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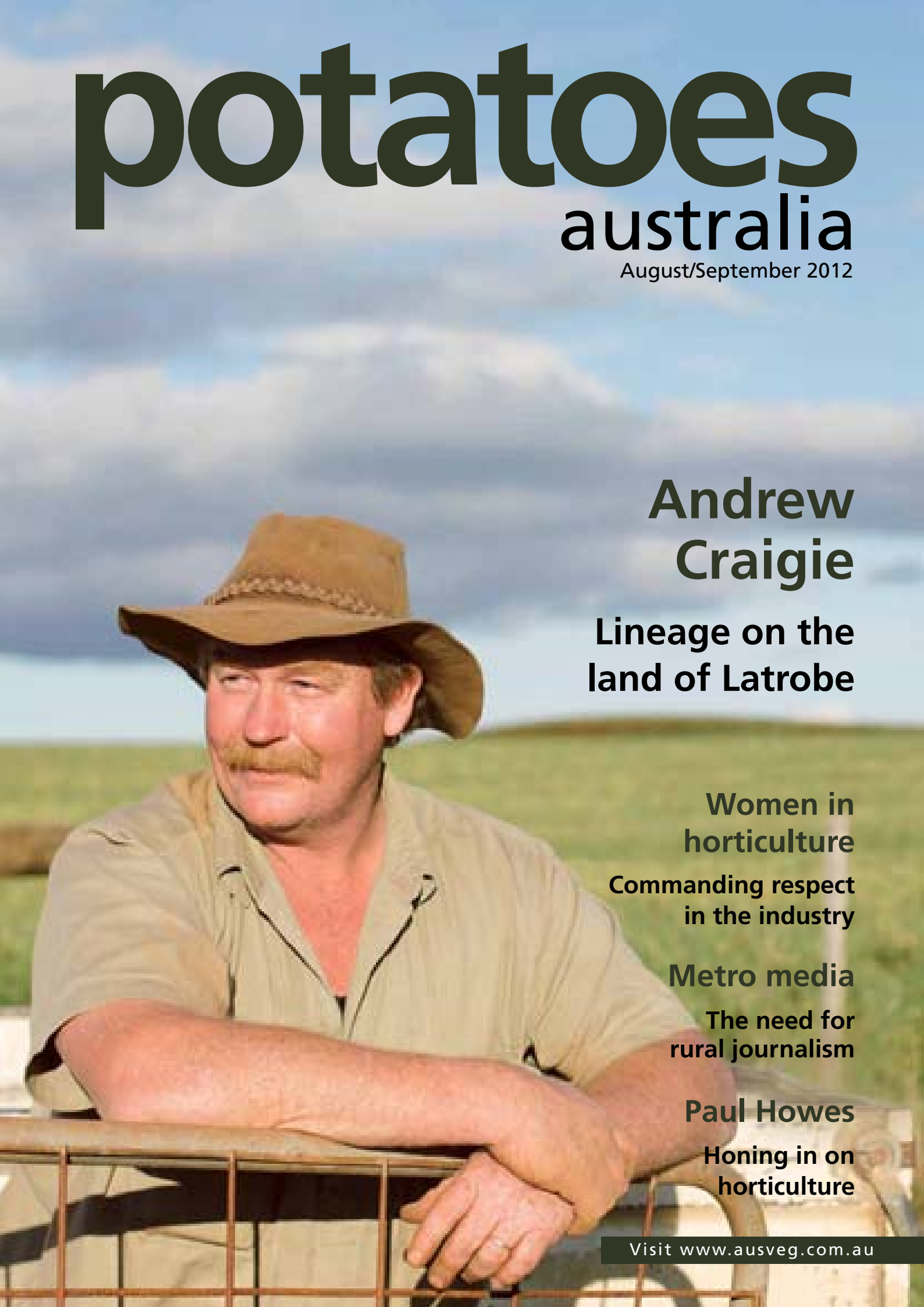
August/September 2012



Andrew Craigie

Lineage on the land of Latrobe

Women in horticulture

Commanding respect in the industry

Metro media

The need for rural journalism

Paul Howes

Honing in on horticulture

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FRONT COVER:
Andrew Craigie
Photograph by Michelle Dupont

John Brent
AUSVEG Chairman

In times where trade is becoming more open and markets are expanding, it is important to ensure that Australia balances new opportunities for trade with the need to preserve strong standards of biosecurity. It comes as a shock that the Department of Agriculture, Fisheries and Forestry (DAFF) Biosecurity has released a Draft report proposing the importation of fresh potatoes from New Zealand (NZ) for processing in Australia. Australia's potato industry is concerned that the Draft report is based on out-dated and ill-informed scientific information.

The report fails to recognise the catastrophic damage caused to the NZ potato industry by the Tomato-potato psyllid (TPP) and Zebra chip disease, which Australia, fortuitously, is currently free from. Key potato industry leaders of the NZ sector have conceded that the impact of the disease has been far greater than originally estimated, having cost the industry approximately $NZ 200 million. Similarly, several major production areas across the United States (US) have also identified multiple cases of Zebra chip over the past 12 months. In an effort to minimise the spread and damage of the disease, the US sector has spent hundreds of millions of dollars in an attempt to control Zebra chip. I've heard several members of the Australian industry ask, 'why are we taking the risk?' The proposal to allow fresh potato imports from NZ for processing is unquestionably fraught with risk - it puts Australia's 600 million dollar potato industry (and related sectors) in jeopardy.

Australian growers have enough thorns in their side having to contend with rising input costs, the high cost of labour, cheap imports from overseas, increased chemical regulations and ramifications from the implementation of the Carbon Tax. A Zebra chip outbreak would not merely be an additional thorn in the side, nor would it simply leave the Australian industry wounded. Rather, it would destroy Australia's potato industry financially, and the livelihood of our growers and their families - it would amount to potato industry death.

Local producers have been more than willing to test themselves on the open market, challenging adversity and exploring innovative possibilities to become some of the most advanced horticultural operations in the world. We are forward thinking and able to seize the opportunities presented by open trade, provided that it is also fair and equitable to all parties. This is why the Australian Government must reach an informed and scientifically accurate position on the importation of fresh potatoes from NZ. Biosecurity is an issue which goes beyond the bounds of trade discussions as it threatens to derail our entire industry.

The import controls being recommended by Biosecurity Australia are simply inadequate and fail to protect Australia's significant potato industry from this imminent threat of disease. The fact that the report has seemingly omitted a Hazard Analysis Critical Control Point (HACCP), a common industry practice, is extremely concerning given the insurmountable risk posed to our industry. The obvious shortfalls of the document, and the looming danger posed to our industry, demonstrate that the 24-year ban imposed on fresh potato imports from NZ must not be lifted.

John Brent
Chairman
AUSVEG

Richard Mulcahy
AUSVEG Chief Executive Officer

With potatoes for processing making up a large part of the Australian potato industry, figures showing increased levels of imported processed vegetables over the past two years are indeed cause for concern. Cheaper costs of production and labour, not to mention subsidies of as much as 23 per cent as seen in Belgium, do not allow for a level playing field for Australian growers. These concerns have resurfaced with the release of the 'Composition of Trade Australia 2011' statistics compiled by the Department of Foreign Affairs and Trade (DFAT). The report shows that imports of processed fruit and vegetable products continue to rise at a concerning rate. This rise is attributed in part to the high Australian dollar.

While reports of this nature confirm that imported processed produce is challenging Australian growers for market share, they also strengthen our resolve at AUSVEG to try and ensure that Australian growers remain competitive against these overseas operations. Progress is being made with Australian policy makers in order to improve Australian Country of Origin Labelling Laws. Recent research has shown that 67 per cent of Australian consumers would be willing to pay more for locally grown produce. The decision to choose Australian grown produce should be an easy one that does not require shoppers to search the fine print on the back of a packet.

Improving Country of Origin Labelling laws will play a critical role in the battle against cheap foreign imports. While overseas potato products may be cheaper to produce and process, they are often not grown to the high standards of safety and quality seen in Australia. An improvement in Labelling laws will assist in providing fairer competitive conditions for hardworking Australian potato growers.

Richard J Mulcahy
Chief Executive Officer
AUSVEG

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Crop Care

Editorial

World Potato Congress, Edinburgh, May 2012.

Museum of Old and New Art, MONA.

This edition of *Potatoes Australia* contains interviews with some of the most influential people within Australia's media and political circles. As well as showcasing innovative R&D, the magazine exhibits several captivating feature articles on key members of the potato industry.

Despite significant contributions on-farm, in the community and within the family, a woman's role in the horticultural sector often goes unacknowledged or unappreciated. The Annual Women in Horticulture Event, as part of the 2012 AUSVEG National Convention, sought to recognise the important contributions made to the Australian horticulture industry by women in the sector. This year, Leader of the Australian Greens Party and Senator for Tasmania, Christine Milne, as well as Melinda Brimblecombe of Moira Farming in Forest Hill, Queensland, addressed attendees for the event held at the renowned Museum of Old and New Art, MONA (pg 10).

Henry Dunbabin features in this edition's Young grower profile. Hailing from Boomer Bay in south-east Tasmania, the fresh market potato grower and agronomist discusses challenges facing the industry, his experiences from the grower study tour to Belgium and the United Kingdom, and how he thinks young people can be encouraged to join the sector (pg 12).

