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February 2008



Profile : Des Jennings

2007 Federal Election Coverage

International Year of the Potato 2008



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AUSVEG Chairman

Michael Badcock

Editor

Simon Adams
AUSVEG
Ph: (03) 9544 8098
Fax: (03) 9558 6199
M: 0419 732 446
simon.adams@ausveg.com.au

Communications Coordinator

Toni Davies
AUSVEG
Ph: (03) 9544 8098
Fax: (03) 9558 6199
M: 0400 242 713
toni.davies@ausveg.com.au

Advertising

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

Design, Print and Distribution

at+m integrated marketing
Ph: (03) 6334 3577
Fax: (03) 6331 5006
info@atmmarketing.com.au
www.atmmarketing.com.au

Editorial Committee

Michael Hughes (QLD)
Department of Primary Industries
& Fisheries
Ph: (07) 4095 8229
Fax: (07) 4095 8258
michael.hughes@dpi.qld.gov.au

Bob Peake (SA)
Primary Industries and Resources SA
Ph: (08) 8389 8800
Fax: (08) 8389 8899
peake.bob@saugov.sa.gov.au

Iain Kirkwood (TAS)
Department of Primary Industries
and Water
Ph: (03) 6421 7698
Fax: (03) 6424 5142
iain.kirkwood@dpiw.tas.gov.au

Rachel Lancaster (WA)
Department of Agriculture and Food WA
Ph: (08) 9780 6210
Fax: (08) 9780 6163
rlancaster@agric.wa.gov.au

Steven Page (SA)
Golden Sunrise Fresh Produce
Ph: (08) 8577 8577
Fax: (08) 8577 8544
spage@goldensunrise.com.au

David Antrobus (VIC)
McCain Foods (AUST) Pty Ltd
Ph: (03) 5339 2241
Fax: (03) 5338 0633
dantrobus@mccain.com.au



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PO Box 563, Mulgrave, Vic, 3170

ISSN 1834-2493



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ACCC Inquiry Into Grocery Prices

The Rudd Government has today directed the Australian Competition and Consumer Commission to commence a formal inquiry into grocery prices.

The Rudd Government wants to ensure working families are getting a fair deal at the supermarket.

While the Howard-Costello Government's failure to act on 20 Reserve Bank inflation warnings is impacting on prices across Australia, we want to know if more can be done to ensure working families have access to a competitive market for basic food items.

The Rudd Government has instructed the ACCC to take a broad approach to its inquiry and ensure all aspects of the chain are included - from the farm gate to the check out counter.

The inquiry will consider the current structure of the grocery industry at the supply, wholesale and retail levels including mergers and acquisitions by the national retailers; the nature of competition and the pricing practices in the grocery industry; and factors influencing efficient pricing of inputs along the supply chain.

The ACCC is required to report to the Minister by 31 July 2008.

Assistant Treasurer Chris Bowen has also asked the ACCC to advise him by the end of February on how the ACCC may deliver

a periodic survey of grocery prices at supermarkets for a typical shopping basket; and how best to establish a dedicated website on grocery prices as well as any other methods that could be used to provide information to the public.

Matters to be taken into consideration by the inquiry shall include, but not be restricted to:

- the current structure of the grocery industry at the supply, wholesale and retail levels including mergers and acquisitions by the national retailers;
- the nature of competition at the supply, wholesale, and retail levels of the grocery industry;
- the competitive position of small and independent retailers;
- the pricing practices of the national grocery retailers and the representation of grocery prices to consumers;
- factors influencing the pricing of inputs along the supply chain for standard grocery items;
- any impediments to efficient pricing of inputs along the supply chain; and
- the effectiveness of the Horticulture Code of Conduct, and whether the inclusion of other major buyers such as retailers would improve the effectiveness of the code.

In undertaking the inquiry, the ACCC will consult widely with retailers, businesses along the supply chain, farmers, consumer groups and other interested parties.



