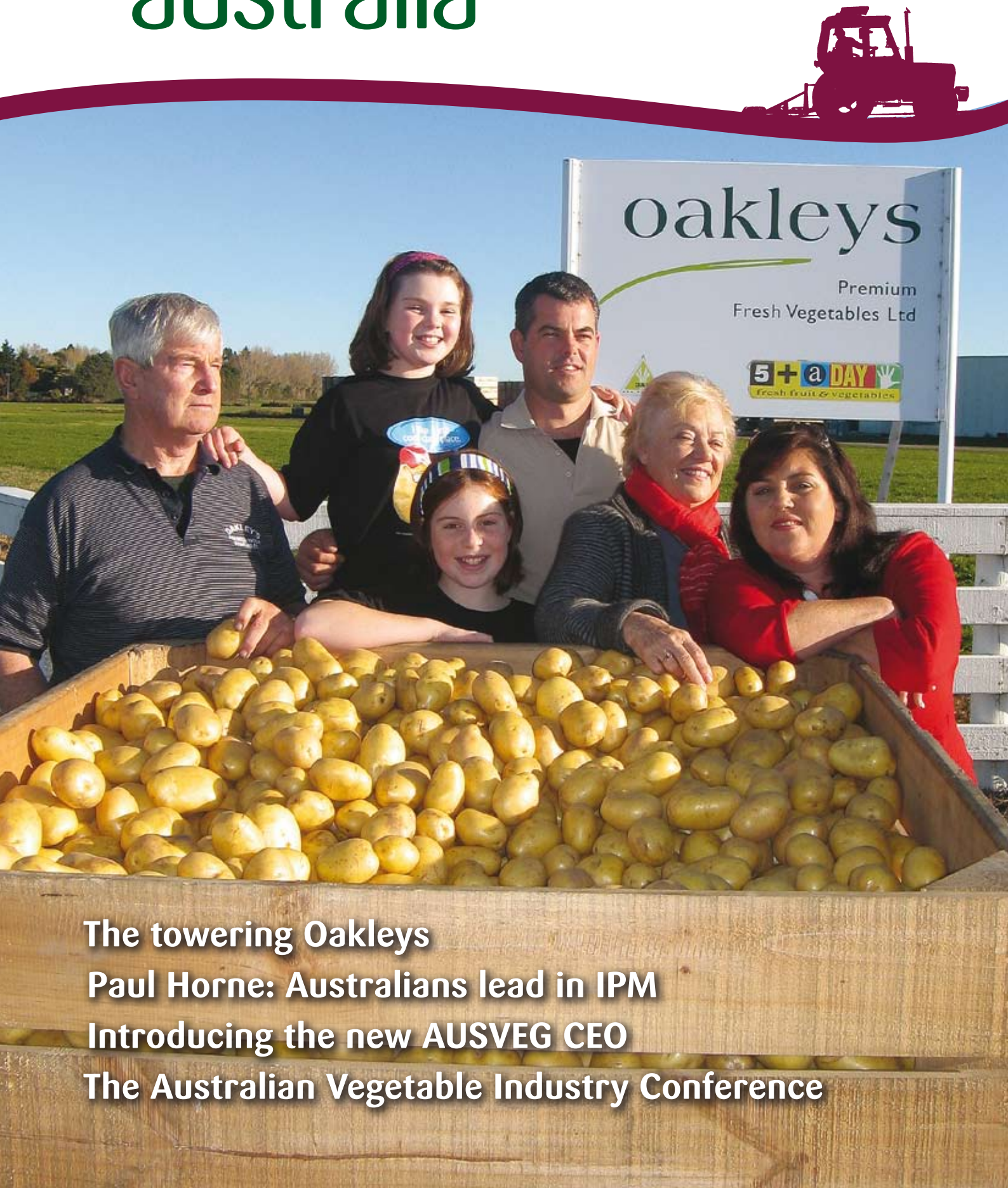
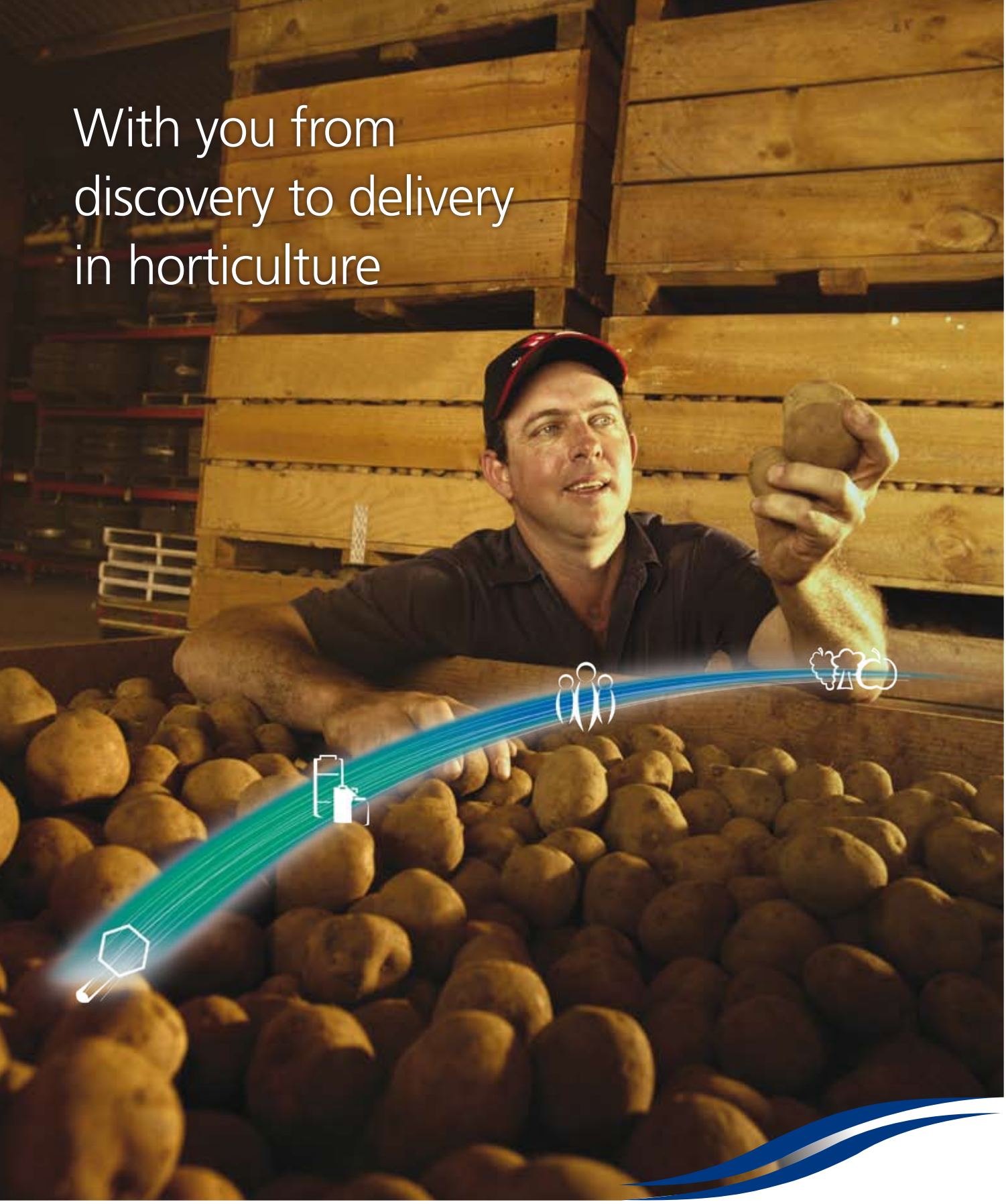
potatoes australia

Informing and connecting
Australia's Potato Industry
June 2009



The towering Oakleys
Paul Horne: Australians lead in IPM
Introducing the new AUSVEG CEO
The Australian Vegetable Industry Conference

With you from discovery to delivery in horticulture



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Cover image: The Oakleys of Canterbury, NZ

AUSTRALIAN GROWN

AUSVEG Ltd is proud to be an Australian Grown campaign partner

AUSVEG Chairman's message

It was a pleasure to meet many of the participants at the recent Australian Vegetable Industry Conference at the Melbourne Convention Centre. The speakers raised a great many issues that are having a profound impact on the potato and vegetable industries.

These keynote presentations were worth listening to for the insights they impart into how to negotiate the changing demands of consumers, the value chain, and what carbon trading means for growing. To listen to the key speakers, please visit the AUSVEG website, www.ausveg.com.au

The potato stream of the R&D showcase highlighted the creativity and expertise behind much of our current and on-going research.

The presentations included insight into the Australian Potato Research Project, an international science initiative worth about $15 million, which aims to find solutions to major potato diseases.

The potato industry continues to be battered by issues some of which are the result of the extended drought, changes to water regulations and economic hardship.

AUSVEG pledges its continued support of the industry by providing a voice for all its members and member associations through these trying times and beyond.

This brings me to our appointment of new AUSVEG CEO Richard Mulcahy whom I was pleased to be able to introduce to conference delegates.

Richard brings to the industry years of experience at the fore of many leading national and international organisations, and a formidable skill at lobbying key policy makers.

He has already successfully initiated a series of meetings with principal policy-makers. This includes appearing before the Joint Standing Committee on Treaties in relation to the ASEAN-Australia-New Zealand Free Trade Agreement and our export of produce to the Phillipines and Indonesia.

Finally, I also take this opportunity to thank interim CEO Robert Lawler for his outstanding commitment and hard work over the past year.

John Brent
AUSVEG Chairman

Editor's message

In this issue we meet a number of people who exemplify the value of thinking outside the square.

2009 Researcher of the year Dr Paul Horne has long been involving potato growers with the practices of integrated pest management (IPM), when they could easily have opted for other, more ecologically harmful, methods of waging war against plant pests.

The results have paid off for Paul, and for Australia, with our growers being recognised internationally for producing some of the world's cleanest, greenest potatoes by our overseas counterparts. Now, with biosecurity highlighted in the battle against climate change effects, pests and diseases, Paul talks us through some of the current threats and how growers should be approaching these.

Kiwi grower, Robin Oakley has won multiple awards, and has many New Zealand and international industry accredited courses under his belt. But it is his forward-thinking approach with a firm eye on enlarging the future of potatoes everywhere that sets this particular grower apart. Whereas many growers of his age are exiting farming in droves, Robin engages some different gears and demonstrates on pages 18-20 what it is about growing that keeps him growing.

The Australian Vegetable Industry Conference featured a day-long Potato R&D showcase with some excellent presentations. Among them, Agwest Plant Laboratories Manager Mark Holland, delivered his vision for tomorrow's seed certification, which we have adapted for this issue.

As the onset of PCN still remains an unknown, Tony Slater of the Victorian Department of Primary Industries this month outlines what the Potato Breeding Program is doing with respect to resistant and susceptible cultivars in an informative article on what it takes to craft a spud that can beat potato cyst nematode.

We also introduce you to new AUSVEG CEO Richard Mulcahy and speak to him about his ideas for the industry, while allowing you to catch up with our regular columns, including Ian James' Economic forecast, in this edition.

Finally, we bring you Spudscape, a fresh, sometimes off-centre, look at the ideas and innovations making up the world of potatoes. I hope that Spudscape—and certainly this issue—gets your imagination fired.

Jenan Taylor
Editor
Potatoes Australia

Pathologist steps up to the plate

The Victorian Department of Primary Industry's (DPI) Dr Nigel Crump will step into new shoes when he takes up the position of General Manager, ViCSPA in the next few weeks.

The Board of ViCSPA (Victorian Certified Seed Potato Authority) last month announced that it had appointed Nigel, a Potato Plant Pathologist with the DPI to the role based at the Toolangi research facility.

ViCSPA Chairman Doug Marshall said Nigel's wealth of experience and skills including a good reputation as a proactive energetic potato researcher combined with excellent relationships with individual growers and the wider industry, made him an excellent candidate for the position. He also has a full understanding of seed certification including the sciences behind the Scheme.

"We look forward to Nigel adding value to ViCSPA and the seed potato industry," Mr Marshall said.

At Knoxfield since 2001, Nigel's responsibilities included research project development and delivery, and staff management. He also led a sub program of the Australian Potato Research Program (APRP) on soil health. The focus of his research was the development of practical strategies to reduce diseases of potatoes in Australia.

Outgoing ViCSPA Manager Keith Blackmore is retiring from fulltime employment in mid July, but will continue to work on a part-time basis contributing to the organisation and members the benefits of his extensive and unparalleled experience in potato seed certification in Australia.

"Although I am looking forward to a well-deserved break before starting out in the part-time position, I hope to be able to help fill some of the knowledge gap left in the south western potato-growing districts by the untimely passing of Bruce Fry earlier this year," Keith said. pa

Plant Health Australia launches biosecurity Overview

Plant Health Australia (PHA) has launched the National Plant Health Status Report, a 180 page snapshot of the nation's plant health system.

Australia's Chief Plant Protection Officer, Lois Ransom, has commended the efforts of Plant Health Australia in publishing of the National Plant Health Status Report.

"The National Plant Health Status Report promotes confidence in Australia's domestic food security and supports our access to overseas markets. The Report also gives the whole biosecurity sector a benchmark against which future improvements in the plant health system will be measured," Ms Ransom said.

The report provides information on the plant pests of greatest concern to Australian industries, the organisations and processes involved in keeping Australia's agricultural and forestry industries free from pests, and innovative plant health research projects currently being undertaken by Australian research organisations and universities.

It is a consolidated snapshot of the system that protects Australian agricultural and forestry industries, worth more than $20 billion a year, from exotic pests and diseases.

"This Report provides policy and decision makers across governments and industries an overview of the sophisticated biosecurity system responsible for protecting Australia's food supply and product markets. It is a useful reference manual for educators and those providing support and commercial services to the plant industry.

