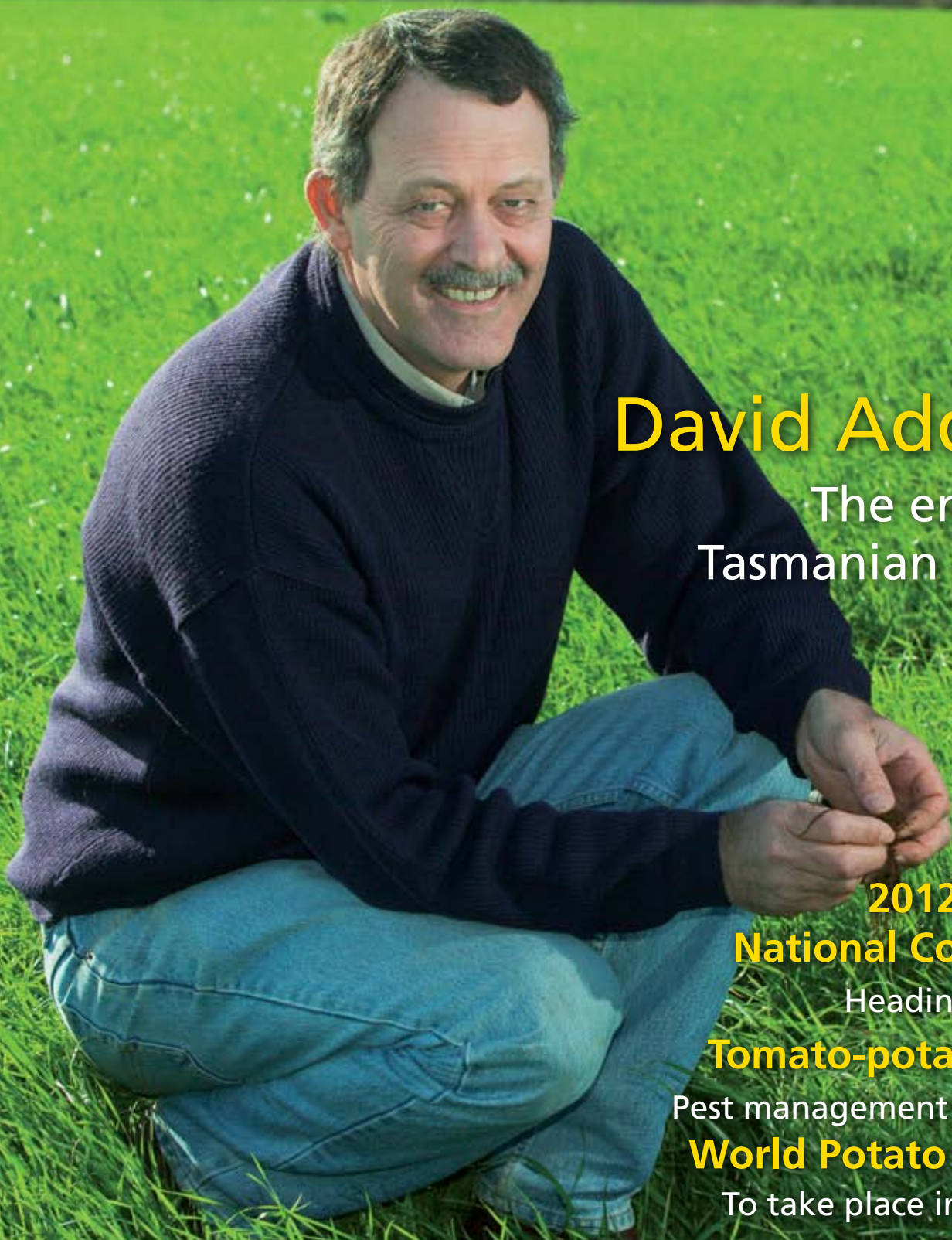


potatoes

australia

August/September 2011



David Addison

The enduring
Tasmanian grower

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potatoes australia

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► FRONT COVER:

David Addison

Photo supplied by Rick Eaves

John Brent AUSVEG Chairman

Following the resounding success of the 2011 AUSVEG National Convention in Brisbane, where some 1,000 delegates attended, I am excited to confirm that the location of the AUSVEG National Convention and Awards for Excellence will be Tasmania in 2012. I am looking forward to what will no doubt be an impressive exhibition from 10-12 May, and with the Wrest Point Hotel Casino in Hobart set to stage the event, I am sure the 2012 Convention will exceed all expectations.

Minister for Tourism, The Hon Scott Bacon, recently joined us in Hobart to reveal the location of the anticipated AUSVEG

event, which is expected to generate approximately \$1 million in expenditure for Tasmania. The Convention is now one of the biggest of its kind in the Australian horticulture industry. We hope you will take note of the important date and show your support at this significant industry event.

In other recent news, following concern from the potato industry about the risk of spreading Zebra chip disease through the importation of New Zealand potatoes if a request from that government for market access was approved, AUSVEG initiated the 'Don't take the risk' campaign. With

industry and growers fearful of the potential contamination of Australian potatoes with Zebra chip disease, which is spread by the Tomato-potato psyllid, AUSVEG circulated a petition against importation for industry members to sign. Amid an overwhelming response from potato growers nationally, with almost 1,000 signatures of support, the petition has now been tabled in Federal Parliament by Federal Labor MP Tony Zappia from South Australia. Now that the petition has been officially submitted, we are expecting a result will be forthcoming in the latter half of this year, when Biosecurity Australia release their report.




John Brent
Chairman
AUSVEG

Richard Mulcahy AUSVEG Chief Executive Officer

We are looking forward to a busy and exciting time ahead for AUSVEG, with a number of events already beginning to fill the calendar for 2012, including the AUSVEG National Convention and Awards for Excellence and a proposed grower tour (subject to HAL approval) to the World Potato Congress.

After the resounding success of the National Convention this year, arrangements are now well underway for the 2012 event, which will offer fantastic networking opportunities for growers and key industry players, a showcase of trade stands, R&D information and of course the coveted AUSVEG National Awards for Excellence.

Another highly anticipated event is the 2012 World Potato Congress, held in Edinburgh.

AUSVEG is excited to be organising grower participation at this event from 27-30 May next year. The event will bring

together international potato industry players, growers and representatives of research and development endeavours, in an effort to exchange information in a global forum. With plans to facilitate the expansion and development of the potato industry, the congress will also communicate on the international potato supply to ensure adequate provisions are available in the future for the three billion more mouths to emerge by 2050.

Congratulations are in order to Fresh Potato Industry Advisory Committee (IAC) member and Tasmanian potato grower Max Baker for winning the Telstra Regional Business Award recently. Produced from his farm in Kindred in Tasmania's north west region, Mr Baker and his family grow, pack and supply potatoes in Tasmania and also four other states in Australia.

Chair of the Fresh and

Processed Potato IAC, John Rich, has recently announced his retirement. Harboured an impressive and extensive career, Mr Rich held the position of Executive Officer for over 23 years with the Tasmanian Farmers and Graziers Association (TFGA), held a long association with the organisation previously known as Potato Growers of Australia now incorporated within AUSVEG, was the Australian and New Zealand representative on the World Potato Congress Advisory Committee and has been involved in a range of international meetings on issues related to the potato industry.

Mr Rich was a member of the Industry Management Committee of Horticulture Australia Limited (HAL), where he represented 23 horticulture groups and was appointed to the position by HAL on the recommendation of AUSVEG and the Potato Processing

Association of Australia (PPAA).

Mr Rich's contributions to the potato industry have been monumental. We thank and congratulate him on all of his success.



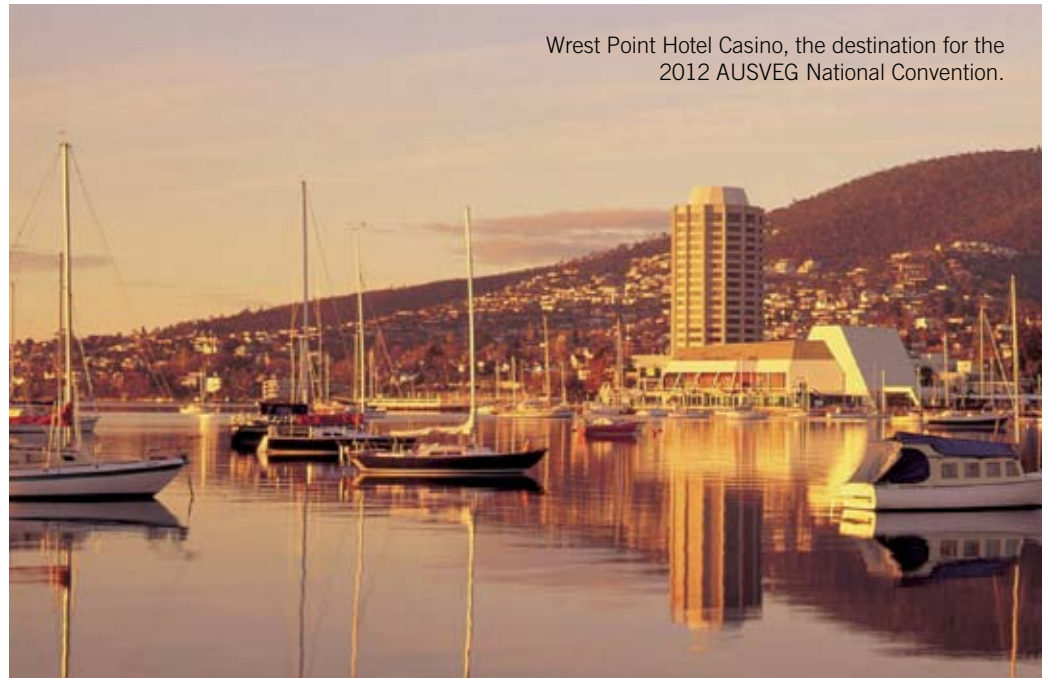

Richard J Mulcahy
Chief Executive Officer
AUSVEG

Editorial

In this edition of *Potatoes Australia*, we spoke with an influential and long-standing Tasmanian grower who has been involved in the potato industry and an advocate for the Australian spud for over 40 years. David Addison, former IAC member and potato grower, spoke with us about the triumphs and challenges of his most recent growing season, soil management techniques and what he believes is threatening the Australian potato industry (pg 18).

