potatoes australia

August/September 2010

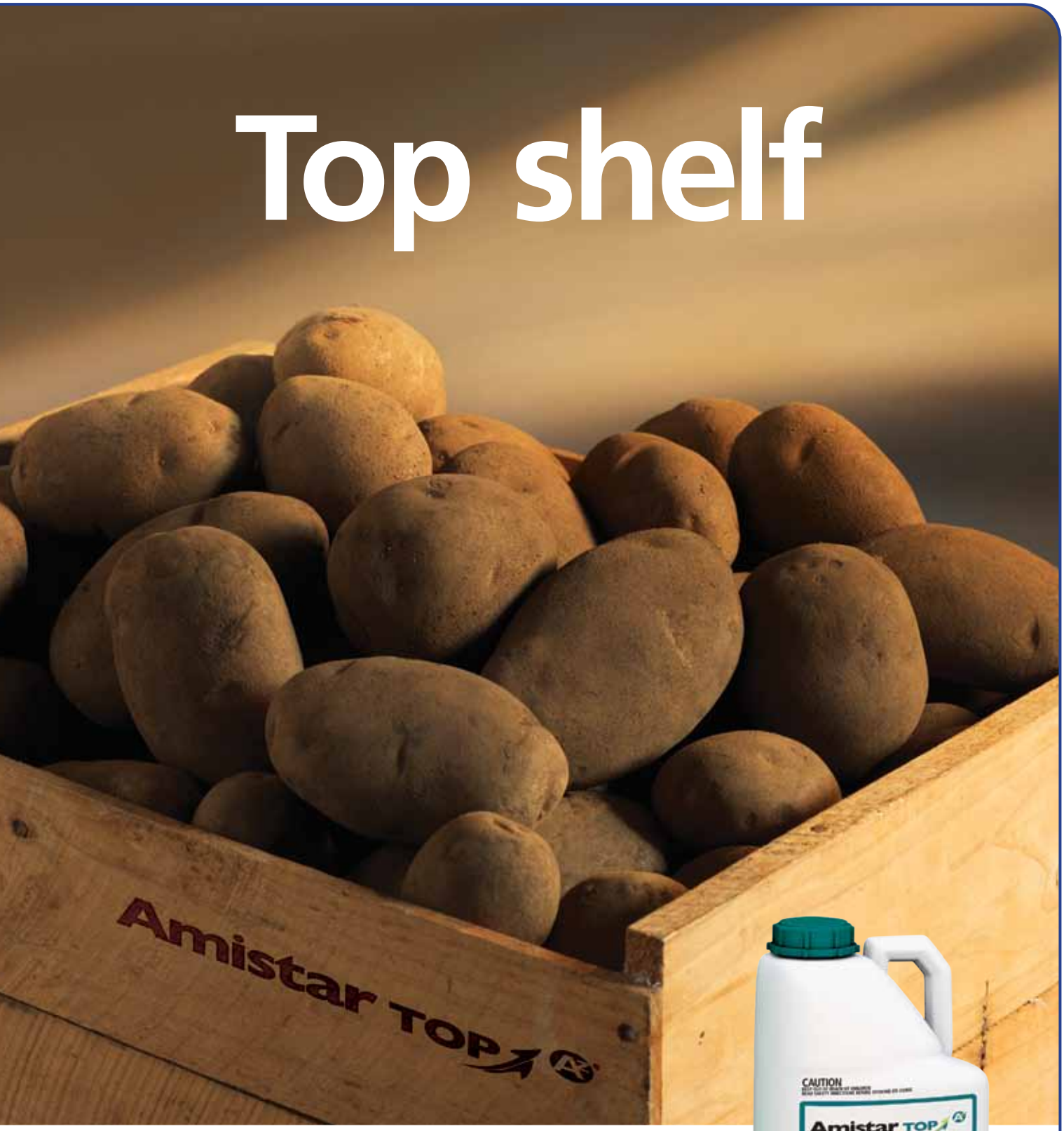
Daniel Maher
Effort and precision

Kathryn Adams
Intellectual property

Dr Robert Edis
Keeping it efficient

Dr Eva Bennet-Jenkins
Fascinated by pesticides

Top shelf



Top choice

- Row closure specialist
- Protection and early curative activity against Early Blight (Target Spot) at row closure
- Broad-spectrum disease control
- Delivers optimal plant health and marketable yield
- One convenient drum

GROW your reputation

For more information call the Syngenta Technical Product Advice Line on: **Freecall 1800 067 108 or visit www.syngenta.com.au**

syngenta®

potatoes australia

AUSVEG Chairman
John Brent

AUSVEG CEO
Richard J. Mulcahy

Production/Editorial Manager
Mignonne Rawson
AUSVEG
Ph: (03) 9822 0388
Fax: (03) 9822 0688
mignonne.rawson@ausveg.com.au

Communications Manager
Hugh Tobin
AUSVEG
Ph: (03) 9822 0388
Fax: (03) 9822 0688
hugh.tobin@ausveg.com.au

Advertising
Max Hyde
Ph: (03) 9870 4161
Fax: (03) 9870 4163
M: 0408 558 938
max@hydemedia.com.au

Graphic Design
Michael Leigh
AUSVEG
Ph: (03) 9822 0388
Fax: (03) 9822 0688
www.ausveg.com.au

Print
Southern Colour Pty Ltd

Distribution Queries
AUSVEG
Ph: (03) 9822 0388
Fax: (03) 9822 0688
admin@ausveg.com.au

Contributors
Bronwyn Walsh, Tony Slater, Scott Mathew, and David O'Neill

AUSVEG
HAL
Know-how for Horticulture™

All research and development projects are facilitated by HAL in partnership with AUSVEG, and in relation to processed potatoes also the PPAA, and are funded by the National Potato Levy and/or voluntary contributions from the industry. The Australian Government provides matching funding for all HAL's R&D activities.
For further information visit **www.ausveg.com.au**

Potatoes Australia is produced by AUSVEG and is free for all National Potato Levy payers.

ISSN 1834-2493

FRONT COVER:
Daniel Maher - Precision Production, Dean, just outside Ballarat in central Victoria

Photo by Ian Wilson

Making a world of difference downunder.

Australian potato farmers face competition every day from the world's most efficient producers. To remain competitive and productive, you need the very latest technology.

ENTEC® is a revolutionary fertiliser enhancement proven in many countries around the world. It works downunder in your soil to minimise losses and improve nitrogen efficiency, helping you to enhance your opportunity to grow more potatoes of a better quality.

Don't chance it. Enhance it with ENTEC for:

- Potentially higher yields with improved crop quality*
- Reduced costs with fewer fertiliser applications
- Reduced losses from nitrogen leaching and denitrification
- Balanced nitrogen supply to help meet plant requirements for more consistent, quality produce.

SUSTAIN & GAIN WITH ENTEC

ECOLOGY • NITROGEN • TECHNOLOGY

For more information, see your local ENTEC Accredited Incitec Pivot Distributor or call 1800 009 832.

*Pasda et al (2001) Biol Fertil Soils. Incitec Pivot Limited ABN 42 004 080 264. ©Entec is a registered trade mark of K+S Aktiengesellschaft.

IPL5260ARedhanded

Incitec Pivot

Incitec Pivot Fertilisers is Australia's leader in soil and plant nutrition, investing locally in innovative products and agronomy solutions to help Australian farmers remain globally competitive. www.incitecpivot.com.au

Chairman's message

AUSVEG has always pledged its support for the potato industry and I would like to provide an assurance to Australia's potato growers on behalf of AUSVEG that this support will continue.

AUSVEG recognises that potatoes are one of the most prominent vegetable commodities in the Australian industry. As the national peak industry body for potato growers, we are aware of the significance of staying engaged with the industry and we are strongly committed to improving communication with all sectors of the potato industry, including with the supply chain and processors.

It was for this reason that a meeting was convened, to coincide with the AUSVEG National Convention, which invited attendance from the different sectors of the potato industry.

The Board of Directors including well-known potato grower Geoff Moar, Victorian Potato Growers Council President Des Jennings, AUSVEG CEO Richard Mulcahy and I met recently with grower members of the Fresh and Processed Potato Industry Advisory Committee (IAC) from around Australia, to discuss the most important issues on the national potato industry agenda.

Several outcomes came out of this important meeting, one being a commitment to strengthen dialogue between the parties and ensure greater cooperation between the potato industry and its representatives.

The meeting was a great opportunity for the different groups and representatives from the industry to make clear any issues or concerns they had and it is this sort of open discussion which allows for a clearer understanding between industry members and industry representatives alike.

As part of AUSVEG's ongoing commitment to the sector, a new communication tool is currently being developed which will provide updates specific to potato growers. Summaries of potato IAC meetings, that are now being periodically made available to growers online, are an important step towards strengthening the relationship between the IACs and the industry, including grower organisations. This will offer greater transparency, allowing growers to obtain a more complete understanding of the processes that the committees go through in accessing R&D project proposals.

The potato industry has never been spared hardships, whether it is in the form of economic challenges, changes to regulations or climate. The Board of Directors and I are aware of these challenges and their difficulties. Through meetings like the one held on the Gold Coast and others, AUSVEG will continue to engage with the potato sector to provide a stronger voice for growers and our member associations through these trying times and beyond.

John Brent
AUSVEG Chairman

CEO's message

It was with great interest that the industry heard of the announcement earlier this year of proposed changes to legislation to hasten the setting of Maximum Residue Limits (MRL).

The Food Standards Australia New Zealand (FSANZ) Amendment Bill 2010 was introduced in Parliament on 13 May. The proposed legislation suggests that the Australian Pesticides and Veterinary Medicines Authority (APVMA) vary the Maximum Residue Limit (MRL) Standard in the Australia New Zealand Food Standards Code.

While the legislation is yet to pass through Parliament and won't until the new government is sworn in, it is positive news for Australia's potato growers, who have been at the mercy of lengthy approval processes in the past.

Under current processes, the APVMA conducts a rigorous, scientific risk assessment on new and old chemical products before they can be approved for use in Australia.

FSANZ then conducts a second assessment, consults with industry and public stakeholders, and obtains approval from the Australian New Zealand Food Regulation Ministerial Council before including the MRL in the Food Standards Code.

This system has been found to be duplicative and has caused significant problems for growers because of unnecessary delays in approving MRLs. For example, a farmer may legally purchase a chemical product that has been approved by the APVMA, and use that product in accordance with the label directions but ultimately find that he or she is not able to sell the produce because the APVMA-determined MRL is yet to be adopted within the Food Standards Code.

The Amendment Bill currently before the Senate will significantly reduce the regulatory burden on registrants by reducing the time between a chemical product being registered for use by the APVMA and a corresponding MRL being adopted and incorporated within the Food Standards Code.

AUSVEG welcomes this Bill, which will streamline the procedure for setting and varying Maximum Residue Limits (MRLs) for chemicals in the Australia New Zealand Food Standards Code.

For further information about the proposed legislation and to read our interview with the CEO of the APVMA, Dr Eva Bennet-Jenkins, go to page 20.

Richard J Mulcahy
AUSVEG Chief Executive Officer

Pg 10 Scott Williams: Pinpointing the potato industry's biggest issues

Pg 24 A potato utopia

Pg 20 Dr Eva Bennet-Jenkins: Fascinated by pesticides

Editorial

As every Australian potato farmer knows, being a grower is hard work. This year, one potato grower in particular was singled out and praised for his achievements and dedication to the industry.

Daniel Maher, from Dean in Victoria, won the Young Grower of the Year award at the vegetable and potato industries' National Awards for Excellence held during the AUSVEG National Convention in May.

Mr Maher said in his speech that he was proud to receive the award but just as proud to be an Australian potato grower. He is the cover story for this issue of *Potatoes Australia.* Please go to page 14 to read his story.

Potatoes Australia always promises to feature a range of relevant research and development projects. This edition is no exception, with a number of relevant and timely potato industry research projects featured.

On page eight, readers can learn more about the second phase of the Australian Potato Research Program (APRP) from the perspective of SED Consulting, the company managing the program. On page 12, Tony Slater from the Department of Primary Industries (DPI) Victoria, provides an update on the National Potato Breeding Program. On page 24 we report on the latest findings from a project at the DPI Victoria, which is seeking to identify microbes in soil which help suppress potato diseases, and we also explore a project seeking to use precision irrigation to save costs and improve water use efficiency for growers on page 30.