It also demonstrates the robustness of Australia's plant health system and should build confidence in the quality of Australian plant products," said Greg Fraser, Executive Director and CEO of Plant Health Australia.

The National Plant Health Status Report identifies, among other things, details for the 2007/08 financial year including the more than 200 high priority plant pests that are exotic or of significant quarantine concern to Australia.

It also highlights over two thousand biosecurity research and development projects currently underway or completed in Australia, and the in excess of 120 surveillance programs targeting plant pests of concern across the country.

Every Australian has a stake in Australia's plant health system. The system plays a crucial role in safeguarding agricultural industries and sustaining regional economies, as well as helping to maintain production, productivity and access to export markets.

"The cooperation between all the stakeholders, both government and industry, that helped develop the National Plant Health Status Report has been admirable and I would like to thank everyone involved," Mr Fraser said.

A copy of the National Plant Health Status Report is available on the PHA website at www.planthealthaustralia.com.au pa

Psyllid response

New Zealanders threatened by the potato psyllid which is causing around NZ$30,000 damage and reducing the potato yield by up to 20 per cent are calling for growers to be vigilant about the pest's movements, as part of a robust management strategy.

The head of Horticulture New Zealand's Potato group Terry Olsen has told journalists that "There is a lot of research going on, but as yet, we don't have a good fix on the psyllid in New Zealand. There is early evidence that it may thrive in warmer climates and those that have mild winters," he said.

"I think the answer will be a management package, rather than the use of agri-chemicals alone."

Syngenta's 2009 Researcher of the Year, Dr Paul Horne, who was recently invited to present his findings on potato psyllid at the World Potato Congress, agreed that caution needed to be exercised.

"I think that definitely we need to have an IPM strategy to deal with potato psyllid. The pesticide-based approach is still currently used overseas but I believe has failed and is far inferior to the IPM strategy that is used very successfully in Australia," he said.

"This approach was outlined in my talk to the Potato Psyllid Workshop in New Zealand." pa

Watch, listen to World Potato Congress

For all those who couldn't make it to The World Potato Congress, or wanted to listen again to segments of particular interest, recording of the presentations and proceedings are now available on the internet.

Chairman of New Zealand Potatoes Terry Olsen indicated that the recordings were the perfect combination of antidote and inspiration for all those beset with hurdles in their day to day practices. "It's the sharing of ideas that in the long-term that will ensure the success of our industry," he said.

To view or hear the recordings, visit the World Potato Congress website, www.potatocongress.org pa

Germany to allow GMO potato trials

Germany has decided to allow the test cultivation of a potato containing genetically modified organisms (GMOs), despite banning the cultivation and sale of GMO maize type MON 810 produced by US seed corporation Monsanto.

According to Germany's Agriculture Minister Ilse Aigner open air trials of the GMO potato Amflora, developed by German chemicals group BASF presented no threat to public health or the environment.

Aigner said this month she would carry out a new review of an application for the open-air trial cultivation of Amflora, which was test-cultivated on 150 hectares in 2008.

Aigner said on Monday she would only permit test plantings of Amflora of 20 hectares instead of the 40 hectares sought and the plantings must have extra protective fencing.

BASF warned last week a decision to stop trials could damage Germany as a location for scientific research.

German Chancellor Angela Merkel had earlier indicated that millions of euros had been invested in developing the Amflora potato in the hope that there could be field trials.

"This fact cannot simply be ignored because currently sentiment is hostile," Merkel said on Friday.

The GMO maize ban has been controversial within Germany's ruling government coalition because of fears it could damage scientific development in the country.

German Research Minister Annette Schavan has called a round table meeting into the future of GMO crops.

"We must take the fear of new technology seriously but the debate cannot be left to fear only," Schavan said this month.

Monsanto, the world's largest seed company, has also started legal action against the German ban.

Source: Thomson Reuters pa

Local food vital to politics: Water4Food

Regional food security is vital to the role of Australia's foreign aid program, however this is being jeopardised because food production security within Australia was being overlooked, according to the Water4Food program.

"High quality food produced sustainably here in Australia plays a critical role in, not only feeding poor people overseas, but in building diplomatic relationships critical to our future in the Asia Pacific Region, "said Cr Terry Hogan, Chief of the Water4Food Australia, a community-based strategy of the Riverina and Murray Regional Organisation of Councils (RAMROC).

"Food is the foremost on the recipe for geopolitical stability in the Asia Pacific Region.

"What's at stake with the current national water policy and planning vacuum is our ability to play a critical role for Australia's foreign aid program."

Cr Hogan also called for a significant boost to research and development funding designed to improve the productivity and sustainability of food production in Australia.

"The government announced $2.4 billion for clean-coal projects and $1.5 billion for solar power plants in the budget," he said.

"In the same budget, however, the Government axed the research and development agency Land & Water Australia. Land & Water Australia justifiably regarded itself as a special home grown solution to sustainability and productivity challenges inherent in a food and fibre production sector consisting of more than 130 000 individual businesses.

"A recent national Productivity Commission report suggested that if there was a flaw in the L&W model, it was that Australia was not investing enough in public good research and development."

He said Water4Food wanted to form 'part of the solution' in federal and state government policy challenges facing the water resources sector.

To that end, RAMROC have launched a Community Resources kit designed to guide everyone with a stake and interest in regional issues in the ways to lobby politicians, interest groups and deal with the media in order to foreground their concerns.

Water4Food Australia seeks to protect water supplies for the production of food in the Murray, Murrumbidgee, Lachlan Valley and Lower Murray Darling Basin valleys.

It also seeks to develop and roll out an integrated strategy to protect communities, food producers and processors from the impact of: political and regulatory responses to drought and climate change, market reforms which unfairly restrict water availability for food production, and environmental extremism.

RAMROC is about getting out there and spreading the word, empowering stakeholders to speak out with confidence, concisely identifying and reiterated their key concerns and most importantly being fully prepared for this important mission," says The Riverina and Murray Regional Organisation of Councils chair, Cr Terry Hogan AM.

"Significant outcomes can be achieved by using the media, lobbying politicians and speaking to local interest groups about the key concerns.

"The truth is that we have one opportunity to 'make a difference' and investing time in reading this guide and developing a strategy will equip local citizens with the knowledge and confidence to achieve the community objectives."

"The best outcomes for our communities will be by establishing and maintaining strong and positive relationships with key players," Cr Hogan said.

For a copy of the kit email imc@imcanz.com.auw pa

High tech hunting

Growers be aware, the locavore philosophy has just reached new heights with help from the market leaders of all things cool and 'techie', Apple.

Observe Apple's new iPhone application, Locavore, which launched in March in the US and for the time being is limited only to that country. iPhone users and purveyors of fine food can now partake in the growing frenzy of locavore—a term used to describe people who only eat food grown within a certain distance of their residences—by turning on the suitably named application.

The technology works in conjunction with GPS and location networks to find local farmers markets. It has a list of 'need to know' categories including information such as what produce is in season, what will be available next, as well as the best recipes to use.

The new feature is particularly popular for being able to show consumers over 200 different types of produce and where it is currently being grown. Locavore also provides direct links to wikipedia articles and other food sites and blogs so that consumers can find out as much as they can about the produce they are after.

While the technology has reportedly been experiencing some teething problems, locavore fans of the new application are already expecting the second version to make even more fresh food information available on their cell phones.

It's only a matter of time before the Locavore application (or something like it) arrives on Australian shores, and with US food bloggers already praising the usefulness of the feature, it's another triumph for modern technology and for the farmers, retailers and other food industry representatives who participate in the scheme.

Words **Gretel Sneath**

Leading the world in IPM

Up until the late 1980s, Australian potato farmers were almost totally reliant on chemical insecticides to control pests, but the discovery of successful IPM alternatives has ensured that is no longer the case.

Generations of growers have been waging war on the highly destructive potato tuber moth *Phthorimaea operculella*. Prior to 1987, their 'artillery' predominantly consisted of broad-spectrum organochlorine, organophosphate and synthetic pyrethroid insecticides, but when the organochlorine insecticides were withdrawn from agricultural use in Australia, the search for alternative control measures broadened to include Integrated Pest Management (IPM).

Australia's 2009 Syngenta Researcher of the Year, Dr Paul Horne, has played a key role in the development of these new pest management strategies. His work with Victoria's Department of Agriculture, and later his own company, IPM Technologies Pty Ltd, has led to the introduction of a range of beneficial insects, compatible products, and services to facilitate the implementation of IPM in horticultural and broad-acre crops across Australia.

... today, a majority of the nation's potato growers are able to recognise the beneficial species as well as the pests. But it seems the rest of the world is still playing catch-up.

In the beginning, the methodology was greeted with a degree of scepticism until it was backed up by scientific information and on-farm demonstrations.

"To collect such information, we needed growers to collaborate and agree not to use broad-spectrum insecticides on certain paddocks," Paul explains.

Growers needed to be convinced that their livelihoods would not be destroyed despite the fact that normal applications of insecticides were being withheld, and so they were given regular information on what was happening in their crops.

Monitoring involved a search for all pests and all beneficials, and judgments were made as to the likelihood of economic loss if no further action was taken. If damage was considered likely, then suggested action did not only include chemical options; cultural controls for potatoes such as rolling, watering, and harvesting early or hilling were also proposed.

"The involvement of growers in this research ultimately meant that they were aware that there were beneficial insects in their crops as well as pest species, and that they needed to be cautious about the impact of the pesticides they applied. This encouraged them to adopt strategic rather than routine applications, and, in some cases, avoid insecticides altogether," says Paul.

The results were overwhelming given that some of the farmers had been applying seven or more insecticides per crop prior to their involvement in the trials, and today, a majority of the nation's potato growers are able to recognise the beneficial species as well as the pests. But it seems the rest of the world is still playing catch-up.

"We believe that the model of IPM in potato crops that we have developed in Australia could be applied in any country, with the advantages including reduced use of insecticides and avoidance of secondary pests, but from my understanding, it's still very much a pesticide-based approach in places like the USA and UK and certainly New Zealand," says Paul.

The big fear now is that Australia could take a backwards step if some of the insects and insect-vectored diseases found in these countries cross our shores.

Paul believes the tomato potato psyllid *(Bactericera cockerelli)* is one of our biggest concerns. First identified in an Auckland greenhouse tomato crop in April 2006, it has also been found in the USA, Northern Mexico and Southern Canada, and can cause a severe reduction in yield and quality. Until now, the pest has only been combated by heavy and frequent doses of insecticides, and while Australia remains psyllid-free, Paul is concerned that any change in this status could destroy this country's well-established IPM strategies.

A draft pest risk analysis report released early in May by Biosecurity Australia proposes quarantine measures for importation to Australia of solanaceous crops from countries where *'Candidatus Liberibacter psyllaurous'* and its vector are present. The draft report identifies potatoes, nursery stock and the tomato-potato psyllid infected with *'Ca. L. psyllaurous'* as ways the disease could be introduced to Australia. Currently potatoes for human consumption are not permitted access into Australia, however the risk of *'Ca. L. psyllaurous'* has been evaluated as this is a potential pathway for movement of the bacterium.

Biosecurity Australia has proposed a combination of quarantine measures and operational systems to reduce the risks associated with the importation of potatoes, nursery stock and infected tomato-potato psyllids. These measures include processing

in quarantine approved premises and application of control measures to ensure low populations of psyllid in crops.

"If it follows the sequence of events which happens when we get a new pest in this country, the internal quarantine restrictions and legal requirements could impose a pesticide strategy on growers who don't want to follow that path," Paul says.

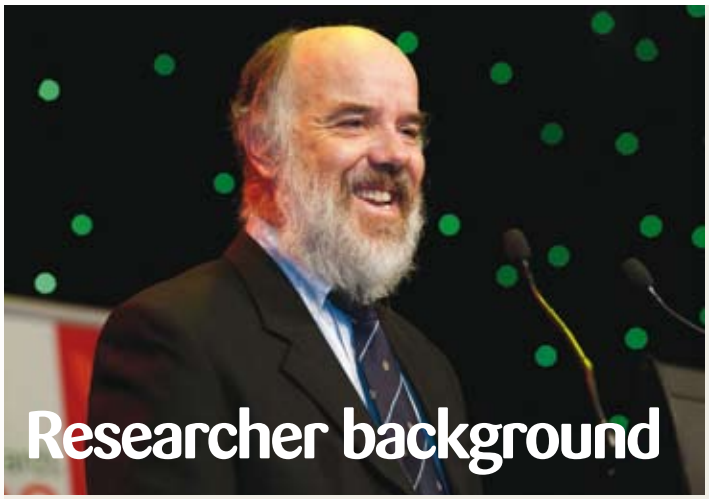
"It simply is not possible for potato growers to expect that they can use an IPM approach and at the same time use a broad-spectrum insecticide spray for any pest. It has to be realised that the control of all pests need to be considered and that the control of some pests can disrupt the biological control of other pests. We cannot expect to spray out potato psyllid and still have biological control of potato moth, aphids and thrips."

Researchers overseas have already identified a number of natural predators that feed on psyllids, including the convergent lady beetle, minute pirate bug and damsel bug. But although they are good eaters and will interrupt any stage of psyllid development, their effect on populations is modest. A parasitic wasp that will paralyse nymphs and lay their eggs in them has also been identified, but field studies overseas show that they are not well synchronized with the psyllid life cycle and therefore do not show much promise.

"We cannot expect to spray out potato psyllid and still have biological control of potato moth, aphids and thrips."

Paul says further research into control of the psyllid is needed – and it needs to take place *within* New Zealand so that a strategy can be developed before it possibly arrives in Australia.

"We need to develop an approach to deal with this pest that does not rely on insecticides and that will fit into the IPM strategy that we have used successfully for over a decade," he says. pa



Researcher background

Dr Paul Horne has more than 30 years' experience as an entomologist, and has published five books and more than 70 scientific papers on entomological topics. He is an Honorary Research Fellow in the School of Life Sciences at La Trobe University and Melbourne University's School of Agriculture, Forestry and Horticulture, where he works as an associate supervisor of both undergraduate and post-graduate students.