Advancements in the world of R&D underpin the success of the industry. In this edition we focus on potato psyllids (found in our neighbouring country of New Zealand).

Researchers are identifying and monitoring native and foreign psyllids, in an effort to develop an early detection system for the destructive Tomato-potato psyllid if it is to arrive in Australia in the near future. Also being investigated in the fight against the potato psyllid are strategies for its control and eradication involving integrated usage of insecticides. The potato psyllid, although not yet present within Australia, poses a great threat to our potato industry and the two projects aim to find a



Wrest Point Hotel Casino, the destination for the 2012 AUSVEG National Convention.

solution against the destructive pest before it begins to cause damage locally (pg 13 & 25).

Focusing on international R&D, in this edition we have a closer look at the collaborative effort to develop and manage late blight disease resistant potato varieties in Papua New Guinea (pg 30) and investigate the collaboration between Australia and Canada in manipulating the ratio of

magnesium in potato soils to reduce Common scab disease (pg 16).

Closer to home, consultation has been held around Australia with potato growers to assist in finalising the Potato cyst nematode National Management Plan (pg 11).

Planning is also moving along fast for the 2012 AUSVEG National Convention, Trade Show and Awards for

Excellence, with the location now set at the Wrest Point Hotel Casino in Hobart (pg 24). With the 2011 Convention hailed as a huge success, the event has now become one of the largest in the horticulture industry.

This edition of *Potatoes Australia* also brings you the latest pests and diseases profile, potato varieties, soil solutions and, as always, we profile an up and coming young grower.



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Regional Business Award to M & J Baker Farms

Max Baker, Fresh Potato IAC member and Tasmanian grower, has received the Telstra Regional Business Award for 2011.

Max Baker is the owner and Director of M & J Baker Farms, originally a small family-run business established over four decades ago, now an award-winning supplier.

Mr Baker grows, packs and supplies potatoes to supermarket giant Woolworths in Tasmania and another four states in Australia from his farm

in Kindred in Tasmania's north west region.

Telstra Regional Business Award winners received a share in \$500,000 of cash and prizes and were also welcomed into an exclusive national business alumni.

Deputy Premier of Tasmania, Bryan Green, congratulated all winners of the 2011 Telstra

Tasmanian Business Awards.

He said that it was the small businesses which were critical to realising economic growth for the region and generating more jobs.

"Small businesses play an important role in building communities, especially in regional Tasmania," said Mr Green.

"These awards help promote Tasmanian businesses showing high customer service levels and dedication to meeting their customer needs."

M & J Baker Farms also won the Woolworths Produce Supplier of the Year Award in 2005.

AUSVEG congratulates Mr Baker and his staff on their success.



Max and Judy Baker. Photo courtesy of Lighthouse Communications Group

Richard Mulcahy addresses McCain growers

AUSVEG CEO Richard Mulcahy recently addressed key potato growers for McCain.

On 20 May, at the Wallace Hotel in Victoria, CEO of AUSVEG, Richard Mulcahy, spoke to key growers of McCain potatoes.

The presentation focused primarily on what is taking place within the industry, future plans to strengthen lines of communication with

the government and the new direction of AUSVEG.

Mr Mulcahy detailed several developments including the Finalisation of the PCN National Management Plan, which aims to prevent uncontrolled spread of the pest and economic loss for the industry. He also talked about the importance of Country

of Origin Labelling.

Mr Mulcahy also updated attendees on the 'Don't take the risk campaign' on biosecurity with regard to Zebra chip disease and the threat posed by the potential importation of New Zealand potatoes into Australia.



Australia's first National Plant Biosecurity Strategy developed

A culmination of more than three years of work by Plant Health Australia (PHA) has seen the release of the National Plant Biosecurity Strategy.

With the endorsement of the Australian Government Department of Agriculture, Fisheries and Forestry and state and territory primary industries, the National Plant Biosecurity Strategy has been widely accepted as a significant component of supporting agriculture in Australia.

The development of the strategy involved extensive consultation with key industry and government stakeholder groups to identify and address challenges facing Australia's plant biosecurity system.

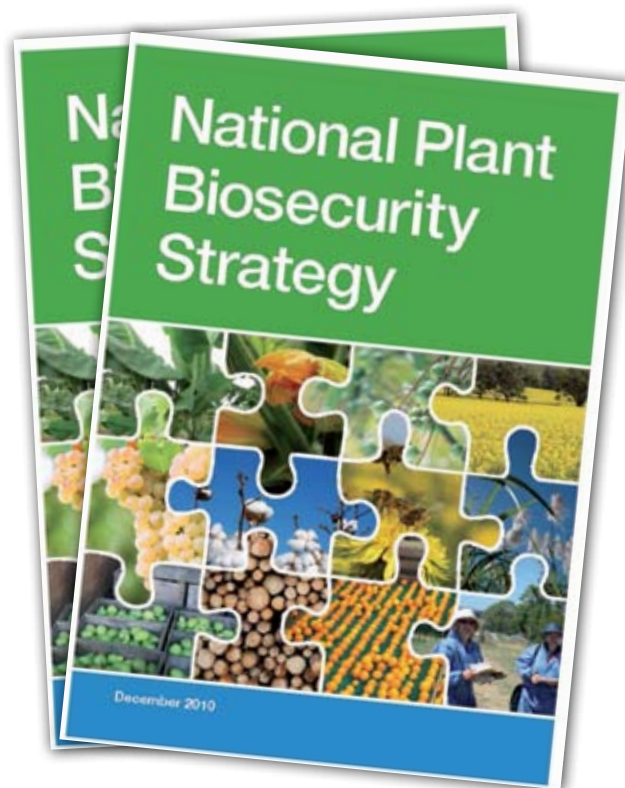
Invasive weeds and plant pests pose serious threats to

Australia's primary producers and reduce agricultural productivity.

Plant Health Australia Chairman Dr Tony Gregson AM, stated that the strategy would play a vital part in driving essential reforms to Australia's plant biosecurity system.

"We have developed a common understanding of the areas of potential weakness in our pest, disease and weed defenses and what we need to do to address them," he said.

The next stage for the strategy will be to develop an implementation plan.



Potato Europe exhibition to show in Belgium

It's less than two months until one of Europe's largest potato events.

Taking place on 7 and 8 September, the 2011 *Potato Europe* exhibition is now eagerly anticipated, with close to 6,000 visitors expected in Kain, Belgium. Spread across 23 hectares, the event will accommodate an estimated 165 exhibitors.

The exhibition will feature topics including breeding and inventory management in potato cultivation, fertilisation and protection of plants, potato production techniques in soil preparation and planting, delivery, storage and harvesting

and storage preparation techniques.

Test fields are an important element of the exhibition with variety tests, phyto and fertilisation on the program for visitors.

The demonstrations of harvesting machines will no doubt provoke a new wish list for growers and this year will see 16 machine exhibitions.

i For more information visit www.potatoeurope.com



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A site to see

CABI-the not-for-profit science-based development and information organisation-is in the final stages of development for the Invasive Species Compendium.

Due to be released in several months, the Invasive Species Compendium, compiled by not-for-profit science-based development and information organisation CABI, will act as a database for the identification of over 1,500 species of pests and will provide information of their effects on natural and managed ecosystems.

A useful resource, the database could potentially assist in the early identification and management of invasive pests on potato crops. The compendium will present

reports, presentations and public information resources, geographical information, statistical analyses and carry out risk analysis. With the material to be made openly available to the public, the database will no doubt be an asset for researchers, agronomists and growers for the control of pests in crop growing and farming.



To view a sneak peak of the Invasive Species Compendium site visit www.cabi.org/isc



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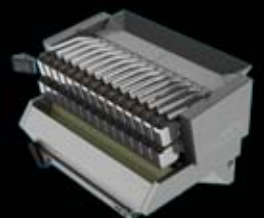
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Potato cyst nematode national plan to harmonise regulations

In early 2011, industry consultation on the current Draft PCN National Management Plan took place in major potato production regions throughout Australia, with the concept of a National PCN Plan generally well-received and support from industry and state government representatives for a national approach.

A National Management Plan for the official control of Potato Cyst Nematode (PCN) in Australia aims to collate regulations throughout each state of Australia to ensure that the eradication of the PCN will progress under standardised policies. It's intended the plan will reduce the bureaucratic nature for dealing with detections and across-border tuber movements, in particular between PCN free zones once they are recognised.

History of the plan

A scientifically-based Potato cyst nematode risk analysis was completed in 2008 by the Department of Primary Industries Victoria and was used as a foundation for the risk mitigation steps in the Draft Plan.

The Draft Plan recommended a national surveillance program of 10-30% of land each year

to prove area freedom. It also made recommendations for more surveillance for high-risk land and seed certification. If Potato cyst nematode is not detected in an area then the surveillance will give proof of regions free from contamination.

This will then assist in Australia's market access to PCN free countries and also the importation of product into Australia from countries that may harbour the PCN disease.

The proposed plan will ensure that the incidence of new strains of *G. Rostochiensis* (Golden cyst nematode) and *G. Pallid* (Pale cyst nematode) will be identified and contained before having the opportunity to multiply. Compulsory PCN testing of potato seed sold in Australia will be a critical step in preventing the spread of PCN.

In March 2011, industry consultation was conducted in key potato production

regions across Australia. These meetings were conducted on behalf of AUSVEG. This process of consultation and presentation of the plan to growers and key industry players was carried out by Dr Doris Blaesing from RMCG and Dr David Beardsell from the Department of Primary Industries Victoria. This was an imperative step for understanding how the National Plan would operate within the industry and how the plan would then be implemented by State Government authorities. Industry representatives, growers, packing and processed potato leaders and state representatives were involved.