Finally, Dr Kevin Clayton-Greene, Taskforce Chair of the New Zealand Tomato-Potato Psyllid project, reports on the latest findings from his recent trip to New Zealand to research Zebra Chip disease.

As promised, interviews with speakers from the National Convention will feature in coming issues of *Potatoes Australia*. This issue includes Kathryn Adams, Senior Research Fellow from the Australian Centre for Intellectual Property in Agriculture (ACIPA), who spoke to us about the important issue of intellectual property rights. Dr Eva Bennet-Jenkins, Chief Executive Officer of the Australian Pesticides and Veterinary Medicines Authority, speaks about how the APVMA operates, and Dr Robert Edis, from the University of Melbourne, discusses nutrient use efficiency in potato crops.

As always, the potato industry is working at a hundred miles per hour and *Potatoes Australia* has sought to address and present the key issues affecting potato growers today.

Daniel Maher
Effort and precision
- Pg 14

Contents
August/September 2010

Features

R&D

Regular Items

News

Making intellectual property work for you

Intellectual property rights might sound like a world away from the reality of potato growing, but it may be an untapped source that many growers should be harnessing for their own benefit.

Words | **Mignonne Rawson**

Protecting your crop from disease, pests or weather damage is usually at the forefront of most growers' minds, but according to Kathryn Adams, from the Australian Centre for Intellectual Property in Agriculture (ACIPA), intellectual property rights should be as well.

Ms Adams is a Senior Research Fellow at the ACIPA, who has been working with Horticulture Australia Limited (HAL) over the past six years running workshops for growers, organising conferences, and writing reports on capturing the value of intellectual property for horticulture.

As a special guest speaker at the recent AUSVEG National Convention, Ms Adams gave a presentation on intellectual property rights, which included information about plant breeders rights (PBR), patents and trade practices.

> "Sometimes it's hard to distinguish whether a plant is actually a mutation of a variety or whether it's just some common variety that has been around for a long time but nobody has grown it in that particular area"

Ms Adams said that one of the main reasons why she decided to present on intellectual property rights was because of the concern expressed by some in the industry about the supermarkets and other large players taking ownership—or exclusive licenses—of PBR protected varieties, and then appearing to limit the availability to growers.

She said that it was important that growers know the rules about marketing protected varieties so they understand what can and cannot be done in the marketplace.

"The grower view is often that unless you are in that particular growers' 'club' you may not get access to a particular protected variety, so I thought the best way to tackle this would be to set out what the rules are and what the limiting factors are, and then people can make their own decisions about whether or not there is any sort of action that can be taken," Ms Adams said.

"I particularly wanted to explain the rules regarding trade practices and plant breeders rights, so that people can make their own judgement about whether someone is stopping them from getting access to something that they may think they have a right to have."

Making farmers aware

Ms Adams said that one of the main issues affecting the wider use of intellectual property rights by farmers, was that many of them were not aware of what they can and cannot do with a PBR protected variety owned by someone else.

"Nearly every grower will use a protected variety at some point so it's in their interest to understand what the rules are and how they can make it work for them," she said.

"The other thing is that when somebody talks about PBR a grower often thinks that the variety owner is going to bar them for having access, which isn't necessarily the case.

"Rather, because it is an exclusive right, the rules allow the owner of the variety to set the terms and conditions under which they will license others (including growers) to use the variety, so I think it's important for people to

understand the total framework."

Knowing your potato crop

Ms Adams said that if a grower does find a mutation or sport, the problem is that they are often unsure if it is a new variety which could potentially be protected by PBR.

Ms Adams also said that growers sometimes find a sport or develop a new variety themselves and they do not know how to go about protecting it, or the potential benefits of doing so.

"Sometimes it's hard to distinguish whether a plant is actually a mutation of a variety or whether it's just some common variety that has been around for a long time but nobody has grown it in that particular area," she said.

"Sometimes there can be embedded viruses which actually give characteristics that are different to the norm, so there are all sorts of reasons. The purpose of PBR is to actually demonstrate in trials that the new variety is different and it's uniform and it's stable in those characteristics, so that then gives an objective methodology for determining if it is really a new variety."

Breeding and investment

Ms Adams said that she cannot stress enough the importance for growers in understanding intellectual property rights, because it encourages people to breed new varieties and also allows for more investment in breeding programs, which then benefits growers.

"The original purpose of PBR was to give breeders a mechanism for controlling the use of a variety. If you don't have PBR the variety just goes out into the public domain and you don't have any way of getting any income back to reinvest in new breeding programs," said Ms Adams.

"With PBR the breeder gets an exclusive right for a period of about 20 years and then has a mechanism for charging a royalty, which allows others to use the new variety and the breeder can receive money for it and start their next breeding program."

No matter what you grow or where you are in Australia and regardless of the size of your operation, Ms Adams said that intellectual property rights was important for all growers.

"The really important thing is that you can make intellectual property work for you as a grower, whether it be a trademark or plant breeders rights or patents, and you have to understand what you've got and how your business can use it," she said.

For more information:

- Please visit www.acipa.edu.au
- You can read Kathryn Adams' presentation from the AUSVEG National Convention at: www.ausveg.com.au/convention

Kathryn Adams addresses delegates in the speaker sessions at the AUSVEG National Convention

Pinpointing the potato industry's biggest issues

Focusing on the vital issues related to potato growing is the aim of the game for the second phase of the Australian Potato Research Program (APRP). The program's Project Co-ordinator, Scott Williams, talks to *Potatoes Australia* about what the program will deliver with six new projects in phase two.

Words | **Mignonne Rawson**

The main problems in the potato industry have been identified as potato and soil health, and six projects have been allocated for the second phase of the Australian Potato Research Program (APRP). But what can and should farmers expect from this newest program?

Scott Williams, from SED Consulting—the firm which is managing the program—is the Project Co-ordinator of APRP2, and he said that there had been an "exhaustive process" to pick six targeted projects for the second phase of the program.

A consulting group called Pyksis was hired to conduct an industry prioritisation process to determine what the main aims of APRP2 should be.

Mr Williams said that it was during this process that potato health and soil health were determined to be the most important issues for potato growers and the industry.

"They are the key issues that were identified, and all these projects relate to these issues," said Mr Williams.

Mr Williams said that APRP2 would be delivering much needed knowledge and solutions about diseases which cause yield losses and therefore financial losses to farming businesses. The information from Pyksis enabled the Processed Potato Industry Advisory Committee (IAC) to choose the most relevant projects, he said.

Mr Williams said that it was impossible to pinpoint the most important project in the program, because each one would offer something back to the industry.

There are six projects as part of APRP2:

• $1.1 million will be invested over three years to provide the industry with a strategy, compatible with existing Integrated Pest Management programs, to deal with Tomato-Potato Psyllid in Australian potato crops. Psyllid spreads Zebra Chip which has devastated crops in the United States and New Zealand and is highly likely to reach Australia eventually.

• $775,000 will be invested over five years to increase understanding of the relationship between the amount of a disease agent on a seed potato line and the subsequent incidence of disease in the crop. The project will use new DNA tests developed under APRP1.

• $4.4 million will be invested over five years in an international project to deliver soil DNA tests to potato growers that can be used to predict disease incidence. The project involves gaining a greater understanding of the relationship between levels of disease agents in soil and expression of disease—especially for Common and Powdery Scab and Rhizoctonia—and builds on the DNA test development of APRP1.

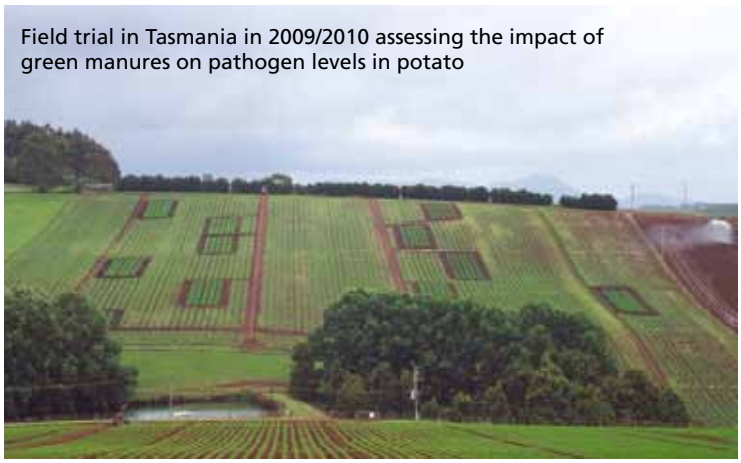
• $6.5 million will be invested over five years in an international project to develop new strategies for disease control (Common and Powdery Scab, Rhizoctonia, Verticillium, Bacterial Wilt) based on greater understanding of the effect of soil factors (physical, chemical and biological) and water. The project will also investigate new hormone and endophyte approaches to disease control.

• $385,000 will be invested over four years to improve understanding of Verticillium spp. and Potato Early Dying (PED) Syndrome in Australia, and to develop strategies to deal with them. PED is an important disease overseas and is thought to occur here, but the precise causes, extent of losses, resistance of different varieties and how to control the disease, are not well understood.

• The sixth project engages a professional R&D management firm to ensure the projects track to schedule and that their progress is widely communicated.

What's in a project?

Contracts for APRP2 were finalised in March. Mr Williams said that many of the projects had already begun, but that nothing of note had been recorded so far and meaningful results could not be expected until further into the project.



Field trial in Tasmania in 2009/2010 assessing the impact of green manures on pathogen levels in potato

Example of Powdery Scab

"Several of the projects had started before March because there was money within the research proposals from the organisations. For example, the Department of Primary Industries (DPI) Victoria started with its own money," said Mr Williams.

"However, it should be remembered that the projects that have started are only in the early stages. They've done some of the trial work and they're starting to analyse some of the results but there's not much that's terribly concrete at the moment."

Mr Williams said that the sixth project (monitoring and evaluating) and the Tomato-Potato Psyllid were stand-alone projects, but that the other four projects were more closely linked.

"These projects are looking at disease expression for: Rhizoctonia, Common Scab, Powdery Scab and Verticillium. It is hoped that they will provide a much better handling on how and when these diseases are expressed and how to manage them," said Mr Williams.

"APRP2 has been designed to be cross-linked so that one project wouldn't exist without the other. This is one of the beauties of APRP2. It has been constructed very carefully for linkages.

"The closely linked projects, for example, are all looking at very similar things.

They are all investigating potato diseases and asking 'can we come up with a formula that says if there is that particular disease load on that line of seed potato, then that's how much you'll lose in yield in this given soil.'"

Mr Williams said that APRP2 will eventually provide invaluable solutions to growers, such as advice about services or practice changes.
"It will probably be a couple of years though, before we can say to growers 'here's something, go and use it'," he said.

The multiplier effect

Mr Williams said that farmers should be aware that their levy money is not the only funding for APRP2.

"The investment in APRP2 sounds like a large one, but in fact comprises only slightly over $2 million of levy money over five years, or around $400,000 per year. The total cost of the program is $13.7 million," he said.

"The research parties put in $5.2 million; voluntary international contributors put in $2.7 million; and the Government contributes $3.9 million. So the levy money, which comes from both growers and processors, is multiplied several times to produce the total investment—the levy money is less than 15 per cent of the total funding.

"R&D is an expensive exercise, unfortunately, but the outlay on APRP2 is not particularly large compared with other agricultural R&D investments."

Confidence

Mr Williams said he is confident about APRP2 and that growers should be too.

"Growers can be confident not only in regard to value for money but also because the best potato researchers from around the world are working on solving their problems. The extent of international collaboration in this program is excellent," said Mr Williams.

"R&D is vital for any industry to remain competitive. Money always seems to be tight but it is important to keep investing in innovation, because otherwise you fall behind other industries and other countries. Being smart is our advantage over other, cheaper producing countries."

APRP2 is facilitated through HAL, funded by the National Potato Levy with matching funds from the Australian Government and voluntary contributions from the New Zealand Institute for Plant and Food Research, Horticulture New Zealand, Potato Council (UK) and A&L Canada Laboratories.

Molecular tools improve breeding and identify cultivars

The latest results to come out of the National Potato Breeding Program include some exciting developments that could lead to cultivars being grown specifically for certain traits to suit the Australian industry.