Since 1996, Paul has also been the director of IPM Technologies P/L, a company founded to conduct entomological research, particularly in the area of sustainable agriculture, biological control, integrated pest management (IPM) and assessment of invertebrate populations for conservation status. IPM Technologies provides crop monitoring services to increase adoption of IPM and also produces beneficial insects. Clients have included Horticulture Australia Limited, Rural Industries Research and Development Corporation, GRDC, DuPont, Syngenta, Bayer, Native Grasslands Conservation Group, many private farmers and vineyard managers. The company also undertakes collaborative research with many State Departments throughout Australia, and with CSIRO, and has taken part in several projects (some current) in New Zealand with the Foundation for Arable Research (FAR) and Plant and Food Research.

Meet the new AUSVEG CEO

From being a senior executive of a Fortune 500 company to serving as a Member of Parliament, recently appointed AUSVEG CEO Richard Mulcahy talks about challenges faced by growers and his plans for helping the industry assume its rightful position on the national stage.

You've worked in a number of different industries, including government and private enterprise. How will this experience benefit the vegetable industry?

The various industries I've worked in have all had a number of similarities: their full economic worth was not being recognised federally, they were confronted with a range of issues—legislation, taxation, economic concerns and industrial relations—and they all had a very good story to tell that wasn't being heard. As a result, there was scope for dramatic improvement. The vegetable industry is no exception.

While good work has gone on at state level, which is very important in terms of national policy, AUSVEG's voice has not been strong at a national level.

We have many effective research and development projects that deliver outcomes for growers and help the industry, but we tend to hide our light under a bushel. As an organisation we need to be front and centre in terms of our engagement with government.

I've initiated dialogue with bureaucrats at a national level, along with key Members of Parliament from both sides of politics. There'll be ongoing discussions as we establish our credentials, ensuring that when matters arise that impact on the vegetable industry, we will be consulted and our point of view heard.

We're in the introductory stage, but the office of Tony Burke, Minister for Agriculture, Fisheries and Forestry, has already agreed to further scheduled meetings with AUSVEG. Similarly, the office of John Cobb, Shadow Minister for the same portfolio, has indicated that they would like to have detailed discussions in coming weeks on issues that they have identified in relation to water and AQIS charges.

What are the current top challenges faced by the industry, and how can these be turned into opportunities?

As an industry, we offer a product that is essential to society. We have an established reputation as growers of high-quality produce, and there is fantastic diversity, representing a range of different groupings and nationalities.

However, we are under serious challenge from imported products. While this presents an immediate threat, we must also recognise the enormous challenges we face in the retail area, with two major retailers dominating the grocery trade in Australia. This situation is likely to be with us for a long time, so we have to find ways of working through it to ensure that Australian-grown products are given greater prominence and support at the retail level.

The presentation by Jin Ju Wilder, President of California's Coast Produce Company, at the recent Australian Vegetable Industry Conference showcased innovative ideas that have been employed in some American vegetable retail outlets.

I plan to have discussions in the coming weeks at the retail level to see if we can trial some of these ideas. This will increase

awareness of the quality of our products and use the locally-grown label as a selling point over imported products.

What forces will shape the industry in the years to come?

The number of issues that the vegetable industry contends with is astounding. Trade, biosecurity, labour force, urban sprawl, water access, consolidation of competitors, and interconnection within the retail sector are all matters that present significant challenges for growers; they underline the importance of AUSVEG playing a major role in tackling these issues to help protect its members.

Imports are a major issue, as are treaty negotiations. AUSVEG recently lodged a submission with the Federal Parliamentary Joint Standing Committee on Treaties, giving evidence in relation to the concerns we have over the free trade arrangements in Asia, particularly impediments to Australian exports into Indonesia and the Philippines.

Meanwhile, in the area of industrial relations, pending changes to the Horticulture Award will also have adverse economic consequences, presenting the industry with significant challenges in terms of increased labour costs.

What type of support can growers expect from AUSVEG?

The first thing we're working towards is greatly enhancing the communications we have with our state members and allied organisations—those that share our concerns in the horticulture sector. We're also improving our communications with decision makers in the parliamentary sphere. I've had an extensive briefing with the Levy Revenue Service and members will see significantly more information coming from AUSVEG, which will help them better understand the issues they face.

I'm anxious to ensure that there is a strong level of transparency and accountability. I've had the privilege of serving as a Member of Parliament in the role of Shadow Treasurer and as Chairman of the Parliamentary Public Accounts Committee, so I have a considerable awareness of processes in terms of expenditure of funds. Levy-paying growers must be confident that funds from the national vegetable and potato levies are deployed in the most efficient and effective way. To facilitate this transparency, more information will flow, not less.

We had a report on the rural aspects of the Federal Budget out to all members by 8.15pm on Budget night. This information provision is a sign of things to come. I hope that state organisations will help by ensuring these briefings and reports are disseminated within their own membership.

While AUSVEG will continue to give great importance to research and development projects, there's an intention to significantly improve our capacity to lobby, so public affairs is a priority for the future. We also hope to develop partnership arrangements with many industry providers and suppliers to assist them in communicating with members.

The international potato industry and communities advocate a shift to food production models based on co-operative networks and increased research and development in order to take advantage of opportunities afforded by food security issues. Describe some of the ways that AUSVEG will help the Australian potato industry achieve this.

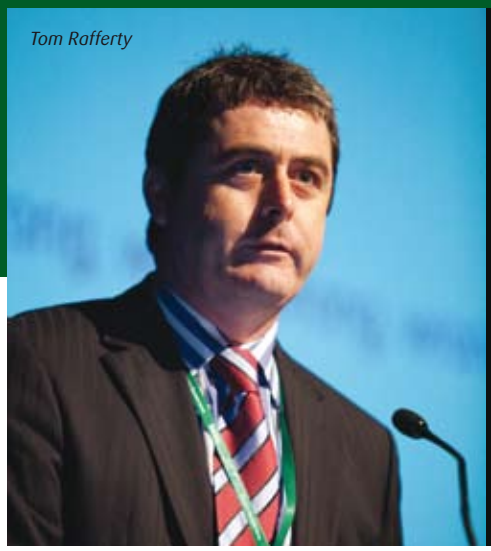
Cooperative models have been successful in some cases and similarly unsuccessful in others, so while they are worth exploring, their suitability really depends on local circumstances.

The biggest challenge for potato production is the impact of dietary changes. The reality is that there has been a trend towards an Asian-influenced diet among young people in recent years, and that certainly provides a challenge for those involved in potato production. That is really a marketing issue and not an insignificant one in terms of guiding consumer choice.

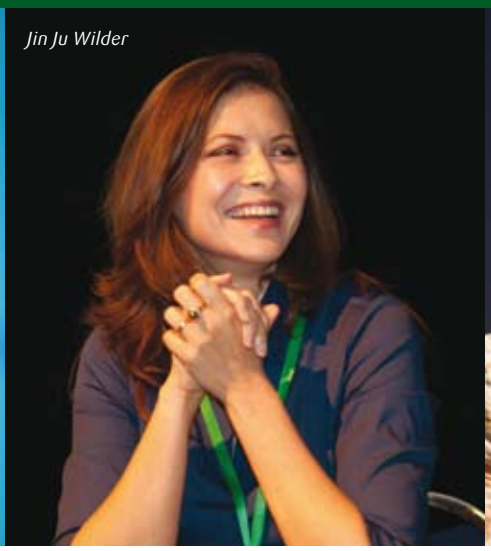
There has been great growth in the processed sector, and it continues to be an important element of the potato industry. I'm looking to work with industry leaders in that section of our constituency to see what role AUSVEG can play in helping growers enhance their production and sales, recognising that we are operating in a changing environment. pa

Geoff Moar, Richard Mulcahy and Luis Gazzola

How to grow a healthy Australia



Tom Rafferty



Jin Ju Wilder

Joanna McMillan Price

The importance of carbon trading and its effects on the vegetable industry was a major issue tackled at the 2009 Vegetable Industry Conference. But international and Australian experts agreed that provided there was an eye to the future, there were plenty of opportunities for industry growth.

Over the two days, speakers' presented on topics ranging from current consumer trends in Australia and overseas, to climate change and how the industry would cope.

Carbon conversations

Keynote speaker the Shadow Minister Assisting the Leader on Emissions Trading, Andrew Robb, said that climate change and carbon trading was "... the biggest structural change in our history and we have to get it right.

We are concerned that there are costs to producing vegetables, but no compensation. The best way of lowering emissions was for companies to have their own balance sheet to find efficiencies," he said.

"There is also scope to stop carbon in the atmosphere and increase and grow biomass in the soil. This gives great scope in Australia to rehabilitate the soil with known agricultural practice."

Professor Colin Birch, from the Tasmanian Institute of Agricultural Research, explained that the agricultural sector was not scheduled for inclusion until 2015. "But that costs were sure to increase when a carbon tax was introduced. There aren't many opportunities for offsets and so industry will need to be looking at appropriate adaptations.

"It will be important for the industry to look for new vegetable cultivars and implement efficient water use strategies. More research is needed into other opportunities, new industries, and

Pemberton potato grower, Dom Della Vedova, said it had been interesting listening to the speakers. "In Australia we can grow anything but it's about being able to sell our produce. The industry is moving more towards marketing and from a grower viewpoint I believe that we need to know what happens beyond the farm gate.

"We need to advertise and promote our products and strike the right nerve. It's important that consumers are able to connect with farmers. These are the messages from experts that we all need to hear," he said.

new products," he said.

Science Leader, from the Employment, Economic Development and Industry Department, Queensland, Shane Dullahide, raised the issue of whether there was a difference between climate change and climate variability. "It's possible for farmers to adapt to climate change, but much more difficult to deal with climate variability. How do you manage conditions that go from heat wave to flood? This is an area that needs more understanding," he said.

The local and international guest speakers were adamant that even in tough economic times there were plenty of opportunities to sell fresh vegetables, but it was important to keep pace with changing consumer trends.

Buying tastes

General Manager of Fresh Food, Coles, Peter Pokorny, believes there are plenty of opportunities for the industry. "But we need to understand that the global financial crisis has changed consumer behaviour.

"Customers are eating more at home, and they want value for money, but not at the expense of quality. There is huge interest in food on television programs and we need to capitalise on that. The need for locally produced vegetables has supplanted organic, and people want to know the source of the food and when it's in season," he said.

"There is a strong interest in how to combine vegetables with other products. People are eating at home, but they don't want the meal to be dull.....there is a huge interest in finding out how to prepare delicious and interesting food.

"This opens up huge opportunities and demands. It's about growing the total pie and there is much to achieve here before we get excited about marketing overseas," he said.

President of Coast Produce Company in Los Angeles, Jin Ju Wilder, says we have a large role to play in inspiring consumers.

"We need to get an emotional connection with the consumer – whether that message comes from taste, or on the packaging.

"Consumption of fresh fruit and vegetables has dropped. People in the US are worried about jobs, and putting fruit and vegetables on the meal table is not a priority," she said.

"With people eating at home, we need to make sure that our vegetable products are on the shopping lists, and we need to be talking up the seasonality and the reasons to buy our products. I've noticed in the shops in Australia that Imperial mandarins, are in season now. There should be signs saying they are sweet tasting, have few seeds and are good for you.

"You need to get the message out there, talk to consumers about the product, and let it tell its story about whether it is organic or locally grown. People want to know where their food comes from, they want to have a personal connection with food," Jin Ju said.

"But whatever you do to survive, don't drop the prices. Growers are already being squeezed to the limit," she said.

Emeritus Professor of Food Marketing at the Imperial College, London, Professor David Hughes, described similar trends in the UK. "Organic products have lost 25 per cent of sales, but they will bounce back. Value- added products are also suffering.

"But the market for local products is increasing. People are demanding information about where the stuff comes from, and they want to buy what's in season. They want to know when the new potatoes come in season so they can buy them for that brilliant taste.

"Success in future depends on getting more information about consumers and understanding their needs. And we should be looking at marketing products on social networks such as MySpace, face book and YouTube. It's a big part of the future and the vegetable industry needs to be there," Professor Hughes said.

Diet

Sydney-based Nutritionist and Dietician, Joanna McMillan Price, had a simple message – we want Australians to eat more vegetables and to do that we need to change the image of the vegetable industry.

"We need to show people that vegies are a sexy and fun food to eat. They shouldn't be just a side dish, but an important, fun and vibrant part of our diet," she said.

Joanna said her research showed a major obstacle to eating vegetables was the perception of convenience. "People are busy and many don't have the skills to cook vegetables in an interesting way. People also have fears about fresh vegetables being full of pesticides, but they will eat a ready-made frozen meal," she said.

"I have just completed a project producing recipes that cost under $10 and have only five ingredients. People don't know how to produce healthy meals that don't cost much. They want simple, but interesting ideas," she said.

"We should be supporting Australian farmers and growers, and convincing people that vegetables are the main event in any meal," she said. pa

Words **Karen Shaw**

Showcasing potato research and development

The Potato Industry Research and Development Showcase held at the recent National Vegetable Industry Conference raised some important issues for the future of the industry. These included pest and disease management, a proposed national seed certification scheme and understanding fertiliser use.

The showcase, part of a two-day National Vegetable Industry Conference in Melbourne, was designed to give researchers Australia-wide a chance to explain their work and give an overview of future industry challenges.

Diseases & biosecurity challenges

The Victorian Department of Primary Industry's (DPI) Plant Pathologist Dr Nigel Crump and Thorpdale grower Des Jennings talked about the importance of understanding and knowing what's under your crop, particularly with the emergence of Potato Cyst Nematode (PCN)

Dr Crump said: "The golden nematode or *Globodera rostochiensis* could take up to four years to show-up in crops, and longer before there was any damage. But yields could be reduced by up to 50 per cent. Fortunately we are not at this level in Australia yet," he said. "But growers need to be vigilant about crop rotation, only growing good clean tubers, controlling volunteers, and growing resistant varieties."

