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australia

August/September 2015

## Dr Kevin Clayton-Greene

Researcher wins  
international award

## Nicholas Eyles

Young grower

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## AUSVEG Chairman and CEO messages



## Geoff Moar

### AUSVEG Chairman

It was wonderful to see so many potato growers from across Australia join the record number of delegates at the 2015 National Horticulture Convention, Trade Show and Awards for Excellence, which was co-hosted by AUSVEG alongside our industry peers, Apple and Pear Australia Limited (APAL). From 25-27 June, more than 1,400 delegates made their way to Jupiters Gold Coast, making the event the most successful to date.

The hard work and dedication of Australia's potato growers was also celebrated at the National Awards for Excellence Gala Dinner, which was the perfect way to wrap up three days of learning and insight. My innovative colleague from New South Wales, potato grower John Doyle, took home the prestigious Syngenta Grower of the Year award in recognition of his participation in numerous trials on his farm, including drip irrigation, moisture monitoring and biofumigation.

Queensland potato and vegetable grower Kerri Lamb was also presented with the Steritech Women in Horticulture award, as a testament to her active involvement in initiatives such as exports and diversifying into new products. Matt Cocciolone, a young potato grower from Western Australia, received the VISY Industry Impact Award for taking the initiative to introduce new, modern bags for potato packaging to his business.

Leading potato researchers were also celebrated alongside our growers, including Dr Doris Blaesing from Tasmania, who has been involved in the potato industry for a number of years. She was a fitting candidate for the Bayer Researcher of the Year award, which celebrated her contribution to major research projects including the Soil Wealth initiative, which educates growers

on the importance of soil in the potato growing process.

Now that the biggest event in Australian agriculture has drawn to a close, I would like to thank APAL, our Strategic Partners, delegates, exhibitors and speakers for their ongoing support.

Soon after celebrating their achievements on the Gold Coast, members of the Australian potato industry also contributed to developments on the global stage during the International Potato Group meeting in China. Australian representatives attended the meeting in July and discussed international R&D initiatives such as soil diagnostics, potato nutrition, product development and pest and disease management, as well as future collaboration with other significant potato growing nations such as South Africa, New Zealand, Canada and the United Kingdom.

Following this meeting, an Australian delegation of potato growers also attended the 9th World Potato Congress in China, which is dedicated to supporting the global growth and development of the potato. Our attendance at these events reinforces that collaboration with some of the leading minds in the international potato industry will help ensure that Australian growers remain at the forefront of international potato R&D for many more years to come. I would also like to place on record our appreciation for the outstanding arrangements made by both McCain and Bayer CropScience for the growers who recently visited China.

Geoff Moar  
Chairman  
AUSVEG



## Richard Mulcahy

### AUSVEG Chief Executive Officer

In an industry first, AUSVEG teamed up with Apple and Pear Australia Limited (APAL) in June to host what can now be called the biggest event in Australian agriculture – the 2015 National Horticulture Convention, Trade Show and Awards for Excellence.

The success of the event, which attracted more than 1,400 delegates, highlights what can be achieved when sectors within the horticulture industry work together towards a united goal. We are confident our potato and vegetable growers enjoyed the opportunity to network with their apple and pear growing colleagues during the event and discuss mutual areas of concern.

There were also plenty of industry members and researchers who attended the Convention, allowing growers to discuss issues of interest with the wider potato community. This included leading potato researcher Dr Kevin Clayton-Greene, who is known to many within the Australian potato industry. His long and distinguished career prompted AUSVEG to nominate him for the internationally-renowned Industry Recognition Award, which was recently presented to him at the close of the 9th World Potato Congress in China.

Dr Clayton-Greene's work in the lab, on the farm and with various industry advisory groups has resulted in the development of many biosecurity and plant health milestones that have helped to protect Australia from potential threats, such as keeping the destructive Zebra chip disease at bay. On behalf of the Australian potato industry, I congratulate Dr Clayton-Greene on his most recent achievement.

Back on home soil, some progress has been made in relation to Country of Origin Labelling (CoOL) since the last edition of *Potatoes Australia*

was published. The Federal Government recently released new label designs, which include 'Made In' and 'Grown In' country of origin claims, as well as 'Packed in' statements.

While some of these proposals help consumers easily identify if a product is manufactured locally and the percentage of Australian ingredients, AUSVEG is still concerned that these changes fall well short of a genuine CoOL system that Australian consumers demand and deserve. We are disappointed that the opportunity to prohibit using the term 'made in' has not been seized and that consumers are still left in the dark about the origins of imported produce contained in food manufactured in Australia. While the proposed labels are definitely a step in the right direction, we feel they do need to go much further, to give consumers the genuine CoOL system that they have been calling out for.

While the new labels will be implemented on new products as soon as possible, a review of the system will be conducted within two years. In the meantime, AUSVEG will not give up the fight for further improvements to our CoOL system and we will encourage manufacturers to be more transparent about the countries of origin of key ingredients.

Richard J Mulcahy  
Chief Executive Officer  
AUSVEG

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**AUSVEG CEO**

Richard J Mulcahy

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**FRONT COVER:**

Dr Kevin Clayton-Greene

Photograph by Belle Young

The 2015 National Horticulture Convention, Trade Show and Awards for Excellence was the perfect opportunity for the team at *Potatoes Australia* to catch up with potato growers around the country. It was great to see so many of you take the time to travel to the Gold Coast for the biggest event in Australian agriculture to date.

For those of you who couldn't make it – or if you just want to relive the highlights – turn to page 8 for a comprehensive wrap-up of the event. A selection of outstanding potato growers also made their mark at the National Awards for Excellence, which celebrated their achievements in the past year. A full list of award winners can be found on page 12.

The Potato Industry Extension Program was also in full force with a booth at the Convention's Trade Show. An overview of the main highlights from the program as well as some industry updates are detailed on page 32.

Meanwhile, the man gracing our front cover this edition is Dr Kevin Clayton-Greene, one of the most respected and knowledgeable potato researchers in Australia, who recently received the prestigious Industry Recognition Award at the 9th World Potato Congress in China. A profile on Dr Clayton-Greene can be found on page 16, while an overview of his latest research report identifying gaps in the potato industry's knowledge and possible areas of future R&D



30

Stuart Applebee

appears on page 24.

This edition is packed with plenty of useful potato R&D, including an update on the Potato cyst nematode and the results from recent field trials that demonstrated how susceptible and resistant cultivars affected PCN populations under Australian conditions (page 20). Seed potato demonstrations have also been held in Western Australia to highlight the new technologies available to growers in times of drought (page 28).

This edition's Front Line biosecurity column puts the Tomato spotted wilt virus under

the spotlight (page 26), as this has been a major problem to Australian potato growers for many decades. Also, the latest wave of results from the consumer research project Potato Tracker are discussed on page 36.

Looking overseas, we summarise the key points from a best practice guide on irrigation and water use in the potato industry, which has been developed by the UK Agriculture and Horticulture Development Board (formerly UK Potato Council), on page 34. Also, a US study on the benefit of combining in-season crop protection strategies with

post-harvest applied fungicides and biofungicides in the management of Fusarium dry rot is outlined on page 35.

This edition, we will also take you to Tasmania for our two grower profiles. Nicholas Eyles from Selbourne in north Tasmania shares his views on the future of the potato industry and his passion for the land on page 22, while we chat to fourth-generation grower Stuart Applebee of Penguin about the potential of working with new technologies in the Grower profile on page 30.



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# 2015 National Horticulture Convention becomes biggest event in Australian ag

AUSVEG AND APPLE AND PEAR AUSTRALIA LIMITED (APAL) UNITED IN JUNE TO HOST THE 2015 NATIONAL HORTICULTURE CONVENTION, TRADE SHOW AND AWARDS FOR EXCELLENCE, WHERE MORE THAN 1,400 DELEGATES DESCENDED ON JUPITERS GOLD COAST FOR THREE ACTION-PACKED DAYS OF INNOVATION, INSIGHT AND NETWORKING.

## THURSDAY 25 JUNE

You could sense the excitement in the air as a record number of delegates made their way to Jupiters Gold Coast for the 2015 National Horticulture Convention, Trade Show and Awards for Excellence, incorporating AUSVEG and Apple and Pear Australia Limited (APAL) in a first for the Australian horticulture industry.

The unique partnership presented an array of new opportunities to delve into broader areas of interest in Australian horticulture, allowing the nation's vegetable and potato growers to network with their apple and pear growing colleagues and discuss mutual areas of concern. This collaboration also cemented the 2015 Convention's place as the largest and most successful event in Australian agriculture to date.

On the first day of the Convention, APAL held its Annual General Meeting and Speed Updating sessions, where a series of researchers presented key findings on apple and pear projects. As night fell, delegates gathered

for the Welcome Reception, where AFL legend and Master of Ceremonies Peter Daicos marked the official opening of the 2015 Convention and Trade Show to the delight of many long-time Collingwood fans in the crowd. With more than 90 industry booths on show, there was certainly plenty of food for thought for visitors in the coming days.

## FRIDAY 26 JUNE

On Friday morning, delegates were treated to a thought-provoking start to the day with a breakfast presentation from Rob de Castella, Director of the Indigenous Marathon Project. This initiative aims to promote healthy lifestyles to Indigenous communities by selecting a group to compete in the New York City Marathon with just six months of training.

Many delegates noted their newfound inspiration to go for a run along the beach and were keen to hear more from the first instalment of Convention speaker sessions. The opening address was presented by Horticulture Innovation Australia Limited CEO John Lloyd,



United States Potato Board President and CEO Blair Richardson.

who highlighted the broad opportunities that exist through innovation.

Coles General Manager of Fresh Produce Brad Gorman also presented on strategic investment in the fresh food sector, noting that quality determines where a consumer wants to shop. His presentation was followed by some helpful advice from National Workplace Lawyers Special Counsel Tass Angelopoulos, who stressed that every business must have the processes, policy and training in place to deal with complaints.

Attracting younger generations into the horticulture and wider agriculture industries was also addressed by University of Queensland Dean of Agriculture Professor Neal Menzies. He reinforced that horticulture needs to sell its industry as a wonderful place to work, particularly as he believes it is entering a 'boom' period.

Many potato growers in the audience enjoyed the keynote speech from Blair Richardson, President and CEO of the United States Potato Board, who gave an insightful presentation on marketing fresh produce to Millennials (Generation Y). He noted that growers need to ensure their produce remains relevant to this generation, whose habits and ideals are vastly different to older consumers.