Words | **Tony Slater, DPI Victoria**

The National Potato Breeding Program, through its strategic trait program, is developing tools that will assist in breeding potatoes for certain 'attractive' traits. These new cultivars will have a range of characteristics required, or desired, by the Australian potato industry, and most importantly could lead to growers being able to breed lines with disease resistance.

The program has been using molecular markers which can pinpoint important traits, such as Potato Cyst Nematode (PCN) resistance. Basically, a molecular marker helps researchers identify a specific gene which can be bred into a cultivar.

Genes of interest

The breeding program has taken samples from a range of potato varieties and tested them by using molecular markers. This will lead to a better understanding of whether there are any genes of interest contained in certain potato cultivars in Australia. It will also tell researchers more about the genetic diversity of Australia's potato population.

Understanding the genetic diversity within the collection being tested will allow the breeding program to maximise genetic divergence and exploit hybrid vigour to produce highly productive cultivars in Australia. This can be an efficient method of obtaining genetic gain in new cultivar development.

Simple sequence repeats

The Department of Primary Industries (DPI) Victoria has employed the use of simple sequence repeats (SSRs) in this project because they are currently the molecular marker system of choice internationally. An SSR is a repeating sequences of one to six base pairs of DNA, for example, TATATATA. SSRs can reveal whether or not a cultivar has a required trait.

There are currently 148 SSR markers in the international public domain that have been mapped to exact locations on the potato genome.

Over 200 markers have also been mapped by the International Potato Genome Sequencing Consortium, which will be released to the international potato research community within a couple of months.

Lee Schultz from the National Potato Breeding Program at the DPI in Victoria is currently investigating the usefulness of these markers.

To understand the diversity within the collection of potato samples being tested, 27 SSRs were screened across 92 cultivars, including clonal variants.

From this initial suite of SSRs, 12 were selected for further analysis. A further collection of 463 cultivars and breeding lines, representative of parental material used in the breeding program, were then screened with the reduced suite of SSRs.

Interpreting the results

This screening was able to discriminate all but four of the commercial cultivars in Australia (Figure 1).

Both Banana and Kipfler, and Nicola and Dutch Cream were very similar, and could possibly be clonal variants (Figure 1 blue arrows).

Clonal selections of Trent, Pike, Wontscab and Sebago were not differentiated, but clonal selections of Russet Burbank, Kennebec and Atlantic differed by very small differences (Figure 1 purple arrows).

Within the analysis of the similarity of the cultivars, small clusters of similar cultivars were found (Figure 1 orange boxes).

Small groups of fresh market, crisping and French fry cultivars can be distinguished, while other groups can be traced back to common country of origin. Importantly, this tool will enable the breeding program to identify genetically diverse parents to combine for specific markets.

DNA fingerprinting

Another up shot to this project is the work being undertaken to identify individual cultivars. This is being conducted by taking samples of DNA. The process is called DNA fingerprinting and it could one day lead to farmers being able to provide 100 per cent assurance that their potato cultivars are accurately identified.

Currently, potato cultivar identification is based on plant and tuber morphology and can, in some instances, be subjective and unreliable. But using DNA fingerprinting provides far better accuracy.

The International Potato Centre has developed a potato genetic identity (PGI) kit utilising 24 molecular markers from across each of the 12 potato chromosomes and was able to discriminate 93.5 per cent of 742 indigenous potato genotypes, while Science and Advice for Scottish Agriculture (SASA) use nine SSRs to distinguish over 1,000 cultivars.

In order to make genotyping cost effective, the number of molecular markers required to discriminate all Australian commercial cultivars must be kept to a minimum.

The current suite of 12 SSR markers will be further assessed using leaf material of commercial cultivars from other sources, including reference collections.

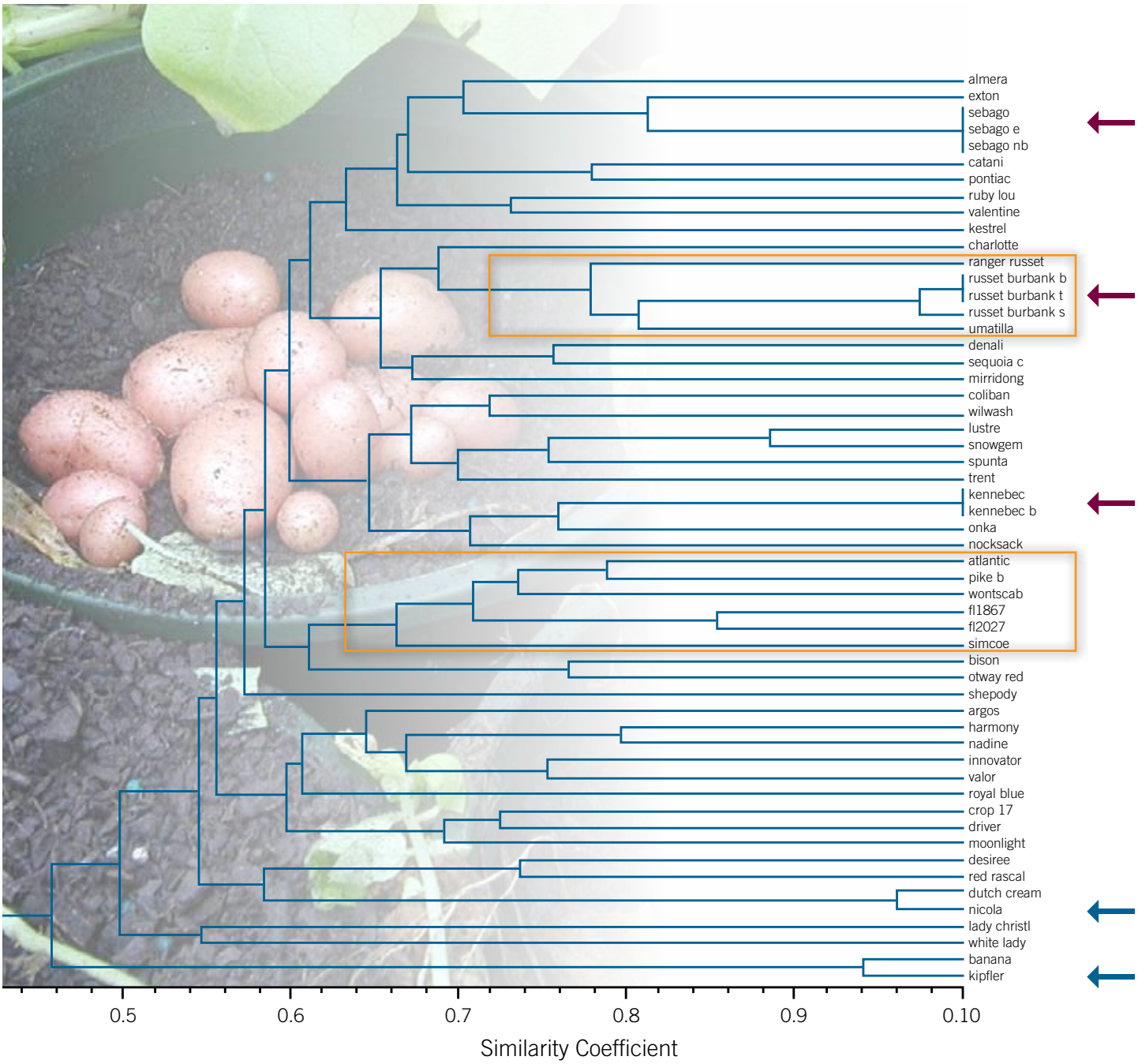
Discrimination of all commercial cultivars is essential, and the test will be developed to deliver this outcome.

In parallel, DNA from a range of tissues and products will be extracted and screened to determine transferability across different potato tissues.

Once the reproducibility of the genetic identity kit has been proven, this service can be provided to the Australian potato industry.

Figure 1.

Similarity of the main Australian commercial cultivars



Grower Information

Producer:	Daniel Maher
Business:	Precision Production
Region:	Dean, just outside Ballarat in central Victoria
Farm Size:	Cultivates 150 acres of potatoes throughout the Ballarat district
Other:	Young Grower of the Year 2010

Photography by Ian Wilson

Effort and precision

2010 Young Grower of the Year, Daniel Maher, represents the best of the next generation of potato growers. A man not afraid of hard work, Mr Maher is prepared to seize every opportunity that comes his way.

Words | **David O'Neill**

A young veteran of potato growing at the age of 28, Daniel Maher was born and bred in spud country, just outside Ballarat in Dean, Victoria. Still growing on the same property operated by his grandfather, Mr Maher's extensive operation includes land throughout the Ballarat district.

According to the young grower, the region is synonymous with potato growing.

"I guess, it stems from the Irish immigrants who found this area pretty similar to their homeland and started growing spuds in the late 1800s," Mr Maher said.

"Now most farms in this area are into their fourth or fifth generation and still growing potatoes."

At just 21-years-old, Mr Maher took on the responsibility of running the family property after his father and uncles' partnership disolved. Though most would have been content with such a large responsibility at a young age, for Mr Maher it was just the beginning.

With knowledge gained working on farms in Western Australia, experiences from growing up on the family farm and a 'have a go' mentality, Mr Maher

> "I wanted to find the best growers and learn what they were doing on their farms, so eventually I would have the skills to run a farm on my own"

set about expanding his business, adopting the most innovative and cost effective farming techniques in the process.

Seven years on, he owns and manages Precision Production, a thriving business built on the very philosophies that inspired his beginning all those years ago.

Key to his success has been his focus on Global Positioning System (GPS) tractor work, which Mr Maher has utilised since he learnt the benefits of the practice in his time spent working on farms interstate. Looking back, Mr Maher considers that experience–the time spent away from his farm–as incredibly valuable and a major reason why he has been able to make a living in the cut throat potato industry.

"I wanted to find the best growers and learn what they were doing on their farms, so eventually I would have the skills to run a farm on my own," Mr Maher said.

"I think it's very important for young growers to get out there and see how other growers are farming. I believe you learn a lot about your own farm when you're not actually on it."

Invaluable experience

It was in Esperance in the south of Western Australia on broadacre farms,

that Mr Maher first learnt about the benefits of using GPS systems and discovered it was technology he could adopt in growing potatoes.

"It was a massive part of the farms I worked on, and I learnt a huge amount about the technology in relation to the benefit it can have on a farm in terms of improving efficiencies," he said.

In his first season, Mr Maher incorporated a GPS system into his operation through the use of a local contractor.

The next season when the contractor was looking to move on, he took the plunge, bought the business and went about implementing the technique on his own properties and on behalf of other growers throughout the district.

Seizing the opportunity

The huge financial risk involved in purchasing the equipment to incorporate into the system, was something that Mr Maher considered to be a necessity in order to take advantage of the opportunities that were presented.

"There was a lot of work out there and having a go (buying the equipment) was the only way of taking advantage of it," he said.

In terms of benefits, Mr Maher said he believed using the system, which has a sub two centimetre accuracy, allows for improvements in spacing, getting an even spread and improving the straightness of crop rows.

"It may seem like another cost to some growers, but if you only pick up an extra couple of rows in the paddock, then it's worth it," he said.

"It's especially good on hills and that sort of thing, where in the past we would have been overlapping or underlapping."

Despite these benefits, cultivating approximately 150 acres of potatoes still, of course, has its challenges for the young grower, who carries a heavy burden, in terms of labour, on his own shoulders.

"My biggest weakness is lack of time. So the more efficiencies I can put into the business, the more time I can save, and the more productive I can become," Mr Maher said.

"During the last summer which was pretty dry, the crops required constant irrigation, so most of my time was spent travelling around the district doing as much as eight irrigator shifts a day."

It means long days and long nights, and a level of commitment that would seem insane to most people who are working their nine to five desk job. But for Mr Maher and potato growers across Australia it's the difference between success and failure. A philosophy of 'work til you drop' is the only way to make a living.

> "Go like buggery, work until you sleep in the tractor, and wake up in a couple of hours and go again"

"Go like buggery, work until you sleep in the tractor, and wake up in a couple of hours and go again," Mr Maher said.

In seven short years, Mr Maher has increased his yield to 2500 potatoes per season, but said he couldn't have done it without his father's influence.

"When my father stepped aside he let me take on all the responsibility and the risk, so I was able to really make the business my own," he said.