Developing varieties that have PCN resistance has been a part of the plant breeding focus, DPI Plant Breeder, Tony Slater, reported. "We are also looking for varieties that have improved post harvest qualities and better overall disease resistance."

DPI Plant Virologist, Brendan Rodoni is researching potato viruses and vectors including those transmitted by aphids, such as potato leaf roll, potato virus Y, potato virus S and the tomato spotted wilt virus in potatoes.

"Potato leaf roll virus is known as a persistent virus. It could take an aphid up to two hours feeding to acquire the virus, and 20 minutes to reinfect another plant.

"This is compared with Potato virus Y and Potato virus S, both of which are known as non-persistent viruses. It takes 15-30 seconds for the aphid to feed and get enough of the virus to re-infect another plant. Such a short feeding time, means that chemicals are not always an effective control," Brendan said.

The DPI's Dr Dolf de Boer who has been researching potato late blight in Papua New Guinea reported on potato late blight *Phytophthora infestans* – the disease that caused the Irish potato famine when 1.5million people starved to death. "It's a resurgent problem, and growers overseas are struggling to control more aggressive strains of the disease," he said.

Dr de Boer explained that new strains of the disease were more aggressive and had a shorter life cycle of between 5-7 days. "The new strains are more adaptable to different temperatures and lower moisture periods.

"This is a resurgent problem overseas and a major economic worry. The chance of it coming to Australia is low. But the disease can survive on clothes, which means there is a risk of it spreading that way. The nearest infestation of the new strain is in Indonesia," he said.

Fertiliser management

Principal of Ag Challenge, Tony Pitt, debated the need to change fertiliser management strategies. "In the past couple of years the price of fertiliser has doubled so we need to understand whether the current strategy is right and practices sustainable," he said

"Emphasis has been put on the Nitrogen, Phosphorus, Potassium (N:P:K) ratio, but should growers be also looking at other nutrients?"

Left - right
Des Jennings
Mark Holland
Lucy Keatinge & Hugo Le Messeriur
Iain Kirkwood

Brendan Rodoni

Artist, Matt Cotter gets the picture

He said there was some evidence that, on heavily cropped soils, saturation point of phosphorus had been reached. "It seems because growers need high levels of productivity there is no case for a decline in overall fertiliser use. That is with the possible exception of phosphorous.

"While fertiliser prices may have doubled over the past two seasons, the ratio between costs for fertiliser at planting time and the contract price has remained largely unchanged," he said.

But Tony did question the sustainability of continuous use of phosphorus. "Phosphate rocks are running low and we need an alternative."

He also talked about the potato crop response to higher nitrogen levels. "Usually the response to higher levels of nitrogen follows a straight line until it plateaus. Tissue testing has become the accepted means of determining the crop nitrogen status. If nitrogen levels are below the key-thresholds for tissue analysis then adding nitrogen fertiliser is likely to be cost effective. However if the crop is not responsive, then adding more nitrogen might be a waste of money," he said.

Tony also raised the issue of magnesium and calcium deficiencies in areas, such as Ballarat and Thorpdale. "In these areas the balance of minor and trace elements has, until recently, been adequate for potato cropping," he said.

But now growers might need to add extra trace elements and suggested calcium nitrate fertiliser at hilling (together with boron) and magnesium sulphate before planting to help prevent deficiencies.

Overseas expertise

While much of the focus was on the Australian industry, visiting Extension Crops Specialist from the University of Maine, Dr Steven Johnson, spoke about his experience in the US and New Zealand.

Dr Johnson said optimising production was not always about producing the biggest pile of spuds, but the most profitable. He listed a range of tips for optimising profit.

"Firstly growers need to take soil samples every year to analyse fertiliser needs. Optimising the crop can also be as simple as calibrating the cutting machine to ensure it operates correctly so the seed is a good shape for feeding onto a planter. It's also important to understand the physiological age of the seed. For example young seed with one big shoot will produce potatoes the size of a pumpkin. But middle age seed produces more stems on the plants, and thus a better crop," he said.

"When planting you want the fertiliser to be just below the tuber so the roots are forced down to find water. Our research has also shown that planters operated at less than 6km an hour give more consistent tuber placement in the rows," he said.

"Understanding crop water needs and having a pesticide schedule are also important. Growers in our area monitor the weather data and make an analysis about late blight spraying. We might put on between 9-18 applications, but it depends on the year," he said.

Dr Johnson also discussed the importance of selling certified seed. "We believe if the standards are not acceptable in the crop then it should not be certified and the potatoes sold for some other purpose," he said. pa

LR: Vegetable Industry Awards winners Dr Paul Horne, Steven Skopilianos, Kim Vincent, Nathan Clackson & Peter Dal Santo

Celebrating industry champions

A commitment to the environment, sustainability, innovative thinking, efficiency and knowledge resources, along with service excellence was what defined the winners at the Australian Vegetable Industry Awards night at Melbourne's Crown Palladium on Wednesday 6 May.

Vegetable Industry Awards 09

The winners were selected from a line-up of growers, researchers and pesticide management professionals who each displayed bench-setting standards in their field of knowledge, experience and future outlook.

AUSVEG CEO Richard Mulcahy was impressed with the calibre and outstanding achievements of the finalists and awards recipients within the industry.

"Congratulations to this year's winners. They have set a very high standard and will no doubt inspire their peers in the Australian vegetable industry to aspire to excellence, "Richard said.

AUSVEG Chairman John Brent also commended all the nominees for their contribution to horticulture and to the Australian economy in general.

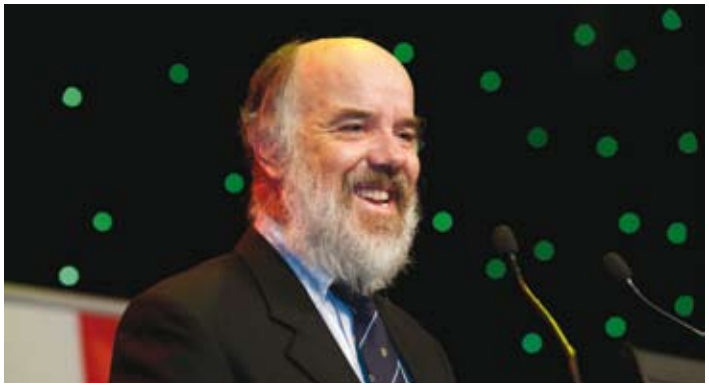
"The Australian horticulture industry is worth around $1.4 billion, creating jobs and dollars for communities. This year's finalists and winners are champions of the industry whom we congratulate and encourage to continue their excellent work," he said.

Brisbane Produce Marketing Innovative Marketing Award

On accepting the Innovating Marketing Award on behalf of Ladybird Organics, Director' Steven Skopilianos said, "I've been a vegetable grower for over 25 years and we did not invest in marketing until recently; we never paid much attention to it. However, since our conversion to organics, we engaged consultants to assist us with the process, and it has paid off.

To be recognised for our efforts in this time of drought and bad economic news is very encouraging. It helps us to go back into the paddock and keeping planting the seed. "

Steven also acknowledged the assistance of the Biological Farmers Association in Ladybird Organics' conversion to more sustainable operations. "This award is for organics," he said.



Syngenta Researcher of the Year

Dr Paul Horne, winner of the Syngenta Researcher of the Year prize, was equally jubilant:

"It is a very great honour to be selected. Unfortunately the value of research is not seen until growers get to implement the results. I set up IPM Technologies with that in mind and took up research into IPM to get growers to develop it.

They took what must have seemed like extremely strange advice at the time, but I'm positive they've seen the benefits over the years," Paul said.

Landmark Young Grower of the Year

Nathan Clackson won the Landmark Young Grower of the Year award and immediately reminded Australian farmers that they still had many opportunities for growth despite the hurdles they faced.

"There are a number of categories in particular that I think have a lot to offer growers. Asian vegetables is a huge area from which growers can benefit. Hydroponics is terrific for developing new skills, and there are opportunities for better efficiencies with improved land use.

With growing urban spread there need to be sound management concerning the land put aside for farming and we need to make good farming investments," he said, also citing the Dutch model for dedicated farming lands. "We need to learn from that and emphasise it here in Australia."

Landini Grower of Year Award

The Landini Grower of the Year, Kim Vincent, thanked AUSVEG Environmental Manager, Helena Whitman, NSW Industry Development Officer Alison Anderson, and fellow growers for their support and encouragement.

"I came into this industry at an older age and I would like to thank the Vegetable Industry Advisory Group (IAC) for their friendship and all their help during the hard times". Kim ended her speech by encouraging industry members to "keep on keeping on".

AUSVEG industry recognition award

Peter Dal Santo won the AUSVEG industry recognition award and was ecstatic as he accepted the prize.

"It's rewarding but it does get hard at times," Peter said. "We help the industry with pesticide access and pest management issues. The industry is going through some big changes with regards to pesticide access, but thanks to past and present industry development officers we have access to some very clever people and resources.

We need to get very smart about how we're going to take on board some of the changes that have been happening with regard to pesticides internationally. We have to take these on board for the Australian context. These are some very significant issues and we're working in conjunction with some of the nation's leading IPM researchers such as Paul Horne and Sandra McDougall to get past some of these challenges." pa

Words **Jenan Taylor**

The talented Mr Oakley

Robin Oakley understands that channelling change in a changing world is a terrific strategy—and not just for the sake of sales.

Robin Oakley used to get up at five o'clock every morning to personally transport the produce from his fledgling enterprise to local fresh markets. He was just 15 years old, but already his love for the land had seen him producing his own certified seed potatoes, pumpkin and cauliflower, which he then sold at roadside stalls and in the local community.

The early start in the industry meant that Robin was able to establish and foster strong links which have helped him go from strength to strength. He left school in 1985 to build his enterprise up from paddocks leased from his potato grower father, Graeme. "I decided to pursue this path, when I realised I could trade my work in my father's fields in exchange for equipment for my own ventures," Robin says.

Since then the fifth generation seed potato and vegetable grower has become the Owner, Managing Director and Manager of New Zealand's *Oakley's Premium Vegetables*, an award-winning company based 60 kilometres south of Christchurch on the infamous Canterbury Plains. Despite the duties this brings, however, Robin maintains that he is "out in the paddock often, keeping a hands-on role."

"I'm aligned to the Jamie Oliver mentality of taking the message to kids and educating them about the possibilities of fresh produce."

These days *Oakley's* regularly hosts visits from world-renowned researchers referred to them by Lincoln University. More recently, Robin's enterprise was visited by delegates from the International Year of the Potato; teams from Elders, Australia; potato growing representatives from South America; and, notably, the Chinese Minister of Agriculture and fellow dignitaries who were interested in increasing the growth of the potato business in China.

Robin's facilities are also the destination of choice for fresh produce managers from a range of different New Zealand retailing organisations who want to learn about the latest trends in fresh produce.

Clearly, Robin has made some sound decisions in his chosen field and his passion for trying out new things, his drive and willingness to explore risks for his enterprise and produce, are instrumental to this.

Oakley's has created a solid reputation for its produce and operations through ventures that include visible community initiatives and innovative approaches to the supply chain.

GROWER INFORMATION

Producer:	**Robin Oakley**
Location:	**Southbridge, Canterbury, New Zealand**
Crops:	**Potatoes, broccoli, pumpkin, cauliflowers, parsnip, red beet**
Soil Type:	**Silt loam**
Avg Rainfall:	**around 450-600mm**
Awards:	**FMG Rural Excellence Award (2001); Vegfed Yound Achievers in Horticulture Award (2001); Lincoln University Foundation (Horticulture) Farmer of the Year, 2nd place (2002); Selwyn District Business of the Year Award (2002); Ellesmere A & P show R. G . Robinson Trophy for Potatoes and Roots - most points in section, 2006, 2007, and 2008.**

Some of these initiatives have been borne by the same types of pressures that potato producers around the world experience, that is in not getting the best returns for production efforts.

"Prices aren't great and there's risk everywhere. The distribution system seems to work for retailers, but not for growers, and so there's a need to take a better interest in the supply chain," Robin says.

"Potato growers have got so much at stake that we have to remain in the driver's seat. Some of the big retailers seem to be less committed to growers, so we've made a point of regularly engaging with fresh produce managers. That way they engage with our product and can pass on an understanding about it – and us— to the retailers *and* the customers.

That's so important these days especially, with people seeking advice at purchase point on what effect the product has on the world."

Some of his undertakings with the supply chain have involved introducing distinct packaging types for his produce, which enables customers to recognise his brand and remain loyal to it across separate retailing organisations.

True to his ambition to remain in full control of his enterprise, Robin makes a point of connecting with his customers directly.

"We're striving to get as close to our customers as possible," he says, some of which involves keeping a good public presence through sponsorship deals in the local community, participating in sporting associations, and teaching school children.

"I'm aligned to the Jamie Oliver mentality of taking the message to kids and educating them about the possibilities of fresh produce," he says."We're always wondering about what else we can tell them that enables them to get a clearer picture of growing food, and hopefully develop an affinity for that."

"The International Year of the Potato was extremely valuable for us in this respect. Many New Zealand growers really got behind it; I found myself doing regular television spots and being included on a children's documentary show because of it. That's an investment we can't let slip, so I'll keep getting out there," he says.

Still, not even Robin can be in all places at all times, so he has a couple of weapons in his arsenal.

Family is foremost. Robin's parents Graeme and Dorothy, and his wife Shirleen, who remain involved in the organisation.

Graeme encouraged Robin to pursue his passion for production, and currently oversees the potato side of Robin's venture. He shares Robin's vision for raising the profile of potatoes in consumers' minds, while Dorothy is active in rural community work, including spending a decade serving on the Rural Women New Zealand National Board.

Shirleen is a fellow Company Director and integral to the organisation's administrative functions. She is also in charge of public relations, the sponsorship arm, and the running of the company's website.