Industry updates were also provided by Bureau of Meteorology Senior Research Scientist Dr Debbie Hudson, who spoke about the latest developments in seasonal forecasting for horticulture, while Valagro Global Crop Manager Gianluca Di Tommaso presented on the future of biostimulants in the horticulture industry.

On a more sombre note, Federal Assistant Minister for Health, Senator Fiona Nash, addressed the Ice epidemic gripping rural and regional Australia. She reiterated the need for local communities to join a national strategy to tackle the issue head-on.

Friday's speaker sessions wrapped up with presentations from Western Australian researcher Dr Peter Batt, who discussed consumer preferences for quality, competitive prices and service when buying fresh produce. Bayer CropScience Managing Director Tobias Marchand also addressed partnerships in



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innovation and sustainability in Australian horticulture, noting the company's passion for mentoring youth and collaborating with the wider industry to move forward.

After a busy day of speaker sessions and visits to the Trade Show, delegates had an opportunity to relax and have some fun by donning a sombrero for the DuPont Mexican Fiesta, where they networked with friends and colleagues to the entertaining soundtrack of a live Mariachi band.

## SATURDAY 27 JUNE

Following breakfast, AUSVEG and APAL delegates broke off into two concurrent speaker sessions that targeted issues in their respective industries. AUSVEG delegates heard from Harris Farm Markets Co-CEO Tristan Harris, who noted that a culture of innovation was necessary to deliver sustainable growth to the vegetable and potato industries.

It was also a numbers game on Saturday morning as Equity Economics Director James Bond delivered an overview of domestic and international drivers of growth and exports in the Australian vegetable and potato industries.

Syngenta APAC Head of Vegetables and Specialties Andreas Steiner presented his view on Integrated Crop Management as the key to sustainable and profitable vegetable production, while Adama Digital Innovation Manager Alex Mills launched Trapview®, a new product that uses photo recognition technology to detect, track and provide real time insights into insect populations.

The opportunities that the recent Free Trade Agreements present to Australian horticulture growers stimulated an interesting discussion from the Kalfresh panel of speakers, comprising AUSVEG National Manager – Export Development

Michael Coote, Export Council of Australia CEO Lisa McAuley, Montague Fresh National Sales and Procurement Manager Scott Montague and Citrus Australia Market Access Manager David Daniels.

This discussion was followed by an address from Dr Luis Teixeria from DuPont Product Support and Renewal for Insecticides, who noted the growth of illegal products in the market and the importance of the diamide class of insecticides. Independent Economics Director Chris Murphy also presented key facts and figures on the industry's link to the national economy.

Finally, one of horticulture's most pertinent issues was passionately addressed during the 2015 Great Debate.

Under the watch of Moderator and National Press Club of Australia President Laurie Wilson, Swinburne University's Dr Antonio Lobo, Changing Habits nutritionist Sheridan Williamson and organic grower Katie Finlay from Mt Alexander Fruit Gardens argued that the benefits of organic produce outweighed those of produce grown using conventional methods. They were fiercely rebutted by the opposition, which consisted of Tasmanian School of Business and Economics Professor Aron O'Casey, University of Adelaide Pharmacologist and Toxicologist Dr Ian Musgrave and AUSVEG Biosecurity Adviser Dr Kevin Clayton-Greene.

With lively discussion continuing among delegates long after the speaker sessions concluded, it was time for some fun away from the farm. The Women in Horticulture Taste of Success attendees visited the picturesque Cedar Creek Winery, where APAL Chair Dr Michele Allan and Tasmanian potato grower Susie Daly led the celebration of women in the horticulture industry. Meanwhile, a group of young guns carved up the Gold Coast waves during the NextGen Hang Ten event.



Attendees at the DuPont Mexican Fiesta.



Tasmanian potato grower Susie Daly (far right) spoke at the Women in Horticulture Taste of Success event at Cedar Creek Winery.

## A CLASS ACT

As the 2015 Convention drew to a close, Jupiters Gold Coast was transported back to the sophistication of the 1920s for the National Awards for Excellence Gala Dinner, where both AUSVEG and APAL celebrated the achievements of leading members of the vegetable, potato, apple and pear industries. Of the 14 AUSVEG awards presented, innovative New South Wales potato grower John Doyle was named Syngenta Grower of the Year in recognition of his

involvement with numerous trial demonstrations on his farm and collaboration with the wider industry, while Western Australian potato grower Matt Cocciolone received the VISY Industry Impact Award. Dr Doris Blaesing, who has contributed many years of invaluable potato R&D to the industry, took out the Bayer Researcher of the Year award.

The formalities ended with the presentation of the Industry Leader Award to Richard Dickmann from Bayer CropScience, while the Lifetime Achievement Award went to Nicolas Trandos from Western Australia, who has dedicated his life to furthering the Australian industry. A full list of award winners can be found in the following article.

Most importantly, AUSVEG would like to thank APAL for its partnership in hosting the 2015 Convention, as well as its Strategic Partners, delegates, speakers and exhibitors who attended for their support, without which the event would not have been such a success.



The 2015 National Awards for Excellence Gala Dinner.

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# 2015 National Awards for Excellence

THE 2015 NATIONAL AWARDS FOR EXCELLENCE CELEBRATED THE OUTSTANDING ACHIEVEMENTS AND CONTRIBUTIONS MADE TO THE AUSTRALIAN HORTICULTURE INDUSTRY BY GROWERS, RESEARCHERS AND ORGANISATIONS, AT A MAGNIFICENT GALA DINNER.

## Industry Leader Award

Richard Dickmann (VIC)



L-R: Bayer Head of New Business Development Richard Dickmann and AUSVEG Chairman Geoff Moar.

## Lifetime Achievement Award

Nicolas Trandos (WA)



L-R: AUSVEG Chairman Geoff Moar and Nicolas Trandos.

## Grower of the Year

John Doyle (NSW)

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L-R: Syngenta Head of Specialty Crops Bob Mullins and AUSVEG Chairman Geoff Moar (on behalf of John Doyle).

## Young Grower of the Year

Erika Watson (NSW)

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L-R: Dow AgroSciences Horticulture Business Manager John Gilmour and Erika Watson.

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## Rising Star of the Year

Shaun Reina (QLD)

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L-R: Shaun Reina and Coles Business Category Manager Fresh Produce Ruth McLennan.

## Industry Impact Award

Matt Coccione (WA)

Proudly sponsored by VISY



VISY National Sales Manager Wayne Dunne (on behalf of Matt Coccione).

## Women in Horticulture Award

Kerri Lamb (QLD)

Proudly sponsored by Steritech



L-R: Steritech CEO Murray Lynch and Kerri Lamb.

## Community Stewardship Award

Michael Quoch (NT)

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L-R: NT Farmers Association Vegetable Grower Engagement Officer Greg Owens (on behalf of Michael Quoch) and DuPont Marketing and Sales Manager Jeremy Cocks.

## Researcher of the Year

Dr Doris Blaesing (TAS)

Proudly sponsored by Bayer CropScience



L-R: Bayer Head of New Business Development Richard Dickmann and Dr Doris Blaesing.

## Innovative Marketing Award

Kees Versteeg (QLD)

Proudly sponsored by CMAA



L-R: CMAA's Andrew Young and AUSVEG Director Matt Hood (on behalf of Kees Versteeg).

### Environmental Award

Adam Schreurs (VIC)

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L-R: Netafim Queensland Manager Jeremy Evans and Adam Schreurs.

### Productivity Partner Award

Adama Australia

Proudly sponsored by Boomaroo



L-R: Boomaroo Head of Sales and Marketing Emily White and Adama Australia CEO Darrin Hines.

### Trade Display of the Year Award

Single-booth (see below)

Propak Industries



Propak Industries Managing Director Garry Sandercock.

### Trade Display of the Year Award

Multi-booth (see below)

VISY



VISY National Sales Manager Wayne Dunne.



# Australian potato researcher honoured with international accolade

A LIFETIME OF ACHIEVEMENTS AND CONTRIBUTIONS TO THE AUSTRALIAN POTATO AND WIDER HORTICULTURE INDUSTRIES HAS LED AUSVEG BIOSECURITY ADVISER DR KEVIN CLAYTON-GREENE TO RECEIVE THE PRESTIGIOUS INDUSTRY RECOGNITION AWARD AT THE 9TH WORLD POTATO CONGRESS IN CHINA.

Dr Kevin Clayton-Greene is a household name to many readers of *Potatoes Australia*, having established himself as one of the most respected researchers and advisers in the Australian potato industry and the wider horticulture sector.

Thanks to his many years of experience and knowledge, Dr Clayton-Greene has undoubtedly advanced and evolved the Australian potato industry to ensure that it not only reaches its full potential, but also maintains the quality and safety that makes the industry stand out on a world scale.

In July, Dr Clayton-Greene's many achievements were recognised on the international stage when he received the Industry Recognition Award at the 9th World Potato Congress in China. AUSVEG nominated Dr Clayton-Greene for the accolade and he is only the second Australian to receive the prestigious international award.

"Dr Clayton-Greene has had a long and distinguished career in Australian horticulture, having prepared over 30 refereed research papers and written hundreds of horticulture industry articles. He has also worked as General Manager at Harvest Moon, one of Australia's largest potato and vegetable producers, located in Tasmania," AUSVEG CEO Richard Mulcahy said.

"His efforts in biosecurity and plant health have gone a long way to safeguarding Australia

from pests and diseases not currently present, as well as educating growers on how to best manage current issues and reduce the risk of incursions.

"His work in this space has been crucial in keeping the destructive Zebra chip disease and fresh potato imports from New Zealand out of Australia."

## Career highlights

For a number of years, Dr Clayton-Greene has represented Australian R&D on the International Potato Group. He has also been Chair of the Australian Technical Advisory Groups for Potatoes and Vegetables and a member of the National Industry Advisory Committee for the potato and vegetable industries. In 2011, he was awarded an AUSVEG Lifetime Achievement Award. He currently acts as a valued Biosecurity Adviser to AUSVEG,

as well as a Biosecurity and Technical Consultant for Horticulture Innovation Australia Limited.

Dr Clayton-Greene was responsible for implementing Harvest Moon's first Quality Assurance scheme, preparing its export business as well as the potato varietal introduction (HZPC) and licensing for fresh and processing potatoes in his various roles at the company from 1993 onwards. This revolutionised how potatoes were sold, with major supermarket lines modelling their sales on this work and fresh market growers producing varieties that Dr Clayton-Greene introduced to Australia.