With the unprecedented overhaul of the metropolitan newspapers seen in as many recent months, the ever-changing landscape of the Australian media has been a topical issue. Editor in Chief of the Weekly Times, Ed Gannon, spoke with *Potatoes Australia* about the importance of rural journalism in metropolitan media and a number of obstacles which need to be overcome (pg 16).

The cover story for the August/September edition of *Potatoes Australia* is Chairman of the Tasmanian Farmers and Graziers Association (TFGA) Vegetable Council, Andrew Craigie. Discussing his opinions on the current country of origin labelling laws and his involvement with the TFGA, Mr Craigie details his long family heritage in the industry (pg 20).

National Secretary of the Australian Workers Union, Paul Howes, presented the keynote speech at the 2012 AUSVEG National Convention. Imparting his views on future opportunities for exporting produce, country of origin labelling and the supermarket duopoly, Mr Howes spoke with Caitlin Rodé (pg 25).

R&D coverage in this edition includes an article on the interactions between pathogens in the development of Potato early dying syndrome by Dr Paul Taylor and a team of PhD students from the University of Melbourne (pg 14). Recipient of the AUSVEG Researcher of the Year Award, Dr Calum Wilson, discusses the introduction of enhanced disease resistance in commercial potato varieties to reduce the prevalence of Common scab (pg 18). Identifying key nutrient levels is imperative to the progression of a healthy and high yielding crop; rapid plant nutrient analysis is explored for its potential on-farm benefits (pg 24).

This edition's Potato Extension column takes on an international flavour by presenting the key findings that emerged from the World Potato Congress held in Edinburgh (pg 28). Additionally, the International R&D update illuminates the experiences and insights from the recent grower study tour to Belgium and the United Kingdom which included visits to some of Belgium's key retail, research and production sites (pg 32). As well as a selection of industry news, *Potatoes Australia*'s regular industry columns, Soil solutions (pg 30) and Ask the industry (pg 31) are featured.

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News in brief

Full house for Potato Extension Workshop in Creswick

A Potato Extension Workshop held at the American Hotel in Creswick attracted over 45 attendees recently.

The Potato Extension Workshop, which was the second to be held in 2012 as part of the three year AUSVEG-run program, aimed to disseminate valuable R&D information and outcomes to growers and industry, was hailed as an enormous success.

The event attracted a diverse crowd including growers, processors, researchers, agronomists and industry officials. A number of representatives from AUSVEG's strategic partners, Elders and Bayer CropScience, were also in attendance.

The session was Chaired by Mr Dean Bone, a seed potato grower from Kennedy's Creek and member of the Potato Extension Advisory Committee. Mr Bone was also an attendee on the recent Grower Study Tour to Belgium and the United Kingdom.

Researchers from the Victorian Department of Primary Industries were the key speakers at this event. Dr Brendan Rodoni spoke about improved virus diagnostic tests and findings on Potato virus Y (PVY) in the opening presentation, and later imparted information on pathogens associated with Zebra chip.

Dr Tonya Wiechel discussed DNA diagnostic tests for soil borne pathogens which are available for growers, while colleague Dr Dolf de Boer revealed how soil heath is crucial for improved and sustainable productivity and disease suppression.

AUSVEG would like to thank the key speakers, the Chair and all those who attended the event. Members of the industry are encouraged to keep an eye on the AUSVEG Weekly Update and *Potatoes Australia* for future Potato Extension activities.

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Dean Bone, Dr Dolf de Boer, Dr Tonya Wiechel, Dr Brendan Rodoni and Manager - Special Projects AUSVEG, Christopher Ritchie.

A packed house at the Potato Extension Workshop.

Imported fresh potatoes: a biosecurity risk

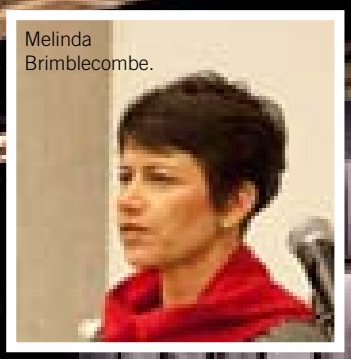
The New Zealand potato industry has applied for access to the Australian market in a bid to import fresh potatoes for processing in Australia.

The Department of Agriculture, Fisheries and Forestry (DAFF) Biosecurity has released a Draft report proposing the importation of fresh potatoes from New Zealand (NZ) for processing in Australia. Industry has expressed both apprehension and disbelief at the proposal given the risk of an incursion of Tomato-potato psyllid and an outbreak of Zebra chip disease.

Zebra chip has cost the NZ industry approximately $NZ 200 million in control efforts since its detection several years ago. Similarly, the US sector has spent hundreds of millions of dollars in an attempt to control the spread of the disease across several major production and processing states.

Australia's potato industry has voiced concerns that the Draft report is based on out-dated and ill-informed scientific information. AUSVEG has initiated preparation of a scientific submission to DAFF Biosecurity in response to the release of the Draft report.


Senator Christine Milne.


Melinda Brimblecombe.

Women in horticulture:

Commanding respect in the industry

The Annual Women in Horticulture event acknowledged and recognised the significant contributions made to the Australian horticulture industry by women in the sector.

Exhibition images courtesy of the Museum of Old and New Art (MONA).

It is not uncommon to be exposed to the somewhat patronising representation of women in the kitchens and men on the farms. Undoubtedly, the wives of the growers and farmers have heard it more. Where has this female archetype come from? Is it from the days of black and white television programs? Could it be from manuals and texts predating the use of the tractor or assembly line? Or perhaps it is stereotypical ignorance exacerbated by all of the above? Regardless of its origin, and contrary to stereotypical views women in the horticulture industry have, and continue to demonstrate, new depictions of the female's role on farm and within the community.

The Women in Horticulture event held at the Museum of Old and New Art (MONA) celebrated and recognised the significant contributions made to the industry by women in the sector. Women are having an increasing influence in the traditionally male dominated horticulture industry, bringing new attitudes, business methodologies and an increased community focus. Leader of the Australian Greens Party and Senator for Tasmania, Christine Milne as well as Melinda Brimblecombe of Moira Farming in Forest Hill, Queensland, addressed attendees for the event, sponsored by Steritech.

Representing women in horticulture

Melinda Brimblecombe delivered an impassioned speech to attendees about the importance of a woman's role on the family farm, in the local community and the wider industry.

"How many times have you heard someone say, 'oh I just do our farm books, I don't work.' I encourage women in our industry to say 'yes I do work, I run our farm office'," said Mrs Brimblecombe.

"The jobs that women do in the office are tasks that others in the corporate world have been trained to do. They have written a resume for the job, they put on lipstick, high heels and drive to work. For those of us in rural businesses, this job often comes with the wedding ring," she said.

"All too often people, generally the women who work in farm offices, don't feel their role is very significant. They undersell themselves. Remember we are not just the farmer's wife, we are also a business partner."

Having somewhat flexible working hours has proved to be beneficial for the community minded Brimblecombe family. During the floods of 2011 which devastated countless horticultural production properties in the Forest Hill region, Mrs Brimblecombe and partner Linton decided to open the town hall to construct the Forest Hill Flood Relief Centre. Within hours of opening, the hall was full of donations, showcasing quite an overwhelming response from fellow members of the community.

Mrs Brimblecombe described the outpour of generosity from their community as nothing short of extraordinary, with teams of volunteers supplying flood victims with food, clothing, and other household articles. Stressing the importance of women in the industry becoming involved with their local communities, Mrs Brimblecombe said contributing support to ensure the welfare of the town and its residents was but one of the countless ways in which women not only support, but lead the Australian horticulture industry today.

The changing role of women in the industry

Addressing the attendees Senator Christine Milne discussed the shift in the role that women play in business and on-farm, and its importance in the wider horticulture industry.

"Over the last twenty years, I'm really happy to acknowledge and watch a significant shift in the recognition of the role that women play in agriculture," said Senator Milne.

"Too often, it has been that the role has not been recognised… and I know that while many women sit and sweat for half the night working out how to make the business viable, they are also doing bits and pieces of farm work. In fact, for some, their time is fully occupied on farm," she said.

"Of course women contribute not only to real farm income, but they absolutely contribute to on-farm wellbeing for the family and the community. In terms of dire situations, such as the floods, it is women who maintain the social connections and community networks that keep rural communities viable and resilient through even the most difficult of circumstances."

With an improvement in the acknowledgment of women in the industry seen in recent years, Senator Milne noted, however, a shortfall in the statistical representation.

"In 1994, at an international conference on women in agriculture, it was said that 'women in agriculture are poorly represented in cultural statistics and measures of productivity. There is more information on the production of livestock than there is on women's contribution to agriculture'," said Senator Milne.

Drawing a laugh from the predominantly female audience, Senator Milne conceded that some well-deserved representation in modern agricultural statistics would go a long way to solidify the role and contribution made by women.

With an imminent shortage of on-farm and research personnel, coupled with an aging workforce, Senator Milne said the horticulture industry, and the wider agriculture sector, are faced with the challenge of attracting a younger demographic to the industry.

"There is a crisis in Australian agriculture where the average age of farmers is 65. One of the big hopes to counter this is the young women who are entering the agricultural workforce in greater and greater numbers," said Senator Milne.