"His advice over the years has been very important, but giving me the opportunity to have a go on my own was something other young growers are sometimes not as fortunate to get."

Effort rewarded

Mr Maher's dedication to implementing the most innovative farming techniques, and his almost super human work ethic, was recognised at the recent AUSVEG National Awards for Excellence, where he received the Young Grower of the Year Award, sponsored by Dow AgroSciences.

Though clearly not one to sing his own praises, Mr Maher said he was proud to win the award.

"Winning the award was excellent, there isn't a lot of help out there for young growers and a little bit of encouragement is always great," he said.

In his acceptance speech, Mr Maher revealed a fierce determination to see Australians take a stance against imported produce and eat Australian grown potatoes and vegetables, which he reiterated to *Potatoes Australia*.

"We don't need them," he said in regard to imports.

"We grow enough potatoes to satisfy the processed and fresh markets. We need to support Australian growers because it's a tough time in our industry and a lot of growers are struggling."

"We keep hearing that we will have to grow more in the future, and I'm all for increasing production, but the demand must be there, and in this area alone there is already potatoes being ploughed under."

With determination and an eye for cost saving innovations, Daniel Maher has seized opportunities that many would have let slip by.

Despite the vast number of challenges confronting the potato industry and the incredible dedication required to remain competitive, for this young grower it's a way of life, and the hard work is just part of it all.

Precision Production situated in Dean, Central Victoria

Aphids in potato crops

Severe losses in potato quality and yield caused by aphids are almost always related to the viruses that aphids transmit. Losses of up to 80 per cent have been recorded in crops which have no aphid and virus management practices in place. In addition to losses in the crop in the ground, subsequent crops can also suffer losses, therefore compounding the impact.

Words | **Bronwyn Walsh, IPM Consultant**

Aphids are soft-bodied insects that are up to four millimetres in size. At least three species are found in Australia: the Green Peach Aphid, Potato Aphid and the Foxglove Aphid. Green Peach Aphids are the most common and are often on the underside of leaves in the lower part of the plant, while the other species are found in the upper part of plants. In a heavy infestation they are scattered throughout the plant.

Females can reproduce alone and give birth to live young. This means their life cycle from newborn nymphs to adults can be eight to 10 days in the spring. Moving through the four juvenile stages, the nymphs look similar but get bigger at each stage, finally becoming winged or wingless adults. Winged aphids usually land on the edge of crops, or in gaps in the crop. Once in the crop they start to reproduce. Aphids are present all year round but are most abundant in spring and autumn.

Aphids are found on a range of plants, including weeds, meaning they can spread viruses from weeds to potato crops. The physical damage caused by aphids occurs when they feed by sucking on plants. The damage can be stunting, misshapen or distorted growth and wilting. Young crops can be susceptible if subjected to heavy infestations. The same 'sucking' behaviour also transmits viruses, sometimes within five seconds.

The viruses aphids can transmit include Potato Leaf Roll Virus (PLRV), Potato Virus X, Potato Virus Y and Potato Virus S. The Green Peach Aphid is the best transmitter, or vector of PLRV, and it can carry and spread the virus for its life. Other aphid species also spread viruses but take longer to transmit and do not retain the virus for 'life'.

Lastly, Green Peach Aphid populations can also be resistant to insecticides. In particular, in Australia, resistance to insecticides from the synthetic pyrethroid has been recorded.

Management of aphids can be done by employing integrated chemical control with biological and cultural control practices. The first step in getting this right is by monitoring for aphids.

Monitoring

Monitoring the same part of crops at intervals means that the level of aphids can be compared and therefore the effectiveness of management practices assessed. Growers should follow a line or zigzag across the crop. At each area selected, the underside of the leaves of 15 or more plants should be checked for aphids. The number of aphids found should be recorded and virus infected plants should also be noted.

Management

Critical cultural management that minimises the impact of the virus, and therefore the opportunity for transmission by aphids, can be achieved by planting healthy virus-free stock. This can be achieved by only planting certified seed and managing weeds around the crop, in particular, solanaceous weeds which habour viruses.

Biological control of aphids is very successful with brown lacewings, ladybirds, hoverflys and parasitic wasps that can all occur naturally in potato crops if insecticides are used carefully and to a minimum.

Lastly, chemical control with effective insecticides registered for aphid control in potatoes is another option. These should be used carefully given the potential to create a resistant aphid population and the negative impact they can have on beneficial insects. To minimise the impact use 'soft' insecticides and specific aphicides, and only treat infested areas with coverage to reach the aphids.

Close-up of Green Peach Aphids

Close-up of a Potato Aphid

Close-up of Foxglove Aphids

Power yield

GET WITH THE PROGRAM.

Unlock your crops full yield potential.

When planning a fungicide program for potatoes, take the Power Yield approach

- Highly effective control of early and late blight.
- The crop health benefits of pyraclostrobin contained in Nufarm Aero fungicide.
- A new fungicide group (Group 7) for use in potatoes in Nufarm Filan fungicide.
- A new active ingredient for potatoes in boscalid contained in Nufarm Filan fungicide.
- A unique disease control program proven to increase both potato yield and quality in Australian field trials.

www.nufarm.com.au

Power Yield: Optimising growth potential in potatoes.

Nufarm

Dr Eva Bennet-Jenkins addresses delegates in the speaker sessions at the AUSVEG National Convention

Fascinated by pesticides

The Chief Executive Officer of the Australian Pesticides and Veterinary Medicines Authority speaks to *Potatoes Australia* to set the record straight about how the organisation operates.

Words | **Mignonne Rawson**

While speaking to Dr Eva Bennet-Jenkins, nothing could be clearer than that she is passionate about chemicals, which is perhaps fortunate since she is the CEO of the Australian Pesticides and Veterinary Medicines Authority (APVMA), a role she has held for the last three years.

It is not often that one hears someone speak in such glowing terms of the world of chemical permits but not so for Dr Bennet-Jenkins, who readily admits to finding the work of the APVMA and the world of pesticides and their regulation 'fascinating'.

The APVMA's role is to independently evaluate the safety and performance of pesticides and veterinary medicines intended for sale, and it was at the recent AUSVEG National Convention, as a special guest speaker, where she took the opportunity to clarify the workings of the organisation.

> "It's about being prepared and coming in early with applications for permits. It's like anything, you've got to be prepared and plan early, and give us the time, because we do quite a bit of research in getting it all together to make the final decision"

Her presentation explained the APVMA's work as a regulator to enable grower's access to safe and effective chemicals.

Dr Bennet-Jenkins said she chose to speak about the organisation's work because of a concern that many vegetable and potato growers view the APVMA as a hindrance to their farm operations.

"I think sometimes they don't quite understand how much work goes on behind the scenes to give them access to chemicals," she said.

"However, I can certainly put myself into their shoes. For example, a farmer wanting to grow a crop or to initiate an innovative idea and go into new markets, but he doesn't have the tools to do what is needed. I can understand that he might see us as being another impediment in getting access to those tools."

Data sharing

Dr Bennet-Jenkins said that the process for industry to generate the data in order that the regulator can properly assess a chemical for use is often a time consuming and costly process. She said therefore research for minor crops and uses is generally done by grower groups and research and development corporations.

"That is why it is so important to look around and ask 'what tests do we need and can we find other information that allows us to be satisfied that it [the chemical] is safe and effective?'," she said.

"We try and extrapolate from knowledge that we have or through the use of overseas data. For example, for a plant which belongs to the leafy vegetable family we try to see whether we can extrapolate between the different leafy vegetables.

"We say to those that generate data, please don't hang on to it. Share it with others because it could be useful."

Growers' best interests

The three main things that the APVMA needs to assess when issuing

a chemical permit, according to Dr Bennet-Jenkins, are: the maximum residue limit for a food, efficacy and crop safety.

During all the stages that are required to issue a chemical permit, Dr Bennet-Jenkins said that the needs of the grower are never forgotten, though she is aware that some growers view the APVMA as an impediment.

"The people who work at the APVMA do an enormous amount of work trying to help growers. They keep the growers needs very close to their heart. There is a lot done at the international level, by urging companies–global companies–to remember the needs of small and minor commodity producers and their need to access new technology just as much as the needs of the major commodity producers," she said.

> "We say to those that generate data, please don't hang on to it. Share it with others because it could be useful to them"

"There are about 150 people working for the APVMA in Canberra, with about eight people who look after minor use permits.

"They're very passionate. They want to do the right thing by growers. We at the APVMA want to work with growers to get them access and allow them to comply with the law. We're not there to be an impediment. That's the last thing we want to be."

What can growers do?

Dr Bennet-Jenkins' final message to the growers and industry as a whole is: help us, help you.

"It's about being prepared and coming in early with applications for permits. It's like anything, you've got to be prepared and plan early, and give us the time, because we do quite a bit of research in getting it all together to make the final decision," she said.

"Don't leave it too late, so plan ahead for seasons, especially in terms of this new arrangement for Maximum Residue Limits (MRL)."

Under proposed new legislation (see break-out box below) the APVMA will be responsible for amending the Food Standards Code and for related legal processes.

The time between issuing a permit and MRL entry into the Food Standards Code will decrease.

"However, there will still be a four month lag time because of Australia's obligations to the World Trade Organisation," Dr Bennet-Jenkins explained.

"Industries in need of permits will need to factor in this time period as well as the time period that it takes for the APVMA to assess and issue the permit. So put your application in at least 6 months ahead of when you want to use the chemical under the permit, so that the MRL will also be in place to allow sale of the produce," she said.

"Make the system work for you."

For more information:

- You can read Dr Eva Bennet-Jenkins' presentation from the AUSVEG National Convention at: www.ausveg.com.au/convention

Food Standards Australia New Zealand Amendment Bill 2010

An Australian Senate committee has urged the passage of legislation to hasten the setting of pesticide Maximum Residue Limits (MRLs).
The Senate Community Affairs Legislation Committee supports the Food Standards Australia New Zealand (FSANZ) Amendments Bill 2010, which was introduced in Parliament 13 May 2010.

It has been proposed that the Food Standards Australia New Zealand Act 1991 be amended to enable the Australian Pesticides and Veterinary Medicines Authority to vary the Maximum Residue Limit Standard in the Australia New Zealand Food Standards Code.

Under the current arrangements, the APVMA, after registering agricultural or veterinary chemical products or conducting a review based on scientific evaluations, notifies FSANZ to incorporate the MRL variations in Standard 1.4.2 of the Code. The average time between notification from the APVMA and the gazettal of the MRL is approximately 12 months but can be even longer. Under the proposed legislation this time will be reduced to less than four months. The new Bill will remove duplication of administrative processes, but the scientific assessment required to ensure the safety to human health and the environment remains unchanged. The Code will retain its current structure whereby no chemical residue in food is legal, unless there is a relevant prescribed MRL standard in the Code. MRLs are specific to the chemical product and to the produce on which the product may be used.

The Ministerial Council will still have the power to request a review of any food standard, including MRLs, and FSANZ will still be responsible for preparing or overseeing the dietary modelling used to determine the appropriateness of an MRL.

For more information go to: www.comlaw.gov.au
or visit: www.aph.gov.au

Keeping it efficient

The importance of soil nutrients in potato crops is not new to growers but could newly commercialised technology be the answer to their prayers? Dr Robert Edis, Associate Professor from the University of Melbourne, talks to *Potatoes Australia* about the current tools available to growers to increase their nutrient use efficiency, and therefore, their yields.

Words | **Mignonne Rawson**

Potato farmers still have some improvements to make if they are to maximise nutrient use efficiency and therefore crop yields, according to Dr Robert Edis, Associate Professor from the University of Melbourne.

Dr Edis was given the opportunity to speak to growers about this issue, on behalf of the International Plant Nutrition Institute (IPNI), at the recent AUSVEG National Convention.

"Potatoes in particular are sensitive to nitrogen for both quality and quantity. It's an important issue," he said.

Why nitrogen?

Dr Edis explained that even though balanced nutrition is essential, he focused on nitrogen because of the reaction that potatoes have to the nutrient. He also said that most research and development (R&D) is focused on crop protection at the expense of trying to better understand nutrients.

> "Currently the efficiency of nitrogen that growers apply is running at 30 per cent, which means that 30 per cent of what's applied ends up on the product and the rest is lost"

"Currently the efficiency of nitrogen that growers apply is running at 30 per cent, which means that 30 per cent of what's applied ends up on the product and the rest is lost," he said.