The regions visited for the consultations included: New South Wales-Wagga Wagga, Dorrig and Guyra. Queensland-Bundaberg and Atherton. South Australia-Mt Gambier and Murray Bridge. Western Australia-Bunbury.

Victoria-Warragul and Ballarat. Tasmania-Deloraine.

The project was funded by HAL using the National Potato Levy and matched funds from the Australian Government.

Consultation

Dr Doris Blaesing said that growers' concerns, questions and recommendations were appreciated and taken on board.

"Feedback on whether people would support the roll out and whether it was actually do-able was necessary and welcomed," she said.

"Each industry in each state is ever so slightly different. You have to really understand how each industry operates to make sure they can actually use the plan, otherwise you might write something that people just can't do or that some people just don't want to do."

Some of the main questions raised at the meetings were

continued over page ►



Dr Doris Blaesing speaking with potato growers at the consultations

on how the plan would be executed and regulated and what factors would be taken into state legislation and which would become industry codes of practice.

Dr Blaesing found that the plan was generally well-received, with a considerable amount of support from industry and state government representatives also.

“Growers generally were in agreement that there is a requirement to have a national approach to managing the disease or the threat of the disease,” she said.

“It’s only recognised in Victoria at the moment but the growers and the industry people were in agreement that uncertainty is a risk. It’s better to know than not to know.”

Dr Blaesing said that the discussions were extremely

real and current threat to the Australian potato industry.

“I think the consultation process highlighted to the industry that the threat is real and that the quicker they get onto managing it, and understanding where the disease is and how they can deal with it, the better.”

Ahead

At the potato levy payers’ meeting in Brisbane on 17 April 2011, findings from the national consultation were presented. Amendments and consolidation of the Draft PCN National Management Plan are currently taking place based on the national consultation with industry achieved through this project.

The process for government review and endorsement of the plan is still yet to occur.

“The plan will reduce the bureaucratic nature for dealing with detections and across-border tuber movements, in particular between PCN free zones once they are recognised.”

helpful in gauging what still needed to be incorporated into the plan.

“In the consultation the growers and industry people contributed a lot of very valuable comments and these are really helping now as this plan is in the process of being revised and the comments that the growers and participants put in are important to make it a workable document.”

“The next step is then for the states to underwrite the plan. With a disease like that, if it is not managed, it can really affect the economy of potato production. It’s a huge cost to manage that disease once it has become established and we’ve got enough examples of that from Europe, where it costs them a lot of money to manage that disease because they now have it in their soil. It does affect yields and it will affect export potential. It would be hugely negative for the industry.”

Dr Blaesing said that the meetings assisted in emphasising that PCN was a

THE BOTTOM LINE

- One of the key components of the National PCN plan is to harmonise state regulations so PCN management follows standardised rules.
- The plan will assist in Australia’s market access to PCN free countries as regions free from contamination will obtain a qualification regarding the area free from PCN.
- National consultation has prompted revision of the plan to accommodate input from growers, state regulatory representatives and key industry figures.

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 Project Number: PT10024



AUSVEG CEO Richard Mulcahy addresses potato growers and key industry players at the Warragul meeting.



Knowing our psyllids

Practices for monitoring and identifying foreign and native potato psyllids in Australia have been developed in an effort to create an early warning and detection strategy to keep the destructive Tomato-potato psyllid at bay, writes Karen Shaw.

Regular monitoring of potato crops in Australia's south eastern states has found no evidence of the Tomato-potato psyllid (TPP)-an insect associated with the disease Zebra chip which has crippled the New Zealand potato industry.

The monitoring is just one part of a major research project that also aims to identify native psyllids and learn more about phytoplasma-a bacteria-like organism that can affect potatoes.

The research project is funded with voluntary contributions from Simplot Australia Pty Ltd, McCain Foods (Aust) Pty Ltd, Snack Brands Australia, Smiths Snackfood Company, and the Tasmanian Seed Certification Scheme that are matched by Horticulture Australia Ltd.

Plant pathologist and research leader, Dr Calum Wilson, believes project results will be vital in establishing a much needed national TPP early warning and detection strategy.

"We want to ensure that if the insect reaches Australia, it's discovered quickly and authorities are advised so that strategies may be put in place to

eliminate it as soon as possible. We need to be vigilant about protecting crops from this terrible pest," he said.

The adult psyllids are about 3mm long, with distinctive dark and light body stripes and veined transparent wings that

causes leaves to yellow and wilt. The adults are excellent fliers and can quickly spread through crops or in the wind.

"This method of spreading provides a potential method for entry to Australia, on wind currents from New Zealand, and

evidence of the insect here. It's to our advantage that the pest is more prevalent in warmer conditions found on New Zealand's north island," he said.

While the psyllid is a pest of potatoes and other solanaceous crops, what's really concerning for growers is that it's a known vector of *Candidatus Liberibacter psyllaerosus* (or *Liberibacter*), a bacterium that is associated with Zebra chip.

This disease darkens tuber flesh when it's cooked and has been a major problem in New Zealand, costing growers about \$60 million in lost production during the 2008-2009 season. To complicate things further, another bacteria like pathogen (a phytoplasma *Ca. Phytoplasma australiense*) has also been found in some Zebra chip-affected plants in New Zealand.

"Important research is underway in New Zealand and the United States to better understand the relationship between *Liberibacter*, the phytoplasma and the psyllid, and the effect each has on potatoes," Dr Wilson said.

"We are really looking forward to the findings."

Dr Wilson said there were many

“ We want to learn more about the forms of phytoplasma that exist in potato tubers and to understand more about whether there are any links with the native psyllids. ”

are held over the body. The nymphs are initially yellowish but become the same colour as leaves when almost mature, making them difficult to detect.

The nymphs feed on foliage and secrete toxic saliva that

we have been closely watching the weather in case favourable winds carry the psyllids across the Tasman," Dr Wilson said.

"In March we noticed unusual winds blowing from New Zealand but have found no

continued over page ►

The adult potato psyllid. Photos courtesy of the New Zealand Institute for Plant & Food Research



The potato psyllid at nymph stage



different forms of phytoplasma. “For example, purple top wilt in potato is associated with a phytoplasma called *Candidatus Phytoplasma americanum. Ca.*” he said.

“Phytoplasma australiense has been found in Australia before, but to our knowledge not on potatoes.”

“We want to learn more about the forms of phytoplasma that exist in potato tubers and to understand more about whether there are any links with the native psyllids.”

“We are working with a team from Agriculture Victoria and will later in the year start collecting plant and psyllid samples from crops throughout Australia for diagnostic analysis,” he said.

Field work

Dr Wilson believes the most important part of this three-year project is setting up systems to monitor crops for early detection of the Tomato-potato psyllid if it arrives in Australia.

Monitoring started earlier this year, when sticky traps were placed on the centre and edge of paddocks across the eastern seaboard from Tasmania to Queensland. The traps were changed weekly and examined.

“The traps examined to date contained low numbers of native

psyllids,” Dr Wilson said.

The trapping and monitoring were introduced after the research team that included Dr Wilson returned from a fact finding visit to New Zealand.

“We needed to update our knowledge, learn what’s being done in New Zealand and discuss how we can work together on future research,” he said.

“The only way to be on top of this pest is to keep monitoring and be ready for action if it appears.”

The New Zealanders are now hopeful that a psyllid management program can be introduced to save their industry. Many growers were using regular, blanket sprays of insecticide for control. But Australian Integrated Pest Management expert Dr Paul Horne is working with the industry to develop a strategy

to help reduce chemical use and protect beneficial insects. Research is also underway to find psyllid resistant varieties.

“The New Zealand farmers realise it’s a problem that’s not going away, and they are doing everything possible to find an economically viable solution so that they can continue to grow potatoes,” Dr Wilson said.

“There is obviously a great

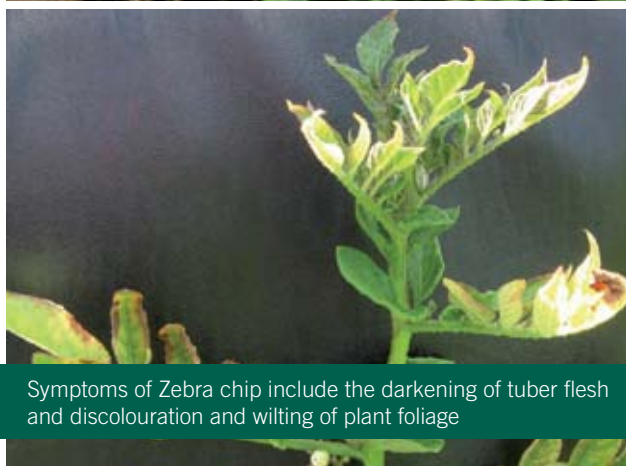
deal of concern here about TPP. It’s clear that the key is early detection. Everyone needs to be on high alert and it’s important that anything that looks like a sign of the psyllid is reported to authorities immediately.”

“The only way to be on top of this pest is to keep monitoring and be ready for action if it appears.”

THE BOTTOM LINE

- An Australian research project that is developing an early monitoring system to detect Tomato-potato psyllid (TPP) will also analyse potato and psyllid samples to learn more about phytoplasma-bacteria-like organisms that can be associated with disease-and identify the native psyllids found in or around potato crops.
- Results of the three-year project will provide integral data for a national TPP early detection strategy. Potato and insect samples will be collected Australia-wide for diagnostic analysis and further understanding of phytoplasmas, their potential vectors and their associated symptoms in potatoes.
- Entomology and bacteriology experts from Agriculture Victoria are working closely with researchers to help identify native psyllids and survey for phytoplasmas in potatoes.

For more information please contact:
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Project number: PT10001



Symptoms of Zebra chip include the darkening of tuber flesh and discolouration and wilting of plant foliage



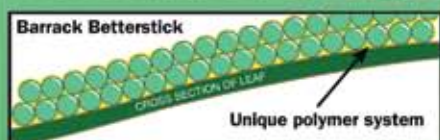
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Manipulating the ratio of K:Mg in potato soils to reduce Common scab disease

International collaboration between Australia and Canada is increasing the understanding of Common scab disease control.