"Last year, at one of the main agricultural colleges in New South Wales, 70 per cent of its 400 graduates were women. That's a terrific turn around. Women are now consistently making up 50 per cent of graduates in agricultural science courses around the country. We are seeing a significant shift and recognition that women are there on equal terms, in their own right, not just in supporting roles," she said.

Food security

Senator Milne also discussed pertinent issues surrounding the effects of climate change and food security in the approaching years of vegetable production, and the role which women will play.

"As the world faces the global food security challenge, women are at the forefront of forging these networks nationally and internationally," said Senator Milne.

"Women around the planet are the main farmers. If you leave developed countries and go to developing countries, it is the women who are the backbone of agriculture. Sadly, many of them are being pushed off the land as large scale agribusiness comes in and transforms the way of doing business. So, we have got a lot of work to do to support, not only women in our own communities, but around the world," she said.

Q&A Young grower profile

Name: Henry Dunbabin
Age: 26
Location of farm: Boomer Bay, south-east Tasmania
Potatoes farmed: Fresh market potatoes
Role in company: Grower/Agronomist

How did you become involved in the industry?

I was raised on the farm. My father used to grow spuds for McCain, so I grew up around it. I completed an Agricultural Science degree at the University of Tasmania, and went on to work as an agronomist overseas for 12 months. I returned to Tasmania and started working for *Daly Gourmet Potatoes*, where I've been for 18 months.

Describe your average day on the farm.

I'm responsible for growing the crop through the season. So that can involve making sure the right fertilisers and the right sprays are used, assessing the crop each week to see what needs to be done and delegating tasks to our team.

What do you enjoy most about working in the industry?

Definitely being outside. It's a good industry to be involved in, especially fresh market spuds as you've got a bit more control in growing them. Getting a quality product at the end of the day is definitely one of the most satisfying parts of the job.

You recently attended the Grower Study Tour to Belgium and the United Kingdom - how was that?

I really enjoyed the opportunity to network on the tour. As I'm from Tasmania, I haven't met a lot of the mainland people before, so that was really good. Also, seeing the different systems and approaches to production was very interesting and I think everyone really took a lot away from that. The grower study tours really make you realise how much of a large and international industry this really is - you get stuck on your own little farm and you lose sight of what is going on across the rest of the sector.

What are the biggest challenges you face as a grower?

The weather here in the south-east of Tasmania can prove to be a challenge. Trying to produce a product of the highest quality all year round to meet the larger retailer's requirements can be hard sometimes - it can make it difficult to supply as spuds don't want to grow 12 months of the year.

How do you think young people could be encouraged into the industry?

It's definitely a tough issue. Some people won't see the pay as being as good as other industries, and you need to work hard to get a good product. But I think participating in the tours, or even spreading the word about the tours, is a great way to get young people interested and excited and thinking 'oh wow, if they're doing this here why can't I do that too?' The marketing undertaken by some of the international companies - which we learnt about in Edinburgh - is quite inspiring. Bringing that knowledge and experience back home from those sort of trips is a great way to encourage young people to realise what an exciting and innovative industry we work in.

Also, programs for kids in primary schools would definitely be a good start. People complain that there is not enough support for local producers, but I think there is a real lack of education from a young age. Farmers and growers could be going to their local schools and encouraging different year groups to grow their own veggie patch. I think that would really help to introduce the idea of a grower as a career choice. Even friends of mine of a similar age who are bank managers and working professionals ask me 'how do you grow a spud?' It seems obvious that there needs to be increased education about Australia's production industries. I think that these sorts of things would then influence younger generations to buy local produce because they will not only have an understanding of where their food comes from, but also have that relationship with the grower.

What do you think is the biggest threat to the potato industry?

Not educating city consumers enough about the quality of Australian produce. As we are a more developed country with higher wages and higher standards of production and associated costs, we are always going to have cheaper imports coming in from overseas manufacturers. Educating our community about the benefits of local produce is an issue which needs to be addressed.

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

I'd probably be in the vineyard industry, back on the family farm.

Potato early dying syndrome in Australia

A collaborative research project is analysing the interaction between pathogens in the development of Potato early dying syndrome.

Potato early dying syndrome (PED) refers to the early maturation and death of a potato crop and can be caused by an interaction between the fungal pathogen *Verticillium* and of the root lesion nematode *Pratylenchus*. Symptoms of the PED complex are difficult to distinguish from normal maturity, other diseases or physiological problems related to environmental stresses. Early foliar symptoms may appear as varying degrees of uneven chlorosis, a yellowing of leaf tissue, and death of lower leaves, often associated with wilting or dying of individual leaflets or stem. A light brown discolouration is often visible at the base of the plant's stem when sliced. The disease is characterised by a deterioration of plants four to six weeks earlier than normal maturity, resulting in yield loss.

Verticillium species are soil borne fungi and once established, can live for long periods in the soil, even if a potato crop has not been planted for many years. The fungi can establish in a field through the use of infected seed or by movement of infected soil. *Verticillium* species also attack many different hosts, and therefore can build up in the crop rotation. The root

lesion nematode interacts with the fungus to enhance the development of visual PED syndrome symptoms and to reduce tuber yield when population levels of the two pathogens are too low to cause disease alone.

Previous research has shown that *Verticillium dahliae* (*V. dahliae*) and *Pratylenchus crenatus* (*P. crenatus*) are widespread in potato soils throughout south-east Australia. Research conducted as part of the Australian Potato Research Program (APRP1) showed that up to 30 per cent of commercial crops were infected by *V. dahliae*, and that it was thought to be causing significant yield losses within the potato industry. However, the interaction between *V. dahliae* and *P. crenatus* in PED syndrome has not been investigated in the Australian potato production system. In North America, moderately diseased PED fields can cause yield reduction of 10-15 per cent, while in severely diseased fields, losses can be as high as 30-50 per cent.

Quantifying the level of pathogen inoculum in soil is important for disease prediction and for assessing the effect of control measures. For many years, the issues associated with accurate determinations of *V. dahliae* inoculum levels in soil and differences in the quantity of inoculum has frustrated researchers in assessing improved control measures. Moreover, methods are highly soil-type dependent, labour intensive and can not be performed as a routine diagnostic service for growers. Recent innovations by researchers at the South Australian Research and Development Institute (SARDI) using molecular tests (PCR-based) have allowed specific detection of *V. dahliae* in soil. As such, this tool can be used to quantify levels of the pathogen in the soil.

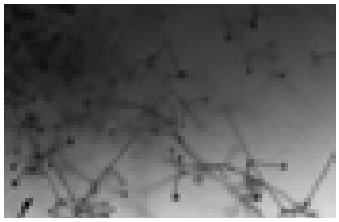
The main objectives of this research project are:

- To study the effect that the root lesion nematode *P. crenatus* has on root infection by *V. dahliae* and subsequent symptom development of PED syndrome,
- To quantify the inoculum threshold level of *V. dahliae* based on DNA quantification and the number of nematodes to cause PED syndrome in Australia, and
- To develop integrated disease management systems to control *Verticillium* infection in potatoes.

The molecular test has been used in glasshouse bioassays by Prakash Vijayamma Ramakrishnan Nair, a PhD student at the University of Melbourne, to measure the importance of *P. crenatus* on infection by *V. dahliae* and subsequent development of symptoms of PED syndrome. Another student, Ms Veradina Dharjono, is also working to develop novel integrated disease management systems to control *Verticillium* infection in potatoes. This study involves the development of glasshouse trials to screen potato varieties for resistance to *V. dahliae*, and trials to assess the efficacy of organic soil amendments to reduce pathogen inoculum.

Both students are funded as part of the APRP2 program and are supervised by Associate Professor Dr Paul Taylor, University of Melbourne, Dr Tonya Wiechel, Department of Primary Industries (DPI) Victoria, and Dr Nigel Crump, Victorian Certified Seed Potato Authority (ViCSPA). Including students in the research program is important in the development of new knowledge, but also generates highly skilled plant pathologists that can help solve industry issues in the future, continuing Australia's innovation capacity and capability.

PED symptoms on plant foliage.



Pathogen *V. dahliae*.

PhD students Prakash Vijayamma Ramakrishnan Nair and Ms Veradina Dharjono alongside Dr Paul Taylor.

Results

Pot trials were conducted in the glasshouse at the DPI, Knoxfield, with potato plants of Russet Burbank and Shepody grown in field soil with known levels of the nematode *P. crenatus*. As part of the trials, *V. dahliae* inoculum was added at various concentrations to the soil in these pots. Treatments also included drenching some pots with a nematicide to kill the nematodes. After 10 weeks, potato plants growing in the field soil containing high levels of nematodes and *V. dahliae* inoculum had increased the incidence of root infection and higher disease severity. Nematicide treatment significantly decreased the number of nematodes in the soil and roots of the potatoes, and reduced disease severity of PED syndrome. The nematicide used is part of the PhD studies, with further investigations required before this strategy can be recommended to industry.

A range of potato varieties were screened for resistance to *Verticillium* wilt in a glasshouse pot trial, where plantlets established from tissue culture were inoculated by dipping roots into a defined spore concentration of *V. dahliae* before planting into pot soils. Preliminary results identified several varieties that showed high levels of resistance through reduced infection of plants and reduced disease symptoms.