"We want to increase a proportion of applied fertiliser that ends up in the harvested plant parts."

Dr Edis said the problem is that nitrogen is often lost because it is converted into other forms, such as nitrate, nitrous oxide, ammonia and di-nitrogen, some of which are lost to the plant.

Dr Edis explained that the other issue is inconsistent uptake by plants. Highly soluble nitrogen sources have "peaks and troughs of nitrogen availability," which can lead to problems such as Hollow Heart. Dr Edis said smoothing this supply of nitrogen to the plant at the times that the plant needs it is essential to grow a good quality crop.

What are the options?

The good news for farmers is that there are several options to improve nutrient use efficiency, according to Dr Edis.

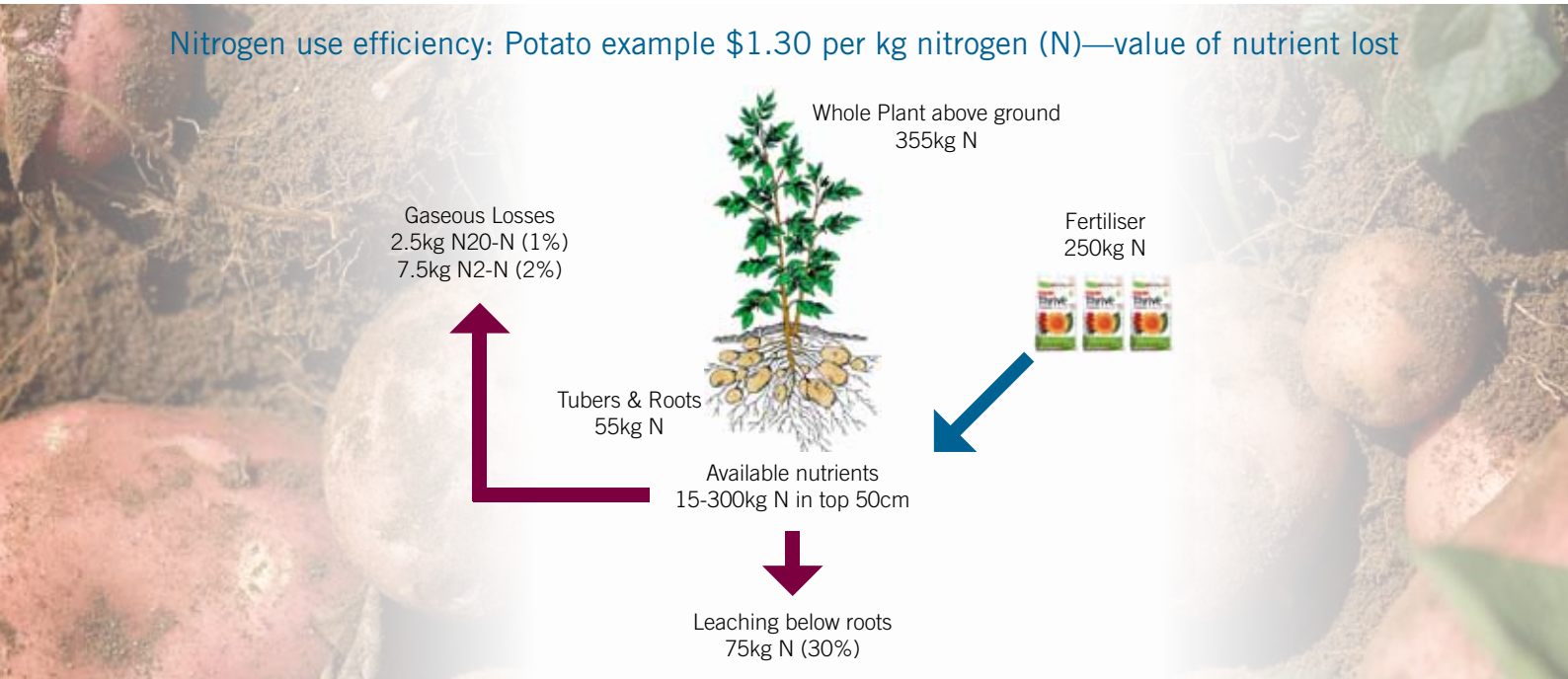
"We think that there's plenty of opportunity to make significant increases in nutrient use efficiency, such as by changing the formulation of fertilisers, by providing better advice to growers, and moderating the timing of applications," explained Dr Edis.

One tool that can be used by farmers is an efficiency enhanced fertiliser, which Dr Edis said has the capacity to slow the rate at which nitrogen becomes a form that is not easily lost.

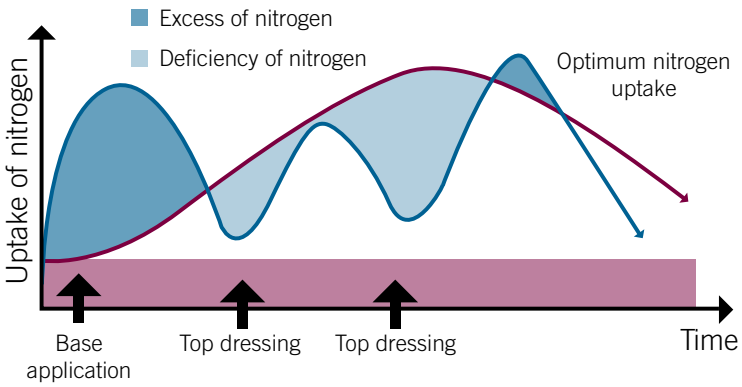
Dr Edis explained that these fertilisers have a coating that slowly releases nutrients and allows for greater flexibility when applying the product because it is then slowly released into the root zone.

The rate of release depends on water and temperature, both of which will encourage growth, so the more the plant needs nitrogen the more rapidly it is supplied.

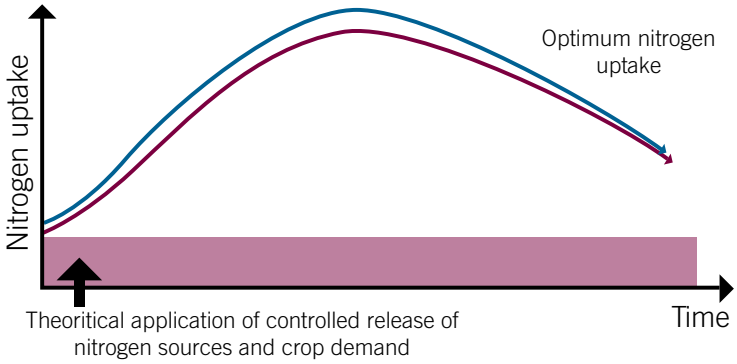
"That means you don't have that rapid pH change and you don't have that



Conventional nitrogen application



Diagrams from COMPO GmbH & Co. KG



rapid concentration of ammonium. It's more slowly delivered and the soil is able to buffer the small pH changes and stop too much ammonium being formed and being lost, which is a good thing," said Dr Edis.

"It also gives the plant more opportunity to take the ammonium as its nitrogen source before that ammonium is converted into nitrate."

Another tool that can now be used is a nitrification inhibitor, which helps to slow the conversion of ammonium to nitrate, which Dr Edis said means that much less application of fertiliser is required.

Environmental and time saving benefits

Dr Edis said that the benefits of using this technology would come in several forms.

"I think the uptake motivation will partly be financial but a lot of it will be a reduction in operations. If you are able to apply a nutrient that is going to meet the plants' needs better you could save one or two operations, and who doesn't need another holiday?" he said.

He also said the environmental benefits of improving efficiency would be significant.

"If you look at the Great Barrier Reef Protection Amendment Act 2009, you will see there is a lot more pressure on people to account for fertiliser run-off," he said.

"The objective of that is to reduce the amount of nutrients, particularly for nitrogen and phosphorous, entering the Great Barrier Reef system, principally by the Burdekin, by 50 per cent in three years. It is an extraordinarily ambitious aspiration for a piece of legislation," he said.

Although this particular legislation would not affect potato growers, Dr Edis said it was the change in the Government's mindset about agriculture and the environment that was important.

"This is not the first time that such a nutrient-focused legislation impacting directly on producers has taken hold and it would seem likely that nutrient use will be more closely scrutinised in the coming years," he said.

> "A lot of vegetable growers are near water ways. They will find themselves under a changing regulatory environment which is going to require them to account for their actions in terms of nutrient management"

"A lot of vegetable growers are near waterways so they will find themselves under a changing regulatory environment which is going to require them to account for their actions in terms of nutrient management.

"Phosphorous, for example, is going to become heavily scrutinised in the Gippsland Lakes. There are quite a lot of potatoes grown in the catchments of the Gippsland Lakes and farming practises of potato growers in that area will become increasingly scrutinised."

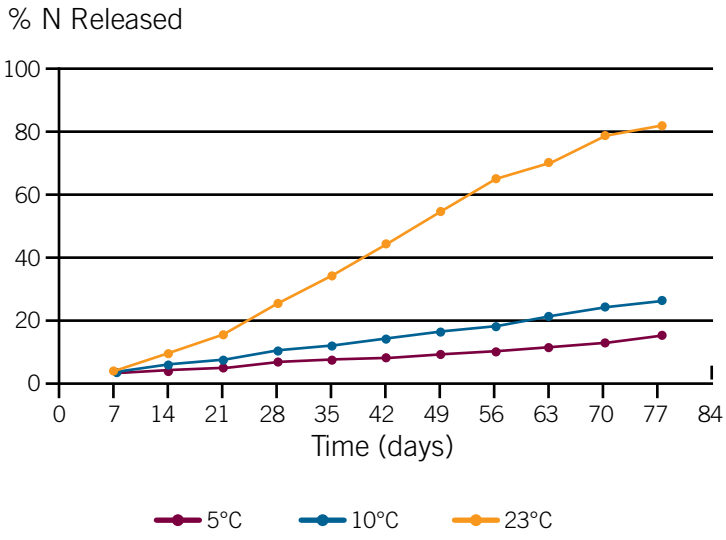
What next?

Dr Edis said that it was therefore in growers' best interests to take a closer look at the options available to increase their nutrient use efficiency.

According to Dr Edis IPNI has developed the '4R's' approach to nutrient stewardship which alerts growers to using the 'Right product, at the Right time, in the Right place and at the Right rate.'

"We want growers to consider nutrient use efficiency. Using a '4R's' approach is vital and they can be involved in doing a little bit of that themselves."

Nitrogen (N) release profiles at constant temperature



A potato utopia

An innovative project being run in Canada is taking technology from the medical field and using it for its own purposes. The good news is that if all goes well Australia will reap the benefits and receive the results, which could revolutionise potato growing in this country.

Words | **Mignonne Rawson**

A whole new world could soon open up to potato growers, according to Plant Pathologist, Dr Tonya Wiechel from the Department of Primary Industries (DPI) Victoria, thanks to a visionary project being run in Canada, which is using cutting edge technology.

Dr Wiechel is one of the collaborators on the project titled *Identifying microbial communities in disease suppressive soils as a means of improving root health of potatoes*. The objective of this research is to find and study microbes that help to prevent diseases in soils where potatoes are grown.

The project is being headed up by Dr George Lazarovits, a Research Scientist, from Agriculture and Agri-Food Canada, and Collaborator Dr Sean Hemmingsen at the Plant Biotech Institute in Saskatoon. Dr Lazarovits has worked extensively with Australian researchers over the years, previously in phase one and currently in phase two of the Australian Potato Research Program (APRP).

> "We are really piggy backing on the work done in Canada, so eventually we can use this technology in Australia"

"We are really piggybacking on the work done in Canada, so eventually we can use this technology in Australia," said Dr Wiechel.

"The project is about trying to understand how the technology can work in this industry."

Finding the microbes

The project, which started in 2007, has taken soil samples from two different potato cultivars on Prince Edward Island and Ontario, Canada. The level of variation in the soil microbial profiles has been investigated at the bulk soil, root and tuber level.

A total of 1540 micro-organisms have been identified and a number of them have been screened for the presence of genes involved in nitrogen fixation and antibiotic production. The micro-organisms that showed promising results from these tests were included in further screenings for their effects on pathogen and potato growth.

