, as well as the efficient performance of the irrigation equipment itself. Tensiometers or time domain reflectometry (TDR) probes can also be used to

monitor soil moisture content.

## Crop management

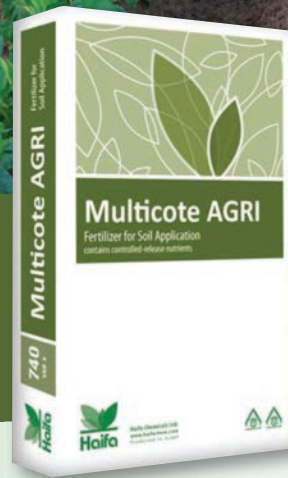
A high yielding, healthy potato crop begins with high quality seed that is sourced from reliable suppliers. This is no exception when it comes to the prevention of Hollow heart in potato tubers.

It is recommended to plant good quality seed at the appropriate spacing, as this will prevent gaps and misses in the crop from seed breakdown or poor germination and reduce the risk of Hollow heart development in oversized tubers in patchy areas of the crop. When cutting seed, follow

**“The development of Hollow heart is believed to result from poor management during the growing process.”**



# The new way to feed potatoes



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**“While some varieties such as Atlantic and Russet Burbank are more susceptible to developing the Hollow heart disorder, most varieties can be affected if the right environmental conditions are present.”**

the best practice procedures to avoid contamination and a breakdown of seed after planting.

### Fertiliser management

Just as humans need a balanced diet to be healthy, so too does a potato crop require an adequate balance of nutrients in the soil to develop healthy tubers. In this case, correct fertiliser management plays an important role in avoiding the development of internal disorders such as Hollow heart.

A properly balanced fertiliser program will help to provide the essential macro- and micro-nutrients required to produce a healthy potato crop and growers should pay particular attention to the correct management of calcium and nitrogen.

As calcium deficiency appears to be associated with the development of Hollow heart, it is important for growers to ensure an adequate supply of the nutrient is present in the soil at planting. Fertiliser can play an important role in this case, as the more soluble versions of calcium are more effective at minimising tuber disorders such as Hollow heart when compared to higher

applications of soluble forms before planting.

In terms of nitrogen, splitting the application of this nutrient can help to achieve uniform growth, particularly on loamy soils and coastal sands.

To improve the balance of nutrients in future crops, growers can use petiole analysis to monitor nutrient levels. In this instance, the first sample should be collected when the largest tubers are 10mm long, while additional samples can be collected on a fortnightly basis to check if the fertiliser application matches the crop's requirements.

As various forms of stress are the primary cause of Hollow heart in potato tubers, growers can control many factors that can help prevent the development of this disorder in their crops.



This information was sourced from the Department of Agriculture and Food Western Australia. For more information, contact Peter Dawson at [peter.dawson@agric.wa.gov.au](mailto:peter.dawson@agric.wa.gov.au) or (08) 9892 8461.



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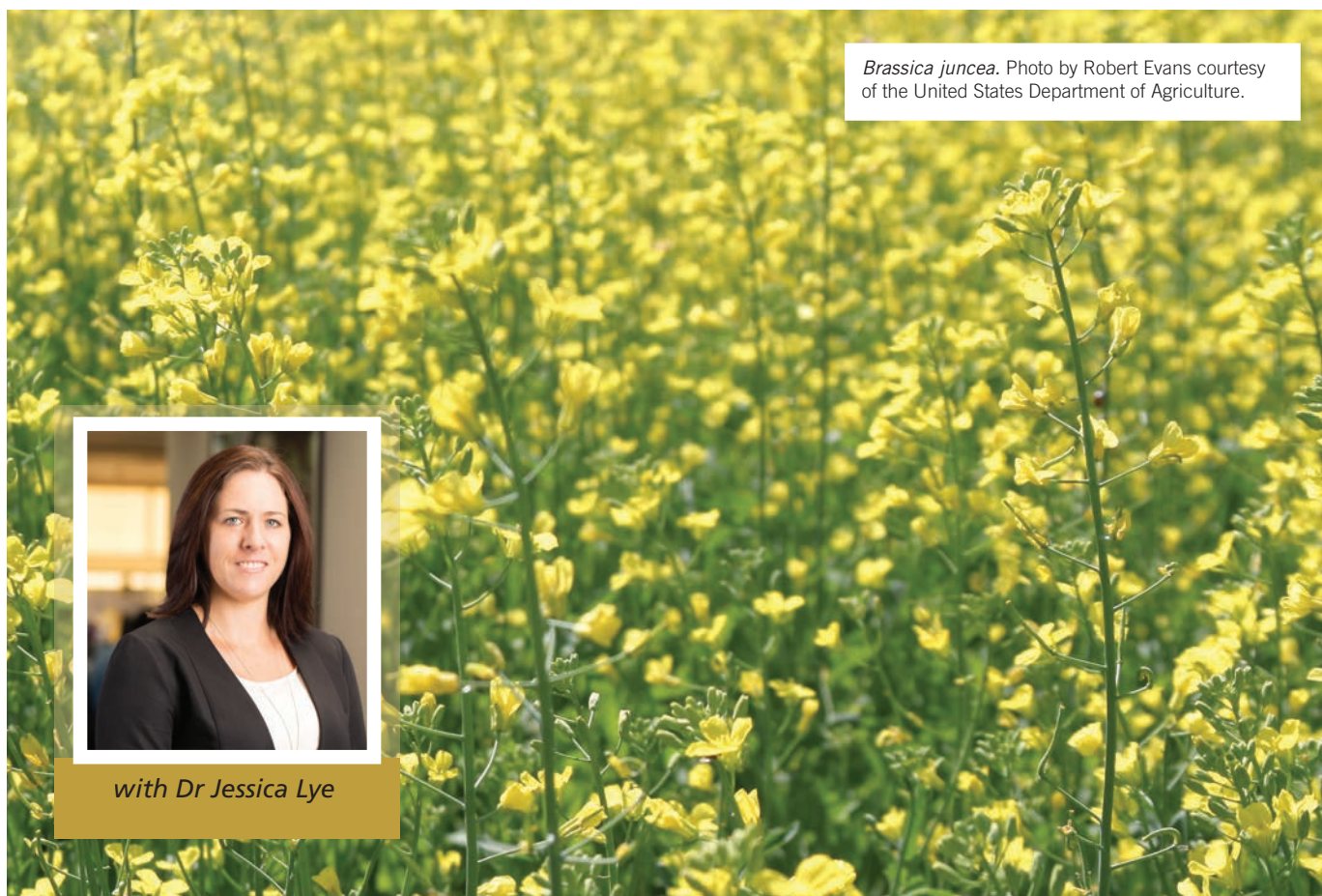
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Pioneering the Future