There was an interaction between high inoculum levels of *V. dahliae* and *P. crenatus* nematodes that resulted in increased infection of potato roots by *V. dahliae* and an increase in the severity of PED syndrome. Hence, these results appear to confirm the interaction between *V. dahliae* and root lesion nematode *P. crenatus* in causing PED syndrome in Australian potato production. In a preliminary glasshouse screening trial, several potato varieties showed some resistance to *V. dahliae* through reduced infection and disease symptoms.

This project has been funded by HAL using the National Potato Industry Levy and matched funds from the Australian Government. The University of Melbourne and the Victorian Certified Seed Potato Authority have provided in-kind support.

THE BOTTOM LINE

- Quantifying the level of pathogen inoculum in the soil is important for disease prediction and for assessing the effect of control measures.
- Results demonstrated an interaction between *V. dahliae* and root lesion nematode *P. crenatus* caused PED syndrome in Australian potato production systems.
- Preliminary glasshouse results have shown that several potato varieties may have some resistance to the pathogen *V. dahliae*, through reduced infection and disease symptoms.

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The need for rural journalism in metro media

Bridging the communicative gap between metropolitan and rural communities is proving to be a challenge. Ed Gannon, Editor of Australia's most widely circulated rural newspaper *The Weekly Times*, spoke with *Potatoes Australia*.

There is often discussion among those involved with the horticulture industry, and the wider agriculture sector, that metropolitan communities are unaware as to where their produce comes from and the issues affecting the producers. With the key metropolitan newspapers neglecting a rural news section, perhaps this notion is not so far removed from the truth.

The disconnect between city dwellers and rural folk was evident in a recent article appearing in *The Weekly Times*, written by Emma Field. The article reported that a customer at a Melbourne city café had complained to staff that it was inappropriate for a metropolitan coffee haunt to stock a rural paper for its customers. Ironically, the woman's irritation has become the catalyst for a new initiative to combat the dominance of metropolitan newspapers. The incident resulted in the launch of the *Great Café Challenge*, an effort to increase the number of rural newspapers in city cafés to connect city occupants with the farming community who provide produce for the nation.

> "Metropolitan communities are seemingly quite oblivious to where their produce comes from and the issues affecting the producers."

Editor of *The Weekly Times*, Ed Gannon, said that although there has been an improvement in communication between mainstream and rural media outlets, the increasing disengagement between metropolitan and rural communities is problematic.

"The issue is the growing disconnect between metropolitan people, rural people and rural issues. Once that connection's lost, there becomes a gulf between the knowledge of what the issues are in rural areas. The amount of media that we have nowadays is filled out with every single thing under the sun including sport, football, celebrity and whatever. There's no room for other issues to pop into people's lives such as rural," he said.

Originally becoming involved with the rural media industry in 1990, Mr Gannon entered a cadetship at *The Weekly Times* before continuing on to report for the *Herald Sun*. Rural issues being underrepresented in the metropolitan media is a serious concern according to Mr Gannon.

"The issue with metro [newspapers] is that they have to appeal to a very large audience. There are so many things competing to get into a newspaper, or a Channel 9 news bulletin or a 3AW news block. Its got to be interesting, its got to be 'sexy'- and I say that with inverted commas around it. Its

> "The issue is the growing disconnect between metropolitan people, rural people and rural issues."

Ed Gannon (*The Weekly Times*).

got to have a bit of pizazz about it," he said.

"I use the example of the dairy calf that sold for $101,000. I told the Herald Sun about it and it ended up running as a page three picture story... those stories are the ones that need to come to life. Those sorts of things happen all the time, but no one knows about it. Rural communities and rural industries don't do a very good job of selling themselves. Saying, 'here's a really good story about a young person doing something' or 'look at this kid, he's 21 and he's running a business that turns over $10,000,000 a year' - it's that sort of stuff they don't do enough."

The absence of political direction and support for the future viability of the horticulture industry was also a point of discussion for Mr Gannon. "There's a real problem at the moment. Seemingly the discourse between what politicians say they want to happen in rural areas, what is actually happening, and what the Government is giving them power to do. For instance, the Victorian Agriculture Minister, Peter Walsh, says that he wants to double production in the next 20 years but without any sort of program that will help people along," said Mr Gannon.

Bridging gaps and creating awareness

With the average age of produce growers currently sitting at 56 years old, there are complex challenges ahead for members of the horticulture industry given an impending skills shortage and the need to attract a younger generation to pursue on-farm production and supply chain careers. Undoubtedly, commercial television programs encouraging culinary experimentation and expression has increased the awareness of the benefits of fresh local produce. However, bridging the gap of viewing locally grown, fresh produce as simply recipe ingredients, and not as an avenue through which domestic production can be supported or sought as a career option, is a finish line which the industry is yet to cross.

"There is a lot of focus - we call it the *Masterchef* effect - on one end of the food production. That is, what gets stuck in an oven or happens on a plate. But there is really not a lot of focus on what happens prior to that," said Mr Gannon.

"I think if you can capture that enthusiasm for food and wine and those sorts of things, and take it back a step… you can help bridge that gap because people can make the connection between 'oh, this is a fantastic thing I've got on my plate' to 'it actually comes from somewhere'."

With the complete overhaul of metropolitan newspapers occurring in recent months, the transformation to the digital era of the published word is increasingly squeezing traditional mediums towards an online format. Incorporating rural coverage into these new compact and online publications would undoubtedly add to the comprehensiveness and inclusiveness of metropolitan media.

Removing the 'common' from Common scab

Novel research has seen the introduction of enhanced disease resistance into commercial potato varieties in a bid to reduce the prevalence of Common scab in potatoes.

Common scab is one of the world's most important potato diseases and one of the greatest constraints to Australia's French fry industry. Diseased tubers have reduced market value and processed product quality can be severely affected. Significant losses can occur for growers and processors. Disease affected seed crops will fail certification and be downgraded to ware quality. Crops with severe disease may be rejected for processing, leaving the crop unsellable. Furthermore, any diseased crops that are taken by the processing factories may require additional processing steps and increase the cost of production. Conservative estimates of losses due to this disease in Tasmania alone reach approximately $3.5 million a year.

Management options for the control of Common scab disease in potato are limited. There are few chemical options, and soil treatments are generally not very effective. Increased irrigation at tuber initiation is suggested to reduce disease, but this can also increase the amount of Powdery scab and Black leg. Similarly, lowering soil pH levels can limit the success of rotation crops. Planting later in the season does appear to reduce disease and has shown promise.

Disease resistance is an obvious long-term goal to improve the sustainability of potato production. Currently, the best existing commercial varieties have only, at best, partial Common scab resistance. Potato breeding programs around the world are striving to enhance resistance to the disease. However, traditional breeding results in seedlings that are a genetic mix of the parents can include the good and bad features of both. This makes selecting disease resistance while maintaining other essential agronomic and quality features extremely difficult, particularly for the French fry sector where there are additional demands on tuber processing characteristics. This is one of the major reasons why Russet Burbank, a 130 year-old variety, still dominates world potato production. Approximately 40 per cent of all potatoes grown in North America and Australia are of the Russet Burbank variety.


PhD student at UTAS: Thangavel Tamilarasan working with potato tissue cultures.


Dr Calum Wilson.


French fry exhibiting Common scab symptoms.

Researchers at the Tasmanian Institute of Agriculture (TIA) have come up with an approach to obtain disease resistant potatoes without changing the genetic qualities of the variety. Using novel plant tissue culture technologies, researchers select individual potato cells isolated from commercial varieties that show resistance features. They then regenerate these back into whole potato plants and test them thoroughly for disease resistance, field performance and cooking qualities. Using these procedures, they have successfully selected 50 new clones of Russet Burbank that possess superior resistance to Common scab as opposed to the original parent, Russet Burbank. These clones produce more disease-free tubers, less lesions on the few tubers that do get any disease, with the lesions invariably very shallow and easily removed by peeling processes. In aspects of field performance, yield, processing, cooking and taste characteristics for French fry production, these clones retain all the essential qualities of the Russet Burbank variety. Indeed, in some clones, improved yield is regularly observed.

Disease resistance in these clones is robust. Over the past 10 years they have consistently shown reduced disease across many trials under low and high disease pressure, against a wide range of pathogen types and natural field populations.

Surprisingly, during field assessment the TIA team observed that the best Common scab resistant clones also displayed reduced levels of Powdery scab disease. Subsequent testing has confirmed these clones are co-resistant to tuber infection with the Powdery scab pathogen. Current research has identified possible resistance factors present in the tuber skin of these clones that may account for resistance to multiple pathogens.

This is the first extreme resistance to Common scab disease in a commercially valuable and industry-recognised French fry processing cultivar. The two best Russet Burbank clones, Tassie Russet™ and Tassie Tater™, have received Plant Breeders Rights protection and the research team are now seeking commercial partners to enable release of these new varieties to the Australian industry.

Although the soon-to-be-released new varieties are variants of Russet Burbank, it is important to note that the technologies used can easily be applied to any commercial potato cultivar to improve scab resistance.

This project was facilitated by the Potato Processing Association of Australia and has been funded by HAL using the National Potato Levy and matched funds from the Australian Government.