"His work on varietal licensing for potatoes initiated a shift in how Australian retailers market potatoes to consumers and also introduced a vast new range of varieties to growers, which created greater opportunities and solutions for the industry," Mr Mulcahy said.

In addition to serving on numerous additional horticultural advisory committees and representing Australia's potato and vegetable industries at international

conferences and trade shows, he also initiated the formation of a Tasmanian potato and seed potato industry group, which operates under the Tasmanian Productivity Group and aims to ensure the state's biosecurity and industry matters are addressed and represented.

## A worthy recipient

Dr Clayton-Greene has worked tirelessly on improving the Australian potato and horticulture industries, which are now regarded as some of the most progressive in the world for their respective R&D practices.

AUSVEG congratulates Dr Clayton-Greene on his latest achievement and thanks him for his tireless work on behalf of the Australian potato and horticulture industries.



Photography by Belle Young.





# New tool for controlling Green Peach Aphids

VICTORIAN POTATO FARMERS CN AND ME FRAWLEY SPEAK ABOUT FORWARD THINKING AND INNOVATIVE IPM PROGRAMS.

**B**allarat farmers CN and ME Frawley have been growing seed potatoes in the Dean region of Victoria for over 50 years.

With the majority of their product supplied to premium grade chip potato growers in South Australia and Queensland, forward thinking and innovative integrated pest management programs (IPM) form two essential components of the production process.

With over 10 years in the industry, Farm Manager, Des Dridan, has seen the devastating effect that Green Peach Aphids can cause on potato crop. As a vector for the Potato Yellow Dwarf Virus in seed potatoes, controlling Green Peach Aphids is imperative to maintaining the high standard of potato crop which the Frawley's have built

their reputation on.

Working with CRT agronomist Andrew Powell, from Davies & Rose Rural & Hardware in Creswick, Des has been impressed with the effectiveness of MainMan insecticide in controlling Green Peach Aphids.

Des explains that it is the rapid killing action and safety on beneficials sets this product apart.

"The results have been exceptional. We did not spot a Green Peach Aphid in treated paddocks all season."

The long-term protection offered by MainMan through the systemic and translaminar action of the product ensures that a protective treatment can be applied prior to an aphid flight, thus ensuring that the plant is protected from infection should a flight occur.



Farm Manager, Des Dridan and Business Owner, Chris Frawley.

This forward thinking has ensured that Frawley's supply the market with a premium product year in year out

"Not only are the paddocks the cleanest we have seen them, the plants seem to get a lift when the product was used," Des said.

Looking ahead, Des has a positive outlook for the future new IPM programs.

"With the success of last season, MainMan will form a cornerstone of our insect control program for many years to come."



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with Scott Mathew

## Herbicide damage in potatoes: Part Two



FOLLOWING ON FROM LAST EDITION'S ASK THE INDUSTRY COLUMN, SYNGENTA TECHNICAL SERVICES LEAD SCOTT MATHEW CONTINUES THE DISCUSSION ON HERBICIDE DAMAGE IN POTATO CROPS.

Glyphosate belongs to the Group M herbicide mode of action (MoA) group and is an inhibitor of EPSP synthase in the chemical family of amino acid derivative. Glyphosate has foliar uptake only and will move systemically throughout the plant (basipetal movement is downwards and acropetal movement is upwards).

Glyphosate affects the growing cells (meristems) and plant growth stops due to a lack of protein. Injury generally appears in less than a week after exposure and starts with new, young leaves.

Early symptoms begin with leaf yellowing (chlorosis) and progress to browning (necrosis) until the plants wilt and die. The process takes 10 to 14 days from exposure and from a full dose there is no recovery. From sub-lethal doses (or sprayer contamination), glyphosate can cause parallel veining on leaves and an over-production of vegetative buds (similar to

symptoms caused by phenoxy compounds such as 2,4D).

### Group L herbicides

SPRAY.SEED belongs to the Group L herbicide MoA group, which are inhibitors of photosynthesis at photosystem I (PSI inhibitors). The product works by diverting electrons from photosynthesis and these compounds cause the formation of hydrogen peroxide, which disrupts cell membranes. If you apply the product over a potato crop that has up to 25 per cent emergence or get drift injury on potatoes, the symptoms will appear as leaf speckling or necrotic spots on leaves. As the symptoms are generally minor and transient, the potato plant will usually recover quickly.

### Group J and K herbicides

BOXER GOLD belongs to the Group J (Prosulfocarb) and Group K (S-metolachlor)

herbicide MoA groups. Group J herbicides are inhibitors of fat synthesis (not ACCase inhibitors, which belong to Group A) and belong to the chemical family Thiocarbamates. Group K herbicides are inhibitors of cell divisions and very long chain fatty acids (VLCFA inhibitors), and belong to the chemical family Chloroacetamides.

The product uptake is via the shoots, roots and foliage of susceptible weed species. The primary mode of herbicide uptake is via the mesocotyl (base of the coleoptile) and will move systemically throughout the plant.

BOXER GOLD affects the protein synthesis at the shoot and root tips (meristem cells), resulting in poor growth. If applied incorrectly prior to potato emergence, the first symptom of severe exposure is no emergence of potato sprouts due to the stunting of the underground shoot.

If applied after 25 per cent crop emergence, the affected leaves have a shortened mid-vein, resulting in a "heart-shaped" appearance from the "draw-string" effect, which is usually associated with leaf "crinkling". Leaves are often very small and may be downwardly cupped before forming the heart shape. This crop effect, however, is usually both minor and transient and the potato plant will generally recover quickly.

However, if you follow the label directions, any damage should be minimal and the crop yield should not be greatly affected.



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:Potatoes Australia: info@ausveg.com.au). Please note that your questions may be published.



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# Managing the PCN pest

FOLLOWING ON FROM LOCAL AND INTERNATIONAL RESEARCH ON THE MANAGEMENT OF THE POTATO CYST NEMATODE (PCN), RECENT FIELD TRIALS WERE CONDUCTED IN VICTORIA TO DEMONSTRATE HOW SUSCEPTIBLE AND RESISTANT CULTIVARS AFFECTED PCN POPULATIONS UNDER AUSTRALIAN CONDITIONS. MADISON JONES EXPLAINS.

The Potato cyst nematode (PCN) is a serious quarantined pest of potatoes worldwide.

Eradicated from Western Australia, where it was first discovered in 1986, it is now known only to occur in Victoria.

A soil-borne microscopic “eel-worm” that feeds on the potato root system, PCN significantly limits yields in fields where it is well-established. It is subject to stringent quarantine and regulatory procedures, which

has been involved in research on PCN.

He said there were currently two species of PCN that affected potatoes worldwide, *Globodera rostochiensis* and *Globodera pallida*, with the former “golden cyst” nematode posing the problem in Australia. Although this is a very serious pest, Dr de Boer said it was the less difficult of the two nematode species to manage.

“PCN ‘cysts’ are the dead body of females that are filled

“Cysts can be carried on seed tubers and in soil, moved around by the wind, water, farm machinery and anything else capable of moving soil.”

## PCN management

In Australia, keeping land free of PCN is a fundamental control measure and regulatory procedures include adherence to strict hygiene protocols, regulation of movement of potatoes from infested and linked land and the testing of fields designated for certified seed potato production.

Recent field trials conducted in Victoria – sponsored by the Victorian Government’s Biosecurity Branch – looked at the management of PCN on already infested land and demonstrated the value of using resistant potato cultivars as a tool for reducing nematode populations in affected soil.

In overseas research, repeated cropping with a resistant cultivar was shown to reduce the population of *Globodera rostochiensis* by up to 90 per cent after each crop.

Overseas plant breeders had also developed many potato cultivars with a resistance gene (H1) that conferred complete resistance to the Ro1 strain of *rostochiensis*, which is the only strain found in Australia.

Dr de Boer said growing resistant cultivars was key to PCN management by preventing lightly infested land from becoming more infested and bringing high populations back to manageable, non-damaging levels.

“When potatoes are grown, specific chemicals released by the actively growing root tips of both susceptible and resistant potato cultivars stimulate the eggs to hatch,” he said.

“The hatched juveniles are attracted to the root tips, invade them and then feed. In susceptible cultivars, the bodies of the small round females then protrude through the root surface, eventually forming cysts full of eggs that stay in the soil after harvest.

Below: Dolf de Boer showing potato growers PCN cysts on the root system of a susceptible potato cultivar. Photo courtesy of Dolf de Boer, DEDJTR.

| Cultivar/treatment | Pf/Pi | Yield (t/ha) |
|--------------------|-------|--------------|
| Fallow (bare soil) | 1.0   | -            |
| Trent (S)          | 2.5   | 12           |
| Sebago (S)         | 2.5   | 14           |
| Coliban (S)        | 3.5   | 22           |
| Atlantic (R)       | 0.8   | 21           |
| Golden Delight (R) | 0.8   | 26           |
| Nicola (R)         | 0.8   | 20           |

Above: The ratio of PCN eggs per gram of soil at harvest (Pf, final) and before planting (Pi, initial), as well as the marketable yield of those varieties, after growing PCN susceptible (S) and resistant (R) potato cultivars in a field trial in Victoria. Ratios greater than one indicate increased egg numbers and less than one indicate reduced egg numbers.

is a critical tool in preventing further spread of the nematode from infested areas.

Dr Dolf de Boer is a Senior Research Scientist in plant pathology at the Victorian Government AGRIBIO Centre for AgriBiosciences, part of the Department of Economic Development, Jobs, Transport and Resources (DEDJTR), and

with up to 400 eggs, each containing a dormant juvenile nematode that is stimulated to hatch when potatoes are grown,” he said.

“In the absence of a host, a small proportion of the eggs (approximately 10 per cent) still hatch each year, but cysts with viable eggs can survive in soil for up to 20 years or more.



Field trial plots (each two-rows wide) planted with different potato cultivars. From the yellow peg (far left), Trent, Nicola, Atlantic, Sebago, Golden Delight and Coliban. Photo courtesy of Dolf de Boer, DEDJTR.

“Resistant cultivars also cause juveniles to hatch and invade the roots, but they are unable to feed, preventing them from developing into female cysts and thereby reducing the population.”