# Indian mustard a key ingredient in the fight against PCN



*Brassica juncea*. Photo by Robert Evans courtesy of the United States Department of Agriculture.

with Dr Jessica Lye

RECENT RESEARCH FROM ACROSS THE GLOBE IS SHEDDING LIGHT ON EFFECTIVE POTATO CYST NEMATODE MANAGEMENT. IN THIS EDITION OF THE FRONT LINE, AUSVEG NATIONAL MANAGER – SCIENTIFIC AFFAIRS DR JESSICA LYE EXPLORES NEW WORK CARRIED OUT AT HARPER ADAMS UNIVERSITY IN THE UNITED KINGDOM.

Potato cyst nematodes (PCN) are made up of two species – the Golden PCN (*Globodera rostochiensis*) and the Pale PCN (*Globodera pallida*). Both species feed on potato roots, and can cause significant damage that affects the yield and marketability of tubers.

A heavy nematode infestation may cause yellowing, wilting, death of foliage and patches of poor growth in the field. Both the Pale and Golden PCN can hatch several hundred offspring, and the ability of cysts to survive in soil for up to 30 years makes PCN difficult to eradicate.

The Pale PCN is found in many potato growing areas around the world, including New Zealand. So far, there has been no detection of this nematode in Australia.

## “Biofumigation offers additional control of PCN.”

- Dr Matthew Back,  
Harper Adams  
University

On the other hand, the Golden PCN (Ro1 strain) was first found in Western Australia in 1986 and was subsequently found in Victoria in 1991. Since then, the Golden PCN (Ro1 strain) has become established in parts of Victoria, although it has been eradicated from Western Australia. Exotic strains include Ro2, Ro3, Ro4 and Ro5. These strains, which are considered to be highly pathogenic, have not been detected in Australia.

## International developments

At Harper Adams University in the United Kingdom, researchers are investigating the potential for brassica to control PCN. In particular, the group is focusing on *Brassica juncea* (otherwise known as Indian mustard, leaf mustard, or cv. Caliente 99).

Recently, the group published research in the journal *Nematology* indicating that both leaf and root extract from *B. juncea* has a significant effect on controlling the hatching of Pale PCN eggs. In fact, PCN eggs exposed to 100 per cent weight/volume of leaf or root extracts resulted in 87 per cent mortality of eggs and irreversible paralysis of the remaining hatched larvae.

*The Front Line* interviewed Dr Matthew Back, Senior Lecturer/ Researcher in Plant Pathology and Nematology at Harper Adams University, for more information on this research.

## What led to your current research on biofumigants?

I became interested in biofumigants in 2006, when I was visited by a representative from Tozers Seeds (formerly Plant Solutions). He supplied us with some samples of *B. juncea* and we decided to run a couple of undergraduate (dissertation) projects to gauge the performance of the biofumigants against PCN. To my surprise, we found that *B. juncea* caused a significant reduction in the number of juveniles invading potato roots.

### What role can biofumigants play in the future control of PCN?

European pesticide legislation was reformed in 2011 (No. (EC) 1107/2009), making it more challenging to register and re-register agrochemicals. With the current shortage of oxamyl, we have limited options for PCN control. Resistant varieties are available for *G. rostochiensis* but we have less resistance available for *G. pallida* and these are not favoured by the supermarkets. Biofumigation offers additional control of PCN but currently I can't see it being a replacement for agrochemicals.

I see biofumigants as a means to supplement existing control strategies such as rotation, chemical inputs and resistant varieties where applicable. We have seen reductions in PCN that range from approximately 45-70 per cent. We are carrying out further work to see whether the biofumigation system can be optimised further.

### What is next on the horizon for your research?

We are investigating the area of partial biofumigation, which is a suppressive effect seen from the growing crop (i.e. before crop maceration/incorporation). An additional area of interest is the incorporation of the crop and how we might improve this. For instance, what type of machinery will cause the most damage to the plant tissue?

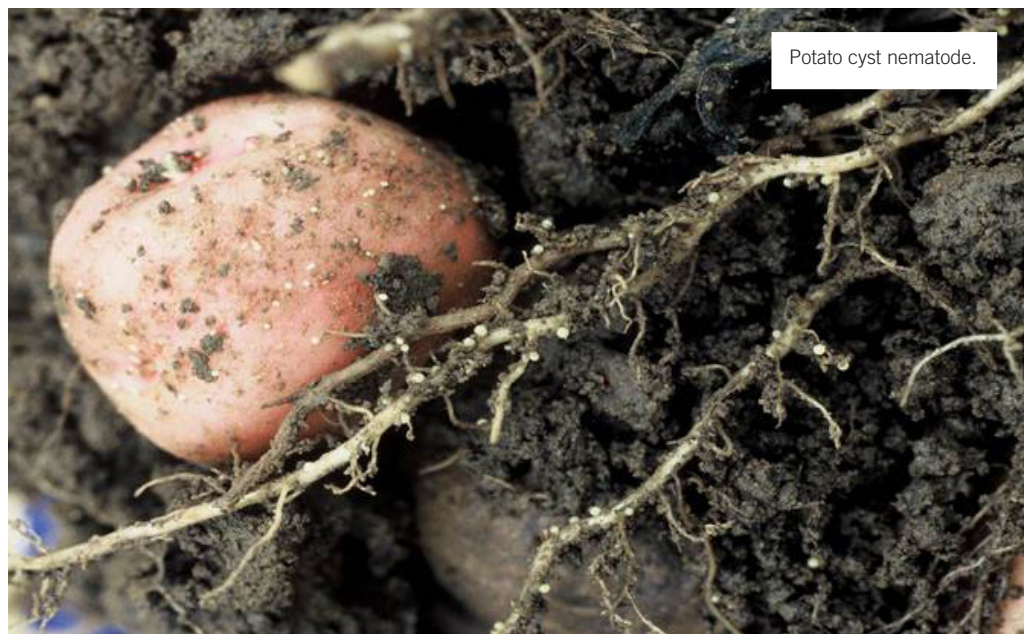


Any unusual plant pest should be reported immediately to the relevant state or territory agriculture agency through the Exotic Plant Pest Hotline (1800 084 881).