Cutting edge technology

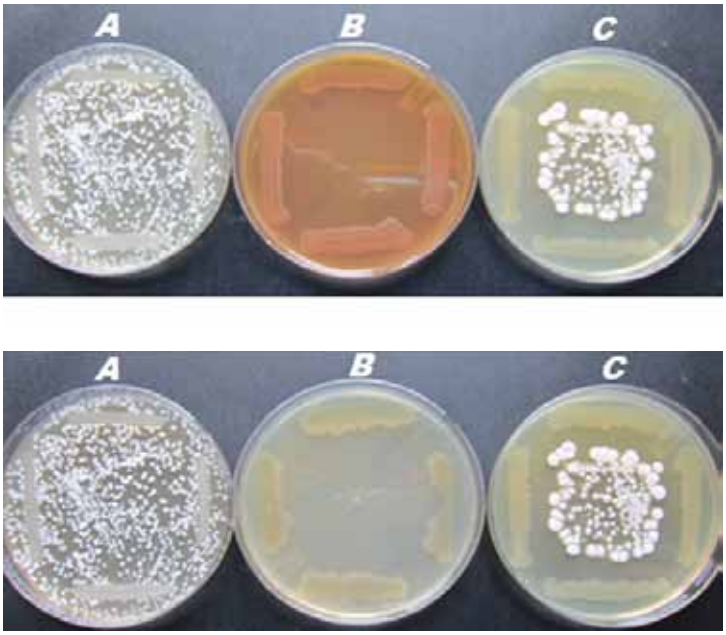
Dr Wiechel said that this project was "cutting edge" not only because of the technology it was using but also because it allowed for previously unknown micro-organisms to be identified and tested.

"In soils we usually can't identify and test most micro-organisms. We can generally only identify about one per cent of the microbes present. That means there are another 99 per cent of organisms that we don't know about. But this technology is using DNA sequencing to understand the

Figure 1.

Dual culture assay to determine inhibition of Streptomyces scabies by bacteria isolated from rhizosphere and root endophytic tissues of potato plants:

A - no inhibition, B - complete inhibition, C- moderate inhibition



diversity of soils, which means we can finally identify and better understand all these previously unknown organisms," Dr Wiechel said.

"The machine being used in this project is a gene sequencer. Normally it's only used in the medical field. In this project, however, it is being used to monitor high levels and low levels of diseases in soils and it is able to show the different micro-organisms present in these soils."

Dr Wiechel said that in doing so, scientists would gain a better understanding of which soil microbes are living on roots and then be able to determine if there are any suppressed diseases in potato crops.

"The tests will hopefully show certain organisms that consistently appear in soils that are devoid of certain diseases," she said.

"With this information it would mean that we would be able to design tests to see if we have these organisms in our soils."

Environmental benefits

"The advantage of this is that it would allow scientists to grow these micro-organisms in cultures and then apply them to soils to help prevent diseases in potato crops," said Dr Wiechel.

Dr Wiechel said another benefit to being able to cultivate disease suppressive microbes would be that it would present a more environmentally friendly approach to growing potatoes. She said that this would present improved ecological means of production.

For soils which have low levels of beneficial micro-organisms present, Dr Wiechel said that a natural application could be applied to build up the quantity, which would also offer an environmentally friendly approach to production.

"The results of this project could mean being able to enhance organisms through natural means. For example, if a micro-organism is already present in a soil it could be as simple as putting a natural enhancer on the crop and the flow-on would be an increase in health and yield of the crop," Dr Wiechel said.

"This work is a new frontier for this discipline. It's a new paradigm shift looking at genes and what organisms certain genes belong to."

"This work is a new frontier for this discipline. It's a new paradigm shift looking at genes and what organisms certain genes belong to"

Share and ye shall benefit

Dr Wiechel said that the beauty of sharing information with international research teams means a far greater flow of critical and up-to-the-minute R&D results being captured by Australia.

"This project could result in us using this sort of technology for gene scanning. Another thing we would gain from this project is being able to search a larger database of organisms. But the really good point to all of this is that any information found will go back into APRP2," she said.

As well as being cutting edge technology, Dr Wiechel said that the great thing about this project was that it was making use of technology that is already available, which has traditionally been used in the medical field.

"We're not re-inventing the wheel here," she said.

The results of the project will be published in the final report in September 2010.

The project was funded by HAL using potato levy funds and voluntary contributions from Agriculture and Agri-Food Canada with matched funds from the Australian Federal Government and DPI Victoria.

The Bottom Line: PT07038

- New technology is being developed to identify micro-organisms present in soils growing potato crops
- Micro-organisms in soil samples from Prince Edward Island and Ontario in Canada are being examined for disease suppressive micro-organisms
- This is a jointly funded project between Australia and Canada, with the information found to go back into APRP2

AUSVEG and Bayer CropScience take the lead with strategic partnership

Since announcing a strategic partnership, Bayer CropScience and AUSVEG have been working together to develop the horticulture industry and battle potential threats.

The partnership has seen Bayer CropScience sharing vital R&D information to assist the industry in addressing major threats to crops, as well as working with AUSVEG to identify market opportunities for vegetable and potato growers.

Mr Joerg Ellmanns, Managing Director of Bayer CropScience and Chairman and Senior Bayer Representative for Australia and New Zealand, said that the partnership between AUSVEG and Bayer CropScience will result in great benefits to Australian growers.

"As a representative of more than 9,000 Australian vegetable and potato growers, AUSVEG is closely aligned with Bayer CropScience's dedicated commitment to Australian horticulture, and we are pleased to be working in close partnership," Mr Ellmanns said.

"We aim to make this alliance work across a number of platforms to ensure the future viability of the industry.

"Bayer CropScience offers leading brands and expertise in the areas of crop protection, pest control products, high value seeds and plant biotechnology.

"Bayer CropScience invests €653m (AU$950m) in global research and development each year. So, for every $10 growers spend on Bayer CropScience products, roughly $1 goes towards creating even better products," Mr Ellmanns said.

Investment in industry

According to Bayer, this investment ensures that they will continue to bring the best possible products to the market to maximise growers' yields. This has resulted in the launch of six new active ingredients in 2009.

Most notably for the horticulture industry, this ongoing investment has brought to the market two products: Belt® and Movento®, which offer farmers new tools to combat sucking and chewing pests.

> "We aim to deliver innovative solutions to the market to help farmers grow healthier crops, more efficiently and more sustainably"

Furthermore, Bayer CropScience has recently been working with AUSVEG and the Potato Industry Advisory Committee to protect the local industry from liberibacter, a bacterium believed to cause Psyllid Yellows and 'Zebra Chip' in potatoes.

The liberibacter bacterium has established itself in New Zealand. Liberibacter bacterium also causes death of potato eyes, a reduction in the number of tubers, and in severe cases, can cause plant death. Losses of 20 to 50 per cent have been reported.

Such an infestation in Australia would be catastrophic for the industry and Bayer CropScience and AUSVEG are working together on contingency plans to combat the threat.

AUSVEG CEO, Richard Mulcahy, said that the partnership is a good fit for both agricultural organisations and will help protect growers from such threats.

[From left] AUSVEG CEO Richard Mulcahy and Bayer CropScience Managing Director Joerg Ellmanns

"AUSVEG members will benefit from Bayer CropScience's huge wealth of R&D and crop protection knowledge, both in Australia and globally," Mr Mulcahy said.

Significant support

As further evidence of Bayer CropScience's commitment to AUSVEG and the Australian vegetable and potato industries, the company was one of the lead sponsors of the AUSVEG National Convention held from 27 to 30 May 2010.

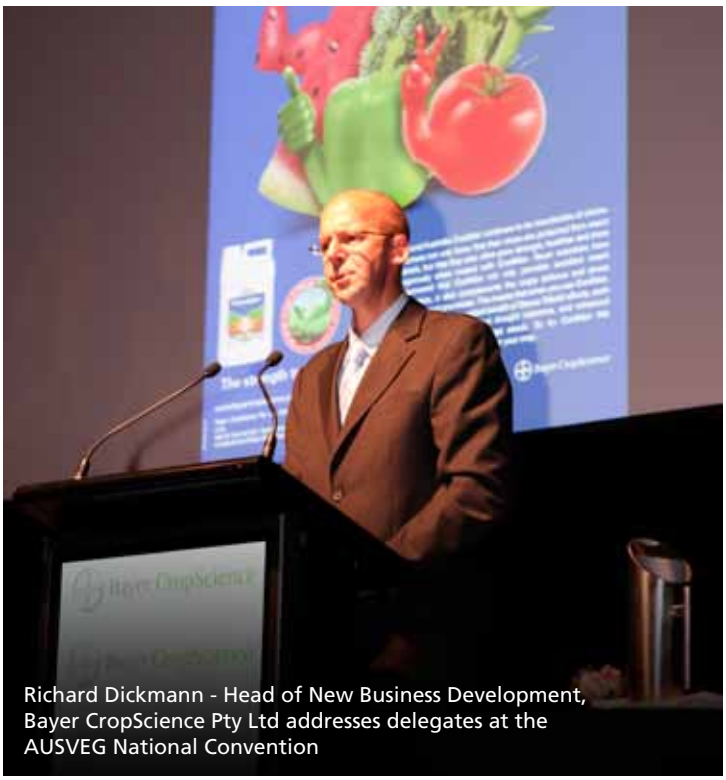
Head of New Business Development at Bayer CropScience, Richard Dickmann, was one of the most well-received presenters when he spoke as part of the speaker sessions that accompanied the Convention's Trade Show.

Following his address, in which he spoke of Bayer CropScience's commitment to growers and innovation, Mr Dickmann spoke with *Potatoes Australia.*

> "We aim to make this alliance work across a number of platforms to ensure the future viability of the industry"

Mr Dickmann said the reason for his position and the New Business Development Department was the company's desire to remain in touch with the challenges confronting growers and to expand its activities beyond core business.

[From left] AUSVEG Chairman John Brent, Gold Coast Mayor Ron Clarke, Scott Ward and Richard Dickmann from Bayer CropScience.



Richard Dickmann - Head of New Business Development, Bayer CropScience Pty Ltd addresses delegates at the AUSVEG National Convention

"There is a lot of new trends in agriculture; climate change, water saving and marketing challenges, so we thought it was necessary to have a department that looks at all of those issues," Mr Dickmann said.

"For example, our food chain partnership in which we are working with retailers and wholesalers, demonstrates how we are trying to become more involved down the supply chain.

"We aim to deliver innovative solutions to the market to help farmers grow healthier crops, more efficiently and more sustainably."

"Furthermore, we look to find new opportunities to help farmers, not just growing, but actually selling their products more profitably and sustainably," he said.

Mr Dickmann also spoke of Bayer's commitment to developing new products, which are not only good in their own right, but are good in terms of sustainability for other pest control mechanisms.

"We really do see ourselves as one of the companies most committed to bringing out new active ingredients.

Nature is moving all the time, pests are becoming resistant all the time, and new modes of action are required," Mr Dickmann said.

AUSVEG Bayer CropScience

Latest news on the Zebra Chip fight

So much is still unknown about Zebra Chip but the Australian taskforce allocated to tackle the problem is not backing down.

Dr Kevin Clayton-Greene, the Taskforce Chair of the New Zealand Tomato-Potato Psyllid (TPP) project, has just returned from his latest trip across the Tasman and he said there is still so much to be done, mostly because so much is still unknown.

This year is the end of the first full season of research and development (R&D) projects being conducted in New Zealand and Dr Clayton-Greene said that whilst there has been some very good progress in some areas, there was still a lot to be done.

"The Tomato-Potato Psyllid issue is very complex and it is certain that there is no simple solution. Both the disease and its management are still in their infancy in New Zealand, and much is being learnt in a short time," he said.

"However, it's important to understand that the industry at present still has no effective tools to control the problem. At present there is nothing on offer that can provide much solace to producers."

Dr Clayton-Greene said that the general consensus by experts is that although psyllid numbers this past season were higher than the year before, Zebra Chip was less severe.

"The reason for this is unknown and may reflect a lower percentage of 'hot' psyllids (psyllids infected with Liberibacter) or climatic reasons. Once again, this highlights the lack of knowledge about the disease," he said.

"In particular from a producer's perspective there is a need to better identify what is required for chemical control, because producers in New Zealand agree that current methods are economically unsustainable.""