### Victorian research

The two-year Victorian trials served to demonstrate how both susceptible and resistant cultivars affected PCN populations under Australian conditions.

“Growing the susceptible cultivars Trent, Sebago and Coliban increased the nematode population (eggs per gram of soil) by two to three times that of the initial population,” Dr de Boer said.

“Growing the resistant cultivars Atlantic, Golden Delight and Nicola reduced the population by an average of 20 per cent, whereas there was no significant change in uncropped fallow soil.

“This was a rather low decline compared with overseas trial results, although this is probably due to the particularly high initial pre-planting population

(120 eggs per gram of soil) at our trial site.

“In the United Kingdom, soil with this level of nematode infestation would be treated with a fumigant before planting a resistant cultivar, but this has not yet been tested in Australia.”

Dr de Boer said the preliminary data from these trials also highlighted how the impact of PCN on yields could differ with each cultivar.

“For example, the yield of the susceptible Sebago was about



Potato root system with numerous PCN cysts. Photo courtesy of Dolf de Boer, DEDJTR.



The yellow cysts (0.5mm) of the “golden cyst” nematode *Globodera rostochiensis* on potato roots and in surrounding soil. The yellow cysts turn ‘brown’ as they age. Photo courtesy of Gordon Berg, DEDJTR.

half that of resistant Golden Delight,” he said.

“However, the susceptible Coliban yielded as well as the three resistant cultivars despite an abundance of PCN cysts on the roots, indicating that Coliban was tolerant to root damage by the nematode. “These are very preliminary findings and further trials are needed to measure the effects of resistant cultivars in both low and high nematode infestations over the long-term.

“We can then model the behaviour of this nematode in rotations with resistant cultivars and make better recommendations to growers on how to best manage this serious pest.”



For more information, please contact Dr Dolf de Boer at [dolf.deboer@ecodev.vic.gov.au](mailto:dolf.deboer@ecodev.vic.gov.au) or (03) 9032 7324.



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# 22 Q&A Young grower profile

**Name:** Nicholas Eyles

**Age:** 24

**Location:** Selbourne, Northern Tasmania

**Works:** Hillcrest Holdings Tas Pty Ltd

**Grows:** Ranger Russet and Russet Burbank



Photography by Belle Young.

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

I am an eighth generation farmer; my family has been producing potatoes in Tasmania since 1988. I was raised on the family property and was exposed to the industry from a young age. My first commercial venture into the potato industry began after I completed college in 2009, working alongside my father and grandfather and more recently my younger brother.

## What is your role in the business?

We run a mixed cropping and

livestock enterprise, producing peas, beans, potatoes, onions, poppies, specialised seed and cereal crops and fat lambs. We also have an off-farm contracting business for grain harvesting and potato planting and harvesting, so my role varies with seasonal change.

I'm involved with many aspects of the business including ground preparation, crop management, harvesting and livestock husbandry. I believe it is important for all members of the business to have some involvement and understanding of each aspect of the enterprise, building on responsibility and learning outcomes and sharing the workload.

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

The best way to describe my average day at work would be diverse, from irrigation to working with stock, dealing with advisers, picking rocks up, spraying and harvesting. Each and every day brings something new or something different to the table.

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

There are several things I really enjoy – being outside each day doing a variety of diverse jobs and helping the crop to grow

**“I think our biggest opportunity is in the quality we produce and the demand for safe, high-end produce...”**

from planting to harvest is very satisfying. I think I get the most enjoyment through working with my family. I am quite fortunate to have a great team in my father, grandfather and brother to draw

upon for advice, constructive critique and support.

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

I believe the biggest challenge I face as a grower is sustainability. There is a constant push for more all the time and through doing this we incur greater cost, damage the soil, increase disease pressure and drive up our risk constantly. The focus shouldn't be about more; there should be a greater focus on sustainable agriculture, both environmentally and economically. This is critical if growers wish to continue farming into the future.

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

The threat of the Tomato-potato psyllid being introduced into

Australian production areas and the globalisation of the agricultural industry causing greater strain on producers' competitiveness within the marketplace are two of the bigger threats that I see facing the industry moving forward. Soil mismanagement is another threat I feel could damage the industry greatly. I believe there needs to be a greater awareness and education placed on soil health. The soil is the base for production and without it there would be no product, no supply chain and nothing for the consumer.

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

I believe there are opportunities to be found in new technologies such as Variable Rate Irrigation (VRI) drainage and the use of biostimulants. I think our biggest opportunity is in the quality we produce and the

demand for safe, high-end produce the consumer is looking for both nationally and overseas.

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

I think there needs to be a more positive attitude developed from within the industry; we have never been very good at selling ourselves as an interesting and exciting career choice. I believe attitude is important; there is an opportunity with the decline of the mining boom to capitalise on the agricultural profession and encourage young people to take up jobs in the industry.

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

If I hadn't pursued a career on-farm I may have gone to

university and studied ag science or medicine or perhaps a trade. Maintaining a connection to the property has always been important to me so I don't focus too much on "what ifs". I am happy with my career choice and enjoy my work, meeting a great network of people and the opportunities I have gained through my involvement in the industry.

### Where do you see yourself in five years?

In five years I hope to be working closely with family, especially my younger brother, growing the family business further, implementing new technologies and trialling new growing techniques, perhaps diversification or further expansion, while maintaining a strong focus on continual sustainability and soil health. I aim to remain in the agricultural industry, hopefully still producing potatoes and other crops and further developing my skills and networks.



## Highlighting opportunities for further potato research



FOLLOWING THE COMPLETION OF THE AUSTRALIAN POTATO RESEARCH PROGRAM PHASE 2 (APRP2), TASMANIAN POTATO RESEARCHER DR KEVIN CLAYTON-GREENE COMPILED A RESEARCH REPORT THAT REVIEWED AND COLLATED THE KEY FINDINGS OF THE PROGRAM, AS WELL AS OTHER RELEVANT POTATO RESEARCH, TO IDENTIFY ANY GAPS IN KNOWLEDGE THAT COULD BE EXAMINED IN FUTURE PROJECTS.

The report, *A review of knowledge gaps and compilation of R&D outputs from the Australian Potato Research Programs*, aimed to identify gaps in the potato industry's knowledge and suggest possible areas of research to be considered in future. It was commissioned by Horticulture Innovation Australia Limited (HIA – previously known as Horticulture Australia Limited) as part of the process to inform future R&D as well as the R&D formulation process.

Importantly, this report represented the first time that a selection of potato R&D projects funded by HIA were examined together. It can also act as a reference point when conducting further research on

agronomy and soil health for the potato industry or assessing the value of new projects.

Compiled by Tasmanian researcher Dr Kevin Clayton-Greene, the project consists of an Extendable Outputs report, which provides an overview of all HIA-funded potato R&D conducted in agronomy and soil health over the past 20 years. This process involved the distillation of all research into a detailed package that can form the basis of a communications program, such as the development of fact sheets, FAQs, further readings etc. The research is also presented in a format that can be adapted to a number of different communication methods and strategies.

A Gap Analysis report is also presented, which is a review of all production-related R&D funded through HIA over the past 20 years. While this report primarily focused on the APRP2 program, it also considered broader potato research projects.

The following briefly summarises some of the key recommendations in the report.

### Extendable Outputs: Recommendations

- Develop Key Performance Indicators (KPIs) to measure the impact of an extension program.
- Develop general soil health communication, using the

findings and data from the report and various research funded by the National Vegetable Levy.

- Update pre-existing material for reuse.
- Request a formal assessment and funding from the Australian Pesticides and Veterinary Medicines Authority (APVMA) before embarking on any communication relating to soil amendments.
- Clarification should also be sought from APVMA regarding the use of fertiliser amendments for disease control.
- Allow online access to research reports on the HIA website (in progress).
- Develop a document control system for all HIA publications to ensure currency and legacy.

### Gap Analysis: Recommendations

#### Immediate funding

- Commence an extension/tech transfer program, with PreDicta Pt as a major platform.
- Commence a baseline survey of current awareness.
- Continue investment in PreDicta Pt to become a cornerstone of soil-borne disease extension and information. To do this it needs to:
  - o Extend to other regions in Australia.
  - o Extend to other





nematodes, especially Potato cyst nematode (if possible).

- o Develop peel tests for Common scab, Powdery scab, Rhizoctonia, Verticillium and Black dot.
- o Integrate decision trees into the manual.
- o Improve varietal susceptibility ratings.
- o Include a Pink rot test.
- Develop a biosecurity R&D sub-program and where relevant, incorporate findings of the Potato virus Y scoping study (PT13006).
- Develop a desktop study to determine factors limiting yield in Australian potato production regions.

*Funding subject to caveats*

- Conduct a stocktake of Australian soil disease research.
- Conduct strategic investment in:
  - o Soil microbiology and characterisation of

disease suppressive soils.

- o Endophytes as a means of disease control.
- o Biofumigants to determine modes of action.
- o The role of other soil/tuber diseases in crop loss, including Rhizoctonia strains and also organisms such as Erwinia.
- o A better understanding of non-vector borne viruses.
- o A possible appetite within industry for a chemical treatment to assist in the control of Powdery scab.

*No further funding*

- Research on fertiliser amendments as a means of soil-borne disease control.
- General potato levy expenditure on Bacterial wilt detection.
- Use of foliar treatments for Common scab without some commercial involvement and a path to registration (unless this is part of a research program to understand mechanisms).
- Plant nutrition (unless

principles with broad application can be established).

This report represented an important step in progressing the Australian potato industry's adoption of past R&D projects. It is hoped that the above recommendations may help to guide future R,D&E for the Australian potato industry in the short-term as well as the long-term.



**i** For more information, please contact Dr Kevin Clayton-Greene at kevinclaytongreene@bigpond.com. This project was funded by Horticulture Innovation Australia Limited (HIA) using the National Potato Levies and funds from the Australian Government. Project Number: PT13013



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Tomato spotted wilt virus. Photo courtesy of Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org.



with Dr Jessica Lye

## Tomato spotted wilt virus: What you should know

TOMATO SPOTTED WILT VIRUS (TSWV) HAS BEEN ENDEMIC TO AUSTRALIA FOR MORE THAN A CENTURY. HOWEVER, IN RECENT DECADES, THE VIRUS HAS BECOME A MAJOR PROBLEM FOR GROWERS, PARTICULARLY IN CERTAIN REGIONS. IN THIS EDITION OF THE FRONT LINE, AUSVEG NATIONAL MANAGER – SCIENTIFIC AFFAIRS DR JESSICA LYE INVESTIGATES THE ORIGINS OF THE VIRUS, MODE OF TRANSMISSION AND MANAGEMENT PRACTICES TO HELP MITIGATE THE EFFECT OF THIS PEST.