For further information, see the farm biosecurity website at [www.farmbiosecurity.com.au](http://www.farmbiosecurity.com.au), or contact AUSVEG National Manager – Scientific Affairs Dr Jessica Lye on (03) 9882 0277 or email [jessica.lye@ausveg.com.au](mailto:jessica.lye@ausveg.com.au).



Golden Potato cyst nematode on potato roots.



Potato cyst nematode.

### New developments in biofumigant research

Biofumigant crops act as break crops, disrupting the life cycle of pests and diseases. Brassica species in particular have the ability to synthesise chemicals that are detrimental to certain plant pests and pathogens.

Glucosinolates are a group of secondary metabolites produced by Brassicaceae. When glucosinolates come into contact with the enzyme myrosinase, which is also produced by the plant, isothiocyanates are produced. These isothiocyanates are toxic to many soil-borne plant pests.

It was previously thought that the glucosinolate-myrosinase reaction occurs only when the plant tissue is well masticated (turned into the soil). However, evidence from the Harper Adams research group, as published recently in *Applied Soil Ecology*, indicates that this can be carried out in soil before the mustard is crushed.

In fact, the research results suggest that natural soil bacteria may produce myrosinase, which then reacts with glucosinolates that are excreted by the mustard plant root system to produce isothiocyanates. This means that a mustard cover crop may be working to inhibit plant pests even before incorporation of crop residues into the soil.

# A practical guide to field drainage

IN MANY CASES, ADEQUATE FIELD DRAINAGE CAN BE THE DIFFERENCE BETWEEN PRODUCING A BOUNTIFUL CROP OR NO CROP AT ALL. *POTATOES AUSTRALIA* SUMMARISES THE KEY RECOMMENDATIONS OF A NEW INTERNATIONALLY-DEVELOPED FIELD DRAINAGE GUIDE THAT CAN BE USED BY POTATO GROWERS.

In a bid to refresh growers' knowledge of field drainage, the Agriculture and Horticulture Development Board (AHDB) in the United Kingdom – whose potato division was previously known as the UK Potato Council – developed a publication for growers entitled, *Field drainage guide: Principles, installation and maintenance*. The guide covers the basic principles of field drainage, as well as maintenance and installation information.

It notes that, generally, there has been a reduction in organic matter levels in arable soils over the past 70 years, making them more susceptible to waterlogging. In addition, good field drainage is of particular value to growers working with heavy soils, in high rainfall areas or where the water table needs to be controlled.

"In essence, good drainage is about managing soil to help it return to field capacity. Soils in a well-drained state tend to work more easily and provide yield benefits," Guide Co-Author and ADAS Senior Soil and Water Engineer Kirk Hill said.

"This guide explains how to get fields in that state, which often does not involve a significant capital investment."

Growers looking to install or maintain existing field drainage systems on their farms should understand that it is a long-term investment, which has the potential to last up to 20 years or more with good maintenance and careful consideration.

## Drainage hot spots

As the guide outlines, regular surface ponding or saturated topsoils are clear indicators of poor drainage in a field. These conditions may also result in reduced crop health or yields, high surface run-off rates and soil erosion, as well as poor root development and limited rainfall filtration into the soil.

According to the guide, drainage systems work best when teamed with good soil



**“Good field drainage is of particular value to growers working with heavy soils, in high rainfall areas or where the water table needs to be controlled.”**

structure. If you suspect that your field is victim to insufficient drainage, it is essential to routinely examine the soil at several points in the field during spring or autumn to check for soil structure and drainage issues.

Well-developed soil can be easily dug up and will break down into smaller units with deep rooting and vertical fissures, while poor soil structure comes in the form of larger, denser blocks of soil that are difficult to dig up. If soils are high in clay content, or are grey with rusty or grey-coloured mottles, this may also represent signs of poor

drainage. Compacted layers should also be removed before growers consider field drainage maintenance or installation.

The guide also details when it is appropriate to supplement the drainage system with mole drains and features information on subsoiling and topsoil loosening to help restore the structure of damaged soil.

**Maintenance is key**

The guide reinforces that there are multiple ways for growers to minimise soil damage on their farms. This includes a reduction in field trafficking, weight of machinery, tyre pressures,

overworking the seedbed and poaching of livestock (where damage to the soil surface is caused by animal hooves). Alternatively, potential solutions can be found in low pressure tyres, minimum tillage and controlled traffic farming.

As with many aspects of farming, regular maintenance is also imperative to ensure the field drainage system works to its optimum level. An effective method involves a simple clean-out of ditches and clearing outfalls to improve the overall drainage system.

“If ditches become infilled and outfalls are not kept clear, the field drainage system will cease to function effectively. This can result in yield-robbing waterlogging beneath the surface and is not merely a problem when there are visible wet patches in the field,” Mr Hill explained.

Finally, the guide describes how locating and maintaining existing ditches and drains can benefit growers. Also, when designing a new drainage system, it explains

why it is important to consider the drain’s depth, spacing and diameter, the use of permeable backfill, outfall availability and gradient, as well as the site itself and the surrounding environment. It is also essential to consult a qualified designer and contractor and use quality materials.

While field drainage can have economic and practical benefits, the guide notes that it is important for growers to carry out both environmental and cost-benefit assessments before installing or managing existing field drainage systems.



To access the *Field drainage guide: Principles, installation and maintenance*, please visit the UK Agriculture and Horticulture Development Board – Potatoes website at <http://potatoes.ahdb.org.uk>.



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The delegates at the 2015 Youth-Ag Summit in Canberra.