The following are the major R&D projects currently taking place in New Zealand:

Psyllid monitoring

This project has shown that psyllids are most active from late December until late January. Very few psyllids were trapped prior to December; however, there were also regional peaks outside this period during February and March. Results vary widely across regions possibly due to the varying degree of coverage and sampling intensity as well as possible variations in host plants.

There are still much lower numbers in the South Island. The highest numbers were found in the Hawke Bay and Auckland regions. In the Hawke Bay, numbers were much higher in tomato paddocks compared with potatoes. For the coming season, the project will look at relating adult trap numbers to nymph levels. Researchers would also like to develop a program that would give an indication about when is the best time to spray.

Spray deposition

This project has been investigating spray technology to improve penetration and efficacy. It has found that finer spray droplets are more likely to give coverage on both sides of the leaf. The use of twin nozzles

(or equivalent) gives greatly improved coverage. Organo-silicone adjuvants greatly improve coverage and super spreader adjuvants at high rates can help with surface creep around leaf margins. Quantum head units gave very good results but they are not yet commercial.

Soft chemistry

The only laboratory results for this project have come from capsicums. The results to date have only achieved 60 per cent control but may be more effective against earlier instar, or younger nymphs. A number of options were canvassed for next year's work including deterrents.

Liberibacter diagnostics

This project developed an improved DNA extraction and a quicker multiplication method for PCR, which also resulted in a more sensitive test that is quicker and cheaper. At this stage there is still relatively little known about both the spatial distribution of Liberibacter within the plant (and therefore where is the best sampling point) and also levels of innoculum and disease expression. The focus now will be on developing a real-time PCR. A similar improved extraction and diagnostic for phytoplasma is also imminent.

Potato insecticide trial

This project is investigating the efficacy of various insecticide treatments and also the best region of the plant to sample when looking for psyllids. The project, which is being conducted at Pukekohe, found that there were no infestations until early December. At this stage there are no clear findings, although calendar spraying gave slightly better results than using reduced sprays. Chemicals used were Avid, Eco-oil, Movento and Karate. It was found that Avid needs to be used with Eco-oil. Next year the project will have bigger plot sizes and better irrigation and will look at main crop trials with four spraying treatments: control, calendar spraying and two different threshold triggers of three and four nymph for first instar infestations. The results also indicated that the middle of the leaf was the best place to assess nymph infestation. The project is also investigating the predation efficiency of natural predators.

Tamarillo research

This R&D project is taking place in Northland and monitoring is being performed in a commercial orchard. It has found that there was a slight increase in populations in late October and November with a rapid increase in late February. This pattern may provide windows of opportunity for spray programs. The most effective treatment on adults of Tamrillos was Avid, Talstar and Calypso with a similar result for capsicums. The best treatment for eggs was Neemazeel, soil-applied Confidor and Calypso on tamarillos, whilst on capsicums it was Avid, Talstar and Movento. This work will continue next year.

Biological control agents

This project is investigating the use of *Tamarixia triozae (Tt)* as a bio-control agent. This agent is from the United States and there are very tight security controls. A native Tamarixia spp has also been identified but it does not exhibit the same levels of predation as Tt. Tt is being tested for its impact on native psyllids but so far only one (the pohutukawa psyllid) suffers from predation and that is limited. Difficulty in maintaining psyllid colonies is holding up further testing. Tamarixia seems to prefer hosts upon which it developed. Unfortunately the native Tamarixia has a poor emergence from TPP and it is not at a sufficient level to maintain its population.

Technology transfer

'Psyllid News' on the *Potatoes New Zealand* website is a primary vehicle for communication. There are also industry web-sites and annual industry updates. It is hoped that a wall chart for spray programs will be produced by June 2012.

Looking after your bottom dollar, and the environment

A project investigating potential benefits of precision irrigation in the vegetable industry could result in both cost savings and an improvement to the potato industry's environmental footprint.

Words | **Mignonne Rawson**

Could helping to save the environment lead to cost savings in your potato farming enterprise?

Yes, is the answer according to Dr Susan Lambert, from the Tasmanian Institute of Agricultural Research (TIAR) at the University of Tasmania.

Dr Lambert's current project draws on the findings from research carried out in a potato research project called *PT07060 Enhancing environmental sustainability in the processing potato industry*. However, Dr Lambert's research is focused on one area in particular—improving water use efficiency.

New and improved

The current three year project is focused on precision irrigation research, with tests being conducted on two irrigation systems commonly used in Tasmanian potato production. They are: a linear move irrigator (representative of a centre pivot) and a travelling gun irrigator (more commonly known as a big gun irrigator). The project is funded by Horticulture Australia Limited (HAL) and is a collaborative project between TIAR, CSIRO ICT and a local Tasmanian irrigation company, Seattle Services Pty Ltd.

Dr Lambert said that although travelling gun irrigators are considered relatively inefficient in terms of energy and water consumption, they remain popular in the vegetable and potato industry for various reasons including portability, low capital cost and their ability to work on undulating topography.

The project has been investigating new technology that can be added to these existing irrigation systems to improve both energy and water efficiency. These include adding a nozzle pressure control system to the travelling irrigator. The other system involves a wireless sensor network (provided by the CSIRO ICT) and a variable rate irrigation system, and is being trialled on a linear move irrigator.

"The advantage of the pressure control system is that the nozzle pressure can be accurately maintained during the irrigation run and result in reduced energy and water consumption," she said.

Dr Lambert also said that the soil moisture sensors used as part of the variable rate irrigation system for the linear move irrigator enabled the regulation of water application by turning sprinklers on and off to control output as required.

"Preliminary results of the pressure control system technology indicate a five per cent reduction in water use and a 10 per cent reduction in energy use," said Dr Lambert.

"Basically this technology will ensure that water is supplied only when needed."

Money doesn't grow on trees

Farmers are always under financial pressure, so they should be relieved to know that this project has the potential to reduce irrigation costs.

Dr Lambert explained that precision irrigation in potato crops could potentially enhance the competitive position of the Australian farming sector by reducing water consumption and energy and labour costs.

"In addition it has the potential to improve yield, quality and uniformity of crops, reduce impact of plant pathogens and improve the efficiency of fertiliser use through reduced leaching of soil nutrients," she said.

Professor Tony Norton, also from TIAR, who collaborated on the project, said that reducing energy use could result in financial savings, in some

Part of the wireless sensor network

Photo of a linear move

instances, above what might usually be expected. “Tasmania imports 75 per cent of its domestic consumption of power from Victoria. Therefore, reducing the amount of energy used will be extremely beneficial for growers,” Prof. Norton said.

In addition, Prof. Norton also explained that improved technology would help to reduce other costs associated with growing potatoes.

“Lots of labour is employed on farms to manage irrigation and this project that Dr Lambert is working on could lead to significant savings in this area,” he said.

The environmental factor

Money might make the world go round but the environmental benefits of this project should not be underestimated. The overall aim of the project is to provide growers with options which will allow improved water use efficiency, reduced energy costs and reduced environmental impact.

“The environmental performance of the agricultural sector could definitely be enhanced by improved energy and water use efficiency and water conservation and reduction in soil erosion, nutrient run-off and leaching,” Prof. Norton said.

“This could lead to reasonable savings for farmers,” he said.

Ultimately though, the results that come from this project will be focused on providing cost savings for growers, especially since they seem to be experiencing ever more increased costs to production. “The focus is definitely on producing a significant reduction in costs to production. Next to that, it’s about reducing labour needs. Then, it’s about reducing greenhouse gas emissions and lastly, it’s to improve irrigation techniques in order to prevent such things as soil erosion and nutrient losses from fertilisers,” he said.

This project was facilitated by HAL using vegetable levy funds and voluntary contributions from industry with matched funds from the Australian Federal Government.

Presssure control system on travelling gun irrigator

The Bottom Line: VG08029

- Investigation has been undertaken into new precision irrigation technology that can be added to existing irrigation systems to improve both energy and water efficiency which could benefit both potato and vegetable growers
- Using vegetable levy funds this project builds on the work undertaken in the project *PT07060 Enhancing environmental sustainability in the processing potato industry*
- New irrigation technology will potentially lead to cost savings for potato growers in labour and energy and a reduced environmental impact

NEWS

McCain's launches School Veggie Patches program

McCain Foods last month announced the launch of the McCain School Veggie Patches program, which aims to teach primary school children about the origin and benefits of vegetables and encourage them to make healthy food choices by planting and growing vegetables in their own schoolyard.

The McCain School Veggie Patches program will see kids across Australia involved in vegetable production which can only be a good thing for the industry, as children become aware of different vegetable varieties and possibly increase their consumption.

Nicki Anderson, Marketing Director, McCain Foods Australia and New Zealand, said she was proud to announce the program, which marks a significant commitment to children's food education.

"We are passionate about educating children about the foods they eat and where they come from," Ms Anderson said.

"McCain School Veggie Patches aims to teach children about the benefits of healthy eating in a fun, outdoor environment.

"Involving children in the process of planting, growing and harvesting veggies is a great way to get them excited about eating veggies, and gives kids some of the building blocks for making healthy lifestyle choices."

Primary schools across Australia and New Zealand have received an information pack with instructions on how to register their school for McCain School Veggie Patches.

Once a school has registered for the program, parents, businesses and community members can donate points to the school, by collecting the barcodes on all McCain frozen vegetable packs and McCain Purely Potato products.

Participating schools can redeem their points for everything they need to build and maintain a veggie patch, including seeds, tools and equipment; such as gardening gloves, wheelbarrows, water tanks and compost bins.

The program represents a $500,000 commitment from McCain Foods on garden equipment available to schools across Australia and New Zealand.

Further information can be found online at:
www.mccainveggiepatches.com

The McCain School Veggie Patches program

Potato salad may cut cancer risk posed by red meat

It was reported in June that scientists from Adelaide's Flinders University found that the starch contained in cold, cooked potatoes would reduce the cancer risk associated with eating red meat.

In a country where the barbecue is its cultural pivot, these latest findings about the benefits of eating potatoes is very good news.

Jean Winter, a PhD student who worked on the project, told the Australian Associated Press (AAP) that the reduction in risk from the potato salad was significant.

"Interestingly, there is more of this starch if you heat up the pasta or potato and then cool it down again," she told the AAP.

The starch assists in minimising the cancer risk by resisting digestion until it reaches the colon, where it is eaten by bacteria, by a process that releases favourable molecules.

Tests were conducted on mice, which were fed a diet of red meat or red meat plus resistant starch and then tested for any indications of the DNA damage that is a forerunner to cancer.

Mrs Winter fed different groups of mice a red meat diet and a diet of red meat plus resistant starch and, after four weeks, their colons were checked for any signs of "DNA damage"—a precursor of cancer.

"We found this starch could significantly lower the formation of these markers for DNA damage," Mrs Winter said.

"It also lowers the fermentation of the red meat in the colon... which can produce toxic metabolites that can also be carcinogenic."

Trading potato information

Tasmanian potato farmers were privy to industry expertise at a local potato growers meeting in Bundaberg in April.

Scott Morris, Farming Operations Manager for vegetable processor Simplot, was in the area sharing his knowledge about the Tasmanian potato industry.

He outlined the challenges of growing potatoes in sandy soils and the opportunities for efficiency gains in nutrition and variety choice.

Mr Morris said that he too had gained some insight regarding the Queensland industry.

"We are generally planting when Queensland growers are harvesting and our seasons are less rigid, so it was very interesting to see how potatoes are grown in different conditions," he said.

"I've also been given a few ideas to take home to our contract growers, including innovative irrigation practices and nutrition, such as applying calcium nitrate at planting."

NEWS

Potato growers adapting best to climate change

Potato growers in the United Kingdom came out on top in a survey measuring how the food production industry is adapting to the impacts of climate change, according to HortWeek.com.

The survey conducted by Farming Futures (an industry-led project which helps farmers and growers respond to climate change) revealed that 47 per cent of vegetable and potato growers said they were taking action.

The survey also revealed that one in four farmers and growers have noticed increased interest from customers in their environmental performance over the past year.

Key findings

- 53 per cent of those surveyed recognised that addressing climate change offers potential business opportunities—a significant rise on last year.
- The number of farmers and growers producing their own energy has doubled.
- Almost half are taking action to reduce greenhouse gas emissions from their land (48 per cent).