THE BOTTOM LINE

- Common scab disease has caused annual losses of approximately $3.5 million to the potato industry in Tasmania alone.
- Using novel plant tissue culture technologies, researchers have selected 50 new clones of Russet Burbank that exhibit resistance to Common scab.
- Researchers found that the best Common scab resistant clones also displayed reduced levels of Powdery scab disease.

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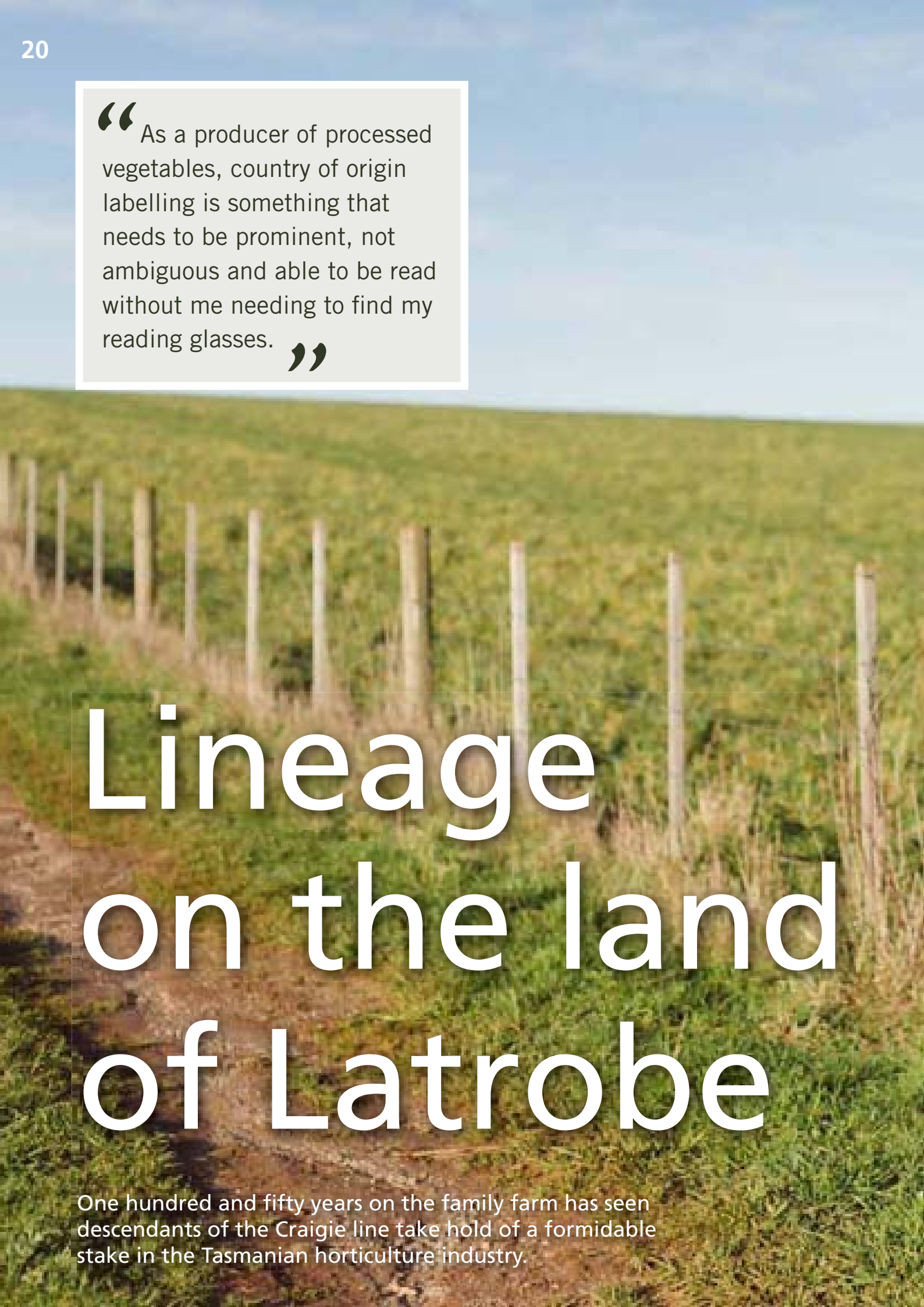
> “As a producer of processed vegetables, country of origin labelling is something that needs to be prominent, not ambiguous and able to be read without me needing to find my reading glasses.”



Lineage on the land of Latrobe

One hundred and fifty years on the family farm has seen descendants of the Craigie line take hold of a formidable stake in the Tasmanian horticulture industry.

Based in northern Tasmania, the Craigie family property resides among the historical surroundings of Latrobe. Established in the mid-19th century as a mining and agricultural settlement, Latrobe was a busy port on the banks of the Mersey River. During this time, the Craigie family, among others, were beneficiaries of agricultural land bestowed to settling families. Despite the turning pages of history, the Craigie family still owns the same land today - they are the only producers to have set foot on the acreage.

As a fifth generation grower, Andrew Craigie has five working lifetimes of agricultural knowledge and experience behind him. The family has grown potatoes for generations and began growing for processing over 25 years ago. Mr Craigie's grandfather and great uncle took their bagged potatoes by horse and cart to the local rail yard where they were then sent to Sydney to be sold. His original settling family, however, did have their initial hardships with their land marred by a limited source of water and marginal soils. Searching for new production opportunities, Mr Craigie bought an adjoining block which, only 15 years ago, saw the beginning of growing gourmet potatoes, in his own right. The lineage of vegetable growing and agricultural production for the Craigie family is as much a part of the history of Latrobe as the former bustling ships docking alongside the Mersey River.

"The Craigie family has been farming on the family property for over 150 years," Mr Craigie said with an air of pride.

"This tradition continues now with a partnership between my uncle, my brother and myself as 4th and 5th generation farmers. We have a mixed enterprise, producing vegetables and other crops along with fat lambs and beef cattle."

The fifth generation grower has learned his own valuable lessons along the way.

"I feel there is no wealth of experience like your own! The three things that I have learnt about growing spuds are first, that every year is different, second, that every piece of land has its own challenges, and third, that it is a science. Today you can't leave anything to chance," he said.

Working in the industry for many years, Mr Craigie had experienced an array of frustrations related to farm gate costs, imported produce and retail pricing. Ten years ago he joined the Tasmanian Famers and Graziers Association's (TFGA) negotiating committee for processed beans in a bid to better represent the interests of domestic producers - an initiation which saw Mr Craigie appointed as Chairman of the Vegetable Council in 2010.

"Over time, it has been proven that all industries need representation to be able to deal with industry issues. TFGA is

one of several bodies that can gather many producers together and present a unified joint view to Government, in addition to supporting growers who face many other challenges in trying to do business in today's climate," said Mr Craigie.

"I joined out of frustration, particularly not understanding why, as producers, we only received such a small part of the retail dollar. Not much has changed in this regard, but I now understand that if nobody puts in the effort, then nothing changes. Along with a very supportive and dedicated group that make up the vegetable council, I have tried to navigate through all the trials and tribulations of trying to ensure the future of our industry," he said.

Country of origin labelling and issues with imports

For a consumer buying their weekly groceries in a supermarket, the prospect of choosing Australian products becomes a daunting and often confusing venture according to Mr Craigie. Country of origin labelling has been a topic of heated debate within the industry for some time, with many growers and key industry members recognising that the current scheme is unclear and inadequate.

"As a producer of processed vegetables, country of origin labelling is something that needs to be prominent, not ambiguous and able to be read without me needing to find my reading glasses. It appears that to put a brand on a packet that shows who is selling the product is not a problem, but to promote where that product comes from is near impossible," said Mr Craigie.

For the consumer who walks in the supermarket door with the intention to purchase products from local producers, they can too often be swayed by other products which are selling for lower prices. With the 'price wars' on produce seen recently in the retail giants, Mr Craigie cautioned that some consumers may not be aware of the differences in production practices of imported products.

"There is a constant bombardment of advertising dictating the decision of consumers on price. The conditions under which food is produced in other places around the world may shock some people into change."

Imported processed vegetable products over the past three years have risen sharply according to a recent report released by the Department of Foreign Affairs and Trade. And with the possibility of fresh potatoes being imported from New Zealand for processing, it seems that battling cheap imports will not be the industry's only foreign challenge.

When speaking about the effects of the Tomato-potato psyllid, the vector associated with Zebra chip disease, Mr Craigie acknowledged: "We are aware that the New Zealand industry is suffering from diseases in their potato crops which are proving very expensive and extremely difficult to control."

"Why would we want to put the Australian industry at risk? It is already under extreme pressure from every other side. Competition from overseas is something that we already have to deal with, so importing fresh potato products into Australia for processing, bearing in mind that our cost of processing is supposably so expensive, just does not add up. If anyone thinks importing fresh potatoes from New Zealand for processing is a good idea, they should be held accountable for any future issues that may occur," he said.

"At the moment, our potato industry is at great risk due to the strong Australian dollar and high input costs. Australia is a very high cost of production country with energy prices, labour, and having to satisfy all the red and green tape. Load this up with the real threat of disease and cheap imports from other countries where a lot of their costs are lower, and often, there may not be a direct but an indirect subsidy in place, and it is a tough place to compete in."