AUSVEG Potato Group Chairman's message

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David Anderson
AUSVEG Potato Group Chairman

Editor's message

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Simon Adams
Editor
AUSVEG



Business Skills and Leadership Development

Australian vegetable growers are keen to develop their business management and leadership skills as long as those skills are tied directly to improving the profitability of their business, a recent Training Needs Analysis revealed.

The Australian Vegetable Industry Training Needs Analysis in Business Skills and Leadership Development was completed over five months from June 2007. It is part of the Vegetable Industry People Development Coordinator project currently being funded by the Australian Government through the Australian Vegetable Industry Development Group.

The need to enhance human resources across the industry is a key plank of Vegvision 2020, the industry wide strategic plan for the sustainable future growth of the Australian Vegetable Industry.

The Needs Analysis involved five stages of research, including a desk top review; in depth case studies of 24 vegetable industry leaders; a survey of Australian vegetable growers, including vegetable, fresh and processing potato, processing tomato, onion and protected cropping growers; a survey of the National Vegetable Levy funded Industry Development Officers and interviews with other industry stakeholders.

People Development Coordinator Dianne Fullelove said she found the vegetable industry leaders to be positive about where the vegetable industry was heading. "The majority of industry leaders and stakeholders I interviewed over the course of the

reporting process were very positive about the industry," Dianne said. "Their biggest goal was to increase the participation of young people in the industry, encouraging them to get involved."

The grower survey revealed a preference for higher-end management skills in the general areas of business management, financial management, people management and marketing.

While interest in these areas was high, it was felt that there would be advantages in having 'regional facilitators' to assist vegetable growers access the large number of training programs currently available.

"The survey revealed that growers currently don't engage in a lot of learning and skills development because they really want something that is specific and tailored to their needs," Dianne said. "They also expressed a preference for experiential learning, such as grower study tours to other farms or visits to other businesses in the supply chain."

The report recommends that the industry focus its attention on a small number of high priority areas that are likely to provide the greatest impact on the industry's fortunes, and that every effort must be made to make the most of existing courses and programs. This will be the focus of the next stage of the People Development Coordinator project, the development of the Investment Plan. The purpose of the Investment Plan is to guide future industry investment in business skills and leadership.

"I am looking at existing training and skills development opportunities that are out there, matching that with the areas growers identified as of interest, and identifying any gaps," Dianne said. "I will then take the Investment Plan, complete with strategies and an action plan, to the Vegetable Industry Advisory Committee in March for their consideration."

The full Training Needs Analysis, including key findings, is available to download via the AVIDG website www.avidgroup.net



PROFILE Des Jennings

Protecting the grower voice

Youna Angevin-Castro speaks to Victorian seed grower Des Jennings about his views on the water situation, the changing landscape of farming, and where he sees the potato industry in the future.

"The water situation is quite unique in this part of the State," said seed potato grower Des Jennings from his 250 hectare property in Thorpdale, 140 kilometres south east of Melbourne. "We get our water from spring-fed dams, which has always made it a reasonably secure area for water, compared to some other potato growing regions of Victoria."

With high annual rainfalls in Thorpdale, potato growers in the area are able to grow their crops with less reliance on additional sources of irrigation. However, despite this, growers in the region are still subject to water restrictions.

At risk is the ability to continue storing water in dams on-farm. Des explains that previous licensing arrangements are now being called into question by water authorities as drought continues, and demands for water increase in urban areas.

"We've been told categorically by the water authorities that we can no longer continue to store water in our dams, or access additional water for our farms.

"This is frustrating from the perspective that we've built the dams, and we've supplied the infrastructure at our own cost, yet we have people telling us that we can't use that water for our own purposes. In a way we've fallen victim to a set of rules and regulations which have been set across the whole country, without any consideration for the differing circumstances of farmers. Not only does this threaten our immediate crops, but in business, if you're going to continue to survive, you need to have capital growth. And without water, this can't happen."