Plant viruses, as a rule, are named after the plant in which they are first discovered. Such is the case with Tomato spotted wilt virus (TSWV), which was first characterised in tomato by Brittlebank in 1919 in the *Victorian Journal of Agriculture* and is now known to infect over 300 different hosts.

TSWV has two claims to fame: it was the first virus to be discovered from the *Tospovirus* genus (which also includes the likes of *Impatiens necrotic spot virus*, *Iris yellow spot virus* and *Peanut yellow spot virus*), as well as being among the first of virus diseases to affect Australian vegetable crops.

The virus caused serious losses in all Australian states during the 1920s and 1930s, particularly in tomato crops. Severe epidemics also occurred in potato crops in New South

Wales and Victoria in the 1940s with the disease detected in up to 60 per cent of planted crops.

### Identifying TSWV

TSWV symptoms can vary greatly according to the strain of the virus and potato variety. Potato plants with TSWV may show necrotic patches on the leaves, which can appear as concentric rings separated by green tissue. It is important to note that this symptom can lead to confusion with Early blight. In addition, severe infection can lead to die off of affected stems or even the whole plant.

Following TSWV infection, tubers may be small and distorted or show sunken, black necrotic spots. Internally, tubers may have hollow, rotten centres, dark shadowing and necrotic patches. These patches may

appear as concentric rings and can be visible through the skin. However, it is also possible for infected tubers to show no external symptoms at all.

TSWV upped the ante in the early '90s thanks to one specific pest. All viruses are obligate parasites, which means they cannot survive outside of their host and must be moved from one plant to another by seed or insects. Often, specific viruses are carried by species that have adapted to suit this purpose. This process, called 'vectoring', leads us to the Western flower thrips (*Frankliniella occidentalis*), an exceptional natural vector of TSWV that was introduced into Australia in the early 1990s. This introduction marked a turning point for the prevalence of TSWV in Australian growing regions.

### Western flower thrips

As with most thrips, the Western flower thrips (WFT) is a poor flier. Adult thrips are often dispersed by wind and on plants, people or equipment. It is important to note that TSWV can also be carried from one potato crop to the next through infected seed. However, some potato varieties are much more likely to pass on the virus than others.

Generally, thrips larvae and adults are usually found in the growing tips of young seedlings, though they may also be present on the undersides of leaves. Their populations tend to increase during spring and summer, when conditions are warm and moisture levels are high. In these cases, numbers can build up rapidly and thrips feeding, which generally manifests as stippling or scarring

of plant tissue, can lead to damage of the crop regardless of whether or not they transmit TSWV during the feeding period.

**Counting thrips**

Thrips numbers in crops can be assessed by using yellow sticky traps placed at several locations in a crop. On a sticky trap, WFT look much like other thrips species and therefore they can be difficult to identify. The WFT body colour ranges from black to orange, the abdomen extends beyond wing tips at rest and there are thick hairs at the tip of the abdomen. A high magnification microscope is needed to positively identify WFT, so if you suspect your crops could be home to this pest, an entomologist or agronomist should be consulted.

**Rapid transmission**

Thrips larvae acquire TSWV as they feed on infected plants and need to feed for more than 15 minutes to pick up the virus from the plant. When the larvae mature to adulthood, they are dispersed to neighbouring plants, where they feed and spread the virus. Since the adult WFT also feeds on pollen, and is therefore attracted to plants in

flower, when checking plants for thrips infestations it can be useful to tap flower contents into a container or onto a white piece of paper.

**Management options**

A number of measures can be taken to manage both TSWV and its vectors:

- Plant only certified seed.
- Control weeds (especially flowering ones) in and around the crop as they may incubate the virus.
- If possible, avoid planting varieties that are most likely to carry over TSWV in seed tubers.
- Keep the property free of old crop residue and volunteer potatoes.
- Inspect the crop for infected plants and remove them. This will aid in reducing the source of the virus.
- Do not bring plant material (including cut flowers) onto the property unless it has been checked for WFT.
- Monitor the crop for thrips and treat appropriately.

Pesticides are best applied during periods of peak thrips activity, which can be determined by monitoring.

However, because harmless thrips species may also be active at these times, it is important to first have the species correctly identified. Depending on the thrips population, they may also be resistant to pesticides or only susceptible at some stages of their life cycle.

Tomato spotted wilt virus can also be vectored by the Melon thrip and Onion thrip, although they are less efficient vectors than the WFT.

Petunia plants are ideal for use as a Tomato spotted wilt virus (TSWV) sentinel plant as they are targeted by Western flower thrips and show symptoms of virus infection, yet they do not incubate the virus. Infection symptoms are localised on petunia plants and leaves can be removed as infection occurs. Planting petunia around growing areas can be a useful way to detect TSWV before it becomes a major problem in the adjacent crop.

| Tomato spotted wilt virus  | Western flower thrips  |
|--|--|
| <i>Hosts</i>   | <i>Hosts</i>   |
| The host range for TSWV is broad, however crops at greatest risk are potato, chillies, lettuce, tomato, eggplant, celery and capsicum. | The WFT can target many crop types. Those most commonly targeted include potato, capsicum, eggplant, tomato, beans, peas, lettuce, celery, parsley, spinach and ornamentals. |



Western flower thrips. Photo courtesy of Frank Peairs, Colorado State University, Bugwood.org.



Tomato spotted wilt virus. Photo courtesy of Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org.



Tomato spotted wilt virus. Photo courtesy of Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org.

**i** Any unusual plant pest should be reported immediately to the relevant state/territory agriculture agency through the Exotic Plant Pest Hotline (1800 084 881). Early reporting increases the chance of cost-effective control and eradication. 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).

# Demonstrating water use efficiency in seed potatoes



A commercial monitoring unit provided for the demonstration.

Temperature and rain sensors in the crop at Jardee, WA.



IN AN EFFORT TO HELP SEED POTATO GROWERS MAKE GOOD IRRIGATION SCHEDULING DECISIONS AND MANAGE THE AVAILABLE WATER RESOURCES IN TIMES OF DROUGHT, A NEW DEMONSTRATION SITE WAS ESTABLISHED IN WESTERN AUSTRALIA TO HIGHLIGHT THE NEW TECHNOLOGIES AVAILABLE TO GROWERS. DIMI KYRIAKOU EXPLAINS.

Producing good quality seed is the first and most important step to producing good quality potatoes. However, in order to achieve this feat, seed potato growers must first overcome challenging factors such as disease, stress and defects related to irrigation, as well as temperature control and finishing the seed itself.

In light of these challenges, a seed potato demonstration site was developed in Jardee near the Manjimup growing region in Western Australia, about 270km south of Perth, to help

growers increase their water use efficiency. The demonstration site was part of the *More Dollars per Drop* water use efficiency project, funded by the Western Australian Government's Royalties for Regions initiative.

According to Department of Agriculture and Food Western Australia (DAFWA) Development Officer Rohan Prince, the project aimed to not only help growers improve water use efficiency and understand how and when the crop is using the water, but also focus on the accessibility of the crop

monitoring equipment used and outline what can be measured if you choose the right equipment.

"This does not mean using less water necessarily, but rather increasing the return on the investment. For example, lower water input with a similar yield improves water use efficiency, but so does increased water with increased yield or better quality, that gives greater dollar return on each litre of water applied," he explained.

"This demo was really about showing growers all the new and available technology that can go into helping them make decisions. There are many good quality and now much cheaper sensors that can measure an array of parameters not only concerned with soil moisture but also temperature, electrical conductivity or salts in the root zone, rainfall and soil water potential, that can deliver the information in an easily accessible format through the web to your phone, tablet or PC."

## Main findings

The demonstration site included three commercially available units, each with links to their pages and logins provided on the DAFWA website. An effort was made to work with products and companies that growers use on a regular basis, rather than equipment that is more difficult to find, use and access.

"This demo was all about giving the growers the chance to assess the gear and the company's platform or website where the information is presented so they could make their own decision about its usefulness," Mr Prince said.

Before the demonstration site was established, both growers and researchers alike wanted to measure the soil and air temperature, as it was an important consideration for tuber quality. Some of the equipment used had the capacity to measure this, along with irrigation depths or volumes applied and the reserves of water



The seed potato demonstration site.

in the root zone following rain. “The demo has shown that you can effectively measure soil temperature and influence it with irrigation. Monitoring irrigation via data from the soil moisture sensors will avoid unnecessary drainage or confirm its need to combat salinity when water quality is marginal,” Mr Prince explained.

“By managing irrigation to account for stored soil moisture and crop water use, lower volumes of water can be applied. Better irrigation management resulting in reduced periods of stress from over- or under-watering will lead to higher quality tubers and fewer defects caused by irrigation.

“The biggest challenge is that this demo was only for a season and this may not have been long enough for growers to gain confidence in using soil moisture monitoring.”

**Key message**

Mr Prince said a field day was also held towards the end of the season where commercial companies were invited to discuss their equipment. He suggested that seed potato growers consider the following questions to ensure the chosen equipment meets their requirements.

- Is the probe suitable for your crop? Is it accurate in the range required for your

crop type and soil type, and is it sufficiently sensitive or reactive?

- Does the probe have good repeatability? For example, does it read the same reading each time, even if the value has not changed, so you can analyse the pattern the data is forming? (The pattern is usually more important than the absolute reading.)
- Can you access the data remotely or easily? If you can, you are more likely to continue using it.
- What support will you receive to interpret the data you are collecting?

“A profitable crop is a good crop

in anyone’s books. If you are putting the effort into getting a crop in the ground and spending thousands of dollars on inputs such as chemicals, fertiliser, labour and power to pump the water, it makes sense to get the best possible return on that investment,” Mr Prince said.

“Water use efficiency translates into increased profit and that’s why making the decision to have the information to help make that possible is smart farming.”

**i** For more information or to access the data from the demonstration site, visit [www.agric.wa.gov.au](http://www.agric.wa.gov.au) or contact Rohan Prince on (08) 9368 3210 or [rohan.prince@agric.wa.gov.au](mailto:rohan.prince@agric.wa.gov.au).