The next generation

Enticing young people into the industry is imperative for its future. With an aging workforce and increasing demand for skilled labour, engaging with the next generation of growers, agronomists and researchers will be a key component in the

> “I believe they [young rural people] are the ones that will prove to the urban youth that agriculture is one of the most exciting and diverse professions they can choose.”

sustainability of the Australian horticulture industry.

“Attracting young people into the industry is always going to be challenging while the industry is in… a state of financial struggle and showing a marginal future. This is not to say that it does not have a progressive future, but we need youth and innovation in order to adapt the industry to future needs,” said Mr Craigie.

“I am very proud that my daughter is now studying Agricultural Science at the University of Tasmania and my son, who is completing an apprenticeship in the metal trades, are both farmers at heart. One day they, along with their cousins, will have the opportunity to be sixth generation farmers.”

“Young rural people already have an association with, and passion for, the land and industry. I feel that sponsoring and mentoring these people is very important. I believe they are the ones that will prove to the urban youth that agriculture is one of the most exciting and diverse professions they can choose,” he said.

Despite the hardships and challenges with which the contemporary Australian grower must contend, the Craigie family’s history, passion and legacy certainly demonstrates one thing - that longevity is possible in times of adversity.

The importance of plant nutrient analysis

Monitoring and analysing potato nutrient levels are essential for a crop's success. Rapid plant nutrient analysis presents a valuable tool for producers battling the growing season.

Nutrient levels in potato plants are critical for the success of a crop. The correct amount of both macro and micro nutrients needs to be available at the right time for each crop to maximise yield and quality, and provide the greatest resistance to pests and diseases. Soil testing alone is often not enough to guarantee a successful crop as a plant's uptake of nutrients varies immensely and can be affected by several variables. Rapid plant nutrient analysis can allow for the examination and identification of nutrient related deficiencies and trends. This is performed through the testing of plant petioles (stems), referred to as a *Nu-Test*.

Through the analysis, 15 key nutrient levels of samples can be identified. The sap is extracted using precision hydraulic presses, which gently extracts sap from the sap stream without breaking down cell structures. The sap is then filtered, diluted and analysed using an inductively coupled plasma spectroscopy (ICP) to measure the inorganic nutrients (such as Phosphorus, Calcium, Potassium, Zinc, Boron), and a flow injection analyser (FIA) to measure nitrogen, chloride and ammonium.

> "Rapid plant nutrient analysis can allow for the examination and identification of nutrient related deficiencies and trends."

Technical Manager at AgVita Analytical, Darren Hicks, said that growers often take several samples to be analysed over the course of a season in order to identify the nutrient trends of a crop.

"Plant nutrient testing is a quick, accurate and inexpensive way to measure the key production components of a crop," he said.

"Growers could potentially save money due to more precise applications of fertiliser or make money due to increased yields if they utilise the results from the rapid nutrient testing."

Mr Hicks said when sampling for nutrient uptake (sap) analysis, growers should take actively growing parts from a random selection of plants from a representative area of the crop, or from plants that are representative of the crop. For *NU-test* results to be meaningful, a consistent sampling technique is important.

With results e-mailed to a nominated recipient - including growers, agronomists or other agents - rapid nutrient testing has presented itself as an avenue through which increased productivity and minimal wastage could be achieved.

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Paul Howes: Honing in on horticulture

National Secretary of the Australian Workers Union, Paul Howes, is not known for shying away from a controversial topic. Discussing the important issues affecting the manufacturing and agriculture industries and sharing his opinions on the supermarket duopoly, Mr Howes spoke with Caitlin Rodé.

The Australian Workers Union (AWU) began in 1886, representing shearers and miners. Today, it has grown to be Australia's most diverse union encompassing workers across countless industries, including agriculture. National Secretary of the AWU, Paul Howes, said he is concerned about the increase in the loss of jobs for growers in the supply chain, the rate of foreign produce entering our shores and the slow uptake of export opportunities in Asia.

"The reality is that with our currency sitting as high as it is, with rampant dumping of illegal foreign produce and goods into the Australian market, and the lack of willingness of politicians to deal with the real emerging issue of food security, things are going to get worse before they get better unless we have some swift and drastic action," said Mr Howes.

"I think there is a lot of opportunity not just for the food industry but also for the manufacturing sector, in China, as they move from being a production to consumption-based economy. But that's not going to happen naturally, not just by the virtue of Australia

> “It is virtually impossible for any consumer who walks into their local Coles or Woolies to know the origin of the goods that they are buying.”

having a lot of land and a lot of produce.”

“If we don’t get the policy settings right, other countries will be better placed to take advantage of that transformation in China… my fear is that if we don’t plan now we’ll actually miss out on the potential to be Asia’s food bowl,” he said.

It does not take much to coax an impassioned response from Mr Howes on the actions and market domination seen by supermarket retail giants in recent times, country of origin labelling and the influx of imported produce onto supermarket shelves.

“I think the current [country of origin] regime is grossly inadequate. The reality is that it is virtually impossible for any consumer who walks into their local Coles or Woolies to know the origin of the goods that they are buying,” said Mr Howes.

“We know how many of the big retailers manipulate percentages of content in particular products to be able to portray themselves as Australian made when really they’re not. More often than not, you see labels of goods being assembled in Australia with imported produce which is a real issue - we should actually have clear and transparent and enforceable country of origin rules. I think we need to also look at the negative role that the supermarket duopoly plays in this regard.”

“Ultimately, I think it is in the national interest of governments of all persuasions to actually intervene here and take on the duopolies that are frankly getting away with the type of anti-competitive behaviour that, in any other sector, would have the ACCC come down like a tonne of bricks,” he said.

The new consumer

Speaking during his keynote address at the 2012 AUSVEG National Convention, Trade Show and Awards for Excellence, Mr Howes discussed the importance of industry communication and the arrival of the ‘new consumer’.

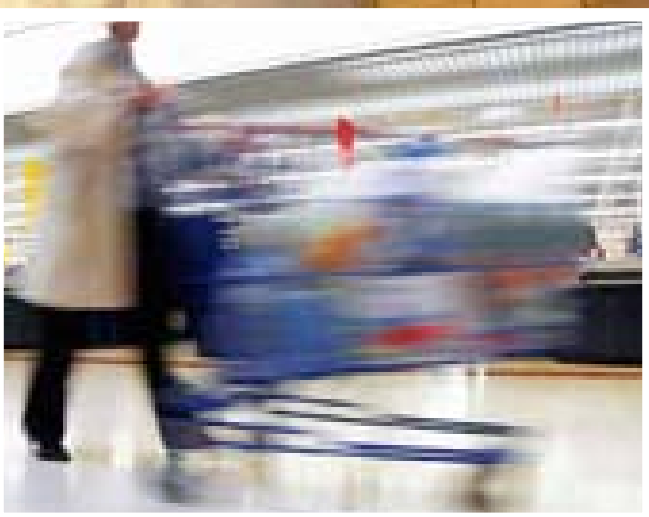
“The transition of China from a production-based to a consumption-based economy will be a total game changer for Australian exporters. This transition will put the Chinese middle class in a stronger position to buy consumer goods including western manufactures and imported foods,” said Mr Howes.

With the rise of export opportunities for Australian producers, Mr Howes conceded that foreign imports still pose a significant threat to domestic industries in an attempt to compete against cheaper, and often inferior, products.

“Vegetable producers around the country are also being undercut by foreign imports that have been produced with illegal subsidies or sold below cost. This has serious implications for Australia’s food supply, particularly when one considers the uncertainty of foreign standards and food quality. In respect to the food industry, experience has shown that rising incomes usually lead to a rise in demand for complexity in food. That means more opportunities for innovative producers who can see where consumer preferences are heading.”

Supporting locally grown produce

With consumers frequently encountering ambiguous and



often confusing food labelling, Mr Howes detailed his personal in-store experiences and why he believes the supermarket giants need to be better regulated.

"When I am doing my own grocery shopping, one of my chief frustrations is the difficulty of distinguishing locally grown food from imported products. In Australia, we really have no idea what we are eating or where it is from," said Mr Howes.

"We all have a stake in the health of our food industry and we should be able to support local producers if we want to. Vegetable growers are the backbone of our nation's food economy and appropriate legislation needs to be in place to be sure that Australian produce is clearly identifiable on our shelves."

"Perhaps the biggest threat to the health of the Australian food sector however, comes from the structure of our retail food duopoly. It comes from the way the big two supermarket chains do business with domestic suppliers. The bully-boy tactics of the supermarket chains might bring lower prices for consumers, at least in the short term, but those prices at the checkout come with increased risks," Mr Howes stated.

> "[Governments need to] take on the duopolies that are frankly getting away with the type of anti-competitive behaviour that in any other sector would have the ACCC come down like a tonne of bricks."

"They are driving independent brand manufacturers out of the market and offshore which leads to the loss of manufacturing jobs, impacts on local communities and affects our long-term capacity for domestic food production. I strongly believe there needs to be greater oversight and controls on the supermarket chains to remove anti-competitive practices and to improve market access for local suppliers."

Potato Extension Program

Image courtesy of the Potato Council UK - a division of the AHDB.

Exposure to international potato industries allows members of the Australian industry to compare and contrast our own policies and practices with those of international counterparts. These experiences enable discovery of better in-field practices, R&D developments, technological innovations and business insights.