Researchers at the Department of Primary Industries Victoria and A&L Canada are reducing the amount of Common scab by manipulating the ratio of potassium and magnesium in growers' fields. This research is part of the new APRP2 program called 'Soil health and disease mitigation' led by Dr Ian Porter and Dr Tonya Wiechel.

Common scab is a significant soilborne disease caused by pathogenic strains of the filamentous bacteria *Streptomyces*. Pathogenic strains of *Streptomyces* produce phytotoxins (thaxtomins). The Common scab symptom is the potato tuber's response to the toxin of the pathogen.

Control strategies for the

“We found that the K:Mg ratio of soil influenced Common scab disease on potato tubers at harvest.”

management of Common scab are thin on the ground.

The research team is investigating the value of nutrient amendments in Common scab disease control on trial sites in the Cora Lynn district in Victoria.

Dr Wiechel said: “We are finding that manipulating the ratio of potassium (K) and magnesium (Mg) prior to planting potatoes can significantly reduce the level of Common scab on tubers at harvest.”

The work builds on promising results from APRP1.

“Our previous research included surveys of growers' fields to discover which soil nutrient factors influenced Common scab disease,” she said.

“During this study we measured the level of soil nutrients and the amount of pathogen DNA at planting to identify which soil nutrients may influence the amount of disease. At the same time, Canadian researchers were doing a similar study and we both found that the K:Mg ratio of soil influenced Common scab disease on potato tubers at harvest.”

In Canada, Dr George Lazarovits from A&L Biologicals said: “The initial results came from a study examining the soil adhering to tubers collected from tubers near the end of their growth stage. We analysed them for all the chemical components and did some serious statistics on trying to unravel if there were any chemical relationships at all.”



“The K:Mg ratio came up as a strange relationship where low and high ratios both seemed to have high scab, but at around 0.4 the scab was much lower. This is still a correlation but many growers indicate that it is working for them.”

In Canada, A&L Canada has been involved for over 25 years with studies that identified an issue with Common scab and low Mg in soils. In-field observations and research found that Common scab was more serious when K and Mg levels were out of balance.

Greg Patterson, President of A&L Canada said: “Prince Edward Island has a serious Common scab problem and in this situation we recommend growers apply liberal applications of Mg from sulfate of potash magnesia to reduce this production problem and increase quality and yield.”

As the Mg increases in these fields over time with continuous application of Mg, the K:Mg ratio comes into line at the required 0.4. This can take three to five years depending on the degree of imbalance that existed originally in the field. Field trials in Australia are being performed to determine the ratios required under Australian conditions.

Canadian growers are seeing the results with cleaner marketable potatoes, better yields and quality, and the ability to grow a marketable crop in

rotation with the potato in Prince Edward Island.

In Australia, the current focus of this research in APRP2 is applying different forms of potassium and magnesium at planting to get the right K:Mg ratio at tuber set, when potatoes are most susceptible to infection. The Common scab susceptible variety Simcoe has responded favourably in the trials.

As part of the APRP2 program, the DPI Victoria team

“ The current focus of this research in APRP2 is applying different forms of potassium and magnesium at planting to get the right K:Mg ratio at tuber set. ”

is trying to understand how the K:Mg ratio reduces Common scab. Does the K:Mg ratio have a direct effect on the survival of the pathogen, or does it block the production of the thaxtomin toxin?

Therefore, there are two approaches to the research. The first approach investigates the survival of pathogen, and team member Mark Wardzynski has been measuring the

survival of *Streptomyces* under different ratios of potassium and magnesium in laboratory experiments.

“Preliminary studies show that different levels of potassium and magnesium may not effect the survival of *Streptomyces*,” Mr Wardzynski said.

The second approach investigates the potential of the pathogen to produce the toxin. Dr Arati Agarwal, Plant Molecular Biologist within the DPI team has developed novel

gene expression in the pathogen *Streptomyces*. This method will be applied to see whether modifying levels of specific nutrients interferes with thaxtomin gene expression.

The goal of the research is to understand how to manipulate soil nutrients to minimise losses caused by Common scab disease, while maintaining or promoting potato yields.

THE BOTTOM LINE

- DPI Victoria and A&L Canada researchers are having success in reducing Common scab by manipulating soil nutrition.
- This research will lead to an enhanced understanding of the disease suppressive effect of soil nutrients.
- Common scab is a soil borne disease which is an accompanying symptom of the potato tuber's response to toxin of the pathogen.
- This article was contributed by Tonya Wiechel and George Lazarovits.

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Project Number: PT09026

methods to measure thaxtomin gene expression in pathogenic strains of *Streptomyces*.

“This technology is widely used by scientists working in the cancer research field to detect changes in human gene expression caused by cancer,” Dr Agarwal said.

Preliminary results are promising, confirming that RNA technology can be used to rapidly detect thaxtomin



Common scab symptom in potato tubers

The enduring Tasmanian grower

With involvement in the potato industry including being a representative on the Tasmanian Agricultural Productivity Group, Vegetable Councillor for The Tasmanian Farmers & Graziers Association and a past member of the Processed Potato Industry Advisory Committee (IAC), David Addison has been fighting for the interests of the potato sector for many years, writes Caitlin Rode.

David Addison grew his first potatoes in 1971. Over the past 40 years he has experienced his share of trials and tribulations, from broad changes across the industry to more specific changes in the way growers operate, in areas including soil management and the environment.

Driving his Ute around the winding bends of the road in his home town, Mr Addison recalled his family's long history in the area and his outlook on potato farming in the north west of Tasmania. In 1863, Mr Addison's great grandfather settled in the area, starting the family's long-term involvement with agriculture in the region.

A second-generation grower himself, he took me on the scenic route back to the family farm. As car gears changed and houses were seemingly

separated by miles, we came to a hill where at its peak revealed the incredibly vibrant, lush green grasses and rich burgundy soils of Moriarty.

With the state's potato production representing some 70 per cent of Tasmania's entire vegetable industry, a substantial amount is grown for processing.

Mr Addison said that all of his potatoes were grown for French fry production, with the majority supplied to processing giant McCain.

A hard season

The most recent season has proved to be more difficult than any other year on Mr Addison's 250-hectare farm. With unprecedented levels of winds and rainfall, it has been a hard battle against Mother Nature.

"Tasmania was no exception to anywhere else on the east

coast of Australia and suffered a lot from the high rainfall through the summer time," he said.

"When you're trying to mature crops and harvest them across all our production-it compromised that significantly beyond anything we've ever experienced in the past."

The recent growing season proved to be so hard in fact, that Mr Addison experienced a 30 per cent loss.

"Potatoes were down 30 per cent, which was just something we've never experienced before; you know five per cent either side would be what you'd normally experience. You've got some (potatoes) compromised at an early stage then a month later it got another hiding, four weeks later it got another hiding and by the time it got to the next hiding there wasn't much left to cry about," he said.

Alongside Mr Addison through this tough growing season has been Senior Agronomist from Serve-Ag, Doug Green. Contributing crop management plans and soil nutritional strategies, Serve-Ag has been involved with Mr Addison for 21 years, and the two catch-up frequently to maintain risk management for the farm's crops.

"The high rain plus the high wind smashed the crops," said Mr Green.

"Potatoes were probably around week 10 to 12 when the January rains hit and it just blew them apart, and crops will not grow there if they get smashed at that early stage."



David Addison and Senior Agronomist Doug Green



Grower Information

Producer: David Addison
Region: Moriarty, Tasmania
Growing: Processed potatoes
Farm size: 250-hectares
Accomplishments: An AUSVEG Director, former member of IAC, representative on Tasmanian Agricultural Productivity Group

 Moriarty,
Tasmania

Soil management

Moving forward, Mr Addison, with assistance from Mr Green, is taking a close look at the farm's soil structure and sustainability by monitoring nutritional elements and also trying to prevent damage to the soil due to compaction.

"We started monitoring nutrition and doing soil tests in the first instance 15-years ago or more," Mr Addison said.

"The information we got from that progressed and we then recognised that we were reading the nutrition levels and applying nutrition but the moisture wasn't necessarily there."

"So when we started to manage the moisture we were able to bring the two to optimum levels to try and get the best yield. If you've got a window of 120-140 days to grow a crop, and 20 per cent of those are too dry and they're not growing, you miss your yield. So you need to time manage the moisture nutrition," Mr Addison said.

Another key problem concerned with soil health is compaction. This is due to heavy tractor tires rolling alongside potato crops.

"You get different levels of compaction and soil types in paddocks...so we started to have breakouts where it started to go rotten, because there might be a pocket that's either had excessive compaction or it has higher clay content in the

soil," he said.

To combat these issues of soil compaction, Mr Addison is leaning towards a controlled traffic approach, which essentially controls the lines of tractors and equipment.

"It's all machinery to tracks so that where your plant is growing free of compaction as much as possible. If you can reduce compaction then you can probably then start to lift the moisture and the nutrition a little more."

Mr Addison said that if he

diseases as those occurred under compacted and water logged areas.

Local developments

The Sassafras Wesley Vale Irrigation Scheme, visible from Mr Addison's property, is a joint venture between the Federal and State Governments and Tasmanian growers. The project has been set in motion in an effort to support Tasmania's growth in the agricultural industries.

With costs estimated to be

will open a new opportunity," he said.

"The water will give people confidence to invest and other people confidence to come into the community."

Future challenges for potatoes

The major threat for potatoes in the future is imported produce, Mr Addison said. With lower production costs overseas and subsequently lower prices available to consumers, Australia's vegetable producers are having a hard time meeting the competition.

"That is what's challenging our markets...the imported stuff is just cheaper than what we can do it for in Australia and I dearly wish we could halve our production costs so that we could be profitable and meet that competition," said Mr Addison.

Mr Addison spoke about the issue of country of origin labelling. He said he could understand how the consumer could be confused by the vagueness and lack of detail about where produce had come from.

"Country of origin labelling is important because it gives people the option to pick up Australian produce if that's what they want to buy," he said.