# Reducing variation in potato tuber weight with liquid seaweed

FOLLOWING A FEATURE ON THE NEXT GENERATION OF POTATO RESEARCH IN THE JUNE/JULY 2015 EDITION OF *POTATOES AUSTRALIA*, WHICH INCLUDED AN ARTICLE ON THE FACTORS AFFECTING TUBER SIZE VARIATION, WE RECEIVED A RESPONSE FROM READER AND TASMANIAN RESEARCHER DR MIKE WALKER, WHO SHARES THE RESULTS FROM A SIMILAR RESEARCH PROJECT ON NUTRIENT TREATMENTS OF POTATO PLANTS ON THE PERFORMANCE OF THEIR PROGENY.

One of the research projects listed in the *Potatoes Australia* article focused on factors affecting tuber size variation, noting an increasing demand for narrower graded tubers and consequently a greater need for growers to produce uniform crops.

Research on this has been and will continue to be the subject of many Ph.D. theses – mine was one. *The effects of nutrient treatments of potato plants on the performance of their progeny*, which was accepted in 1968, looked at the contribution of the seed tuber to this, amongst others. It was cited for about 20 years after.

**Project overview**

Factors affecting tuber size variation are many and varied. One is the application of liquid seaweed. One trial I conducted four years ago produced some useful results.

I looked at Ranger Russet potatoes grown in a 12ha centre pivot circle. Half of the circle was fertigated with the liquid seaweed-based product Ectol, with four weekly applications of five litres/ha after tuber initiation. The other half was the untreated control.

To quantify any effect, the harvester was stopped, at random, five times in each half. One hundred tubers were sampled as a 10 by 10 grid in the middle of the conveyor belt and the tubers were weighed individually to give five replicates of the treated and control samples.

**Main findings**

The statistical analysis was conducted by the Tasmanian

**Table 1: Tuber weight distribution**

| sample                 | control    | treated    |
|------------------------|------------|------------|
| 1                      | 213        | 223        |
| 2                      | 250        | 223        |
| 3                      | 186        | 231        |
| 4                      | 231        | 211        |
| 5                      | 255        | 248        |
| Total                  | 1134       | 1136       |
| <b>Mean</b>            | <b>227</b> | <b>227</b> |
| Standard Error         | 13         | 6          |
| Standard Deviation     | 28         | 14         |
| <b>Sample Variance</b> | <b>808</b> | <b>191</b> |
| Maximum                | 255        | 248        |
| Minimum                | 186        | 211        |
| Range                  | 69         | 37         |

Institute of Agriculture (TIA) and the results are illuminating (see Table 1).

- The average tuber weights of both the treated and control samples were identical.
- However, when looking at the shape of the weight distribution curve, the Standard Error and the Standard Deviation of the treated tubers was half that of the control.
- The Variance Ratio puts a number on this. The higher the number, the wider the curve.
- The Variance Ratio for the control was 808 and for the treated it was 191, or less than a quarter.

The 10 trucks containing the tubers from which the samples were taken, were tagged and records kept of the Simplot QC docket which included the “Size %” for each (the percentage of tubers within the optimum size range). This showed that there were 54 per cent in the five control trucks and 56 per cent in the five treated trucks, which increased gross returns (see Table 2).

This was a healthy crop, grown by an experienced farmer. There was no increase

in yield due to Ectol in this instance. However, in another trial with a struggling crop, this was significant.

**Table 2: Simplot Size %**

|                 | C             | T             | T/C         |
|-----------------|---------------|---------------|-------------|
| <b>Size (%)</b> | 53.39         | 57.87         |             |
|                 | 68.16         | 61.97         |             |
|                 | 39.29         | 57.62         |             |
|                 | 55.53         | 58.52         |             |
|                 | 53.22         | 43.99         |             |
| <b>Total</b>    | 269.69        | 279.97        |             |
| <b>Average</b>  | <b>53.938</b> | <b>55.984</b> | <b>1.04</b> |

For this reason, it’s best to regard the application of Ectol as crop insurance. It contains a broad range of natural compounds, with an equally broad range of effects. An obvious example, given that seaweed thrives in salty water, is the positive effect it has when crops are grown in saline soils. In this case, it reduced the variation of tuber size in a potato crop significantly.

**i** For more information on this research project and other trials, please contact Dr Mike Walker at [wvpl@activ8.net.au](mailto:wvpl@activ8.net.au).

## Stuart Applebee: Looking to the future of farming

DESPITE HAVING DECADES OF FAMILY FARMING KNOWLEDGE AT HIS FINGERTIPS, TASMANIAN POTATO GROWER STUART APPLEBEE ACKNOWLEDGES THE ROLE THAT NEW TECHNOLOGIES AND NETWORKING WITH INDUSTRY CAN PROVIDE TO SEASONED AND YOUNG POTATO GROWERS ALIKE. MADISON JONES REPORTS.

After spending most of his childhood on his parent's farm in the small Tasmanian town of Penguin, fourth-generation farmer Stuart Applebee is no stranger to the world of open skies and good old-fashioned hard work.

"Farming is in my blood, it was the way I was brought up and it is something that I have always loved," he says.

Working at Allen Fields Farm (located in Gawler, just outside of Ulverstone) since he was 21 years old, Stuart snapped up the opportunity to lease the land two years ago and start his own "one-man" farming operation with the help of his wife and two sons.

Located just three kilometres from the north west coast of Tasmania, the 140-hectare farm offers rich and fertile soil with a good average rainfall – the ideal location to grow a range of produce including poppies, pyrethrum and carrots.

But, perhaps Stuart's most important crop is his potato varieties – the Ranger Russet and the Russet Burbank (primarily used for McDonald's French fries).

When asked why he was invested in such a diverse range of produce, Stuart said it was important not to leave "all your eggs in one basket".

"It's not wise to rely solely on one crop, as nature plays such a massive role in determining the outcome of a season," he explains.

"When it comes to nature, every year is different.

"Last year we had trouble with water rotation due to hot weather, especially trying to keep the crops moist and in a happy environment. Add 25 to 30 kilometre winds every day





and it was very difficult to water our paddocks with our soft and hard hose irrigation systems.

“For security and peace of mind, I thought it was a good idea to have a finger in each pie.”

### Dabbling in biofumigation

In an effort to move away from a reliance of chemical treatments, Stuart recently began a trial for the use of Caliente Mustard biofumigation on a number of his crops. While he had no personal experience with biofumigation until now, he says it was something that an increasing number of agronomists and field officers were looking into.

“In Tasmania, we don't have the same pest problems as interstate, as we are basically our own quarantined island,” he says.

“However, this season I wanted to try something new that would move me away from a reliance on chemicals, which can be very expensive.

“At the end of the day, biofumigation will allow nature to do all the hard work in reducing soil-borne issues, as well as allow us to potentially save \$175 per acre on chemicals.”

### Keeping on top of the game

Stuart says that as a relatively small-time farmer – producing 1,100 tonnes of potatoes per season for Simplot – it was important that he remained up-to-date with emerging technologies and farming practices to avoid “getting left behind”.

He was recently among more than 1,400 horticulture industry enthusiasts to attend the 2015 National Horticulture Convention, Trade Show and Awards of Excellence, hosted by AUSVEG and Apple and Pear Australia Limited at Jupiters Gold Coast in June.

Stuart says the Convention highlighted one of the best parts of working in the industry – meeting a wide range of passionate and enthusiastic growers.

“The conference was simply fantastic, with the range of people you get to meet, interact with and listen to,” he says.

“As a younger generation farmer, at 38, I am very much still learning and I relished the opportunity to listen to the advice of more experienced growers and apply their wisdom

to my own farming practices.”

Stuart says that to ensure the future of the potato industry, it is essential to nurture the next generation of farmers.

“Starting up a farm can be a difficult process if you haven't got backing to purchase property,” he explains.

“I know a lot of guys who would love to have their own land, but as it stands you need to put down a 40 per cent deposit, which isn't realistic for many young farmers.

“Having something in place, like a first-time farmer's grant, could really give the next generation of farmers the little bit of extra help they need to break into the industry.”

“I think the future of the potato industry is bright, but in order to keep up with the increasing population and demand for food, it is important that people my age are given the opportunities to invest in property.

“I followed in my father's footsteps and I already see that one of my boys will want to follow in mine, so it's important that we ensure the horticulture and potato industries have a sustainable and vibrant future.”



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## Spud growers' achievements celebrated at the national level

THE AUSTRALIAN POTATO INDUSTRY STOLE THE SHOW AT THE NATIONAL HORTICULTURE CONVENTION AT JUPITERS GOLD COAST, RECEIVING BRILLIANT RECOGNITION AT THE NATIONAL AWARDS FOR EXCELLENCE GALA DINNER ON SATURDAY 27 JUNE. POTATO INDUSTRY EXTENSION PROGRAM COORDINATOR ALEXANDER MILLER RECAPS THE POTATO INDUSTRY'S ACHIEVEMENTS DURING THE EVENT.

The annual Awards for Excellence Gala Dinner is always a highlight of the National Horticulture Convention, which was co-hosted by AUSVEG alongside Apple and Pear Australia Limited at Jupiters Gold Coast from 25-27 June. This year, New South Wales Riverina crisping grower, John Doyle, took home the prestigious Syngenta Grower of the Year award, being recognised for his innovation and dedication to the industry.

Mr Doyle runs numerous trials on his farm including drip irrigation, moisture monitoring and biofumigation, and was involved in the research phase of PreDicta Pt. Mr Doyle also hosted a Potato Industry Extension Program Regional Workshop at his Berrigan

property in August last year, showing his willingness to work with other growers to advance the industry.

The Syngenta Grower of the Year Award commends outstanding achievement across all aspects of vegetable and potato production, including growing, environmental management, staff management and quality of produce. The award was open to all vegetable and potato growers in Australia.

### Potato growers celebrated

The Steritech Women in Horticulture Award was won by Kerri Lamb, Manager at

Queensland-based potato and vegetable growing operation, Wickham Farms. Ms Lamb was recognised for her brilliant work in managing behind-the-scenes operations and driving export ventures for Wickham Farms.

Ms Lamb is testament to Australia's many women in horticulture and should provide inspiration for countless more.

Meanwhile, Matt Cocciolone, Manager at Western Australian-based Beta Spuds, was awarded the VISY Industry Impact Award for his work in developing a modern range of bags that are easier to brand and can replace traditional paper bags.