World Potato Congress 27-30 May 2012

This edition of the Potato Industry Extension Program column focuses on key findings and insights from the World Potato Congress (WPC) held in Edinburgh, 27-30 May 2012.

The 2050 crisis and opportunities for the potato industry

By 2050, the world's population is expected to have increased by two billion people. It is anticipated that there will be food shortages and food security issues. Despite this projection, there are certainly opportunities for the potato industry. Given that it can be cultivated across the globe, the potato can help address the food shortage gap. Interestingly, China will require a 50 per cent increase in food production. Speakers at the WPC said that the potato has the potential to help accommodate China's food requirements. China, constrained by its poor quality of seed, production conditions, shortage of varieties and inadequate storage technology, is an enormous export opportunity for Australian producers.

Genetically modified potatoes

The WPC emphasised that industry and consumers should begin to embrace genetically modified (GM) products. Mark Lynas, an environmentalist

from the United Kingdom said: "If we ignore technological development, we betray the tradition of the Enlightenment."

It was discussed that given the anticipated global population boom and associated food shortages, GM potatoes have the potential to contribute towards food security. Not only enhancing and improving production in the face of resource scarcity, GM potatoes could also exhibit a greater resistance against pests and diseases. Furthermore, GM potatoes are a means to meet consumer demand for potatoes with higher health benefits.

The potato as a means to combat obesity

As a rich source of Vitamin B, Vitamin C and potassium, and a vegetable which blunts the effects of sodium on blood pressure, the nutritional health benefits of potatoes are apparent. Additionally, the potato has a large part to play in combating obesity.

Studies have found that, compared with rice and pasta, people consume less food after eating potatoes - the potato is a craving suppressant. The average calories consumed from eating potatoes is small overall in terms of total calories consumed.

The industry in the United States has recently experienced success in getting the potato back on to the menu of school lunches, and dispelled the negative image of the potato which has been subject to unfair and unwarranted press criticism.

Potato marketing

Traditionally, growers have aimed for maximum yields, and variety production has been occurring for its own sake. Research has revealed that consumers want greater tasting potatoes, and potatoes which can deliver flavour consistently. Additionally, they want potatoes which have enhanced health and nutritional benefits. The key message for growers and processors is that they should now be breeding/producing potato varieties based on flavour and health.

Potato retail

A majority of potato shelving/displays in retail outlets around the world are dull, unimaginative and not tempting or inviting for consumers. To improve the marketability potential of the potato, retail displays need to be dramatically changed. The consumer wants information presented to them simply, clearly and in a visually appealing manner. Potato retailing should cultivate an emotional factor and be easy to navigate. Labels should be used to advise the consumer as to which varieties are the best tasting, the healthiest, produced locally, organic, easiest to prepare and have the best end uses (e.g. mash, baked, steamed). The potato needs to become more sophisticated to meet the demands of a more affluent and product demanding consumer. Potatoes are no longer driven by the production companies - they are driven by the consumer market.

Product innovation

The WPC emphasised that the best potato product innovations are those which cater for the modern consumer. For today's families, there is a preference for quick meal preparation times and fast meal sitting sessions. As such, innovations like the two pack of jacket potatoes which can be baked in an oven in five minutes, and the single bag microwave steamed potato, have proved to be popular.

Consumer insights

It appears consumers are willing to pay more for locally grown produce as well as premiums to contribute to a worthy/charitable cause. Under this new consumer paradigm, food must demonstrate a measurable impact on community and society. Additionally, consumers want to recognise all ingredients on a label, and want food made with as few ingredients as possible. Retailers can win over the consumer by providing labelling which contains complete nutritional information and country of origin information.

Potato storage

In Europe, having air space above the crop is typical in larger storage sheds, and bin storage is popular for fresh and seed potatoes. Interestingly, the size of storage facilities in Europe is shrinking in order to have greater control over the conditions in storage - the smaller the storage facility, the easier it is to control its temperature.

Molecular Pharming

Plants may be the next option for providing medicine to those who cannot afford it. Through a process called Molecular Pharming, which involves extracting vaccines from plants, potato tubers can be a source for pharmaceutical cultivation. Pharmaceuticals produced through Molecular Pharming can be administered orally which is both safer and cheaper, particularly for administering medicine in the third world. A hepatitis B vaccine is expressed in potato tubers and patients can receive immunisation by eating potatoes.

Upcoming events

Potato Extension Workshop - South Australia

A Potato Extension Workshop will be held in South Australia in August. This is an excellent opportunity for growers and processors to hear about how R&D can be implemented practically, and what it can offer in the short and long term. Event details will be advertised in due course.

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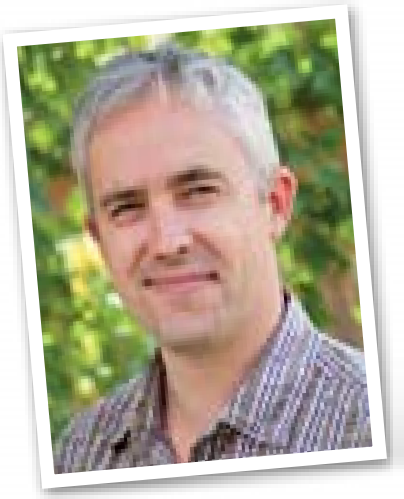
Soil solutions

with Rohan Davies

Is cost per unit of nutrient the best way to compare fertilisers?



Technical Agronomist at Incitec Pivot Fertilisers, Rohan Davies, discusses crop nutrient uptake and fertiliser use in potato crops.

When deciding which fertiliser is best suited to supply your crop's nutrient requirements, it is important to consider how effectively plants can absorb nutrients. Growers should determine the effectiveness of nutrient uptake and compare costs on this basis, rather than looking at cost per unit of nutrient when making purchasing decisions. Plants use water, carbon dioxide, energy from the sun and essential nutrients to produce organic substances like sugar, starch, protein and oil.

Foliar applications

Water and nutrients can be absorbed by plant roots or leaves. However, the uptake of nutrients through leaves will only ever supply a small amount of the plant's total nutrient requirements. This is due to the leaves' sensitivity to applications of large concentrations of foliar nutrients.

There are two ways in which dissolved nutrients can enter leaves:

- Through the stomata, and
- Through the cuticle.

Since the stomata are predominantly situated on the underside of the leaf, good coverage of both the under and upper side of leaves is necessary for the most rapid and complete uptake of foliar fertiliser. To ensure optimal uptake of nutrients, foliar fertilisation should be carried out when relative humidity is high, for example, early in the morning or late in the afternoon.

Cations & anions

Nutrients generally fall into one of two groups: cations, which have a positive charge, or anions, which have a negative charge. Soil has a negative charge so it can attract or hold positively charged nutrients, or repel negatively charged nutrients.

This cation and anion soil principle gives rise to four circumstances:

1. Cations can be made unavailable or 'locked up' because they are strongly tied to negative binding sites on clay particles and organic matter.
2. Cations can be replaced or released by other cations and subsequently taken up by the plant or lost through leaching.
3. Cations can be released by connecting with anions and subsequently taken up by the plant or lost through leaching.
4. Anions remain in the soil solution and therefore move within it. Plants can take up anions or they can be lost through leaching.

Plant availability

Product sources for nutrients vary widely in their plant availability. There are four main sources - inorganic, synthetic chelates, natural or organic complexes, and fritted glass products.

1. Inorganic nutrient sources include oxides, carbonates and metallic salts such as sulphates, borates and molybdates. Sulphates tend to be the most common inorganic nutrient.
2. Synthetic chelates are formed when a chelating agent binds to a metallic cation. The stability of these bonds impacts on the availability of the nutrient to the plant.
3. Natural organic complexes are made by reacting a metallic salt with an organic by-product e.g. lignosulphate. Knowledge of how this complex is formed is scarce, and it is difficult to determine the stability of these complexes.
4. Fritted glass products are glassy products in which the nutrient solubility is controlled by the product's particle size and matrix composition. Their use in Australia is not widespread.

Revealingly, there is a wide range of different sources to supply the nutrients which crops require. Growers should determine the effectiveness of nutrient uptake and compare costs on this basis, rather than simply looking at cost per unit of nutrient when making purchasing decisions.

Soil nutrition questions

Please send your soil nutrition questions to *Potatoes Australia*.
Email: info@ausveg.com.au
Phone: (03) 9822 0388

Ask the industry with Scott Mathew

Treatment of potato seed is an integral component of seed and soil borne disease management. Technical Services Lead at Syngenta, Scott Mathew, answers your questions in this edition of Ask the industry.

Potato seed treatment is often one of the most underrated operations performed by many potato growers and is vitally important in terms of seed and soil borne disease control. Potato seed that is correctly suberised and treated will produce a more uniform crop and increase the early vigour of plants.

Question: What is the best method when applying seed treatments?

The best method, in my view, is treatment over the grading table either prior to storage or immediately prior to planting. Some things to be mindful of include:

- Calibrating the equipment to ensure the correct application rate is applied as too much chemical in some situations may prove to be phytotoxic, especially if accumulated in the eyes of the tubers.
- Inadequate coverage, which may not totally protect the seed piece from disease infection.
- Ensuring that the rollers etc. are as full as possible to prevent chemical losses.
- If using a liquid seed treatment, ensuring that the tubers are thoroughly dried relatively quickly, or storing them in areas with adequate airflow to facilitate faster drying times.