## Youth agriculture summit tackles global issues

IN AUGUST, 100 OF THE BRIGHTEST AND MOST PASSIONATE YOUNG MINDS IN THE GLOBAL AGRICULTURE INDUSTRY GATHERED IN CANBERRA FOR THE 2015 YOUTH-AG SUMMIT, WHERE THEY DISCUSSED AND DEVELOPED SOLUTIONS TO THE CHALLENGING TASK OF FEEDING A HUNGRY PLANET.

By 2050, the world's population is estimated to increase to nine billion. If predictions of water shortages, a lack of arable land and increased agricultural pests, weeds and diseases are accurate, this will place our global food supply under immense pressure.

To meet this challenge, Bayer CropScience teamed up with Future Farmers Network (FFN) Australia to host the 2015 Youth-Ag Summit. Held in Canberra from 24-27 August, the global youth conference brought together 100 young leaders from 33 countries to discuss, develop and deliver solutions to the question: How do we feed a hungry planet?

Ultimately, the summit aimed to build awareness and understanding of the challenges facing modern agriculture and encouraged delegates to build international networks with like-minded individuals.

**"Ultimately, the summit aimed to build awareness and understanding of the challenges facing modern agriculture and encouraged delegates to build international networks with like-minded individuals."**

### Program outline

Over the course of four days, delegates listened to presentations that revolved around the key themes of innovation, sustainability and leadership, while also meeting with industry representatives at networking events and attending a field trip to the CSIRO research facilities in Ginninderra.

The speaker sessions addressed a variety of global challenges in agriculture including food wastage, equitable food distribution, sustainable food consumption and alternative food sources. Keynote addresses included inspiring presentations from Bernd Naaf, Member of the Board of Management at Bayer CropScience, and Julie Borlaug from the Norman E. Borlaug Institute for International Agriculture.

During the week, delegates worked with their peers and mentors to discuss the challenges

facing global food security, which were initially divided into 15 themes. From this pool of topics, five key themes were selected as being of most importance in terms of relevance and impact for young leaders in agriculture, including:

1. Education and skills building.
2. Communication about the value of agriculture careers and farming.
3. Socially acceptable and responsible consumption.
4. R&D and innovation to intensify or develop new production systems.
5. Personal and organisational leadership.

Meanwhile, delegates were also encouraged to develop three individual challenges to tackle food security at a personal level. These goals will be shared and discussed online via the Youth Ag-Network, where delegates can exchange ideas on modern agriculture, food security and safety.

## Lasting change

As the 2015 Youth-Ag Summit drew to a close, two delegates – Laura Grubb from Australia and Samba Ouma Zablon from Kenya – were chosen to present the Canberra Youth-Ag Declaration to the United Nations Committee on Food Security in Rome later this year. The declaration is a global call for action that can be used by innovators and policy makers to help solve the most pressing issues in modern agriculture and ensure lasting change.

After four days of insightful discussions, it is hoped the delegates will return to their respective countries with a heightened desire to advocate for the global future of agriculture.

**Laura Grubb from Australia and Samba Ouma Zablon from Kenya will present the Canberra Youth-Ag Declaration to the United Nations Committee on Food Security.**



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## Daniel Taylor: Growing a future

WESTERN AUSTRALIAN POTATO GROWER DANIEL TAYLOR SPEAKS TO KAREN SHAW ABOUT HIS PASSION TO KEEP THE LOCAL POTATO INDUSTRY THRIVING, AND HIS THOUGHTS ON THE FUTURE.

Daniel Taylor reckons he is living the dream. “My outlet is my work. I am one of the lucky ones,” says the potato growing young gun from Western Australia.

Passionate about the industry, he urges other young people to get their hands in the dirt too.

“We need an influx of young growers,” he says. “We can’t rely on older farmers to grow our future food. There’s a huge reward watching a crop grow and getting a final product that you know is good quality and healthy.”

After leaving school, Daniel had plans to study physics at university, but a year-long stint in the classroom left him with no doubt about a future back on the land.

“I enjoy the fact that every day you do something vastly different and see some achievement from putting in a crop, to planting or irrigating,” he explains.

### A family affair

For the past decade, Daniel has worked on the family farm in Vasse, near Busselton about 2.5 hours south of Perth, with his parents Keith and Paula, older brother James and staff member Luke.

In addition to potatoes, the farm previously produced beef and sheep, as well as pumpkin and watermelon crops. But they have all been sidelined to focus on expanding potato production.

The Taylors currently grow about 50 hectares of potatoes on a four-year rotation. In addition to licences to sell to the domestic market, they have pursued contracts for export and at times have grown seed for sale within Western Australia.



They grow varieties including Nadine, Dutch Cream, Almera, Maranca, Lady Crystal, Ruby Lou, Virginia Rose and Royal Blue – the latter, according to Daniel, is popular and captures about 20 per cent of the fresh market. However, he believes the industry’s future relies on developing new varieties and to this end, he is keen to see the results of a small-scale trial of several new varieties that have just been planted on the property.

**Soil sustainability**

The other big issue for the Taylors is soil sustainability. Daniel has continued to follow his parents’ philosophy in looking after what he says is the property’s biggest asset – its soil. “It’s not just for us, but for the future,” he says. “In 50 years

when my kids are looking for spuds they will need some dirt to grow them in.”

The Taylors have reported good results from growing green manure crops.

“Our main driver is organic carbon, and putting green matter back into the ground,” Daniel says.

This involves planting high-yielding sorghum crops as well as mustard and brassica combinations to aid biofumigation before the potato crop is planted. The green manure is then mulched back into the soil.

As soil heath has increased so have crop yields, with Daniel quoting a two per cent average yield increase every year. There has also been an obvious decrease in the need to use pesticides and fungicides.

To increase production and

income, Daniel is planting a summer crop this season from January to March, for harvest in June and July. This is in addition to the regular season that runs from May until October.

**Changing times**

While there are currently about 13 growers in the Vasse district, Daniel is worried that when the potato industry in Western Australia is deregulated, scheduled for early 2017, many smaller growers will be squeezed out.

“The future of the industry here is quite uncertain at the moment,” Daniel explains.