Looking forward to what the next season of growing in Moriarty will bring, Mr Addison is eager to take on the challenges and rewards which lay ahead.

“Country of origin labelling is important because it gives people the option to pick up Australian produce if that’s what they want to buy.”

avoided driving on the paddocks altogether, then it would recover within two years, however, putting a single wheel track on the soil would damage its quality by some 60 per cent.

Mr Green also favoured the controlled traffic approach for the benefit of the soil, stating that over time the environment was of a better quality and it would be less likely to have issues with root and soil

\$12.28 million, the irrigation scheme will see 5,460 millilitres of water supplied annually over 150 days of the growing season.

Mr Addison believes the project will benefit the North West Tasmanian community immensely, bringing a renewed outlook on agricultural production and attracting a wider community also.

"That will be a fantastic thing for this community—I think it



David Addison at the Cherry Hill seed cutting plant, in north west Tasmania



One of the pivot irrigators on Mr Addison's farm



Sam Calameri, Baldvis Market Gardens, potato/carrot grower with Rohan Prince, Development Officer, Department of Agriculture and Food WA

Improving fundamental growing elements through good farming practices

Better practice and the integration of knowledge is the key to improving the bottom line for Western Australia's potato growers, David Hastie reports.

Over the last 15 years, the Department of Agriculture and Food Western Australia (DAFWA) has been striving to identify better growing techniques to ensure the long-term survival of the vegetable growing industry in the state.

DAFWA's latest research aims at converging nutrition and irrigation studies into the one project in a bold bid to identify methods to help improve soil health and function in the infertile coarse sandy soils of the Swan Coastal Plain.

Five demonstration sites on grower properties—three in the northern metropolitan zone and two in the southern metropolitan zone—will be used and will trial a mix of crop types and production methods.

The project will closely monitor irrigation, soil moisture, soil nitrate and nitrate leached

to demonstrate the adequacy of the evaporation-based irrigation and adopted fertiliser schedule and to monitor the environmental impact of

zone) are recognised within the industry as leading innovators. They are Sam Calameri of BMG (2011 AUSVEG Grower of the Year), and Joe Castro of Castro

Australian Government. In conjunction with vegetablesWA, DAFWA has commenced work on the 'good practice vegetable production' project. Currently in the implementation stage, the program will run for three years.

DAFWA Senior Development Officer Bob Paulin said the aim of the project was to better understand soil health, as well as to get growers to talk about their growing methods and techniques in a bid to see growers in the region improve their bottom line.

"It really is about improving growers' bottom lines and improving their returns," Mr Paulin said.

"But the focus on how you achieve that is on integrating all of the knowledge that we have got in the areas of nutrition, fertiliser management, irrigation management, and more recent ideas about how we can make

“It really is about improving growers' bottom lines and improving their returns.”

practices. Crop performance and improvements in soil health will also be recorded.

The selected potato growers participating in the project (both from the southern metropolitan

Farms, a significant potato and carrot grower in the region.

The project has been funded by HAL using voluntary contributions from industry and matched funds from the

the soil function better so that the whole process becomes more efficient."

"It's a continuation of work that we have been doing now for many years. We used to do a lot of work looking at nutrition and then we started looking at irrigation."

"Then we started to put the two together and now this work is really trying to move beyond just irrigation and fertiliser and start looking at things like soil quality."

The production of quality potatoes in the sandy soils of the Coastal Plain requires the application of relatively large quantities of water and fertilisers. As far back as 1996, the DAFWA began to look closely at the benefits of using compost, not only to enhance

vegetable production, but for horticulture in general.

Mr Paulin said the project was encouraging growers to move away from traditional fertilisers such as chicken manure and embrace more environmentally friendly alternatives.

"It's really about whether we can manage the soils for better performance under vegetable production," he said.

"If you do that, you are maximising your ability to utilise irrigation efficiently and minimise fertilisers' losses."

"Also what I have come to realise during the course of the research is that every grower has a different system and some guys are doing things better than others. So we took the next step to actually work with

growers and look at integrating new systems."

Despite the region's infertile soils—which extend 100 km north and south of Perth—with the help of the research, potatoes are grown right across the Coastal Plain and are no longer restricted to the traditional growing regions such as Manjimup-Pemberton. Mr Paulin likened the soil to that of the Mt Gambier region in South Australia, where potato growers have had to learn how to manage the soil to get the best results possible.

"We grow potatoes right up the Swan Coastal Plain because we can use the different climatic zones, so we can extend our potato production which means we can pretty much plant crops all year-round," Mr Paulin said.

The project will also provide field walks at the demonstration sites north and south of Perth, starting in August.

THE BOTTOM LINE

- The project will continue the operation of five previously established 'good practice' demonstration sites to gauge the quality of vegetables produced and levels of loss associated with current good farming practice.
- Sites will show growers how to implement efficient irrigation design, evaporation-based irrigation scheduling, '3Phase' fertilising and soil health improvement.
- Growers will learn from real case studies and through interaction with researchers. They will also be given the opportunity to take part in field walks at the demonstration sites north and south of Perth in August and will be encouraged to visit each others' properties and share their ideas and observations.

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 Project number: VG10082



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Ask the industry

with
Scott Mathew



Scott Mathew, Technical Services Lead from Syngenta

Weeds are a common nuisance encountered by growers and dilemmas can arise when they develop a resistance to frequently used herbicides. Scott Mathew answers your questions in this edition of Ask the industry.

Question: Why am I starting to find that some herbicides that I have used in the past are no longer working as well?

Well there could be a number of reasons for this and I will try and cover a couple of the most likely.

The first cause could well be that you have developed or are developing herbicide resistance due to the intensive use of herbicides in horticultural crops for weed control.

When a particular herbicide's mode of action (MoA) group is used repeatedly over a number of years (Herbicides from the GROUP A mode of action e.g FUSILADE FORTE, Sertin or Motsa etc) you are selecting for resistant strains of grass weeds to that herbicide MoA group, and this can occur in as little as 3-4 years.

Remember that the resistance risk is the same for products having the same mode of action. Also, in any weed population there are likely to be a small number of individuals that are naturally resistant to herbicides, even before the herbicides are used.

Question: What influences the development of herbicide resistance?

There are a number of factors that can influence the development of herbicide resistance, however, the four main factors are:

- The intensity of selection pressure and frequency of use, which refers to how many weeds are killed by the herbicide and the number of years of herbicide use, which is a good measure of selection intensity.
- The frequency of use of a herbicide or mode of action group.
- The frequency of resistance present in untreated populations. If the frequency of resistance is relatively high, such as with GROUP A (FUSILADE FORTE) herbicides, resistance will occur quickly. If the frequency is low, such as with GROUP M (Glyphosate) herbicides, resistance will occur more slowly.
- The biology and density of the weed-weeds that produce large numbers of seed and have a short seed bank life in the soil will evolve resistance faster than weed species with long seed bank lives. Resistance is also more likely to be detected in larger weed populations.

Question: What should I look for, or do, if I think I may have herbicide resistance population of weeds on my property?

- Assess the efficacy of a product/s after application.
- If a failure is suspected do not use the same product or a product from the same mode of action group.
- Test the resistance status of the weeds in order to confirm if resistance exists and the level of resistance you may have.
- Seek advice from local advisers (agronomists).
- Rotate herbicides to another effective mode of action the following year to help prolong herbicide effectiveness.
- Control weed survivors before they set viable seed.

Question: Are there any other reasons why a herbicide application may not have achieved the desired result?

You need to ensure when applying the herbicide that you do so correctly-the majority of herbicides require good coverage of the target area to ensure the best possible chance of controlling the weeds. Along with this you need to make sure your spray equipment is properly maintained and calibrated before use to achieve the best result.

Finally, you need to follow the full label directions for the herbicide you choose to use and always use the recommended label rates, nozzles and spray volumes.

Ask the industry

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

Heading to Hobart



The AUSVEG National Convention, Trade Show and National Awards for Excellence is set to take place in Tasmania in 2012.



Following the staggering success of the 2011 AUSVEG National Convention held at Brisbane's Sebel-Citigate Hotel, where close to 1,000 delegates attended, AUSVEG and Minister for Tourism the Hon. Scott Bacon have announced Hobart as the destination for the 2012 event. Creating a sensation for the third time from 10-12 May, the 2012 National Convention, Trade Show and Awards for Excellence will showcase an exciting program of events, impressive speaker sessions and exhilarating entertainment.

To be held at Wrest Point Hotel Casino in Hobart, it is estimated that the 2012 Convention will generate approximately \$1

million in expenditure for the Tasmanian economy, featuring new events and a fantastic social program.

Now the biggest event of its kind in Australia's horticulture industry, the Convention will bring growers together with members from all areas of the industry's supply chain for an invaluable networking experience.

AUSVEG National Marketing Manager Simon Coburn said: "AUSVEG is very excited to be taking the 2012 National Convention to Hobart. It is undeniably one of the most beautiful cities in Australia and Wrest Point Hotel Casino set against the stunning backdrop of the River Derwent

is the perfect venue to host the event."

"The Convention will run for three days, but we are encouraging our delegates to bring their families, make a holiday of it and enjoy all Hobart has to offer."

The Trade Show is a fundamental part of the National Convention and promises to be packed with significant industry leaders from the supply and services sectors, as well as key figures involved in research and development.

The event will also showcase numerous high-profile and influential speakers, as well as industry experts, who will share their knowledge with delegates through a timetable of speaker

sessions.

During the final evening of the National Convention, the coveted National Awards for Excellence and Gala Dinner will return to recognise the achievements of some of the vegetable industry's most valued members during an evening celebration.

AUSVEG is set to make more exciting announcements about the 2012 National Convention in the upcoming months. For now, growers and industry stakeholders are urged to save the date and show their support at this influential event next year.

For more information contact AUSVEG on (03) 9822 0388 or email convention@ausveg.com.au.

Pre-empting the potato psyllid through IPM strategies

Paul Horne and Jessica Page from IPM Technologies are developing ways of dealing with Tomato-potato psyllid involving minimal use of insecticides.