After working in the hospitality industry for 10 years, Mr Cocciolone started working

at Beta Spuds, his family's business, in 2008. He helps to coordinate the logistics of 25,000 tonnes of potatoes annually through their washing and packing facility.

Finally, Tasmanian-based researcher Dr Doris Blaesing of RM Consulting Group was also recognised for her achievements. Dr Blaesing was awarded the Bayer Researcher of the Year Award for her work on the vegetable levy-funded Soil Wealth project. Dr Blaesing has been a committed member of the Australian horticulture industry for many years and recently completed work on the Seed Certification Review for the potato industry (PT13010).



**Spuds on show**

The Potato Industry Extension Program was also showcased at the National Horticulture Convention's Trade Show, highlighting to growers, agronomists and industry experts the latest and greatest R&D.

Attendees of the largest event in Australian horticulture received first-hand information on the consumer research project Potato Tracker, with key findings and information from recent waves heavily featured at the booth.

Jenny Witham and Fiona McKernan from Colmar Brunton, the Australian market research agency conducting Potato Tracker, were at the booth to discuss the project with visitors. They helped to dissect the most significant triggers for the purchase of potatoes and provide preparation preferences and market figures from around the states.

The booth also highlighted the Australian Potato Research Program Phase 2 (APRP2) outcome PreDicta Pt, developed by the South Australian Research and Development Institute (SARDI). Fact sheets, example test kits and an instruction video on the service were available to delegates.

Booth visitors were also put to the test in a potato guessing game, where they were able to sample two types of roast potatoes and guess the varieties. A number of aficionados were able to correctly specify Sebago and Coliban as the secret spuds.



L-R: Steritech CEO Murray Lynch and Women in Horticulture award winner Kerri Lamb.

**An opportunity to educate**

While the majority of growers who visited the PIEP booth during the Trade Show know their potato varieties, this does not appear to be the case for many Australian consumers. A recent Potato Tracker report highlighted that over one-third of Australians are unable to name a variety of potato when unprompted, and up to 15 per cent didn't know which type of potatoes they were buying when presented with different varieties.

**International PVY research to be showcased to WA growers**

The Potato Industry Extension Program is teaming up with the Department of Agriculture and Food Western Australia (DAFWA) on 21 September to host a special industry workshop that will have a key focus on Potato virus Y (PVY).

Internationally-renowned plant virologist from the University of Idaho, Dr Alexander Karasev, will

discuss his research from the US, which focuses on PVY isolates and how they differ from each other, as well as the symptoms they cause in potatoes.

The latest local potato R&D outcomes will also be presented, including information from consumer research program Potato Tracker.

**i** Potato growers are invited to participate in the workshop. For more information, please contact Alexander Miller at AUSVEG on (03) 9882 0277 or Brenda Coultts at DAFWA on (08) 9368 3266.



L-R: PIEP Coordinator Alexander Miller and Colmar Brunton Managing Director Jenny Witham.

While the research did show that potatoes were the most purchased vegetable commodity in Australia, it appears that consumers don't know whether they are buying a Kipfler or a Kennebec. They may also be unsure of which varieties are best suited to each method.

Ultimately these findings highlight an opportunity for growers to look for ways to help educate consumers about the varieties of potatoes they are buying and what cooking methods they are best suited to.

For instance, packaging can be used to explain that potatoes with a higher starch content (such as Royal Blue, Sebago

and Desiree) are better suited to mashing, roasting and baking, while waxier potatoes (such as Kipflers, Nadines and Nicolas) are better for boiling, steaming and salad use.

Varieties such as Dutch Cream can also be communicated as a suitable "all-rounder" option for consumers. Readers can turn to page 36 for more information on the latest findings from the Potato Tracker research project.

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



## A helpful guide to irrigation and water use

POTATO GROWERS RECOGNISE THAT WATER USE AND SUPPLY ARE VITAL INFLUENCERS OF PRODUCTION. WITH DEMAND FOR WATER INCREASING CONSTANTLY, THE UK AGRICULTURE AND HORTICULTURE DEVELOPMENT BOARD (FORMERLY UK POTATO COUNCIL) COMMISSIONED A DETAILED REPORT INTO WATER USE FOR POTATO PRODUCTION.

The report, entitled *Irrigation and water use: Best practice guide for potatoes* collated extensive research to set out to potato growers the best ways to keep using water efficiently and sustainably into the future.

According to findings from the Met Office Hadley Centre in the UK, approximately 40-50 per cent of the world will be in drought by 2100. Therefore, the Centre predicts that the control of water will be an issue of extreme prominence in the near future.

The report examines in detail how potato growers can best harness the precious natural resource, and save time and money while keeping their growing operations viable for generations to come.

### Key findings

To achieve the optimum crop results, it is vital that water is applied at the most suitable time. It is just as important, according to the report, that water is not wasted and has as little impact on the environment as practically possible.

It was found that irrigating potatoes early in the growing season has the potential to minimise the infection of crops with diseases like Common scab, while also having the positive effect of maximising tuber amounts and boosting the

growth of the crop canopy.

Correct timing of irrigation can also allow growers to harvest their crop with minimal damage and write-off.

### Sustainability

The report suggested that growers need to understand how a decrease in the overall water supply could decrease their ability to adequately irrigate, which in turn affects profitability. It was suggested that growers plan at least five to 10 years ahead, in order to keep their business resilient to drought and other cases of extreme weather.

This requires considered and strategic water management planning, alongside careful environmental protection measures. Such actions not only sustain water as a resource into the future, but at a more grassroots level, ensure that growers can continue to access enough fresh water for their operations and maintain their businesses.

### Actions

The guide lists five basic principles for effective and efficient irrigation in a potato growing operation: business planning, irrigation planning, irrigation management, crop

and soil management, and monitoring.

Firstly, the report recommends that growers write a sound business plan to combat the often-high capital costs of irrigation as well as external factors such as the impact of government policies.

The next step is for growers to conduct the necessary research before establishing their irrigation system, and update it as necessary. The report notes that the right site must be matched to the production system, crop choice, irrigation design, soil type and landscape as well as the security and supply of water.

When it comes to irrigation management, it is recommended that growers implement irrigation scheduling systems. This means that growers can accurately apply the right amount of water at the right time, for optimal crop production. Three basic approaches are listed, which can be used individually or in combination.

- Calculating crop water requirements based on climate and evapotranspiration.
  - Monitoring soil moisture levels in the root zone.
  - Monitoring the plants themselves.
- Using these factors, growers

can calculate when the crop requires water, in order to apply it at the most appropriate time.

The next recommended action is to implement thorough crop and soil management techniques. This requires growers to examine and understand the development stages of potatoes.

When this information is identified, modern irrigation techniques can apply water containing dissolved nutrients straight into the crop. The soil condition is another important aspect to understand, as the amount of water in the soil can be altered to provide ideal conditions for root growth and function.

Finally, the report recommends that growers accurately monitor their water use. Observing aspects of irrigation system performance, water quality and gross financial margins can indicate performance. Growers can use these key indicators to tailor their water use, and ensure it is as efficient and financially beneficial as possible, as well as environmentally sustainable.



To access the *Irrigation and water use: Best practice guide for potatoes*, please visit the UK Agriculture and Horticulture Development Board website at <http://potatoes.ahdb.org.uk/publications>.

# Tackling Fusarium dry rot in potatoes

FUSARIUM DRY ROT IS A DEVASTATING POST-HARVEST DISEASE THAT AFFECTS POTATO GROWERS WORLDWIDE. *POTATOES AUSTRALIA* OUTLINES THE FINDINGS OF A JOINT RESEARCH PROJECT IN THE UNITED STATES THAT EXAMINED THE BENEFIT OF COMBINING IN-SEASON CROP PROTECTION STRATEGIES WITH POST-HARVEST APPLIED FUNGICIDES AND BIOFUNGICIDES TO COMBAT THE DISEASE.

The potato post-harvest disease, dry rot, can seriously affect both seed tuber pieces in the field and tubers in storage. In particular, *Fusarium* species are often detected in soils where potatoes are grown. Spring and autumn are the two main opportunities for *Fusarium* species to infect potato tubers in the crop cycle. However, tubers are not usually infected until harvest, when the potato skin is more likely to rupture and present multiple points of entry for the pathogen to cause dry rot lesions in the tuber.

In storage, dry rot develops most rapidly at about 90-95 per cent relative humidity and temperatures between 15-20 degrees Celsius. However, the disease may continue to develop at lower temperatures used for the storage of potatoes.

In Michigan potato production, *F. sambucinum* (Fusarium dry rot) is one of the main species that affects potatoes in storage, causing seed piece decay after planting and sprout rotting in seed tubers. For this research project, Michigan State University's Department of Plant, Soil and Microbial Sciences teamed up with the University of Idaho's Aberdeen Research and Extension Centre to examine the benefit of integrating in-season crop protection strategies with post-harvest applied fungicides and biofungicides to reduce the losses caused by Fusarium dry rot during storage.

## Method

### Field experiment

Over two years, two field trials were conducted at Michigan State University's Montcalm Research Farm in the spring season using a chip processing cultivar (cv. FL1879) and a table-stock/seed cultivar (cv. Goldrush). Separate in-furrow applications of mefenoxam and phosphorus acid at planting

were followed by separate foliar applications of mefenoxam, phosphorus acid or *Bacillus subtilis* at canopy closure, which were all repeated twice. The control plot was treated with chlorothalonil seven times at canopy closure, prior to desiccation.

To avoid bruising, the tuber pulp temperatures were monitored and harvested when the tubers had reached temperatures between 12-20 degrees Celsius. The tubers were then placed in 450kg aerated wooden boxes according to the field treatment and stored in a curing facility at 10 degrees Celsius and 90 per cent relative humidity for three weeks before storage inoculation and treatments were applied.

### Storage experiment

The potato tubers grown under the field treatments were stored at 20 degrees Celsius and 95 per cent relative humidity for 10 days. Temperatures were reduced by one degree Celsius per day to enhance wound curing.

Tubers free from any visible disease symptoms were washed and placed in clean plastic crates to dry for 24 hours. The tubers were then prepared for inoculation by lightly grazing the surface with a wire brush and soaking them in the inoculum for 48 hours.

The tests were carried out at two storage temperatures used in the potato industry: 10 degrees Celsius (chip processing temperature) and four degrees Celsius (table-stock and seed temperature). After inoculation and treatment, the storage temperatures were reduced by one degree Celsius per day until the target temperature was reached. The tubers were cut longitudinally into four slices and evaluated for symptoms of dry rot.