“(Regulation) has allowed growers a degree of certainty to ensure there is no product oversupply on the market.”

He hopes there will be some

transition period for the market to accommodate the proposed changes.

But Daniel is adamant that it’s not all doom and gloom, as he is one of the few growers to have invested in the industry by buying a farm. While his debt has increased, he says if you are “prepared to have a swing, there might be room for us in the future”.

He hopes the family’s decision to buy and lease more property and focus on growing potatoes will pay dividends with or without regulation.

“Growing food is absolutely critical,” he says. “We need to feed Australia. And right now there’s not enough people, resources and dollars going to primary producers to ensure that will happen long-term.”



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# Herbicide damage in potatoes: Part Three



with Scott Mathew

FOLLOWING ON FROM THE PREVIOUS EDITION OF *POTATOES AUSTRALIA*, THE THIRD INSTALMENT ON HERBICIDE DAMAGE IN POTATO CROPS WILL FOCUS ON HOW THE ISSUE CAN ARISE FROM EITHER THE DRIFT OF HERBICIDES ONTO AN EXISTING POTATO CROP OR FROM HERBICIDE RESIDUES CARRIED OVER IN THE SOIL. SYNGENTA TECHNICAL SERVICES LEAD SCOTT MATHEW EXPLAINS.



Metribuzin damage on growing potato crop. Photo courtesy of Paul Wellington, Elders Loxton.

Herbicides that belong to Group I (Phenoxy carboxylic acids or Phenoxy: 2,4-D, MCPA etc. and Benzoic acids: Dicamba) are disruptors of plant cell growth, also known as synthetic auxins. Potato plants exposed to Group I herbicides from drift generally exhibit twisting stems (epinasty) due to asymmetrical growth. The leaves will be malformed and appear as cup-shaped, crinkled, strapped and having parallel veins.

Leaves of dicamba-exposed plants have a folded or hooded appearance and the curling of some petioles and leaves may occur, along with a puckered appearance. Symptoms may

occur within a few hours to several days. Yields are also reduced, but there are little effects on tuber appearance.

Group I herbicides such as the Pyridine carboxylic acids (Pyridines) – for example, clopyralid (Lontrel) – produce symptoms that are similar to phenoxyacetic acids such as 2,4D. Typical symptoms include the curling of young leaves, twisting stems due to asymmetrical growth and leaves that appear to be malformed in appearance (cup-shaped, crinkled, strapped and having parallel veins). Tuber yields are greatly reduced and exposure may carry over into seed tubers, affecting the following year's crop.

## Effects of other herbicides

Herbicides from the Group C chemical class triazines, such as atrazine (Gesaprim), cyanazine (Bladex) and simazine (Gesatop) produce symptoms that are similar to metribuzin, as discussed in Part 1 of this series which featured in the June/July 2015 edition of *Potatoes Australia*. The most notable early symptom is veinal chlorosis.

The sulfonylurea Group B herbicides, such as chlorsulfuron (Glean), metsulfuron (Ally), triasulfuron (Logran), imazamox (Raptor),

imazapic (Midas), imazapyr (Lightning) and imazethapyr (Spinnaker) can cause symptoms to both the foliage and the tuber. Foliar symptoms include a light green appearance of leaves, especially new ones, and the leaves are cupped upward giving a 'boat-shaped' appearance. Rolling of the leaves may occur, resembling drought stress.

Severe injury results in stunting and purpling, which greatly reduces tuber yield and quality. The tuber symptoms include longitudinal cracks, 'dumb-bells', curved or folded tubers, indentations and knobs, bumps or protrusions. The tubers are often undersized and the skin may develop 'alligator hide'. Severe injury may cause tuber 'chaining' and formation of 'popcorn' tubers, while aerial tubers have also been observed.

Potato injury symptoms from herbicides			
	LEAVES	STEMS	ROOTS
<b>Glyphosate</b>	Yellow, brown, die	Die	Die
<b>Boxer Gold</b>	Heart-shape, crinkle, downward cup	Delayed emergence, stunting	---
<b>Pendimethalin trifluralin</b>	Dark green blotches, some crinkling	Delayed emergence, short thick sprout, stunting, brittle	Knobby tips, missing hairs, growth stopped
<b>Metribuzin Linuron (Triazines)</b>	Yellow margins and tips, interveinal yellowing to browning	---	---
<b>Sulfonylureas</b>	Yellow blades, purple veins (Note: tubers misshapen)	Stunting, purpling	---
<b>Diquat Paraquat</b>	Speckling (drift)	---	---



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

# Global potato industries unite to discuss key issues

THE INTERNATIONAL POTATO GROUP RECENTLY MET IN CHINA TO DISCUSS SOME OF THE LATEST AND GREATEST POTATO R&D OUTCOMES FROM AROUND THE GLOBE. *POTATOES AUSTRALIA* EXPLAINS THE MAIN TOPICS OF DISCUSSION HELD DURING THE MEETING.

Representatives from Australia's potato industry joined leaders from the United Kingdom, Canada, New Zealand and South Africa at the 2015 International Potato Group (IPG) meeting held in China earlier this year, with each country providing a detailed overview of their local potato industry and R&D processes.

PreDicta PT, an outcome from the Australian Potato Research Program Phase 2 (APRP2), was discussed widely at the meeting and acknowledged as a leading development that could have a real impact for growers. PreDicta Pt is a DNA-based soil testing service that identifies whether particular soil-borne pathogens are present, enabling growers to plan and prepare their soils prior to planting.

## Keeping soils healthy

The IPG identified soil-borne diseases and general soil health as key areas of importance during the meeting. While leading work such as PreDicta

Pt was acknowledged, it was stressed that there are knowledge gaps that should be addressed by the industry.

The UK and South Africa have been conducting some research into soil-borne diseases, with the latter investing more money into this research than any other area. Common scab, Powdery scab and Soft rot in particular are being researched in South Africa.

Additional research in the UK focuses on many areas including precision agriculture, crop nutrition and storage management. A best practice guide has recently been produced to provide store managers with information on how to minimise the risk of damage to potatoes when in storage.