Potato psyllid, also known as Tomato-potato psyllid, is now a major pest of potato crops in New Zealand, having arrived there a few years ago (probably from the USA). It can devastate potato crops by a combination of direct feeding damage and through transmission of disease. Losses of 80 per cent or more have been reported and some growers have stopped trying to grow potatoes because of the pest.

To deal with the pest in New Zealand, most growers apply weekly sprays of insecticides. The insecticides used usually include broad-spectrum types such as methamidophos (*Nitofol*) and lambda-cyhalothrin (*Karate*), which of course would kill any beneficial species in the crop that would be controlling other pests such as aphids, potato tuber moth and thrips.

Obviously, to follow the same path in Australia to deal with the pest would not be desirable, but

“ Potato psyllid can devastate potato crops by a combination of direct feeding damage and through transmission of disease. ”

what else can be done?

The project

The Australian potato industry and Horticulture Australia Limited, with further support from Horticulture New Zealand and Plant and Food Research (NZ), have funded a project led by Paul Horne and Jessica Page (IPM Technologies P/L) to try and find a way of dealing with this pest in a way that is compatible with the Integrated Pest Management (IPM) strategies that are used by many Australian growers, involving integrated use of insecticides.

Potato psyllid is not yet present in Australia and so this project aims to find a solution for Australian potato growers before it causes damage here. That of course meant that most of the work needed to be conducted in New Zealand rather than Australia.

The project had two distinct phases: the first was to make sure that there were insect

predators that would eat the psyllid; and the second phase was to trial an IPM approach using a combination of insect predators, cultural (management) options and limited use of selective insecticides in commercial crops.

The first step in the project was to look at possible predators of potato psyllid that occur in both countries. Three species were found that are common in Australia and are also found in New Zealand. These were the Brown lacewing (*Micromus tasmaniae*), Damsel bugs (*Nabis kinbergii*) and the Common spotted ladybird (*Harmonia conformis*). The first two species (Brown lacewings and Damsel bugs) are already extremely important in Australian potato crops, helping to control aphids and caterpillars, especially potato tuber moth. The ladybird species is not the most important species in Australian potato crops, although it does occur there, but

continued over page ►

Brown Lacewing. Insect images courtesy of Denis Crawford

The Potato psyllid

- Potato psyllid (*Bactericera cockerelli*) is a tiny insect that as an adult resembles a cicada that is only a couple of millimetres in size.
- Nymphs are flat flakes that sit flat on the leaves just like scale insects.
- Both adults and nymphs suck sap.
- The psyllid can transmit a disease (*Liberibacter*) that causes 'Zebra chip' in processing potatoes.
- The psyllid is eaten by a range of generalist predators that already occur in potato crops, including: Damsel bugs, ladybirds, Brown lacewings and hoverfly larvae.



is found in both countries and so was used as an indicator of how ladybirds might react to potato psyllid.

Laboratory trials

Plant and Food Research entomologists were then asked to test these species in the laboratory to see if they would accept psyllids as prey. The answer was 'Yes', all three species would eat the psyllids. Not only that, but all life stages of the three species would eat all life stages of the psyllid. This was an essential start to the project as some confidence in the fact that there was a biological control component that could be used was required.

The next stage of the testing was to give the predators a choice of food, not only psyllids. The question was: 'If there is alternative food available, will they still eat psyllids?' Once again, the answer from the tests came back as 'Yes'. Researches established that generalist predators that we rely on in Australian potato crops could be expected to also prey on psyllids if they arrived.

Field trials

To then go into the field and test a strategy that involved predators and selective chemicals was not so

straightforward. The type of control that these predators give cannot be tested in small plot trials. Researchers needed paddock-scale sites and of course without the use of broad-spectrum insecticides. Given the degree of damage that potato psyllid can cause, it was to be expected that finding a co-operating farmer would be highly difficult.

However, in South Canterbury (south of Christchurch) researchers found an agronomist and farmers who were interested in reducing pesticide applications. The psyllid pressure here was not as high as in the North Island.

Discussions on pesticide use were productive and for some crops the use of more selective products only was considered possible. Observations on the crops during the course of the season allowed decisions to be made that reduced the insecticide applications to well below the weekly applications considered necessary elsewhere. Most importantly, there were no reports of Zebra chip after harvest from these sites.

These were not formal replicated trials but simply observations on an overall proposed strategy that combined biological and chemical controls in real

commercial crops. More detailed observations will be carried out in the coming season in New Zealand at a small number of sites, and the use of possible cultural controls to enhance numbers of beneficial species will also be investigated.

An important point with the use of beneficial species is that far more species are possible predators than the three species that were tested in the laboratory. Those three were chosen because they occurred in both Australia and New Zealand. There are also species of hoverflies and other predatory bugs (e.g. species of *Orius*) that are known to prey on potato psyllid in New Zealand, but those species do not occur in Australia. While Australia has a set of closely related species that are highly likely to prey on the psyllid as well, researchers will not know for certain until the pest actually is present in Australia.

IPM for Tomato-potato psyllid

At the conclusion of this project the researchers hope that there will be another option for control of potato psyllid if it arrives in Australia. However, only growers using an IPM approach for all pests will be able to use the strategy properly, as

insecticides targeting any pests may disrupt the biological control of psyllids. Recognising the range of predators that we have in Australian potato crops will become even more important for farmers and advisors if and when this pest arrives.

This project is part of APRP2. The researchers would like to particularly thank Duncan McLeod (Seed and Field Services (SI) Ltd) for his interest and collaboration in the field.

THE BOTTOM LINE

- Collaboration with New Zealand is enabling the development of an Integrated Pest Management system for the control of potato psyllid.
- Results show generalist predators that we rely on in Australian potato crops could be expected to also prey on psyllids if they arrive.
- Preliminary field results are extremely encouraging and will be further tested in upcoming potato seasons.

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Damsel Bug

“Potato psyllid is not yet present in Australia and so this project aims to find a solution for Australian potato growers before it causes damage here.”

Soil solutions

with Rohan Davies



Hollow heart

Rohan Davies, Research and Product Development Manager at Incitec Pivot Fertilisers, considers what can be done to reduce hollow heart in potatoes.



Rohan Davies

Question: What can be done to reduce hollow heart in potatoes?

The key to reducing hollow heart in potatoes is to limit crop stress.

This means maintaining consistent soil moisture, ensuring balanced nutrition for the crop and using quality seed at the appropriate spacing and timing.

Maintain consistent soil moisture

Depending on the crop stage, water stress can reduce the number of tubers set per plant, reduce tuber size and cause misshapen potatoes or reduce dry matter and specific gravity.

If hollow heart is a problem, it may be that the crop suffered water stress during potato sizing.

Remember that the vast majority of a potato crop's moisture is extracted from the top 25cm of soil.

To maintain consistent soil moisture on heavy soils, growers

may need to investigate better drainage systems. In some cases, it may be necessary to take some paddocks out of potato production, or use variable rate irrigation technology, so that you can better focus on land where yields can be maximised.

Ensuring balanced nutrition

For best results, it is important to select paddocks with an optimum pH and level of soil fertility.

Check that soils have adequate potassium levels, as this has been shown to reduce hollow heart (Christ, 1998).

Avoid growing crops with excessive fertilisation programs—ensure you tailor your fertiliser program to the variety you are growing and to deliver nutrients when the crop requires them—typically the maximum demands are between 50 to 100 days

from planting.

Use quality seed at the appropriate spacing and timing

Growers can select plant varieties that are less susceptible to hollow heart and plant for denser stands to help achieve uniform spacing. Wide plant spacing promotes the growth of bigger tubers which tends to increase the incidence of hollow heart.

Growers can also delay planting on fields that are prone to low soil temperatures and excessive wetness.

According to Christ (1998), low soil temperature (10 to 13°C continuously for five to seven days during tuber initiation) and high moisture tends to favour hollow heart, as does heavy irrigation after the plants are stressed.

Low soil temperatures are also an issue around bulking, as these conditions may harm pith cells which are capable of holding vast quantities of starch.

When favourable conditions return, a hollow cavity is formed where these cells once were, as the surrounding cells expand when the tuber continues to bulk.

i Soil nutrition questions

Please send your soil nutrition questions to *Potatoes Australia*.

Email: info@ausveg.com.au

Phone: (03) 9822 0388

The journey of the Atlantic potato

Rene de Jong, National Manager for Potatoes at Elders Rural Services, presents the ultimate chipping potato.

Who doesn't know of the Atlantic potato? Maybe those who don't associate with potatoes, but I'd be pretty sure everyone involved in potatoes does. The Atlantic variety is the workhorse of the crisping industry and serves many other processing industry markets.

Back in the mid 1980s I was helping Dr Roger Kirkham and Graham Wilson do trial work on Atlantic potatoes in the Koo Wee Rup area in Gippsland, Victoria and whilst the yields were challenging to obtain at the time, the crisping colour and specific gravities were excellent for the processors.

Was this the holy grail of the crisping industry? Well I think it was, as it had many of the attributes around the needs of the crisping industry and ended up replacing Kennebec, which was a poor crisping potato at the time. Whilst Atlantic has great cooking attributes, it also suffers from problems after medium to long-term storage with variable cooking colour, so timing of use for processing became critical.

Atlantic potatoes were bred in the United States and made it on the national listing for commercial use in the US in 1976. I recall the Australian release of Atlantic potatoes being around 1978, after a protracted importation process that took around two years.

Characteristics

The tubers are essentially round but can be slightly flattened, have a rough skin finish, off-white coloured skin, often have deep eyes and plants set 6-10 tubers. The tops are reasonably strong, root system relatively shallow and it grows to maturity in a relatively short to medium time, with a white flesh.

Some of the unique attributes of Atlantic include its medium dormancy and relatively high vigour (with the need to remove sprouts from the seed at least once to get better results).