This is an issue that Des feels strongly about, and is moving to form a local management group to address the problem. It is this strength of conviction that

has led Des to become an active and vocal member of the potato industry: both within his local community and on a national scale.

"It is so important to initiate discussion and debate about these issues, and for growers to become involved in some of the decision-making. Obviously, as growers, we don't operate in isolation, and we also need to include the opinions of the regulators, the community and other stakeholders. But at the moment, there is very little discussion or compromise - everyone has their own perspective, and decisions are being made without proper consultation."

A second-generation seed grower, Des has seen a great deal of change within the industry over the years. In particular, he has noted the shift in the way that growers run their farms, and the changing relationship with clients.

"When I was a kid, running a farm used to be a way of life. Farmers worked to live - to buy the necessities such as food and clothes.

"Today, it has definitely become a business. Everything has become profit-driven, and the relationships you develop with your customers are very different to what they once were."

It is the changing landscape, and the potential threats that it brings with it, that has forced Des to be an active voice in the industry.

"Its simple really. All I really want is to see people fairly rewarded for the work they do," Des said.

"One of the reasons I joined industry committees in the first place was to make sure the growers' perspective was heard. That's one of my fears - that other people determine the direction of our businesses."

Des has been a longstanding director of the AUSVEG board - a role he fulfils out of responsibility to the potato industry.

"At times, the commitment has been hard on my business, but I'm scared that if I'm not there, there will be no-one to provide a voice. But at the same time, it can be very rewarding."

As a seed grower, Des sees the potato breeding program as one of the highlights of the industry's research and development program. Over the years he has seen the number of varieties grow from one or two, to over twenty major varieties.

Des is also behind a local initiative to return variety trials to Thorpdale.

"For a while, the trials used to be done elsewhere, but now its back with the farmers, which has been positive for the program. By nature, most growers are sceptical until they actually see results, so by getting them involved, there are gains to be made."



With a healthy breeding program, Des believes the next step for industry is to invest in marketing initiatives. He sees Matt Wickham's appointment as the industry's marketing communications executive as just the beginning, and hopes to see industry make inroads into improving its marketing message.

"If the potato industry is going to survive, then we all need to dip into our pockets to make it happen. And I don't just mean growers - merchants, agents, retailers, everyone needs to put money towards marketing and promotion."

Des would also like to see a more united industry, and believes that if growers work together, then their opportunities are multiplied.

"Instead of having ten growers each growing 100 acres of potatoes, they should look at grouping together and grow 1000 acres. It's a way to obtain economies of scale, and the reality is that the bigger you are, the more opportunities you have."

But before that can happen, Des believes that there needs to be a shift in focus, and that the industry needs to look at the big picture.

"Everyone is so busy worrying about their own problems, that they miss a lot of opportunities that face them.

"We need to start looking at the whole picture, and with the assistance of grower groups and AUSVEG encourage the sharing of different perspectives. Then we can move forward, as a united industry, to overcome some of the issues that are facing us today."



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AUSVEG News

AUSVEG has announced its new Board of Directors at the 2007 AGM held in Melbourne in late January 2008.

The elected Directors are as follows:

- Jim Trandos - West Australian Vegetable Growers Association
- David Anderson - Potato Growers Association of Western Australia
- John Mundy - South Australian Farmers Federation
- Steven Page - South Australian Farmers Federation
- Des Jennings - Victorian Potato Growers Council
- Luis Gazzola - Victorian Vegetable Growers Association
- Phillip Beswick - Tasmanian Farmers and Graziers Association
- Geoff Moar - New South Wales Farmers Association
- Jeff McSpedden - New South Wales Farmers Association
- John Brent - Growcom
- John Bishop - Growcom

The vegetable representative of the Tasmanian Farmers and Graziers Association is still to be announced.