Canada highlighted the importance of communication and extension of all its projects in the potato industry, to ensure that growers have the ability to implement outcomes relevant to their operation. All Canadian research proposals must include

an extension component to enhance the transfer of knowledge to growers.

Australia's extension and knowledge transfer methods of potato R&D were also discussed and widely thought to be successful in the industry. This includes *Potatoes Australia*, and other initiatives such as the Potato Industry Extension Program and digital communication platforms.

## A global discussion

Following the meeting, participants also had the opportunity to attend the World Potato Congress in Beijing, which provided insight into further R&D from around the globe, as well as the Chinese potato industry.

Keynote presentations at the Congress covered topics including China's potato production and market potential, as well as its potato R&D and food security. The technical sessions included discussions on the health

characteristics of the potato and strategies for managing disease and virus including Common scab, Powdery scab, nematodes and Late blight.

Industry tours were also facilitated by the World Potato Congress.

The IPG currently meets every three years, usually when the World Potato Congress is held. However, the potential for more regular meetings is currently being investigated, as well as opportunities for future collaboration on research programs.



Participation in the 2015 International Potato Group meeting was funded by Horticulture Innovation Australia Limited (HIA) using the Fresh Potato Levy and funds from the Australian Government.

For more information, please contact AUSVEG. Phone: (03) 9882 0277 Email: [info@ausveg.com.au](mailto:info@ausveg.com.au)

Project Number: PT14702



# Aussie growers gain unique insight into Chinese potato industry

THE 2015 POTATO INDUSTRY LEADERSHIP AND DEVELOPMENT MISSION TO CHINA PROVIDED 10 AUSTRALIAN GROWERS WITH THE CHANCE TO VISIT POTATO GROWING OPERATIONS AND SUPPLY CHAINS IN CHINA AND ATTEND THE WORLD POTATO CONGRESS IN BEIJING. THE MISSION GAVE GROWERS A CLOSER LOOK AT THE INTERNATIONAL MARKET AND HELPED THEM GAIN A FRESH PERSPECTIVE ON THEIR OWN BUSINESSES.

With the continuing rise of China as a leading global agricultural exporter, learning about the operations of its domestic potato industry is vital for Australian growers looking to expand their businesses.

Over 10 days in July and August, participants in the 2015 Potato Industry Leadership and Development Mission visited key growing regions in China to gain a deeper understanding of the workings of the Chinese industry and its future potential.

## The rich soils of Harbin

The mission's first destination was Harbin, the capital of Heilongjiang province. With some of the most nutrient-rich soil in all of China, Harbin is a valuable growing region and a key part of China's agricultural output.



Attendees discuss tuber yield with McCain Foods China Agronomy Director Ren Wang (far left).



Growers examine potatoes produced by McCain Foods China.

The group met with Ren Wang, Agronomy Director for McCain Foods China, and travelled to the Hulan area to visit potato farms operated by McCain Foods China.

The operation of these farms is firmly rooted in Chinese tradition. To ensure that both fertile and unfertile land is spread fairly among all farmers in a village, each farmer is historically given a set amount of

rows in any one paddock, rather than a whole paddock.

Under current arrangements, growers have 100-year leases for their land from the Chinese Government, but continue to only manage individual rows. This can pose problems for commercial operations like McCain, who can only acquire paddocks by negotiating individually with each farmer – who, in turn, often look to

re-negotiate the lease year after year to get better terms.

This also imposes difficulties in growing commercial quantities: with farming operations divided on a row-by-row basis, paddocks often support multiple crops that are planted side-by-side. While this maximises growing space, it also increases the spread of disease between crops.

While in Hulan, the group also visited an experimental and demonstration farm used by McCain to conduct crop tests, including experiments with varying crop densities, nitrogen levels and chemical usage.

Growers left the Harbin

area with a deeper insight into Chinese commercial potato growing operations and a better understanding of not only the common concerns between the Australian and Chinese industries, but also the unique problems faced by their Chinese counterparts.

## Bustling Beijing markets

After their eye-opening visit to Harbin, the group travelled to Beijing to explore the Chinese fresh vegetable supply chain with Cynthia Wei of Bayer CropScience.

The first stop on the tour was the Da Yang Lu Market, the

second-largest fresh produce market in Beijing. The market covers an area of 326,000 square metres and is devoted to suppliers offering vegetables, fruit, meat, grain, oil, seafood, drinks and flavourings.

Here, the participants experienced the different landscape of vegetable trading in China. Given the low value of fresh vegetables in China, operating a cold chain is too expensive, making the overall supply chain very different to its Australian equivalent.

The next stop was a Metro wholesale market, one of the 81 operations run in China by the German-owned chain. The tour was led by Metro Fresh Food Manager Xu Dongwei, who explained that the company focuses on business-to-business wholesale trading, with operations in 57 Chinese cities that serve more than 3.8 million customers.

From the Metro market, the mission moved on to Sanyuanli Market, a haven for Western restaurants and amateur chefs alike. The market offers “exotic” produce that is difficult to find elsewhere in Beijing, including mangoes and Brussels sprouts – an important reminder to participants about the differences of international marketplaces.

At the final stop, Jing Ke Long supermarket, participants

browsed the shelves of the fresh produce section to find that the prices, range and quality of potatoes on offer in Chinese supermarkets is comparable to those on Australian shelves. Afterwards, the group visited Bayer’s Chinese headquarters for a presentation on China’s fresh potato industry and insights into the future of the industry.

### World Potato Congress

The final days of the mission were spent at the 2015 World Potato Congress, which offered a valuable

and educational experience for participants. The group joined more than 900 delegates from around the world and moved between keynote speaker sessions, the trade show and technical presentations, allowing each group member to engage with the content that most suited their business operation.

The participants particularly benefited from the keynote addresses by Ningxia Autonomous Region Vice Chairman Dr Dongyu Qu and the President of China’s Agricultural University,

Bingsheng Ke. These presentations provided expert insights into the sustainable development of the Chinese potato industry and the development of Chinese agriculture and food security.

Other speakers at the Congress also gave growers an excellent overview of the issues common to both the Chinese and Australian potato industries. These presentations, which covered topics such as variety development, mechanisation of the industry and application of biotechnology in potato breeding, were invaluable to the participants.