Staff is paramount to *Oakley's* successes and Robin is particularly proud of his 35-strong team (depending on the season) of helpers. There is regular training, social get-togethers such as trivia nights, and they are all encouraged to attend product launches. Central to all this, Robin says, is good communication.

"Communication is more important than anything else in this industry. As such, my staff attend communications skills workshops which underscores their abilities and professionalism.

But it is technology in the form of a company website that adds an extra dimension and breadth to Robin's reach.

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The website introduces people to the Oakleys, details their history and informs users on the types of produce grown by the company, as well as the reasoning behind their innovative packaging. It features information on varieties and recipes and also provides advice on what insects customers might expect to see in their fresh produce from time to time.

Importantly, the site also emphasises the company's dedication to traceability, food safety and quality assurance, which in this age of greater accountability as a valuable marketing tool, makes a win-win situation for him.

Although he plans to add features including a kids' education corner, he is not careless about the information he puts on the website, or on any other of his communication mechanisms.

"There's a lot to tell consumers about potatoes and there are always new things, but the fact of the matter is that they can get quite confused with the amount of information, so we just aim to educate and entertain to the point where they'll retain the necessary knowledge about specific products and understand where the food comes from and how it is grown."

The combination of family experience and support, staff and website frees him up for planning and pursuing other interests related to the enterprise, and beyond.

So does he ever worry that he's not spending enough time at the coal face?

"Farming is about constant transition and, by natural extension, so are my operations."

"I'm passionate about growing; I've been doing this for many years, and yet, I don't always want to just grow potatoes, or pumpkins or beets. What happens after the paddock? You just get what you get for your five kilograms of spuds—and that's it?? There's so much more to farming."

"One of the biggest things I came to realise was that I wasn't just a grower. I'm also a manager and ultimately, a leader of people [in a community]," Robin explains.

"Farming is about constant transition and, by natural extension, so are my operations. It took a while for me to get my head around that, but it all makes more sense when you do. It's the key to enjoying what I do and the way I see it, is the reason for my enterprise being what it is today and in the future." pa

CEO's message

Since accepting the role of Chief Executive Officer to AUSVEG, I have been amazed by the number of challenges with which the national vegetable and potato industries have to contend.

From biosecurity and proposed climate change legislation to industrial relations agreements and international trade protocols, these are all issues that AUSVEG is determined to help growers and other industry representatives tackle with positive outcomes.

I have introduced a number of key initiatives in order to actively serve the ongoing interests of our levy-payers and other industry stake-holders.

These initiatives include:

- Improving communication channels between AUSVEG, our member bodies and associations and Horticulture Australia. This includes the publication of a periodic online CEO Update designed to complement our current weekly online bulletin, and meeting regularly with member bodies, and AUSVEG directors.
- Increasing our representation and visibility at government levels and engaging with key policy-making. This includes initiating regular meetings with Ministers, Ministerial Advisers, and other key decision makers.
- Strengthening and developing links between local, national and international stakeholder bodies. This includes strengthening our ties with HAL and developing ongoing dialogue with overseas associations and agencies such as the International Centre for Potato Research (CIP) in Peru and the International Potato Industry Steering Committee.
- Increasing our public profile. This includes establishing a stronger media presence in local, regional and national broadcast and print formats.

The vegetable industry has a stronger message to sell than any other industry I've been involved in—the role that vegetables can play in a healthy diet. Bringing the health benefits of our product to the attention of consumers will result in increased sales and greater consumer awareness.

It is my contention that potatoes have an unique and important message to sell in terms of their benefits, however, a well-thought out, long-term outlook needs to be employed here.

Recent debates in the UK point to the dangers of allowing potatoes to be perceived for their value as cheap staple items amid the global economic recession. Prolonging this view of potatoes could only serve to further erode the competitiveness of our industry when the economy stabilises.

We need to explore initiatives—some of which marry with the expert opinions expressed at the recent Australian Vegetable Industry Conference—that elevate the reputation of potatoes as a versatile, satisfying and nutritionally-sound choice on the plates of eaters across all levels of the Australian socio-economic sphere.

Such an approach has the potential to significantly improve production in the industry.

I've had the opportunity to be involved in programs in other industries with projects with similarities to what the potato industry should be aiming, including a successful marketing campaign for a Chicago-based Fortune 500 company that was structured around the health aspects of the company's products. This campaign resulted in increased global sales that have lasted to this day.

Finally, I would like to take this opportunity to thank interim CEO Robert Lawler for his hard work and efforts over the past year.

As always, AUSVEG looks forward to keeping you fully informed of industry happenings. In the mean time I look forward to hearing about some of your views and these can be emailed to info@ausveg.com.au, or call us on 03 9544 8098.

Richard Mulcahy
Chief Executive Officer
AUSVEG

Words **Ian James**

Appraising the Federal Budget

FEDERAL BUDGET ANALYSIS

What a difference a year makes. In 2007 the Budget for this financial year was being framed in the midst of a booming economy smitten with labour shortages and racked by inflationary fears. Government coffers were awash with money as business tax revenue soared, capital gains taxes increased and high levels of employment created endless streams of pay as you go tax revenue from wage and salary earners. The government was budgeting for a $21.7 billion surplus for 2008-2009 and the forward estimates were for a $20 billion surplus for 2009-2010. Now the government is budgeting for a $57.6 billion deficit for 2009-2010, a massive turnaround of $78 billion. And it is forecasting that the Budget will not return to surplus until 2015-2016. In the meantime, the government will rack up debt to finance the shortfall in revenue.

Fiscal versus monetary policy

These sorts of figures are enough to give any accountant apoplexy. As pointed out in previous editions, the Federal Budget is, essentially, an accounting document. It provides the financial framework for the delivery of a whole range of government services and social policy. However, there is an economic dimension to the Budget. The government can use its taxation and expenditure to impact on spending decisions of companies and individuals. Also it can impact on economic activity by either expanding or cutting back on the resources it uses for its activities. This is called fiscal policy.

There has been little active use of fiscal policy in recent years. The emphasis has been on good book keeping, playing down government debt and handing any revenue windfalls back to the taxpayer in the form of tax cuts and extended welfare payments to middle and higher income earners. The budget had become an accounting document. The task of maintaining economic growth with low unemployment and low inflation was largely left to monetary policy (the variation of interest rates). However all this changed with the onset of the world financial crisis and the economic consequences that it delivered.

It is in the context of a deteriorating economy and expectations that the world was experiencing its worse economic downturn since the Great Depression of the 1930s that the Budget needs to be judged.

Stimulating growth

The Australian Government's approach to the economic downturn that resulted from the freezing over of world credit markets was not too dissimilar to other governments around the world. Stimulus packages were delivered late last year and in autumn this year. Were they appropriate? The economic answer is 'Yes'. The downturn in the Australian economy would have been much worse without this action. Treasury estimates that economic growth would have been 2.75% lower in the coming financial year and unemployment much higher without the stimulus packages. There can be some argument over the form of the packages, especially the cash handouts. It would have been better if the money had been spent on long term investments, such as infrastructure and skills training,but these take time to put in place and have an economic impact. At the time these policies were designed, confidence was a critical factor. Cash handouts benefit because they are not permanently built into expenditures and have an immediate impact on spending decisions.

It is in the context of a deteriorating economy and expectations that the world was experiencing its worse economic downturn since the Great Depression of the 1930s that the Budget needs to be judged.

Where Australia stands

The starting point for the Budget for 2009-2010 is much worse than envisaged. The economic downturn has had a big impact. Government revenue has been savaged with major downgrades in expected taxation collections from business and capital gains taxes. Rising unemployment will not only drain taxation revenue but also boost expenditures due to higher social security payments as more people are displaced from work. Even without any government action the 2009-2010 budget deficit would have deteriorated from a surplus of around $20 billion to a deficit of around $26 billion. So the majority of the turnaround in the Budget position ($46 billion of $78 billion) is beyond the government's control.

Government policy decisions have been responsible for $32 billion of the projected turnaround in the Budget position. Some of this comes from the previous stimulus packages, especially the most recent. While the highlights were one-off cash handouts, there were a number of measures that involved ongoing commitments. These will now be costed as a full year. The rest comes from extra expenditure taken by the Government in this Budget. The two big boosts to the Budget deficit come from the increase in the aged and carers' pension and a boost in expenditure on infrastructure programs in transport, health and education. The Government has taken some decisions aimed at reigning in expenditures and targeted largely at higher income earners.

Observations

Budgets inevitably have a political hue about them as judgements are made about the economic competence of governments and whether alternative policies would be more desirable. They also have a personal hue as individuals will look at specific budget items and make assessments of the Budget based on personal self interest. In making an economic assessment, these have to put aside.

Should we worry about the debt that the government is taking on to fund its deficit? Running budget surpluses should not be an end in itself. If debt is used to bolster economic activity and increase productivity then there is nothing wrong with that. Most businesses take on debt simply for that reason. Despite the sharp deterioration in the budget situation, the deficit is not as large as in other advanced countries. The deficit in Australia for 2009-2010 is equal to 4.9% of the value of the economy compared to 7.7% average for the advanced economies. And net government debt is extremely low at less than 5% of the value of the economy compared to around 30% in Canada, 60% in Germany, 70% in the UK, France and the USA and 115% in Japan.

The Budget should be criticised, however, for failing to plan for a return to surplus when the economy recovers.

Criticisms

There could have been increased taxes and slashed expenditure to compensate for the collapse in tax revenues associated with the economic downturn, although nobody is really suggesting this. That is what governments did in the 1930s. The government could also have sat on its hands and done nothing. This would have involved not increasing expenditure. Policies such as raising the aged pension and increasing investment expenditure on infrastructure could have been dropped. But there is an argument that further stimulus is needed to cushion the economy against the economic downturn and that the investment in infrastructure is sorely needed. In short, given the data on the economy and the forecasts, concerns over the size of the budget deficit and government expenditure are ill-founded.

The Budget should be criticised, however, for failing to plan for a return to surplus when the economy recovers. Some re-ordering of expenditure priorities and revenue measures could have been undertaken, particularly as the government had raised expectations of some bitter medicine. In the end there was little pain. True, the government has acted against some tax avoidance and made some modest moves to means test some welfare payments. But the means testing cuts in at generous levels and there are still too many reasonably well off people with their noses in the public purse. Finally, the wisdom of proceeding with the previously announced income tax cuts should be questioned. pa

SPUDSCAPE

Ideas
Inspiration
Innovation
Imagination

Words **Dan McGuire**

Uncovering History's Unsung Hero

In the early 19th Century, English politician William Cobbett called the potato "the root of slovenliness, filth, misery, and slavery". The potato was social and spiritual death, he said, and its proponents must be either blind or wicked.

Cobbett's judgment on the spud appears bizarre to us today but his reasoning is not so hard to fathom according to US author Larry Zuckerman. Cobbett realised the unassuming potato would overturn the status quo and change the world forever – as indeed, it did.

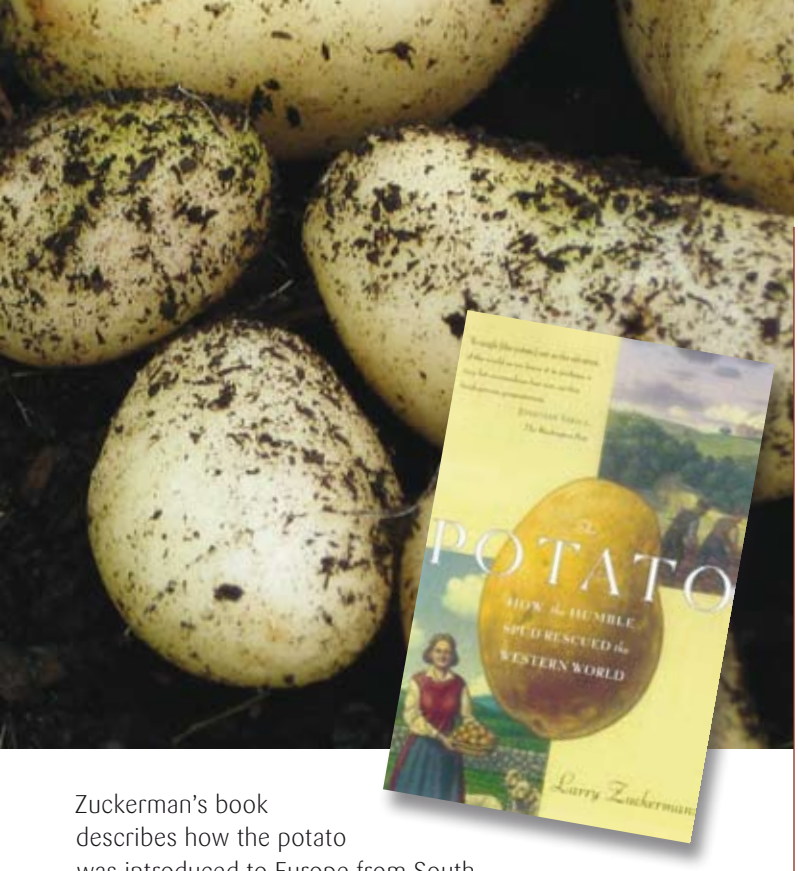
"The potato has had as revolutionary an impact on Western history as the railroad or the automobile," says Zuckerman, author of the award-winning book *The Potato: How the Humble Spud Rescued the Western World* and a key speaker at the recent World Potato Congress in Christchurch.

"It's hard to imagine what the West would be like today without it. Would the American frontier have been settled by Europeans as rapidly or successfully? Would the French peasantry have kept body and soul together as well as it did following the Revolution of 1789? Would the English factory hands who made possible the Industrial Revolution have starved to death instead?"

Zuckerman's message – that just as expertise in cultivating potatoes helped shape western civilization, so knowledge about agricultural food systems is imperative if the world is to move ahead sustainably – was enthusiastically received by delegates and fellow speakers at the Congress. Growers Robin Oakley (NZ) and Gary Bendotti (Australia) said it gave them increased confidence about the industry and their approach to food production.The appreciation was mutual.