Office Bearers were elected as follows:

- Chairman: Michael Badcock
- Vice Chairman: David Anderson
- Treasurer: John Mundy

AUSVEG Chairman Michael Badcock said "I would like to thank past Directors for their considerable efforts over the last few years and very much look forward to working with the Board to ensure the organisation meets the needs of all growers across Australia".

AUSVEG signs MOU with AHGA

AUSVEG has signed a Memorandum of Understanding (MOU) with the Australian Hydroponic and Greenhouse Association (AHGA).

The partnership between AUSVEG and the AHGA will enable both organisations to work more closely together to deliver improved benefits for growers.

"This is a major step forward for the industry in improving collaboration and increasing the positive profile for the vegetable industry and the business environment for growers", AUSVEG Chairman Michael Badcock said.

The AHGA is the peak industry body representing commercial hydroponic and greenhouse growers Australia wide.

Woolworths takes Drought Action again

Woolworths Supermarkets has again donated supermarket profits to drought relief efforts, holding its Drought Action Day on February 15 2008.

Proceeds from the day are forwarded to the Country Women's Association to provide financial assistance to rural families and the Landcare program, a collaboration between business, government and local communities to address salinity, farming sustainability and waterway pollution problems.

The previous Drought Action Day, held on 23 January 2007, raised \$4.7 million. In addition to donating all profits its supermarkets, Woolworths also solicited donations from customers through donation tins displayed in each store.

New Fertiliser centre established in Adelaide

Growers in Australia stand to benefit from a new research centre - the first of its kind in Australia - that aims to develop more advanced fertilisers for agricultural use.

The \$5 million Mosaic Fertilizer Technology Research Centre, to be based at the University of Adelaide's Waite Campus, has been established as a joint commercial venture with one of the world's largest fertiliser companies, the United States-based Mosaic Fertilizer LLC.

The Mosaic Fertilizer Technology Research Centre will develop and evaluate more efficient fertiliser products that will be marketed around the world. These new products will aim to be more effective in delivering nutrition to plants, enabling growers to more efficiently produce higher yields in crops to meet ever-increasing demand.

The new centre builds on an existing relationship between the University and Mosaic. Mosaic has previously obtained an option to commercialise two fertiliser technologies developed jointly by the University and CSIRO Land and Water.



Consultants adapt workshops to growers' needs

Horticulture Australia has appointed consulting company RMCG as national coordinator of the Drought Information Delivery for Horticulture project which will commence in February 2008.

The project has been established following the Australian Government announcement of a \$7.5 million drought response support funding package for growers in the Murray Darling Basin.

According to project manager Charles Thompson, the Australian Government allocated the drought response support package for "irrigation workshops to assist irrigators manage their farm businesses with reduced water allocations".

"What constitutes a workshop is flexible, and after consultation with Murray Darling Basin irrigators, who said they were workshopped out, we have adapted the program," he said.

"While not deviating from the objective of Drought Information Delivery for Horticulture, the mechanism of what is delivered and

how it is delivered will be developed in consultation with regional industry groups to ensure we avoid duplication with what is already available."

A possible delivery model could be one-on-one meetings where an experienced local consultant or facilitator meets individually with growers to help them assess their options or meetings where growers exchange techniques and ideas on stretching their water allocations.

Local facilitators can also recommend alternatives for financial assistance and, if necessary, assist growers with developing an exit strategy from their business.

"We realise that growers are drowning in information, and what they need is a chance to filter it - to work out what is relevant to them," Mr Thompson said.

"Growers have already taken various steps to manage their way through the drought - this is an opportunity to assess whether those measures are working."

Facilitators will be appointed in the Riverland, Shepparton, Griffith, Mildura and Swan Hill.

The facilitators will work with local grower bodies, where they exist, or other local organisations.

Further details on the project can be obtained from project leader Charles Thompson. charlest@rmcg.com.au

Fresh potato marketing development

Matthew Wickham, Market Development Manager, reports on the Marketing Plan development and the benefits it's set to offer.