On the final day of the Congress, the delegates took part in industry tours and experienced an interesting glimpse inside the operations within the Chinese potato industry. These tours visited Chinese potato growing and processing operations, including the Snow Valley Agricultural Development and its high-tech facilities for storage, processing, seed cultivation and growing operations. They allowed growers of all levels to observe how major Chinese companies operate and compare the differences between Chinese and Australian processing companies.

### Mission accomplished

With the mission completed, growers returned to Australia with new contacts, new business partners and new information to use within their own growing operations in Australia.

Being exposed to such a diverse group of growers, industry representatives and growing operations opened the eyes of the participating growers to both the differences and the similarities between the Australian and Chinese potato industries, and ensured that the Australian industry is better placed to face the future.



Biosecurity practices were enforced during industry visits to the Snow Valley Agriculture Development facility.



The mission also stopped by the 9th World Potato Congress held at the base of the Great Wall of China.



A full project report will be made available on the AUSVEG website: [www.ausveg.com.au](http://www.ausveg.com.au).

This project has been funded by Horticulture Innovation Australia Limited using the National Potato Levies, voluntary contributions and funds from the Australian Government.

Project Number: PT14701

## Results point to positive trends as Potato Tracker monitoring ends

THE FINAL TWO WAVES OF FINDINGS FROM COLMAR BRUNTON'S POTATO TRACKER CONSUMER RESEARCH PROJECT ARE IN. *POTATOES AUSTRALIA* HIGHLIGHTS THE LATEST PURCHASING TRENDS IDENTIFIED AMONG CONSUMERS AND EXPLAINS HOW GROWERS CAN USE THESE FINDINGS TO DISCOVER NEW BUSINESS OPPORTUNITIES.



For the past 12 months, the Potato Tracker project – facilitated by market researcher Colmar Brunton – has aimed to track consumer attitudes towards potatoes and follow their purchasing patterns. The goal of the project was to monitor and present these trends to the potato industry on a monthly basis, so that growers can form a clearer understanding of the current consumer mindset when purchasing potatoes and ultimately tailor their businesses to address these trends.

### Wave 11 findings

Wave 11 paints a positive picture of the potato portfolio, with household shoppers increasing both their purchase rate and volume of potatoes,

a trend that has been rising steadily across recent waves. The research found that consumers were purchasing potatoes more than three times a month and the popular vegetable also featured in meals on an average of 13 occasions per month.

The results allude to the potential for growers to help consumers increase the amount of potatoes they currently purchase. Given that consumers were looking to purchase an average of 2.8 kilograms of potatoes three times a month in Wave 11, targeted packaging may result in an increase in the overall purchase of potatoes.

For example, if growers provide consumers with an opportunity to purchase a pre-packaged, one kilogram bag of

potatoes three times a month, it has the potential to increase the overall monthly purchase volume. This capitalises on the consumer mindset to gravitate towards convenience and ultimately encourages them to buy more potatoes.

### Keeping up the trend

Colmar Brunton outlined that a key way for potato growers to continue riding this wave of success is to maintain the increased purchase and consumption of potatoes that is evident in the cooler months of the year, when consumers increasingly use potatoes in soups, stews and meals typically classified as 'winter warmers'. To keep the ball rolling, the report recommended introducing

consumers to the spud's versatility with alternative cooking styles and recipes so potatoes can be enjoyed throughout the year.

This month, Potato Tracker also found that consumers are willing to pay more for loose washed potatoes and organic loose potatoes. The report suggested that convenience and reduced preparation times for these particular varieties encourages consumers to spend less time preparing the family meal and more time enjoying it. Growers are recommended to address these trends in their long-term business plans.

Wave 11 results also revealed that ease of preparation and taste remain the key potato purchasing influences for consumers. This month's Potato Grower Action Plan – a segment of the report

that highlights ways for growers to capitalise on the findings – encourages growers to position the potato as an ideal meal companion and highlight their ease of use and versatility.

### Wave 12 findings

This final wave of the Potato Tracker project brings good

news for growers, as the findings indicate that 90 per cent of consumers surveyed purchased potatoes in the monitored month.

This positive news is coupled with some insightful advice, particularly in terms of addressing a key concern for consumers: wastage. The report suggests that best before dates

should be clearly printed on all pre-packaged potatoes, allowing consumers a greater insight into the potato's longevity. If possible, labels could further communicate expected freshness, such as: "Will last for two weeks in your cupboard."

In particular, the labels that consumers are commonly looking for include best before dates,

potato variety names and recipe ideas. It was noted that there is an opportunity for growers to include recipes on packaging that outline new ways to incorporate potatoes into dishes, as the majority of consumers typically cook traditional Australian cuisine.

### Name that potato

The main findings from Wave 12 reinforce an integral need to educate consumers on the many varieties of potatoes available for purchase. A key insight from the report indicates that consumers choose specific types of potatoes primarily based on price, but there is significant potential for growth in the industry if more attention is given to increasing consumer knowledge of the different varieties of potatoes available. This can ultimately lead to an increase in consumers choosing specific potatoes for the type of dish they need and potentially paying more for certain varieties.

The report also recommends that recipes where the whole potato can be used, including the skin, could help address wastage concerns, as this is the biggest barrier affecting potato purchasing decisions. In addition to informing consumers about the numerous nutritional benefits of potatoes and possible flavour combinations with other ingredients, these recipes will help to engage consumers in the purchase of potatoes and ensure minimal wastage occurs.

In the next edition of *Potatoes Australia*, we will compile a summary of the Potato Tracker project, highlighting the key findings and most apt recommendations from the project.



**i** The Potato Tracker project was conducted over a 12-month period with a wave of new findings released each month. Full copies of the report can be found on the AUSVEG website at [www.ausveg.com.au/potatoes/potato-consumer-research.htm](http://www.ausveg.com.au/potatoes/potato-consumer-research.htm).

This project has been funded by Horticulture Innovation Australia Limited using the Fresh Potato Levy and funds from the Australian Government.

Project Number: PT13015

## Achieving improved seed potato uniformity



Creswick seed potato grower Ashley Labbett and local agronomist Andrew Powell inspect the good uniformity of the family's potatoes.