"It's amazing to me that the book is still in print after 10 years, and people get in touch with me to tell me their thoughts about it," Zuckerman said about *The Potato*, which won the UK's André Simon Special Commendation Award, given annually to an outstanding book on food.

"I've gotten a kick out of being read in a half-dozen languages too, but the greatest honour was to be invited to give a keynote address at the WPC in Christchurch, and to have so many people seek me out afterward to tell me how much they enjoyed it."



Zuckerman's book describes how the potato was introduced to Europe from South America, with the primary focus on the tuber's impact in four countries – Ireland, England, France and the US – from around 1770 to the start of World War I.

e said it sprang from an idea about examining a history of Western daily life "through the potato's eyes". However as he researched other books he was struck by what was left out.

"They didn't put the potato in the context of what else was going on at the time or explain how it overcame centuries of European prejudice to reach such a position of force," Zuckerman said.

Why the prejudice?

"As a member of the nightshade family, the potato was a kissing cousin to plants thought to be poisonous or reputed to have occult properties like mandrake, henbane, deadly nightshade and the tomato – a controversial plant in its own right. There was also a persistent myth that the potato spread various deadly diseases."

Bread was the staple but it relied on slow, labour-intensive grain harvesting and processing.

In contrast, the potato offered large yields on virtually any soil, requiring little labour and few tools to supply bulk in the diet and vital nutrition. It resolved or made more manageable so many problems of time, space, labour, land, fuel and income.

"The potato could feed entire societies almost by itself," said Zuckerman. "It stretched the household budget, the food supply and that most precious commodity, time, thereby permitting more exertion for other activities, not less."

This was heresy to the privileged classes like Cobbett, whose campaign to oppose the potato failed miserably in the face of its popular support.

This tale of the tuber's triumph is a fascinating read. Zuckerman's book makes it clear the humble spud has a lot to be proud about—and so do the people who produce it.

Larry Zuckerman, *The Potato: How the Humble Spud Rescued the Western World* (North Point Press, 1999). pa

Niche one

It's inevitable. To get ahead, we're going to have to marry marketing with produce - or at least, employ clever, more innovative thinking to stand out from the crowd. Potatopro have some suggestions for creating more potato appeal and we've added some of our own:

- Grow a gourmet spud that'll appeal to the fine-dining set: like the exclusive (in the category of truffles exclusivity) La Bonnote potato grown only the French island of Noirmoutier.
- Grow a themed spud: like the heart-shaped ones that were all the rage last Valentines Day in Tesco stores throughout the UK.
- Grow a special flavoured spud (the Bonnote one is enhanced by a sea-salt tang); imagine what would happen if you created one naturally infused with the taste of bacon, cheese and sour-cream.
- Grow a child-sized spud and call it the 'Kiddo'.
- Grow one for the locavore movement. Slap a sign on it that says something like: 'From a place so close-by, it'll incite envy in your Hills Hoist.'
- Invest in your own product knowledge and create a winter, spring, summer and autumn demand. Spread the word on what spuds are available when and how they can best be eaten. Don't believe people want to know? Browse the food magazines on the newsstands right now and you'll notice that three in five features potatoes.

As Potato pro's Paul Van Eijck says: "Wouldn't upscale restaurants, farmers markets and the grocery aisle be more interesting with a range of such potatoes?" pa

Just in:

Australian potato production rose by 16% to 1.4 million tonnes, driven mainly by increases in production in South Australia and Victoria in 2007-08. pa

Words **Mark Holland**

Future seed

The outlook for seed certification in Australia might be significantly changed in as little as six years time if emerging communication and diagnostic technologies are used to change operating procedures in seed certification schemes. By 2015 a national service provider, quality assurance based certification and 'sale by description' features could help boost the efficiency of the seed certification scheme—if the seed potato industry decides to pursue these changes.

In 1999 Australian potato levy-payers funded a project to produce a national standard for the certification of seed potatoes in Australia. The project standardised the rules of the five state-based service providers with a single set of minimum field and tuber standards for disease, defects and trueness to type. This level of consistency, achieved through consultation and consensus, had never before been attained in Australia, and brought marketing benefits to the industry.

The Australian Potato Industry Council and, more recently, AUSVEG engaged the Seed Potatoes Advisory Group (SPAG) to maintain and develop the standard. Representatives from each state-based scheme meet in person annually in a different seed production region. As a result, SPAG is aware of the different forces that shape delivery of the standard in each region and has been able to negotiate effectively 20 significant changes to the national standard after consultation with the seed potato industry.

SPAG believe Australia has a world-class seed certification system operating, but that we should strive to adopt emerging technologies and methods that improve the cost and reliability of our work. Specifically, we need to explore how we can capitalise on emerging capabilities, particularly in the fields of communications and diagnostics.

A national provider

The first way we can begin improving seed certification is to change existing service provision and communication platforms with seed growers. There are only 210 seed producers currently operating with the four service providers. This means four different sets of management and administration systems (mostly part time), four databases and duplication of other infrastructure. A single national seed potato certification service provider will benefit from economies of scale and deliver efficiencies.

A national service provider will standardise procedures even more. It will be large enough to provide dedicated management and administration and capitalise on the improving communications infrastructure in Australia through, among other things, a web-enabled database that will allow real time communication with seed growers, regardless of their location.

A single national seed potato certification service provider will benefit from economies of scale and deliver efficiencies.

For the purposes of this discussion, we will call this national body *Certified Seed Potatoes Australia (CSPA)*, and the following hypothetical will give us an idea of how the CSPA might operate under an improved communication scheme that uses a web-enabled data base.

Imagine a scenario with Jonno Walker, a fictitious seed producer. Jonno, like CSPA, is located anywhere in Australia.

Jonno logs onto the CSPA website, and with a password accesses the database, named EDDIE, to complete his pre sowing application. He types in his label numbers for the crops that he intends to sow. EDDIE confirms all seed sources are valid. Next, Jonno retrieves his farm plan from EDDIE and enters the GPS coordinates of the intended sowing areas. EDDIE draws in the boundary of his intended sowings on the plan, but immediately immediately rejects the plan and advising Jonno that the area overlaps a sowing three years earlier. Jonno requests the 'read only' historical section of the database and retrieves his plan from the offending year. Yes, he had forgotten about the small minituber patch.

Jonno realises he can easily alter his sowing program to avoid the area. He makes the necessary change andEDDIE accepts the new plan. The whole process takes thirty minutes. Jonno downloads his approved sowing list and the required isolation distances for each generation

After sowing, Jonno logs back onto EDDIE and makes a few adjustments to reflect what actually happened. EDDIE locks in the changes and allocates identification numbers to each plot. Any future changes can only be made by CSPA.

When Jonno has completed the harvest and grading a couple of months later, , He logs onto EDDIE, again and feeds in his plot identification number, seed lot code, label numbers, tuber assessment and generates a seed analysis statement. EDDIE saves a copy of every statement. Jonno emails the statement to his customer in another state and receives an order straight away. This customer buys seed from all over Australia but can interpret analysis statements quickly because the statement format is exactly the same, regardless of the origin of the seed. This is a vast improvement from the old system of having to explain everything to interstate customers.

Quality assurance

The second change that will enhance future seed certification is the optimum use of improved diagnostic platforms that enable crop assessments to move from inspection-based operations to a quality assurance-based system. Effectively, this would certify the process, rather than the product; quality assurance has already been successfully implemented for tuber inspections in some services.

Currently, certification staff inspect around 3000 individual plots across Australia at two specific points in each crop's life. These inspections are necessary to identify disease, particularly virus diseases with symptoms that cannot be seen on tubers. However, visual assessment of virus diseases has limitations. For example, virus symptoms are lagging indicators or may not show at all, and potato varieties can transfer virus to daughter tubers at different rates.

Another inefficiency of the present system is that seed growers often sow plots over an extended period, so inspectors need to make several visits to each property. This requires inspectors to be located close to the growers and increases the number of inspectors required, which is an expensive arrangement.

For example, virus symptoms are lagging indicators or may not show at all, and potato varieties can transfer virus to daughter tubers at different rates.

SPAG believe virus test kits will give growers the capacity to detect the viruses on their farm. In addition, laboratory based diagnostic tests will be able to identify and quantify several viruses, in hundreds of tubers or leaves, in a single test. This is the ultimate virus insurance for seed buyers.

In Western Australia routine laboratory-based tests have improved virus levels significantly. This improved disease detection capability will allow service providers to replace the current system of inspections with a single crop audit, reducing the size and cost of the inspectorial workforce by a significant factor, possibly by half.

An additional problem with the current scheme is that cultivar identification is assessed visually. This leaves us open to certifying the wrong variety if seed lots are accidentally swapped with cultivars of a similar appearance. Variety identification tests can improve our confidence in this area.

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In our hypothetical scenario, Jonno finds the variety identification test to be of immense help:

Jonno requests and prints out an inspection schedule for his plots from EDDIE. He gets out his procedures for crop inspection and goes through the crops listed for today. To check for virus outbreaks he takes a sample from 100 plants in each plot with an implement like a stapler. He puts the discs in a bottle with a solution, mashes them with a rod for a minute and puts in a test strip. Each test costs $10. A few minutes later he knows that there is no virus detected in those plants. He retains the test strip to prove the task has been carried out. Jonno is delighted; his 'No tolerance" approach to last year's leaf roll outbreak seems to have paid off.

At the time he had detected leaf roll in a generation two sown plot. Jonno sampled 3000 leaves from the offending and adjacent plots and sent them to the lab. He has the three test results back within three days. He noted the infection level was outside the tolerance for black label certified seed in one plot but clear in adjacent plots. Jonno knew he could risk keeping the plot going but risked the virus spreading to other plots. He had chosen to spray out the plot and remove the source of infection.

Two weeks later the CSPA auditor arranges to conduct an audit. The auditor will take most of the day, checking retained strip tests, records, and crops, but it is more convenient than inspectors rolling up every couple of weeks, and it's a lot cheaper, too. Jonno knows that as always, the auditor will pick up a few things, but that it will lead to useful improvements, and he is confident he is doing the right thing.

A few days later the audit report is emailed back to Jonno. He notes that the non conformances need to be corrected by the tuber audit. He also knows from experience that EDDIE will automatically send him reminders by email prior to that audit.

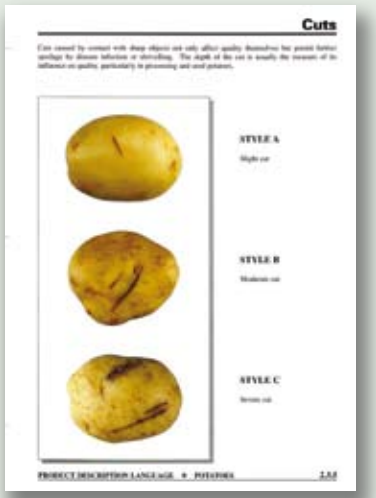
A couple of months later, Jonno completes the harvest and grading of the seed. A sample of 340 tubers is randomly selected from each plot to be sold and secured in the cold store as a reference sample. It must be kept for a year. A small peeling from each tuber of the reference sample has already gone to the lab for virus and cultivar testing. The standard suite of viruses will be tested plus potato spindle tuber viroid, an exotic disease the industry has chosen to watch out for. A single test on the mash will confirm the varietal identity. Jonno will put the test results into EDDIE and file the hard copy.

Sale by description

SPAG believes standards will be required in the medium term for exports but that 'sale by description' is applicable in the domestic market. Under 'Sale by Description' the level of a defect or disease is reported, rather than seed lots being rejected for failing a standard.

There are around 20 defects or diseases that may result in a seed lot being rejected. If the level of one fault fails the standard then certification is not conferred and no credit is given to the product. This can happen despite up to four generations of successful multiplication under the scheme and even if seed lots are cleared in the testing for the other 19 defects or diseases. This is unnecessarily wasteful, overlooks the other benefits of certification and also ignores the fact that importance of diseases or defects may be specific to certain soil types, climate and other factors. One standard does not fit all situations. There may be a case for retaining standards of contagious viruses that may impact on neighbouring growers.

Jonno assesses his tubers. He, and all seed potato growers use the on-line standard photographs as a reference.



As printed in 'Potato description language'. Only style C is considered a cut by certification services.

Jonno knows that common scab has been bad this year. He remembers that the laboratory test for seed borne diseases that he conducted pre season had indicated there was a high risk of common scab infection. By increasing treatments, however, he has limited the infection to five per cent of tubers. In the past this level would have resulted in the seed failing certification, but not now. He types his tuber assessment into EDDIE, locks the results in and prints out an official seed analysis statement. He sends it off to a customer he knows wants all the assurances of certified seed but is not concerned about moderate levels of common scab. He gets an affirmative reply back straight away and makes arrangements to dispatch the seed.

SPAG believe most of the technological enhancements discussed are already available, or will be available by 2015. However, a national service provider, an audit based certification service, and 'Sale by description' features should be given strong consideration. They all have the potential to deliver a more flexible, effective and efficient seed potato certification service for Australia. pa

If you have a question that you'd like addressed, please ring the advice line on 1800 067 108 or email *Potatoes Australia*: jenan.taylor@ausveg.com.au. Please note that some questions may be published.

Ask the industry

A regular advice column covering issues from resistance management to occupational health and safety.

Is there any value in growers conducting on farm trials with regard to new spray application technology?

Let me begin by saying that the worst thing we can do is to keep doing the same thing over and over again and expect a different result.

The adoption of new technology is seen as a critical component to the production of higher quality and higher yielding potato crops in Australia.

Conducting a successful on farm demonstration requires significant commitment of time and resources from all parties involved and, although at first can seem time consuming, the overall results for growers can be extremely valuable.

There is a great deal of support available to growers who wish to conduct demonstrations of new technology.

For growers, the successful demonstration of new technology in 'their own patch' provides them with an opportunity to advance their farming operation using specific knowledge gained for cropping systems and management practices that may be unique to them.