Fully loaded roller table.

Very few gaps will lead to product loss.

Question: How much water should I apply?

The theoretical maximum amount of water that a tonne of potatoes will hold is around 10L/t. This, however, is far too much and may lead to an increase in breakdown issues with seed tubers.

Ideally, you should be using as low water volume as possible to achieve adequate coverage of the seed tubers. If possible, you should be using between 500ml - 2L of total liquid (chemical plus water) per tonne of seed.

Question: What are the new regulations on spray drift?

The new regulations for AMISTAR Top when applied by air include:

- DO NOT apply with spray droplets smaller than a MEDIUM spray droplet size category according to nozzle manufacturer specifications that refer to ASAE S572 Standard or the BCPC Guideline.
- DO NOT apply when wind speed is less than 3 or more than 20 kilometres per hour as measured at the application site.
- DO NOT apply during surface temperature inversion conditions at the application site.
- Use 30 to 40L water/ha. Use a medium spray droplet size classification according to ASAE S572 definition for standard nozzles.
- Mandatory no-spray zones.
- DO NOT apply when there are aquatic and wetland areas including aquacultural ponds or surface streams and rivers downwind from the application area and within the mandatory no-spray zones shown in the table below.

Medium Spray Quality (ASAE S572 definition for standard nozzles)		
Wind Speed Range at Time of Application	**Downwind mandatory no-spray zone**	
	Fixed wing	Helicopter
From 3 to 8 kilometres per hour	40 m	40 m
From 9 to 20 kilometres per hour	60 m	60 m

Ask the industry

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

Attendees on the study tour with Belgian grower Carl Adriansens (fourth from left).

Binoculars on Belgium

From 22 to 30 May, growers and other members of Australia's potato industry were part of a study tour to Belgium and the UK. This edition of the International R&D Update will focus on insights from Belgium's potato industry learnt during the tour.

REO Cooperative Auction House - Roeselare

The REO Cooperative Auction House began in 1942 as an operational market outlet for potato growers. Owned by the producers and growers, with over 1500 major shareholders, the facility has an auction room where buyers gather to bid for vegetables. With Roeselare constituting a key growing region in Belgium, the 450 buyers who purchase from the auction house are well positioned to take advantage of the fresh produce sold daily.

The Auction House's main feature is its warehouse and product tracking system. Once produce leaves a farm it is given an ID number and placed in plastic crates. This means any product can be tracked from the moment it arrives at REO through to when it is delivered to the buyer. Six hundred and twenty tonnes of produce are pushed through the auction house each day. Growers on site praised the system. They are paid every 10 days after produce is sold.

Centre for Applied Potato Research (PCA) - Kruishoutem

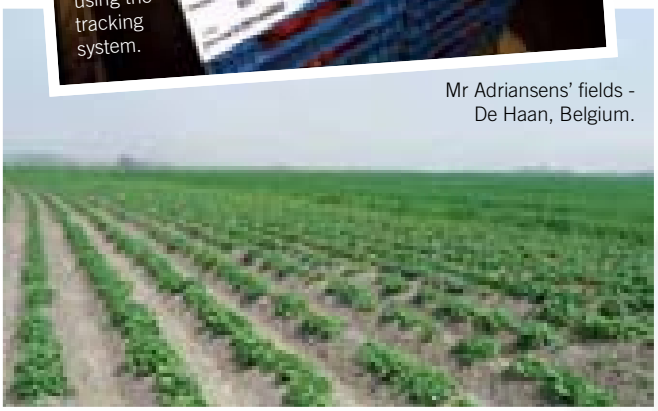
The PCA has been in operation since 1992. Their staff undertake trials on farms throughout Belgium. The R&D focus is on crop protection, variety development, screening of nematodes, and analysis of yields and costs.

The Belgian Industry

Most potatoes in Belgium are grown in the north-west of the country. Seed production is small - only 3000 hectares are certified. The majority is imported from the Netherlands, and more than half of Belgium's own seed production is exported. Belgium's fresh market potatoes mainly come from the Netherlands and France. There are approximately 70,000 hectares of potato growing land in Belgium of which, 90 per cent is for the processed sector. The average Belgian grower has 5-10 hectares of growing land. In 1990 there were 21,000 growers; in 2010 there were 8,000. The price of ware potatoes per 100kg has ranged between 2-30 Euros in recent years, and seed prices between 20-110 Euros per 100kg. Through contracts, growers receive 8-10 Euros per 100 kilograms of potatoes. Belgium has 20 major processors. In 2010, 3,200,000 tonnes of potatoes were processed. Belgian growers do not have to

The auction room in the REO Cooperative Auction House.

REO produce labelled using the tracking system.



Mr Adriansens' fields - De Haan, Belgium.

Tour attendees examine Mr Adriansens' crop.

irrigate their produce due to the amount of natural rainfall, thus reducing a major input cost.

Late blight

Late blight is a major problem in Belgium and spraying has increased between 1992 and 2009, with treatment application occurring earlier in the season. PCA encourages growers to adopt a pre-emptive strategy - for spraying to occur before Late blight infection takes place. This is a necessary but expensive remedy. PCA has developed a Late blight warning service using Belgian weather stations to provide growers with daily temperatures, weather conditions, expected rainfalls and Late blight risk levels. Armed with advice, the grower can take to pre-emptive spraying to combat a Late blight outbreak.

Potato cyst nematode (PCN)

In Belgium, soils are tested every four years. For seed potatoes, it is compulsory to have a PCN test before planting commences. Seed is not washed because of the cost, and there is a high chance that PCN can spread as a result of washing. Under a European Union directive, Belgian growers with a PCN infection will have to wait six years before being able to plant again, unless they can prove that they have adopted measures to mitigate the disease such as PCN resistant potatoes. In Belgium, potatoes have been traditionally rotated on a 1-3 year basis in the same paddock, but it is now more common to see 1-5 year rotations. PCA has recently begun to undertake soil sampling for PCN risk management purposes.

Farm 'Hof Ter Meulen' - De Haan

The tour group were taken around the farm 'Hof Ter Meulen', located 1000 metres from the North Sea. According to owner Carl Adriansens, it is too risky for Belgian growers to specialise in one crop. Revealingly, Mr Adriansens produces 25 hectares of seed potatoes, 8 hectares of sugar beans, and 25 hectares of wheat. He anticipates that 20-25 per cent of Belgium's farmers will not survive the next 20 years due to farmers failing to diversify, rising costs of inputs, wages and production.

Being close to the sea, and having lower temperatures, Mr Adriansens' crop is less susceptible to pests and diseases. Producing 40 tonnes of potatoes per hectare in a good year (20-25 tonnes at present), Mr Adriansens' warehouse holds 350 tonnes, and his harvester can load 150 tonnes per day. Once seed is stored, Mr Adriansens said it is crucial to lower the temperature very gradually. Mr Adriansens has problems attracting decent labourers. Wages are high and a portion is paid to the state. For European growers, there is a 23 per cent subsidy. Mr Adriansens receives 400 Euro per hectare in subsidy but acknowledged they are market disturbing. Mr Adriansens believes one problem with potatoes is that there are too many varieties, which makes them hard to sell. He stressed that all growers should listen to consumers more closely.

i For more information please contact:

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Phone: (03) 9822 0388
Project: PT10702

CALENDAR of events

August 2012

Potato Industry Extension Workshop

Where: South Australia

What: As part of the Potato Industry Extension Program, a free seminar will focus on Potato R&D activities and applicable outcomes. Key industry speakers will discuss R&D benefits for growers and processors, and how it can be implemented practically in an on-farm setting. Presenting an opportunity to see where potato levy funding is going and the benefit that growers and industry are receiving, this will be an important event not to be missed by those in the industry.

Further information: AUSVEG (03) 9822 0388 or www.ausveg.com.au

12-13 September 2012

Potato Europe

Where: Villers-Saint-Christophe, France

What: Potato Europe showcases technical innovations, demonstrations of harvesting, storage methods, essential trading opportunities and information and presents members of the industry with an invaluable opportunity to network and establish new business connections. Held every four years in France, the 2012 event is set to host 10,000 members of the local and international potato industry. This year's themed sessions include performance, sustainability and environmental excellence.

Further information: www.potatoeurope.com

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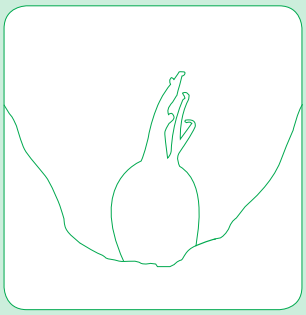

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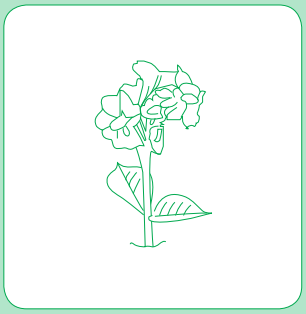

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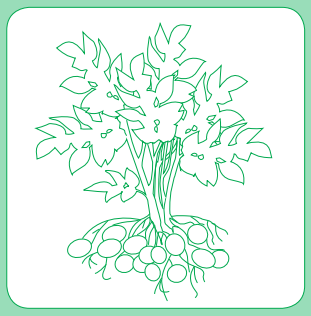

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