OVERCOMING THE DIFFICULTIES OF GROWING SEED POTATOES IN LOW PH SOILS THAT CONTAIN HIGH LEVELS OF ALUMINIUM AND IRON HAS LED ONE VICTORIAN GROWER TO CONDUCT TRIALS OF CONTROLLED RELEASE FERTILISER TECHNOLOGY THAT HAVE RESULTED IN INCREASED UNIFORMITY IN THE CROPS.

Third generation seed potato grower Ashley Labbett, together with his wife, children and parents, farm a 70-hectare property and 15 hectares of leased land near Creswick in Victoria's Central Highlands. In addition to their wheat, canola and prime lamb production, they grow seed potatoes for the Queensland, New South Wales and South Australian markets, as well as locally.

**“We are handling half the amount of fertiliser, so we have one less trip in the truck, and this year we have noticed a more even sample. We weigh them**

**before and after grading and see how much we get into the top fraction.”**

As the low pH, red volcanic soils in the area typically contain high levels of aluminium and iron, soil tests – as well as follow-up petiole tests – are conducted for all crops. In the past, the Labbetts have also applied conventional fertiliser blends in-furrow.

In conjunction with their local CRT store, Davies and Rose Rural and Hardware, the Labbetts have begun trialling the Haifa controlled release fertiliser, Multicote Agri, and are now into their fourth season with the product. They initially banded the four-month controlled release product before applying a two-month release product.

“Our tonnage has not been greatly affected, but cost wise it is good. We are handling half the amount of fertiliser, so we have one less trip in the truck, and this year we have noticed a more even sample. We weigh them before and after grading and see how much we get into the top fraction,” Mr Labbett said.

Based on Haifa's polymer coating technology, Multicote Agri releases nutrients into soils in a gradual manner, according to plants' requirements. The fertiliser combines polymer-coated granules of nitrogen, phosphorus, potassium and magnesium, and non-coated, readily available nutrients.

### Encouraging results

According to Davies and Rose Rural and Hardware agronomist Andrew Powell, low pH and high levels of aluminium can cause a lock-up of phosphorus in soils, limiting plant access.

“However, by going with

the coated phosphorus with Multicote, we have been able to put half the amount on, but still get the same result. Fertiliser applications that were up to 1,500 kilograms per hectare are now down to about 700 kilograms per hectare,” Mr Powell said.

He added that the controlled-release fertiliser was most effective when crops were more exposed to stress, as it releases constantly according to temperature. This is important to ensure the nutrients supplied are not lost during periods of high rainfall or over-watering.

Overall, Mr Powell said the analysis of the fertilisers was well suited for commercial and seed potato crops.

**i** For further information, growers can contact Andrew Powell on (03) 5345 2766 or 0429 452 722.



## Duties imposed on 'dumping' exporters



The Australian Anti-Dumping Commission has recommended that duties be imposed on two Italian tomato exporters, following a finding that the companies were 'dumping' canned tomatoes into Australia.

The complaint, in relation to the behaviour of Feger di Gerardo Ferraioli S.p.A and La Doria S.p.A, was lodged by SPC Ardmona Operations

Limited amid concerns the exporters were 'dumping' tinned tomatoes into Australia. The companies' products represent approximately half of the imported Italian tomatoes in Australia.

AUSVEG Deputy CEO Andrew White said the Anti-Dumping Commission's recommendation is great news for Australian vegetable and potato growers

struggling against cheap, inferior foreign imports and rising production costs.

"We hope that the imposition of duties will go some way to levelling the playing field for Australian producers, who must regularly compete against foreign producers with far lower costs of production. In many cases, these foreign producers also receive government subsidies,

which further enhance their competitive advantage," Mr White said.

"It is vital that Australian vegetable and potato growers and local processors are able to compete on an equal footing with their international counterparts."

## CALENDAR of events



**12-14 January 2016**

### Potato Expo 2016

**Where:** Las Vegas, United States

**What:** The 8th annual Potato Expo will attract more than 2,000 growers, suppliers and experts to discuss emerging trends in the potato industry. The expo will feature educational programming, networking opportunities and a trade show highlighting the latest products and services for potato production, storage and distribution.

**Further information:**  
[www.potato-expo.com](http://www.potato-expo.com)

**22-25 February 2016**

### Potato D.C. Fly-In

**Where:** Washington D.C., United States

**What:** Each year, potato growers and industry leaders from across the United States visit Washington as part of the National Potato Council's Potato D.C. Fly-In. This allows participants to better understand and advocate for the industry's most pressing policy priorities.

**Further information:**  
[www.nationalpotatocouncil.org](http://www.nationalpotatocouncil.org)



Stu Jennings

G'day again,

Well spring has well and truly sprung and it is a pleasant change to be out in the sunshine and enjoying warmer mornings.

As much as I enjoy life on the farm, sometimes a reboot is required and it can be really refreshing to get in the car and take off with the family. Recently, I took the crew away for a few days. It was so good to have a look around this beautiful and vast country that we live in and call home. I find it very interesting to visit different areas, see what the locals are growing in their paddocks and what tractors and machinery they are using.

The best thing about getting away of course is the quality time I get to spend with my family. Some months of the year, it's almost like we don't get to spend time together at all, so being together for a week or two, relaxing or exploring, is priceless.

I've thought a lot about family lately. Most farming enterprises have been started and driven by families, and many Australian farms wouldn't exist, or at least work as well, without a good family behind them. Family is often what encourages us as growers to stay passionate about our lifestyle and our produce over the generations. There are so many aspects to the roles within the family farm with each member usually playing a part. Young or old, large or small, everyone is important and needed.



Stu's family recently enjoyed a timely retreat to the beach.

Any tough times that I have experienced as a spud grower over the years, have been made less so by the support I have from my family. I'm proud to say that my wife is the first person I call when I've finished digging or planting for the season, as sharing the good times is just as important!

I hope that you are all sharing the good times with the people that you care about and are there for each other if tough times come around.

Here's to a great spring and summer wherever you and yours are!

Stu.

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[www.youngpotatopeople.com.au](http://www.youngpotatopeople.com.au)

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