What makes for a good result from an application of a pesticide?

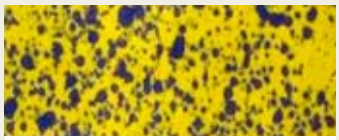
There are several factors that make for successful spray application: choosing the correct product; applying at the optimum time; using the recommended dose; and achieving the required spray coverage of the target.

The first point goes without saying. The remaining three points also relate to spray application and the ability to transfer the required chemical dosage to the target surface from the spray nozzle in a manner that work effectively against the target pest and avoids spray drift or off target damage.

How do growers evaluate the value of new nozzle technology?

In order to evaluate the new nozzle technology, application equipment should be calibrated and well maintained.

The aim is to compare what the grower is currently doing now in terms of application i.e. nozzle type, water rate and spray coverage, with the new equipment.



AI11003
3 Bar 220L/ha

XR11003
3 Bar 220L/ha

Water sensitive paper showing spray coverage and pattern from different nozzles. Changing nozzle type and adjustment to water volumes and nozzle orientation can improve coverage and spray penetration, whilst reducing potential for spray drift.

Research work conducted in the UK by Syngenta has shown that with a simple change in nozzle technology, the level of disease control (in this case Late Blight) was increased significantly over and above standard practices when all other parameters such as the fungicide program, remained constant over the crop.

Water sensitive paper can be placed in various sections of the canopy (upper and lower leaves as well as inner and outer canopy) to measure coverage and, critically, spray penetration into the canopy—particularly to lower leaves where diseases such as Target Spot can initiate. Results are easily observed and necessary changes can be made instantaneously to ensure better results.

Simple observations can be taken throughout the growing season to measure the levels of disease in each treatment for comparison.

Importantly, the level of disease control can have a significant impact on the final product, so growers should seek to evaluate and measure the marketable yield between treatments. Growers have also found advantages in the form of time savings simply by being able to achieve improved coverage and spray penetration with lower water volumes versus their standard application practice.

Adoption of new technology, particularly in the form of spray application has some significant benefits, however don't rely on others to do the work for you. An investment in time by setting up your own demonstration trial can pay significant dividends in the future.

Phil Hoult
Syngenta

Words **Tony Slater**

Resistance is essential

In the wake of the recent detection of potato cyst nematode (PCN) in a new area, it is time to revisit the progress that has been made on the development of PCN resistant cultivars for the Australian industry.

There are two species of PCN, the pale cyst nematode *(Globodera pallida)* and the golden cyst nematode *(G. rostochiensis)*. Within each species there are also a number of pathotypes.

PCN has a limited distribution in Australia—it was first discovered in Perth, Western Australia in 1986, then in Victoria, at Gembrook in 1991, Kooweerup in 2003 and recently in Thorpdale. To date all detections of PCN in Australia have been of *G. rostochiensis*, and apart from the Thorpdale pathotype which has not been tested yet, all have been of the 'Ro1' pathotype.

An Australian PCN management plan is being developed by a national group led by Laura Bowles. The group is considering internationally recognised protocols for the management of PCN, which includes the use of good hygiene practices and resistant cultivars.

As all detections have been of the same PCN species and are likely to be of the same pathotype in Australia, we are currently in a fortunate position to develop resistant cultivars with relative ease. Resistance to the 'Rol' pathotype is under the control of a single dominant gene, so screening cultivars for resistance and developing new resistant cultivars is less complex and more rapid than if resistance was under the control of multiple genes.

Screening for PCN Resistance

Since 2005, PCN resistance screening trials have been conducted in a quarantine facility at the Department of Primary Industries, Knoxfield site, as part of the National Potato Breeding Program and in association with Biosecurity Victoria. These trials have allowed the screening of the commercial cultivars grown in Australia for their resistance or susceptibility to this PCN pathotype. Prior to this, the program had sent cultivars to New Zealand for screening, but as this was prohibitively expensive, only limited numbers of cultivars were sent.

The resistance screening methods were developed in collaboration with Crop and Food Research in New Zealand and the Scottish Crop Research Institute in the United Kingdom. Each

cultivar was grown in pots containing a mixture of potting mix and infested soil from the Kooweerup area in Victoria, and the roots were assessed when PCN cysts reached the golden stage. The highly susceptible cultivar *Ilam Hardy* was used as a positive control, and the whole trial was restricted to the cooler winter months to allow the nematodes to complete their lifecycle.

The quarantine facility at Knoxfield has allowed the screening of the main commercial cultivars and the majority of the parental cultivars in the National Potato Breeding Program's germplasm collection. To date over 500 cultivars have been screened.

The resistance/susceptibility status of the main commercial cultivars has been updated and published in the Seed Potatoes Victoria's Seed Buyer's Guide each year (see, Table 1). This information can be used by growers to select resistant cultivars in preference to susceptible ones, when the resistant cultivars are suitable.

Breeding PCN resistant cultivars

Since the outcome of the first trial in 2005, the National Potato Breeding Program has had a much greater capacity to identify PCN resistant parents. This has ensured that a greater number of resistant parents have been used in the crossing programs since the first resistance screening trial.

When a resistant cultivar is used as a parent with a susceptible cultivar, 50 per cent of the progeny will be resistant. When both parents are resistant 75 per cent of the resulting progeny will be resistant. If one of the parents has more than one copy of the resistance gene, the percentage of resistant progeny will be even higher, even when used with a susceptible parent.

As a greater number of resistant parents have been used over the last couple of years, a good proportion of the cultivars progressing through the program will be PCN resistant. Some of this material is now at the second field generation (G2) stage and will be ready for commercial evaluations in 2010, should they display an array of other suitable attributes following further trials that are a mandatory part of the breeding program.

Identifying and developing better parents for PCN resistance

A current aim of the program is to develop better parent cultivars that, even when crossed with susceptible parents, are able to produce a high proportion of resistant progeny. As potatoes have four copies of each chromosome, and resistance to the Ro1 pathotype is under the control of a single dominant gene, individual cultivars can have up to four copies of the resistance gene. When more copies are present, a higher proportion of the progeny will be resistant. When a single copy is present, 50 per cent of the progeny will be resistant. When a parent has the gene on two chromosomes, over 80 per cent of the progeny will be resistant, and when three or four of the chromosomes have the resistance gene, **all** of their progeny will be resistant.

Last year the National Potato Breeding Program ran a screening trial on the progeny of resistant cultivars to determine how many copies of the resistance gene the resistant parent has.

The majority of the resistant parents were identified as having a single copy of the gene, while three were identified as having two copies of the gene. This information will be used to identify the better PCN resistant parents, and to predict the proportion of resistant progeny when using different parental combinations. We will also be able to design crosses to develop potential parents with three or four copies of the resistance gene, so that 100 per cent of their progeny will be resistant.

Commercial cultivars

Over the past few years, the National Potato Breeding Program has taken rapid steps towards the identification and development of PCN resistant cultivars for the Australian industry. Commercial evaluation of these resistant cultivars will be underway from 2010.

Although the model for investment and the development of cultivars has changed in the recent past, companies interested in PCN resistant cultivars should contact the program to see how they can be involved.

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Table 1 PCN Resistance status of the main commercial cultivars

Main end use - Crisping

PBR status	Cultivar	PCN Resistance
	Atlantic	Resistant
t	Bliss	Susceptible
t	Catani	Susceptible
	Denali	Susceptible
p	FL1867	Resistant
p	FL1953	Susceptible
p	FL2027	Susceptible
	Pike	Resistant
	Simcoe	Resistant
t	Sonic	Resistant
	Trent	Susceptible

Main end use - French fry

PBR status	Cultivar	PCN Resistance
	Kennebec	Susceptible
	Kennebec B	Susceptible
	Kennebec Line 2	Susceptible
t	Macrusset	Susceptible
p	McCain 1	Susceptible
p	McCain 4	Susceptible
	Nooksack	Susceptible
	Ranger Russet	Susceptible
t	Riverina Russet	Resistant
	Russet Burbank	Susceptible
	Shepody	Susceptible
	Umatilla	Susceptible

Main end use - Niche

PBR status	Cultivar	PCN Resistance
	Dutch Cream	Resistant
	King Edward	Susceptible
	Kipfler	Susceptible
	Pink Eye	Susceptible
p	Royal Blue	Resistant
t	Toolangi Delight	Susceptible

Main end use - Fresh

PBR status	Cultivar	PCN Resistance
p	813/28	Resistant
p	Almera	Resistant
p	Argos	Resistant
	Bison	Susceptible
p	Charlotte	Susceptible
p	CMK	Resistant
t	Coliban	Susceptible
p	Crop 4	Susceptible
p	Crop 8	Susceptible
p	Crop 13	Resistant
p	Crop 17	Susceptible
	Crystal	Susceptible
	Desiree	Susceptible
	Exton	Susceptible
p	Golden Delight	Susceptible
p	Harmony	Susceptible?
p	Kestrel	Susceptible?
p	Lady Christl	Resistant
t	Lustre	Susceptible
p	Nadine	Resistant
	Nicola	Resistant
	Onka	Susceptible
t	Otway Red	Susceptible
	Pontiac	Susceptible
	Red La Soda	Susceptible
p	Red Rascal	Susceptible
t	Ruby Lou	Susceptible
	Sebago	Susceptible
	Sebago Line D	Susceptible
	Sebago Line E	Susceptible
	Sebago New Brunswick	Susceptible
	Sequoia	Susceptible
t	Snowgem	Susceptible
	Spunta	Susceptible
p	Valor	Resistant
p	White Lady	Resistant
t	Wilwash	Susceptible

PBR Status

p = PBR variety

t = National Breeding Program Toolangi

The Bottom Line

- There are two species of PCN, the pale cyst nematode *(Globodera pallida)* and the golden cyst nematode *(G. Rostochiensis)*. To date all detections of PCN in Australia have been of *G. rostochiensis*, and apart from the Thorpdale pathotype which has not been tested yet, all have been of the 'Ro1' pathotype.
- Resistance to the 'Rol' pathotype is under the control of a single dominant gene, so screening cultivars for resistance and developing new resistant cultivars in Australia is less complex and more rapid than if resistance was under the control of multiple genes.
- The National Breeding Program aims to develop better parent cultivars that, even when crossed with susceptible parents, are able to produce a high proportion of resistant progeny.

For further information, please contact Tony Slater at tony.slater@dpi.vic.gov.au or on 0408 656 021.

chips

a look at what's new in potato information & technology

Studies

Soil and cultivation

The following five studies look at various aspects of the role of soil and cultivation in potato production systems. The first (Copas et al.) reports on a small plot experiment and several field trials carried out in central Wisconsin, USA.

The resistance of the soils to penetration was described by cone index profiles, which indicated that there was limited potential for root growth below the compacted soil layer with values > 2.0 MPa. In two of the three years of research, subsoil tillage below 33 cm reduced cone index values to <1.0 MPa, although this did not affect total and U.S. no. 1 tuber yields. In addition, none of the quality parameters measured (internal defects and sugar concentration) were affected by subsoil tillage. The paper queries the validity of the wide-scale use of subsoil tillage by growers in this region.

In the second paper (Bernik & Vucajnk), field trials with three types of potato cultivators/ridgers carried out in Slovenia over three years on medium textured soil, are described. A rotary, power take off (PTO) driven cultivator/ridger created the largest cross-sectional area of the ridge and was the most efficient at crushing soil aggregates in the inter-row space and at ridge shaping. Use of this implement gave a higher total yield of tubers than the other two cultivators/ridgers, which were both drawn implements (one having spring tines on a parallelogram framework and wing ridge heads attached, and the other having rigid tines on a parallelogram framework and cogwheel ridge discs attached). While the PTO-driven implement gave better physical properties of the soil, both drawn implements had greater work-rates and required less energy to operate.

The third study(Pavek & Thornton) summarises experiments over three years in the Columbia Basin of Washington State, USA, using two cultivars at planting depths of 10, 15, 20 and 25 cm. Tubers planted close to the surface were more affected by soil temperature extremes, but plant emergence was sometimes delayed for deeper plantings. Although node, stolon and tuber number per stem were affected by planting depth, and 'Russet Burbank' but not 'Umatilla Russet' had increased stem numbers as planting depth decreased, there were no effects on total yield. However, marketable yield and gross income were generally lowest for the 10 cm planting depth, with much of this being due to the increased frequency of green tubers.

Agriculture and Agri-Food Canada has a network of 23 soil monitoring sites to provide baseline data on changes in soil quality and biological productivity of representative Canadian farming systems. The fourth paper (Rees et al.) compares changes in soil parameters between 1990 and 2000 at one site (22-NB) under intensive potato production (a potato-potato-barley rotation) in northwestern New Brunswick. The system of contour tillage with variable grade diversions and grassed waterway resulted in low soil loss and water runoff values. However, heavy fertiliser rates led to increased levels of soil potassium and phosphorus, and soil organic carbon levels and earthworm populations were very low.