Atlantic potatoes have a very low sucrose level during the first month or so after maturity, which allows the frying colour to be very light when used during

this time. However, it tends to be unreliable in storage due to variable crisp colour, which can relate to elevated sucrose levels and the effects of mechanical bruising. Due to high dry matter levels, mechanical damage causing bruising is an issue that requires particular attention at harvest time and during grading.

Take care

So I have given it a pretty good wrap to now, but here are some things to keep in mind when growing and handling Atlantic potatoes.

Seed—get the best out of Atlantic by conditioning the seed with a bit of warmth before planting. Traditionally, most growers would knock the sprouts off a few times to get more tuber set and while this works, we now have the complication of Potato Virus Y (PVY) being a problem and transmitted easily by sap sharing so this practice should only be done on seed known to be free from PVY.

After planting—because of the relatively shallow root system—Atlantic plants readily take up metribuzin (known by most as Sencor®, Lexone® or other generics) and other herbicides such as Linuron. Fertiliser use should be strategic to enhance quality attributes around cooking colour and dry matter—for example, high nitrogen will likely reduce cooking colour and reduce dry matter.

When mature, harvest gently, particularly after a hot season when the dry matter is likely to be higher than normal and black spot bruising will more likely occur. As Atlantic has a short dormancy, the potatoes should be dealt with to their markets within four to six weeks depending on heat units during the time around harvest and storage.

i For more information, please contact: Rene de Jong
Website: www.elders.com.au
Or your local Elders representative.



The Eighth World Potato Congress

set to take place in Edinburgh in 2012

For the first time, the World Potato Congress will be held in Scotland's capital of Edinburgh in 2012.

Hosted by the Potato Council, the 2012 World Potato Congress (WPC) will span from 27–30 May, bringing together over 600 delegates from around the world, including growers, producers, traders, processors and manufacturers.

The aim of the congress is to enable a global exchange of information between the world's potato specialists on all aspects relating to the potato industry.

The congress will also provide an opportunity for those who have technical or commercial interests to share ideas on improving industry aspects, including production and demand.

Delegates attending will be from across the international potato industry. Also attending will be key commercial players including equipment manufacturers, crop protection specialists, banking and finance experts, marketing specialists and scientists.

Delegates will have the opportunity to take part in a number of tours to see developments in the potato industry in Scotland and visit local growing and production

facilities.

Australian potato growers will (pending HAL approval) be given the opportunity of a lifetime to travel to Edinburgh as part of the 2012 WPC grower tour. The tour will be subsidised, making it an affordable and exciting experience to take part in.

Chairman of the Potato Council and considerable Edinburgh potato grower in his own right, Allan Stevenson, said that the event would be an opportunity to bring together the best in the industry where growers, packers and processors would benefit.

"As this is an international event bringing together regulators and key opinion leaders, there will be the opportunity for British growers, packers and processors to influence core EU regulatory issues and draw the attention of the media to the challenges currently facing the industry," he said.

"Furthermore, industry members will be able to take advantage of opportunities to view the latest R&D projects in which Britain continues to lead

the world."

With speakers including the United Kingdom's Government Chief Scientific Adviser, Prof Sir John Beddington, Mr Stevenson believes the congress will address key issues affecting the future of the world potato industry.

"Professor Beddington will examine the global challenges of food security in the coming decades and how policymakers can influence more sustainable intensification of agriculture with crops like the potato," Mr Stevenson said.

"I can see the potential to initiate and broker research projects through contact with scientific and technical communities. And just as importantly, through the extensive programme of keynote presentations, practical workshops and industry tours, delegates will leave with new ideas and strategies to benefit their businesses in the short term."



i For further information and for expressions of interest, please contact AUSVEG on (03) 9822 0388 or email info@ausveg.com.au.



Managing late blight in Papua New Guinea

A joint project by The Australian Centre for International Agricultural Research (ACIAR) in association with the International Potato Centre (CIP), the University of Queensland and led by the Department of Primary Industries Victoria (DPI) is deploying resistant potato varieties to manage Potato late blight disease in Papua New Guinea.

Potato late blight is known to be an extremely damaging disease. Characteristically aggressive, the disease can spread rapidly and destroy the foliage of a potato crop within a few weeks. Responsible for the destructive potato famines of the 1840s, late blight spread throughout Europe in Ireland and the Highlands.

The fungus causing Potato late blight, *Phytophthora infestans*, inflicts approximately \$10 billion of damage to crops every year across the world. In 2003, Papua New Guinea (PNG) experienced a devastating blow to potato production when an outbreak of Potato late blight spread swiftly throughout the highlands region in a matter of months, destroying all potato crops in its path. In the subsistence economy of highlands of PNG, the “English” potato is an important cash crop being sold in local markets or transported to major towns.

With a majority of farmers in Papua New Guinea dependent upon potatoes as an indispensable resource, for some small-holders, potatoes are principal crops.

The highly susceptible variety Sequoia requires fungicidal sprays every five to seven days. With the cost of buying seed potatoes, chemicals, knapsack sprayers and no mechanisation for spraying and harvesting crops, potato production is becoming out of reach for many smallholder farmers.

Australia’s involvement in this project could see local potato growers gain an advantage over Potato late blight through newly developed management plans against aggressive new strains and also potentially provide disease resistant potato varieties to be released in Australia.

The project

In 2004, a project was developed by The Australian Centre for International

Agricultural Research (ACIAR) in association with the International Potato Centre (CIP), the University of Queensland and the Department of Primary Industries Victoria (DPI) to introduce late blight disease resistant potato varieties into Papua New Guinea. And subsequently, to further develop cost effective management strategies for existing and new potato cultivars and to rehabilitate potato production for small-holders.

Leading investigator Dr Dolf de Boer from DPI Victoria became involved in the project in 2004. Dr de Boer had researched potato diseases over the past two decades, including Potato late blight, which had become a re-emergent disease with the spread of new aggressive and fungicide resistant strains from South America into the United States and Europe in the 1980s and 90s.

“The DPI got involved

because Potato late blight strains, or the new strains, were at the top of the list for the biosecurity plan for potatoes in Australia as an issue,” said Dr de Boer.

“And that’s how the Victorian State Government co-invested in this project, because we would learn about late blight and the new strains and how to manage the fungus.”

“Papua New Guinea was one of the few places it (Potato late blight) never got to until 2003. They had an epidemic of Potato late blight which they’ve never seen before there, and it just wiped out the potato crops as it spread right across the highlands.”

According to Dr de Boer, Potato late blight accounts for the highest proportion of fungicide use worldwide.

“The new aggressive strains are much more adaptable than the old strains and have broken the resistance of a number of varieties in Europe,” he said.

“Papua New Guinean farmers were mostly growing the one variety Sequoia, which proved to be very susceptible to late blight. The crop could be totally destroyed within a few weeks of the sprouts emerging from the ground. The fungus completes its life cycle within a week, producing lots of spores, defoliating the plants and spreading very quickly throughout the crop.”

Fifty nine potato clones (advanced breeding lines) were introduced into PNG on a number of occasions from CIP in Peru, mostly as tissue culture plantlets. These were multiplied up in the micro-propagation laboratory in Aiyura by the National Agricultural Research Institute (NARI). They were then planted in screen houses to produce the first generation of tubers (minitubers), followed by one to two generations of field multiplication by the Fresh Produce Development Agency (FPDA) at Tambul in the Western Highlands.

Several potato varieties developed by the CIP were tested in the field by NARI scientists through a series of preliminary, intermediate and advanced trials. The evaluation process was focused on testing resistance to late blight, their agronomic characteristics, whether they would grow well in the highlands of Papua New Guinea, tuber shape, number and yield and their taste and cooking characteristics.

While variety evaluation trials were underway, a series of fungicide trials were conducted to select the best treatment for the susceptible Sequoia so that farmers who could afford to were enabled to grow the variety.

Dr de Boer said: “After five years of trials, the 60 odd CIP clones were shortlisted to 12 that were resistant to late blight. These yielded as well or better than Sequoia and had promising agronomic and cooking characteristics. Those 12 were then put through a series of farmer participatory trials, in different locations which covered altitude, rainfall and so forth, across the highlands going from the east to west.”

“We have just completed the third series of those trials, and we’ve evaluated more than half of the 12 selections.”

“It’s quite an amazing achievement for NARI and FPDA to have screened nearly 60 clones and produced a shortlist. It takes a lot of effort and the biggest challenge was to ensure that there were sufficient quantities of seed produced for the trials.”

The strain of late blight that has been found so far in Papua New Guinea has been the A1 mating type and not the A2 type. A combination of the two different mating types (A1 and



Photographs courtesy of Dr de Boer

A2) will result in reproduction and genetic recombination, which will make the disease even more difficult to manage.

Challenges

A vital element of the project was to ensure that there was enough seed production for the trials and research to continue and progress efficiently.

Improving the capacity to produce mini-tubers and potato tissue culture plantlets (from Peru), then reproduce them into mini-tubers and to then multiply into the fields for trials has been a challenge.

Keeping seed production on track had been the greatest test, Dr de Boer said, where every month the tissue culture lab produced 10-14 thousand tissue culture plantlets to be sent to the FPDA. The plantlets were then grown in insect proof screen houses to produce the first generation of tubers (known as mini tubers). Then the mini tubers were planted out in the field for further multiplication.

The future for potatoes in PNG

At this stage, there have been two varieties officially released by the NARI. There are more varieties that still need to be evaluated through the farmer trial process, which could lead to several late blight resistant potatoes becoming available to farmers.

Dr de Boer said that the difference between the disease resistant variety and the old variety of Sequoia is that Sequoia must be sprayed with fungicides every five to seven days

to keep the crop alive and to make it productive. The resistant varieties will grow right through to maturity without needing a spray, so small-holders do not have to spend the money on chemicals and put in the time spraying these crops every five days.

The new varieties have another major advantage over Sequoia in that they produce good quality French fries. Much of the potato crop produced in PNG ends up in the local restaurants and snack bars.

The project has not only provided PNG with a selection of disease resistant potato cultivars, but provided NARI with the capability of evaluating potato varieties and disease control strategies. There are great benefits for Australian potato growers from this project, including emergency management plans in the event that new strains of the late blight fungus should ever come into the country.