Marketing is a key part of modern business success that will only become more crucial in the future. As domestic and international competition continues to grow, fresh potatoes must find a voice to engage consumers and hold its market share. However, what decides the opinion and tone of the voice? How is it delivered and who too? It's called a marketing plan.

The key elements of a marketing plan are research, industry and market overview, strategy and action. These components combine to dictate marketing so it is consistent and that all components, including people, are working toward common goals.

The marketing plan in progress incorporates a great deal of research on our product, the industry and consumers; it examines the current position or health of the industry. Current research shows some very interesting results including that many Australians are eating fewer spuds, nutrition is a growing motivator in purchasing behaviour and spuds take too much time to cook compared to alternatives. Further research into the industry itself shows that there is poor communication through the supply chain and the industry is fragmented.

Combining research findings reveals marketing strengths, weaknesses, opportunities and threats facing the potato industry. It highlights which consumer

segments to target and how to reach and win new customers. It shows that young families and couples have the greatest growth potential for potatoes. Importantly, it illustrates that we must keep our existing customers happy and eating potatoes more often. Research paints an overview of the industry, highlighting both the good and the bad.

The potato industry overview underlines clear goals that will boost industry development. Goals reached through branding, product, pricing, distribution, positioning and promotional strategies. Public relations for example, is a promotional strategy listed by the marketing plan that aims to achieve objectives by gaining consumer awareness and raising the profile of the potato, a great method of communication for the industry. Strategy decides resource allocation on elements that will provide the greatest return on investment and competitive advantage.

Research and strategy finally leads to actions! There is no doubt that actions speak louder than words, and actions are what the industry needs most of all. Unfortunately, no funding is currently available to implement actions.

Simply put, a marketing plan examines the industry and its customers, decides how to improve business and the actions that will achieve ambitions. It sets clear, realistic and measurable goals, includes deadlines, provides a budget and allocates responsibilities. Perhaps most importantly, it looks at how you can ensure that your plan becomes reality.

It is important to recognise that by adopting a well-researched and coherent marketing plan, the fresh potato industry has a much better chance of building long-term, profitable relationships.

PT06022

The Bottom Line

- Key elements of the marketing plan are research, industry and market overview, strategy and action
- Research has highlighted young families and couples as a marketing opportunity for potatoes
- Supply chain communication and industry fragmentation are issues which need to be addressed

Further information can be found at www.ausveg.com.au/levy-payers/login.cfm





Aussie Spuds – Consumers have their say

Growers hear a lot about developments in the potato industry, both in variety research and disease resistance. Now, Marketing Development Manager, Matt Wickham has investigated what consumers want from the spuds they buy.

A recent market research undertaken on the Australian Potato Industry's behalf found that consumers are concerned about nutrition, demand convenience and crave choice at meal times.

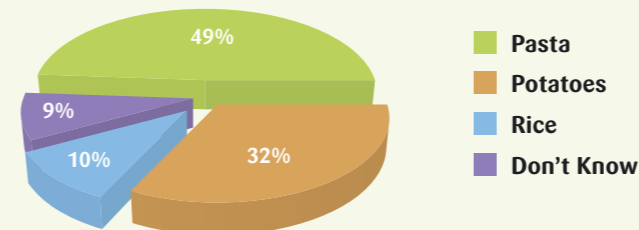
AUSVEG recently commissioned a snapshot market research study to confirm consumer attitudes towards potatoes, information that is critical for the growth of the fresh potato industry. The industry needs to better understand the future consumer and market environment in order to plan an effective marketing campaign that delivers benefits to growers.

The survey, which involved conducting phone interviews with approximately 1,200 people around Australia, revealed Australian consumers have perceptions of the potato similar to those of consumers surveyed overseas reinforcing the benefit of examining international marketing strategies for local use.

During the phone interviews, respondents were asked whether they believed pasta, rice or potatoes contained more calories and fat. Interestingly enough, 28% of people in Australia perceive that potatoes contain more fat than pasta and rice and 32% think they contain more calories than pasta and rice. In fact, potatoes contain less calories and fat than either rice or pasta.