Purple potato could be a mash hit

A new purple potato variety with potential health benefits is being grown commercially for the first time in Scotland, according to a report in the Press and Journal.

Called the Purple Majesty, the new variety is made for mashing and Airdrie-based Albert Bartlett and Sons hopes to harvest 500 tonnes of the variety this autumn.

Purple Majesty was first bred in Colorado, USA. Growing trials over the last couple of years confirmed it was suitable for Scotland and that there is now enough seed for the first commercial crop.

Gillian Kynoch, the company's Head of Product Development and Innovation, said Mr Bartlett was working with Queen Margaret University, Edinburgh, to measure the antioxidant levels in the potato once it is cooked, and to find out if these are then transferred to the human blood system when eaten.

Mrs Kynoch said there were many coloured potato varieties in the world, including Shetland Black and Arab Blue, but they often disintegrated in the cooking process.

"We know that the antioxidant levels in the variety are higher than other fruit and vegetables, but whether they come up against blueberries (one of the so-called super fruits) is not yet known," she told the Press and Journal.

Fiji: To reduce potato imports

Fiji's attempts to reduce the importation of potatoes will not be welcome news for Australian growers who export to the island state.

According to a report on Freshplaza.com, Fiji imports about 16,000 tonnes of potatoes valued at $17 million each year but now the government is taking active steps, through the Agriculture Ministry, to bring about great changes to imports.

The province of Ra officially launched the potato planting season this week at Wailailai Settlement, and it was attended by more than 80 farmers. Ra is expected to harvest 90 to 100 tonnes of potatoes in three months time.

The plan is to encourage local companies to buy potatoes from Fijian farmers rather than import potatoes.

Reserve Bank of Fiji Governor, Sada Reddy, said Flour Mills of Fiji would be one such local company which would be working more closely with the local farmers. Reddy said he understands that the FMF currently buys 400,000 kilograms of potatoes annually for producing potato chips, and with this new venture FMF will be able to lessen the import bill for potatoes.

Chairman of Flour Mills of Fiji, Hari Punja, said they are ready to use the local potatoes to produce the FMF brand of chips.

Chase Vodka named best in the world

Australian potato farmers could take a leaf out of William Chase's book if they are looking to further their potato growing enterprises.

Mr Chase from the Midlands, in the United Kingdom, produces the world's finest vodka.

As reported in the Birmingham Post Mr Chase, the former boss of Tyrrells Crisps, turned his hand to producing vodka several years ago and this year his vodka was named the world's finest at the 2010 San Francisco World Spirits Competition.

In the days since winning the competition, Mr Chase has seen demand rise more than 10-fold, but he said that it would not herald a pursuit of more and more sales.

He believes the secret to the firm's successes has been controlling production by keeping everything in-house.

He also said that using potatoes from his fields rather than wheat – used by many rivals – has ensured the operation is ahead of the competition.

"Everyone else in the industry buys their potatoes in but when I started I thought making everything ourselves would be very important," he told the Birmingham Post.

"We can actually tell people with each bottle which field it comes from."

He said the secret lies in the production methods, which rely on a 70 foot tall metal column which plays an integral part in the distillation process.

"One of the unique things about our vodka is it is made from a traditional copper pot, which gives it its character," he said.

"We boil it up in the copper pot and it has a column and it bubbles away in there and condenses and evaporates about 50 times.

The distillation process at Chase Vodka means the final outcome has a consistency more like wine.

At present, the team at Chase makes 1,000 bottles a week of vodka and 1,000 bottles of gin, which is made by adding junipers and citrus to the vodka.

It also produces some liqueurs, including marmalade, blackcurrant and rhubarb flavours.

Moth infestations could mean better potato yields

Infestation by the larvae of the Guatemalan potato moth (Tecia solanivora) has given researchers from Cornell University a clue to increasing potato yields, according to a new study.

The Australian Food News website reported in May that researchers have found that when 10 per cent of the potatoes in a crop are infested with the larvae, the potatoes harvested weigh 2.5 times more than the potatoes from undamaged plants, even after the infested tubers are removed.

It was also reported that even a 20 per cent infestation rate still produces a doubled marketable yield, while a 50 per cent infestation rate produced the same yield as a normal plant.

Researchers linked the overgrowth of the potatoes to compounds in the larvae's spit, which causes the Colombian Andes commercial potato plant (Solanum tuberosum) to produce larger tubers.

Oddly, the compound only increases the size of a plant's uninfested tubers— those occupied by the moth larvae remain the same size.

Lead Researcher, Katja Poveda, said that the results of the study, funded by the German Research Foundation, were surprising.

"Initially, I wanted to show how much these pests reduce potato yields, but we actually found they increase the yield," she said.

Currently, farmers spray plants with pesticides every two weeks in an attempt to get rid of the infestations.

The Columbian Andes potato is the only one of seven varieties tested to respond this way so far, although future projects will widen the range of varieties tested.

What's On

17-19 August 2010

AgQuip Field Days 2010

Where: AgQuip site, Blackjack Road, Gunnedah, NSW (North West Slopes and Plains) 2380

What: Australia's biggest agricultural industry field day event, staged over three days. Showcasing 500 exhibitors representing 2000 companies, the event attracts over 100,000 visitors every year.

Further information: : www.farmonline.com.au/events/agquip or call (02) 6762 2399

25-26 August 2010

Dowerin GWN Machinery Field Days

Where: Dowerin, Western Australia

What: The biggest showcase of agricultural machinery and associated equipment in Western Australia.

Further information:
http://www.dowerinfielddays.com.au/dowerinfielddays

31 August-2 September 2010

Heritage Agshow

Where: Toowoomba, Queensland

What: The Heritage Agshow is Queensland's largest agricultural and machinery field day and provides an opportunity for businesses to source maximum exposure from a wide selection of the primary industry marketplace.

Further information:
Email Peter Erwin at perwin@agshow.com.au or call him on (07) 4634 1155

2-3 September 2010

14th Symposium on Precision Agriculture in Australasia

Where: Commercial Club, Albury, NSW

What: This will be a one-day event and will offer attendees an opportunity to learn how Precision Agriculture is being applied across a number of agricultural industries. A symposium dinner has been organised to continue networking amongst like-minded peers.

Further information:
Email: nicole@spaa.com.au or phone: 0437 422 000

8-9 September 2010

Potato Europe 2010

Where: Bockerode, Germany

What: This event is set to attract prominent potato specialists from all over the globe and will feature an international exhibition, highly acclaimed field demonstrations and an international congress.

Further information:

http://www.potatoeurope.com/

18-28 September 2010

Spudhunters

Where: The Royal Melbourne Show, Flemington, Victoria

What: Spudhunters is a free activity for kids in the Grand Pavilion that is all about potatoes. Learn where they come from, how they grow and what they are used for. Dig up your own potatoes in specially designed paddocks.

Further information: www.royalshow.com.au

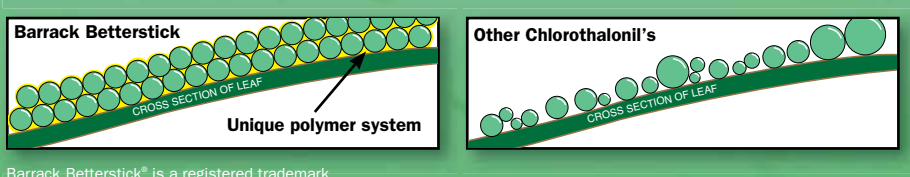
Barrack Betterstick®.

Superior stickiness is only half the story...

Barrack Betterstick's® unique polymer system and smaller active ingredient particle size means you not only get superior rainfastness but also better protection from disease.

Smaller particle size means:

- Multiple layers of protection
- More even distribution
- More surface area of active ingredient in contact with the leaf



Barrack Betterstick® is a registered trademark.

Crop Care

Ask the industry

with Scott Mathew

When visiting potato growers one of the first things I ask them is: Do they visit their potato seed crop being grown? About 95 per cent of the time the answer is "no."

Knowing how your seed crop has been grown and what the seed looks like in storage is vitally important and may affect the way you treat this seed when you receive it. Each year I get numerous calls from our field staff about situations where poor seed handling by some commercial growers had led to diseased or poor quality seed having been planted, which resulted in poor yield being achieved.

Q: So when does management of a potato crop begin?

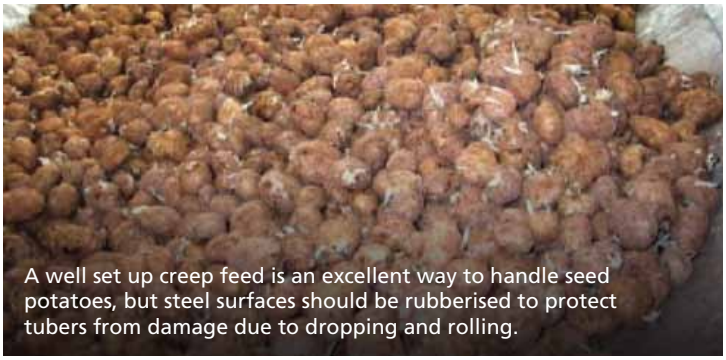
Answer: Every grower should begin managing next season's potato crops with the contracting and purchase of good quality seed. It is extremely important that commercial growers and seed growers have open discussions with each other throughout the season about the progress of the seed crop. It is vital that each understands "what they want the seed to do" in the commercial phase.

In my experience, quite a few commercial growers do not actively start managing their crops until they receive their potato seed and begin planting it, yet it is the steps prior to planting that can have the greatest impact on the final yield results. Once that quality seed has been purchased and delivered, the very next step is often where some growers fall down in their overall crop management.

Q: How important is seed handling and storage by growers prior to planting?

Answer: The purchase of good quality seed is a critical factor to produce a good crop, and there is some excellent seed available each year from the seed producing regions. It is by far one of the most significant investments a grower makes each year in the production of a crop. However, all too often, when visiting commercial potato growers, I see potato seed stored in poorly maintained and dusty sheds where diseases, such as Silver Scurf thrive, ready to infect this year's seed. Sheds are also often poorly ventilated with fluctuating temperatures that can lead to physiological aging of seed.

The seed is then graded/cut using poorly maintained and dirty equipment, where exposed steel and high drop points can easily bruise or damage a tuber, leaving it open to infection from disease such as fusarium and bacteria that cause seed piece decay. Often old potato residue from previous grading can be found on the shed floor or jammed up under belts or between rollers. All are a potential source for disease transfer. Good shed hygiene practice, as well as the use of well maintained handling equipment, is absolutely critical when storing and handling potato seed.



A well set up creep feed is an excellent way to handle seed potatoes, but steel surfaces should be rubberised to protect tubers from damage due to dropping and rolling.

For many seed potato growers, there is a great deal of TLC that goes into producing a quality seed article, not to mention the significance of the investment by the commercial grower purchasing the seed. It is therefore imperative that growers pay attention to detail when handling and storing seed, to ensure they can maximise the returns from the subsequent crop via production of good quality and high yielding potato crops. It is also important that growers consider the benefits of protecting their investment in quality seed from disease at planting, by applying either a seed treatment such as MAXIM 100FS for control of Rhizoctonia, Silver Scurf and suppression of Common Scab and/or use an 'In-Furrow' application of AMISTAR 250SC for control of Rhizoctonia and suppression of Silver Scurf.

Nitrophoska® Special

Now pure white but with the same pure quality.

We've taken out the blue colouring, but we haven't taken out what makes Nitrophoska so special. Unlike blended fertiliser products, every granule of Nitrophoska Special delivers the same amount of nutrient to each individual plant, helping to maximise yields.

Insist on Nitrophoska Special, purely and simply one of the best.

IPL5174Redhanded

Incitec Pivot Fertilisers is Australia's leader in soil and plant nutrition, investing locally in innovative products and agronomy solutions to help Australian farmers remain globally competitive. **www.incitecpivot.com.au**

Incitec Pivot

Cleaning, handling and storage systems.

Think of Grimme and you think of potato harvesters.

Complete the potato process from field to store with the Grimme range of advanced crop handling and storage equipment.

At every stage during and after harvest, every transfer and drop is critical.

Protect your investment with Grimme.

Call Craig Hopkins on 0418 501 647.

LANDPOWER
www.landpower.com.au

POTATOWORLD
The Used Potato Harvester Specialists

GRIMME

IMC LPA 1095 PT