Dr de Boer said that the challenge now was for FPDA to produce a consistent supply of quality seed potatoes of the new varieties.

“Their role will be to actively promote these varieties,” he said.

“They are being helped by strong demand from the small-holders in the highlands wanting to grow potatoes as a cash crop, so they will be grabbing any seed that comes out of the system, so I think there will be a very good uptake of these varieties.”



Papua New Guinean growers investigating disease resistant varieties



Symptoms of Potato late blight on plant foliage

For more information, please contact:
Dr Dolf de Boer
Department of Primary Industries Victoria
Email: dolf.deboer@dpi.vic.gov.au

Name: Brendan Gallagher

Age: 24

Location of farm: Waubra, VIC

Potatoes farmed: We grow potatoes for processing; French fry production.

Role in company: My dad and two brothers and I all help run the farm. We all do our part in labouring, growing and harvesting the potatoes.

How did you get into the industry?

Well it's a family-owned and run business. I'm a fourth generation grower.

Do you plan to continue farming into the future?

Yes. With things like the carbon tax coming in for the future I think it will affect the costs involved, but I know I want to be a grower. I wouldn't mind growing other vegetables as well maybe later on down the track.

What are some things you think could help ease the stress on Australian growers?

One of the biggest things affecting growers right now are cheap imports. It's hard for Australian farmers to compete with the lower prices as our costs are always going up. You've got production costs like fuel and then to be hit with a carbon tax as well—we need to address these import issues.

How do you think younger people could be encouraged back into farming?

Well I think that giving more incentives for people to

move to country areas would be good, or maybe supplementing fuel costs so that young people can afford to do the travel time to get to farms. Among younger people, a career in farming is kind of looked down upon—you know that farmers are not smart or are country bumpkins. But in actual fact, to be a farmer you have to be quite intelligent as you're planting, managing and harvesting crops and dealing with buyers continually—you are running an entire business.

What is the best thing about your job?

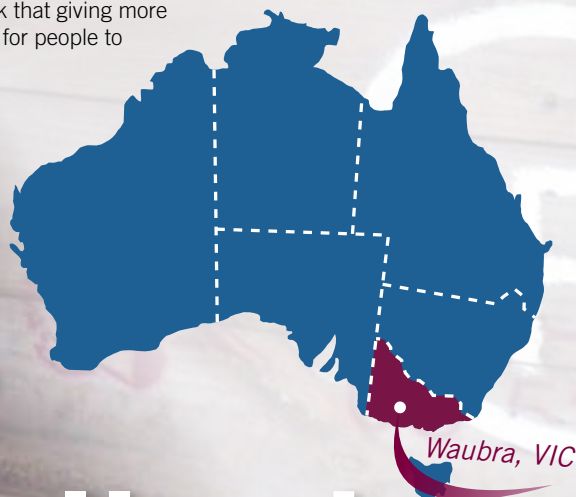
Harvesting a crop of potatoes that you have personally been looking after is very satisfying. If you produce a crop, you know that you've done your job to a good standard.

If you weren't farming, what would you be doing?

I might have become a builder or taken up a trade.

What do you like about Potatoes Australia the most?

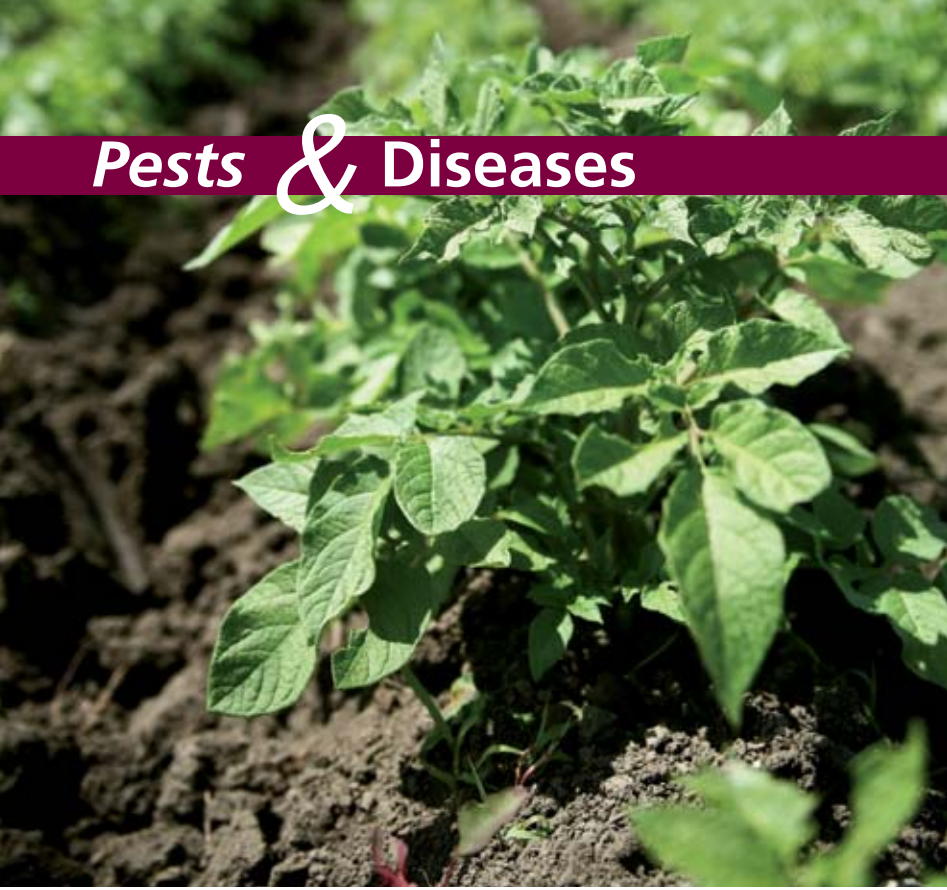
Definitely the grower profiles. It's good to see what other growers are doing, how they are travelling and what challenges they are facing.



Q&A

Young Grower

Brendan Gallagher



African black beetle control in potatoes

In this edition of *Potatoes Australia*, the Pests & Diseases Profile by Dow AgroSciences examines the African black beetle.

African black beetle (*Heteronychus arator*) is a serious pest of pastures and crops all around the world. It was first recorded in Australia 90 years ago and now is found in every state except Tasmania.

In Australia, while pastures are an important host, it is in potatoes that African black beetle are the most economically damaging.

The larvae and adults both attack the potato plant beneath the soil surface, chewing new stems (adults) and burrowing into tubers (larvae). Yield losses can be very significant and so effective control is a must. It is a large insect and because it lives predominantly underground, it is a hard pest to target with conventional sprays. Control can therefore be difficult and an Integrated Pest Management (IPM) approach is the best one to take.

When preparing for planting, paddocks should be kept free of weeds for as long as possible to minimise the land's attractiveness to the pest and to help starve any existing populations.

The fumigant metham sodium is often used during soil preparation three weeks prior to planting, as this is very good at reducing the weed seed bank and thus helps aid control of black beetle and also White-fringed weevil.

There are commercially available nematodes (*Heterorhabditis bacteriophora*) which attack black beetle larvae and these may offer effective control if combined with high soil temperatures and high soil moisture.

When it comes to insecticides, treatment options include Lorsban™ 500 EC. Lorsban 500 EC was first registered for

control of African black beetle in the early 1970s and is the only active registered in potatoes for control of this pest.

The beetle and its larvae live and feed underground, the treatment must be applied in such a way as it comes in contact with the pest soon after application. In this example Lorsban must be applied to the soil and worked in thoroughly, or washed in by rain or irrigation.

Repeat application may be required in heavily infested paddocks and, if it is needed, this second application is recommended at hilling-up.

Lorsban application for African black beetle control will also control most other soil-dwelling pests; this includes wireworms and the White-fringed weevil. It can also be used as a late treatment option for cutworms, vegetable weevil and wingless grasshopper control.

In summary

Control of the soil-dwelling insect pest complex in potatoes can be effectively achieved using an IPM approach:

- Paddock preparation by keeping weeds under control will minimise resident pest populations prior to planting.
- Lorsban at planting will give protection of tubers from African black beetle and most other subterranean soil pests.
- In certain circumstances, nematodes may also help give control of African black beetle larvae.
- Lorsban can be used later in the crop (as a spray or bait) for control of most other pests likely to invade.

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What's on

11 August 2011

Potatoes in Practice 2011

Where: United Kingdom

What: Sponsored by the Potato Council, Potatoes in Practice is the biggest field potato event in the UK and brings together variety trials and research in one place, making it one of the most important dates in the potato industry calendar.

Further information: www.scri.ac.uk

15-19 November 2011

Agritechnica 2011

Where: Hanover, Germany

What: The world's largest exhibition for agricultural machinery and equipment. With more than 355,000 visitors expected, the event will present new developments for the international agricultural machinery industry.

Further information: www.agritechnica.com

27-29 September 2011

PPMA 2011

Where: NEC Birmingham, United Kingdom

What: The UK's leading processing & packaging machinery exhibition, the PPMA Show offers an opportunity to see the latest equipment and technologies demonstrated live.

Further information: www.ppmashow.co.uk

10-12 May 2012

AUSVEG National Convention, Trade Show and Awards for Excellence 2012

Where: Hobart, Australia

What: Now the biggest event of its kind in Australia's horticulture industry, the Convention showcases speaker sessions, exhilarating entertainment and the impressive trade show. To be held at the Wrest Point Hotel-Casino in Hobart, the event will bring growers together with members from all areas of the industry's supply chain for an invaluable networking experience

Further information: www.ausveg.com.au or convention@ausveg.com.au

7-8 September 2011

Potato Europe 2011

Where: Tournai (Kain), Belgium

What: An international exhibition for the potato industry featuring breeding and inventory management in potato cultivation, fertilisation and protection of plants, potato production techniques in soil preparation and planting, delivery, storage and harvesting and storage preparation techniques.

Further information: www.potatoeurope.com



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