The effect of Fusarium dry rot on potatoes.



## Results

The researchers found significant differences in disease incidence from each year for potatoes stored in 10 degrees Celsius and four degrees Celsius temperatures.

Tuber dry rot incidence generally increased with temperature, however the researchers did not rule out cultivar susceptibility as a factor. Due to the strict selection of the sample, the tubers used in this study had no naturally-occurring infection from the field.

The study found that the interaction of field and

storage applied fungicides and biofungicides significantly reduced the development of dry rot, as the untreated field had a significantly higher disease incidence compared to the treated fields, particularly when treated with mefenoxam. When this was followed by storage application of either a three-way mixture of azoxystrobin, fludioxonil and difenoconazole or phosphorus acid, it gave the best control of dry rot.

The researchers concluded that combination of in-season crop protection strategies (such as in-furrow and foliar applications) combined with storage treatment using fungicides and biofungicides effectively increased tuber protection against storage pathogens such as Fusarium dry rot. However, further testing is necessary before growers use this approach to help control dry rot in potato storage.



For more information, contact Michigan State University Associate Professor Dr William Kirk at [kirkw@msu.edu](mailto:kirkw@msu.edu).



# Consumers spill spud secrets in latest Potato Tracker findings

THE RESULTS FROM WAVES 9 AND 10 OF THE POTATO TRACKER CONSUMER RESEARCH PROJECT FROM COLMAR BRUNTON CONTINUES TO IDENTIFY THE MAIN CONSUMER TRENDS IN RELATION TO POTATOES. WE EXPLAIN HOW THESE MAIN FINDINGS CAN HELP GROWERS IDENTIFY HIDDEN MARKET OPPORTUNITIES FOR THEIR BUSINESSES.

## Wave 9 results

Of the 307 respondents in Wave 9, most considered potatoes to be good value for money.

The average recalled spend among consumers for their last potato purchase was slightly lower than previous months, at \$4.50. There was little variation in retail prices between states and retailers, with \$3.93kg for white washed potatoes the consistent average nationally. However, Adelaide and Perth continue to have one of the cheapest retail prices at Coles, of \$2.98kg and \$3.68kg respectively.

Purchase trends remained in line with the first half average, while purchases from markets increased slightly from the previous month, with 18 per cent of respondents buying spuds there at least once.

Mashing and roasting remained the most popular method of preparation, but cooking styles changed slightly during the cooler months. Stewing (29 per cent) and soup-making (27 per cent) with potatoes grew in popularity in Wave 9.

## Packaging

Consumers increasingly indicated that a key barrier to purchase was a difficulty in carrying bags of potatoes, but also placed importance on the value associated with buying potatoes in higher quantities. This provides an opportunity for growers to investigate innovative methods of packaging.

Recommendations made in the Wave 9 report include packaging formats like boxes, or sturdy hessian bags with carry handles, as well as the use of delivery services to neutralise possible purchasing troughs associated with carrying potatoes.

The average consumer bought 2.7kg of potatoes per shop, which is consistent with the average recorded in previous months, highlighting an increasing need to inform and discuss with retailers the importance of pre-packaged formats to consumers.

## Freshness and provenance

The importance placed upon the shelf life of potatoes after purchase increased considerably in Wave 9. Shoppers expected potatoes to remain fresh for 16.6 days after purchase, and

currently rate provenance as 6.2/10 for importance.

The report recommended clearly communicating freshness periods on packaging, to reassure buyers that there will be minimum wastage.

Overall, consumers continued to have an exceptional level of satisfaction with the potatoes they purchase, and intend to continue purchasing them.

## Wave 10 results

This wave of results saw soup-making increase in popularity again, as cold winter weather continued across much of Australia. Thirty-one per cent of respondents elected to make soup with spuds, while the methods of mashing and roasting remained most popular at 75 and 69 per cent respectively.

## Consumer groupings

Previous research has found there are four key drivers that influence consumers' fresh vegetable preferences and purchases, with Wholesome Habit and Eager Explorer consumers making up 65 per cent of all potato purchases in this wave.

Wholesome Habit consumers eat potatoes routinely, and are not looking for anything new. To make potatoes more relevant to these consumers, it was recommended that alternative meal options be provided like lunch and snack choices. These consumers are also conscious of wastage, so longevity of freshness and serving size information is important to highlight.

Eager Explorers are interested in the taste, colour and texture of potatoes, and are more open to larger spends and experimentation with fresh potatoes. Clearly communicating the flavour profiles of different varieties to these shoppers, and providing creative recipe ideas outside of typical Australian cuisine, like Thai and Italian, was recommended for growers and producers to stay relevant to this consumer group.

## Global trends

Over the last three months, there were more than 3,000 products launched globally containing potato ingredients. New products were aimed at snacking, including potato pancakes in Russia and Smoked Haddock Fishcakes in the UK. Products were often aimed at health, with 'no additives', 'reduced allergen' and 'gluten free' the most popular claims.

There were 49 products launched in Australia in the same period, which reflected a significant decrease on the last research wave. Examples of products launched at home included beef and potato pies.



The Potato Tracker project will continue 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

# More brands clarify processed potato origins

FOLLOWING OUR SPECIAL INVESTIGATION INTO THE ORIGINS OF PROCESSED POTATOES USED FOR THE FRENCH FRIES AND CHIPS IN SOME OF AUSTRALIA'S MOST WELL-KNOWN FOOD CHAINS, *POTATOES AUSTRALIA* HAS SINCE RECEIVED FEEDBACK FROM SEVERAL COMPANIES REGARDING THE ISSUE.

The article in the June/July edition of *Potatoes Australia* gained extensive media coverage following its publication, as only four of the nine companies we contacted for comment provided feedback on the origins of their potatoes.

The results were surprising, given that recent events regarding the origin and safety of food have highlighted that Australian consumers want to know more about where their food comes from.

Since then, we have received feedback from KFC, Lord of the Fries and Salsa's, which are outlined below. A Hungry Jack's spokesperson only sent through the following response: "Hungry Jack's sources its potatoes from local and international suppliers" and did not respond to our list of questions. Red Rooster and its sister company

Oporto also did not respond to requests for further information, following its statement earlier in the year which indicated that the chain's fries were sourced from Simplot Australia and McCain Australia.

## KFC

KFC Australia purchases 30,000 metric tonnes of Australian potatoes each year, while 100 per cent of its mash potato is sourced locally.

"Our preference is to source Australian or New Zealand-grown crops where possible. The majority of our chips are sourced from potatoes grown in Australia and New Zealand," a KFC spokesperson said.

"To ensure against the risk of crop failure and guarantee we can always supply chips to our

stores, KFC now supplements its Australian supplies with a small component of potatoes grown in the US and Europe. However, the overwhelming majority of our chips continue to be supplied from potatoes grown in Australia."

Innovator, Russet Burbank and Ranger varieties are used most often, while the majority of potatoes are grown in Tasmania and Victoria and sourced from KFC's Australian suppliers, McCain and Simplot.

## Lord of the Fries

Considering a potato product features in the company name, it's no surprise to learn that Lord of the Fries uses 100 per cent Golden Delight potatoes grown in Australian for its regular menu.

"They are sourced direct from the farm ... Gippsland in Victoria and a farm in New South Wales," a Lord of the Fries spokesperson said.

"The used oil from the chip's fryers is converted to bio diesel, which the potato delivery trucks use to deliver the chips to the stores. The chips are made fresh, not frozen, (with) skins on and with no trans fats."



## Salsa's

Specialising in Mexican cuisine, Salsa's aims to use 100 per cent of Australian-grown potatoes for its needs. The majority of its chips are produced in two plants based in Ballarat, Victoria and Smithton, Tasmania.

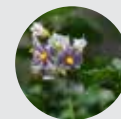
The main potato varieties used are Russet Burbank and McCain Innovator.

"We'd love to buy all Australian-grown produce but it's not always possible due to seasonality of produce and local demand outstripping supply of some products, but where possible we source locally and encourage our local network to do so," Salsa's General Manager Jake Spencer said.



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

## CALENDAR of events



**21 September 2015**

### Potato virus Y industry workshop

**Where:** Bunbury, Western Australia

**What:** The Potato Industry Extension Program and the Department of Agriculture and Food Western Australia (DAFWA) will host an industry workshop featuring U.S. plant virologist Dr Alexander Karasev, who will discuss his research on Potato virus Y (PVY).

**Further information:** Please contact AUSVEG on (03) 9882 0277 or DAFWA on (08) 9368 3266.

**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

Here we are again in August!

I hope things are going well in your neck of the woods.

Did you make it to the National Horticulture Convention? If you did, I might not have seen you there, as there were more than 1,400 people that made the trip to the big do this year.

The Trade Show was bigger than ever, and had a lot of really interesting stuff that could help

you in your operations.

There was a great line-up of speakers this year too. Probably the main thing that interested me was a talk by Blair Richardson – President and CEO of the U.S. Potato Board. He spoke about the marketing of produce and his view that the way in which we promote our product needs to change. He highlighted the fact that the children in modern families now have a significant input into weekly shopping choices. When most of us were younger, we ate whatever was put in front of us or we went hungry, but these days the kids have more of a say.

He also reported that most 18- to 30-year-olds aren't totally bent on eating organic produce. This group accepts that crop protection products are a necessary part of growing healthy crops for an expanding world population, but they do want to know which products are being used, how we use them, and they want to be confident that eating our produce will not be harmful to them. They understandably want this information because they live in a world where information about everything is at their fingertips and they have a massive thirst for knowledge.

With this in mind, we need to influence the choices of this younger generation. We know we have a great product that is a healthy choice for families, we just need a little effort to help put spuds on plates. Something to think about I guess.



The National Awards for Excellence Gala Dinner entertainment.

A big congratulations to all the award winners from the Convention too. It's great to see that people are recognised for having a crack, including a few spud guys who were nominated and won on the night.

I had a good time up at the conference. I learned a bit and had the chance to catch up with a few people I don't get to see very much and some I've never met before. It would be great if next time a few more YPP types make it up, so put it on your list of things to do and keep an eye out for next year's dates and location.

Cheers,

Stu



Adama Digital Innovation Manager Alex Mills launched the new Trapview® system at the National Horticulture Convention.

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



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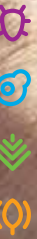


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