Potato Yield and Quality Response to Subsoil Tillage and Compaction. *Copas et al. (2009) Agronomy Journal 101: 82-90.*

The effect of cultivator/ridger type on the physical properties of ridge, power requirement and potato yield. *Bernik & Vucajnk (2008) Irish Journal of Agricultural and Food Research 47: 53-67.*

Planting depth influences potato plant morphology and economic value. *Pavek & Thornton (2009) American Journal of Potato Research 86: 56-67.*

Soil and crop responses to long-term potato production at a benchmark site in northwestern New Brunswick. *Rees et al. (2008) Canadian Journal of Soil Science 88: 409-422.*

Research Summaries

Disease control

Phosphite compounds reduce disease severity in potato seed tubers and foliage. In the research described in this paper, phosphites (alkali metal salts of phosphorous acid) were used to treat seed tubers and foliage of two potato cultivars, 'Shepody' and 'Kennebec', and plant resistance to three pathogens was measured. Treatment of seed tubers gave good protection from *Phytophthora infestans*, intermediate protection from *Fusarium solani* and low protection from

Rhizoctonia solani. With foliar application, protection against *P. infestans* was also high, with greater protection using calcium phosphite than potassium phosphite in 'Kennebec' but the reverse in 'Shepody'. Other plant physiological responses were measured from some of the phosphite treatments compared with controls, such as earlier emergence, darker green leaf colour and a delay in crop senescence. *Lobato et al. (2008) European Journal of Plant Pathology 122: 349-358.*

Efficacy of FIT produce wash and chlorine dioxide on pathogen control in fresh potatoes. FIT Fruit & Vegetable wash is a natural produce wash that is promoted as removing 99.9 per cent of harmful bacteria from fresh fruit and vegetables, leaving no aftertaste or smell. This paper describes an experiment in a commercial fresh pack potato operation where potatoes were washed in flume water with or without FIT, or sprayed with FIT, 9 ppm chlorine dioxide or a water control. On potato surfaces, neither FIT nor chlorine dioxide gave significant reductions in the micro-organisms tested. However, when deionised water inoculated with micro-organisms was treated with FIT or chlorine dioxide, levels of microorganisms were reduced to below the detection limit. When flume water was treated with FIT or chlorine dioxide, only FIT had a large impact on microorganism levels. *Park et al. (2008) Journal of Food Science 73: M278-M282.*

Effectiveness of early-season, single applications of azoxystrobin for the control of potato black dot as evaluated by three assessment methods. A series of experiments during 2003–2006 examined potato black dot disease after single applications of azoxystrobin made either at planting or at 34, 43 or 60-62 days after planting. The different methods used to assess disease on above- and below-ground stems were: (1) frequency of detecting Colletotrichum coccodes from 0.5 cm sections, (2) distance of sclerotium expansion and (3) sclerotium density. All three methods indicated that black dot severity was not reduced by application of azoxystrobin at planting, but application at 60-62 days after planting did reduce all of the disease indicators. Below-ground stems had more disease than the above-ground stems, as indicated by methods (2) and (3) in all years and method (1) in two of the four years. Tuber yield was not significantly different between any of the azoxystrobin treatments and the control in any year, although post-planting azoxystrobin treatment did reduce the incidence of infected progeny tubers compared with the non-treated control in some years. *Cummings & Johnson (2008) American Journal of Potato Research 85: 422-431.*

In vitro suppression of soilborne plant pathogens by coir. Laboratory experiments showed that coir, the mesocarp pith of coconut, suppressed growth of the soilborne plant pathogens *Phytophthora capsici* and *Fusarium solani*. This only occurred when the coir was not sterilised, indicating that micro-organisms associated with coir were responsible for this effect. One micro-organism isolated from coir, *Aspergillus terreus*, inhibited mycelial growth of various soilborne pathogens by up to 75 per cent. *Hyder et al. (2009) Horttechnology 19: 96-100.*

Processing

Review of the sugar end disorder in potato *(Solanum tuberosum L.).* The sugar end disorder, also referred to as dark ends, jelly ends, translucent ends and/or glassy ends, is a serious quality defect in processing potatoes, causing French fries to become dark at one end, which makes them unacceptable to consumers. A symptom of the most common type of sugar end is relatively low starch and high sugar content in the basal end of the tuber. Factors that may lead to sugar end disorder include high soil temperatures, transitory soil moisture deficits and too little or too much nitrogen fertiliser, particularly if these occur during early tuber bulking. The accumulation of large amounts of sucrose in the basal tissues of the tuber appears to be a response to stress, and this is a result in the change in activity of key carbohydrate metabolising enzymes. Resistance to sugar end disorder is highly heritable. This paper lists research-based crop management recommendations to minimise the potential for development of sugar end disorder. *Thompson et al. (2008) American Journal of Potato Research 85: 375-386.*

Natural DNA variation at candidate loci is associated with potato chip colour, tuber starch content, yield and starch yield. This paper describes an in-depth analysis of 243 potato varieties and breeding clones to look for genetic markers that correlated with chip quality before and after cold storage, tuber starch content, yield and starch yield. A number of significant and robust associations of DNA markers with traits were found, especially for chip quality and tuber starch content. Several of these markers were in genes encoding for enzymes that function in starch and sugar metabolism or transport. *Li et al. (2008) TAG Theoretical and Applied Genetics 116: 1167-1181.*

Effect of processing on slowly digestible starch and resistant starch in potato. The proportions of rapidly-digested, slowly-digested and resistant starch were measured in potatoes of the variety Frisia after laboratory-scale treatments had been applied to tubers that were raw, cooked or cooked followed by cold treatment (four degrees centigrade over two days). The treatments included freeze-drying, coarsely mincing, pasting, freezing, and dry-milling after freeze-drying. There was very little rapidly-digested and slowly-digested starch in raw potato, and mechanical treatments did not affect this. Over 95 per cent of the starch in cooked potato was of the rapidly-digested type, but during cold storage up to half of this was converted to slowly-digested starch. Tissue disruption after cooking was associated with the formation of resistant starch. Freezing after cooking gave similar results to the prolonged cold treatment, while freeze-drying of the cooked potatoes tended to increase the proportion of resistant starch. These findings provide some guidance on potato processing options to alter the nutritional profile of potato products, since rapidly-digested starch is associated with high glycaemic impact, slowly-digested starch provides sustained energy availability and resistant starch has prebiotic benefits. *Mishra et al. (2008) Starch-Starke 60: 500-507.*

Popular Articles

Potatoes Postharvest

'Potatoes Postharvest' is a recent publication by well known UK-based potato experts, RT Pringle, RC Clayton and CFH Bishop. It begins with some plant physiological background information relating to potato

chips

a look at what's new in potato information & technology

storage and then examines harvesting and store loading systems. There are several chapters on various aspects of store design, equipment and the importance of accurately controlling the environment in the store. Towards the end of the book are chapters devoted to seed grading and preparation for planting, packhouse and processing facilities and quality control. The book finishes with a look at marketing and storage costs. This publication is aimed at all participants in the potato industry, including researchers and potato growers.

Potato Review

Markets: Spud sales up as crunch bites deeper. The British Potato Council is taking advantage of price rises in rice and pasta to promote potatoes as a part of inexpensive, tasty and nutritious meals. Despite the recession, or possibly because of it, retail reports are indicating increases in volumes of fresh potatoes and potato products. In addition, McDonalds has seen a recent increase in sales, which is good for McCains who is the supplier of frozen fries. Fish and chip shops in Britain are also indicating greater customer numbers, which is in contrast to the trend in recent years. Supermarket chains are developing promotions that focus on cheaper food options, and in many cases this involves potatoes.

Irrigation: No room for poor water management. This article summarises presentations from two irrigation specialists at a seminar in the UK. The speakers described the significant negative effects from under-watering (e.g. poor crop nutrition) as well as over-watering (e.g. shallow rooting, oxygen stress, soil damage and nutrient leaching). Both speakers stressed the need for irrigation scheduling – properly timed applications that started with knowing what the soil moisture content was and then made adjustments according to other factors, such as soil type, irrigation system, crop type and intended market, etc. The importance of keeping good records was also emphasised, as detailed information is needed to feed back to decision-making in future crops and to negotiate with water regulation authorities.

Snippets from www.potatonews.com

A small selection of the articles that are posted on the Global Potato News website appears below.

January 2009: New headlines

India: Frito-Lay planning pan-India expansion under the contact farming model. Frito-Lay, the foods business unit of Pepsico, procures half of its potatoes for making chips from contract farming agreements. Currently this is done in eight states across India, but the company is planning to introduce this system across the whole country. Frito-Lay is also involved in cultivar development and seed production in India.

United States: Burbank acreage continues decline. Recent results released from a survey of the eight major potato-producing states in the USA confirm that plantings of Russet Burbank have again dropped, being replaced by newer russet and specialty potato varieties.

Updated: Comparison of fungicide products for the control of *P. infestans* in Europe. This website, www.euroblight.net/Fungicide/FungicideComparison.asp?language=UK, summarises the effectiveness of fungicide products/co-formulations for the control of *P. infestans* in Europe. The ratings, based on the highest rate registered for Europe, were considered by the Fungicides Sub-Group at the Hamar Late Blight Workshop in 2008. They have been developed from field experiments and experience of product performance when used in commercial conditions.

December 2008: Feature articles

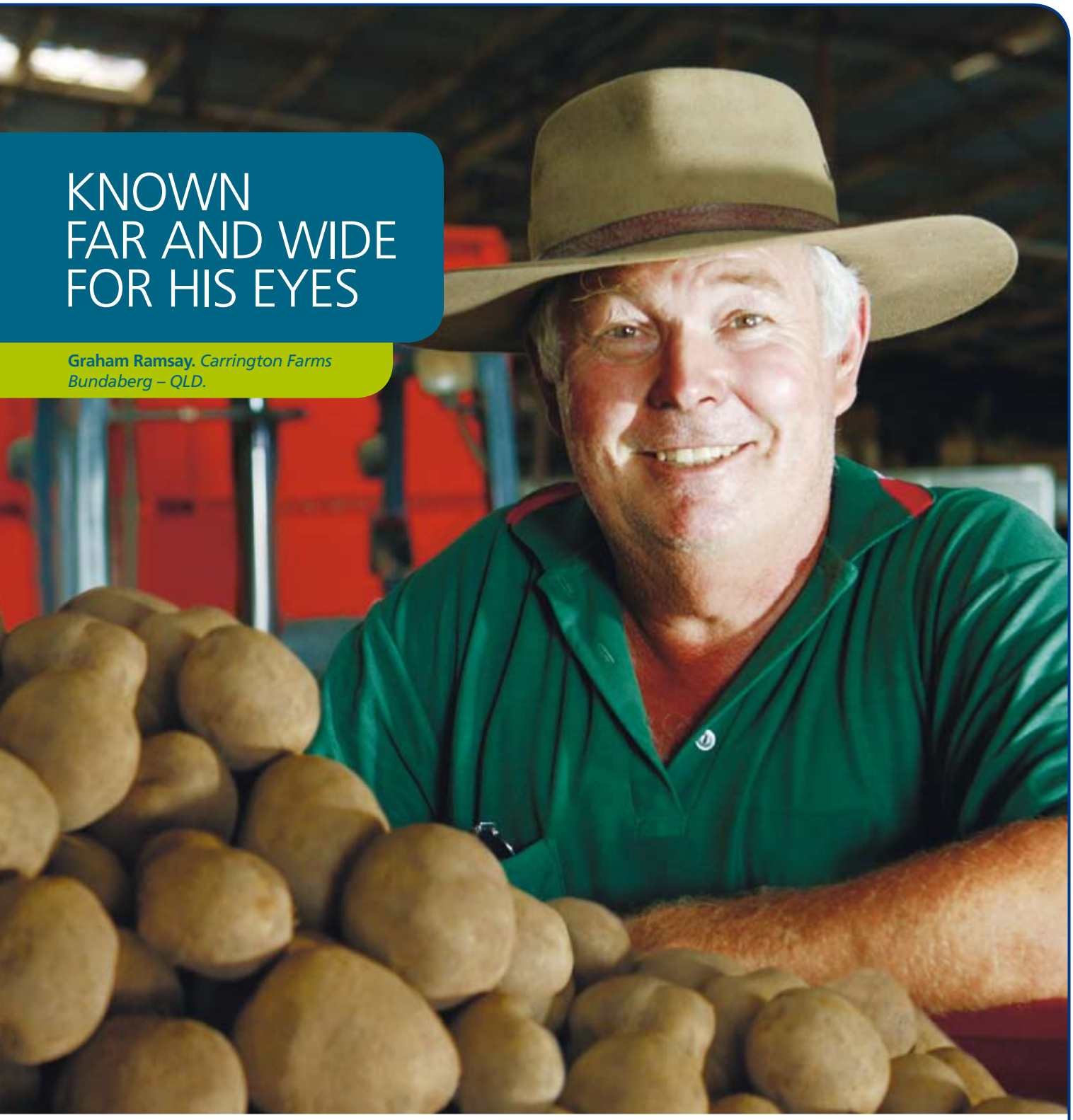
Potatoes score high on newly developed nutritional scoring system. Scientists from Yale have developed a way to score foods involving a complex mathematical formula that includes the content of a large number of nutritional and anti-nutritional compounds. The "Overall Nutritional Quality Index" (ONQI™), or NuVal Score, is a value between one and 100, with a higher number indicating a healthier food. Potatoes scored an excellent 93, which compares well against salmon (87), white rice (57), pasta (50) and apple pie (2). Broccoli topped the list with a score of 100.

Potato humidity: A key aspect of storage management. An excellent article (www.fruitandveggie.com/content/view/1961/61/) about the effects of evaporation on weight loss in potatoes and how to prevent it by maintaining a high relative humidity in the potato store. Not only is potato yield affected by water loss, but dehydrated tubers may have poor quality, inferior texture, discolouration and diminished taste. The article describes how humidity may need to change during various phases of potato storage and in response to temperature, and summarises some of the humidifying devices available for potato storage operations.

Effects of the season on seed physiology and seed performance. This article refers to a paper that was presented at the Idaho Potato Conference (www.kimberly.uidaho.edu/potatoes/2002seedproceedings.pdf). It investigated the effects of weather, particularly temperature, during the growing season on subsequent performance of the potato seed tubers produced. While extremes of temperature are important, even more influential is the timing of these extreme events in relation to the developing seed tubers. Other factors, such as length of the growing season, cultural practices, soil moisture and plant stress also affect seed physiology. To some extent these can be modified by storage, with higher temperatures causing the stored seed to mature more quickly.

January 2009: Feature article

Fifty potato facts. A fact sheet about potatoes has been compiled and published by the International Potato Center (CIP) in Lima, Peru. It is available at www.cipotato.org/publications/pdf/004495.pdf.



KNOWN FAR AND WIDE FOR HIS EYES

Graham Ramsay. *Carrington Farms Bundaberg – QLD.*

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