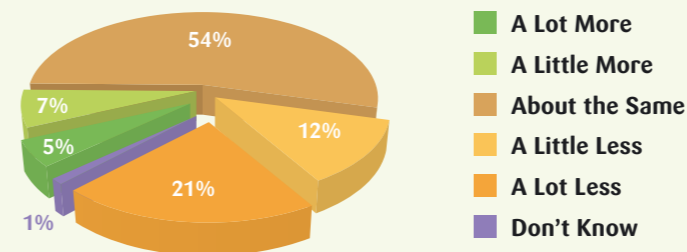


Q1. TYPE OF FOOD THAT CONTAINS THE MOST CALORIES PER SERVE?



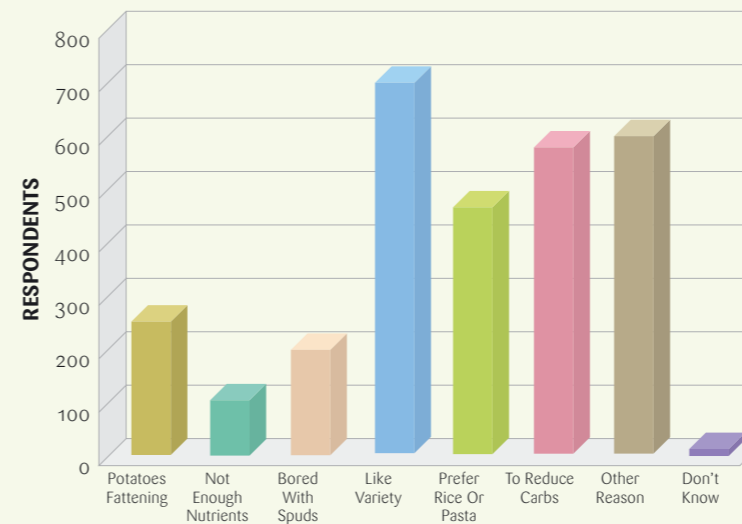
32 per cent of people surveyed believe potatoes contain more calories than rice or pasta.

Q2. EATING MORE OR LESS FRESH POTATOES THAN FIVE YEARS AGO?



21 per cent of Australians are eating a lot less potatoes than what they were 5 years ago. 54% are eating about the same quantity.

Q3. REASONS FOR EATING LESS FRESH POTATOES THAN FIVE YEARS AGO?



From the 1202 respondents of the survey, 721 agreed that they are eating fewer fresh potatoes than five years ago as they are seeking more variety in their diet, while 589 agreed they are trying to reduce carbohydrate intake. Other reasons for the decline volunteered from the respondents highlighted the belief that potatoes take longer to prepare than alternatives.

The results have further revealed that there is a great opportunity to educate consumers and amend current perceptions. Weighted to national population figures, 4.3 million Australians believe that spuds have more fat than pasta and rice and five million people think potatoes have more calories than pasta and rice. That is a considerable dent into potential fresh potato sales.

Consumers are also demanding variety. The introduction of ethnic meals and new alternatives provides a great array of choices for meals. Potatoes must work harder to hold its market share by promoting new and exciting methods of preparing spuds that fit into the modern, busier lifestyle.

From the 1202 respondents of the survey, 721 agreed that they are eating fewer fresh potatoes than five years ago as they are seeking more variety in their diet, while 589 agreed they are trying to reduce carbohydrate intake.

Disturbingly, 21 per cent of Australians are eating a lot less potatoes than they were five years ago. The two main reasons cited for this drop are reducing carbohydrate intake and a need for more variety. Other reasons for the decline volunteered from the respondents highlighted the belief that potatoes take longer to prepare than alternatives.

Carbohydrate intake and dietary changes are a big concern for consumers. Unfortunately, carbs and potatoes have had a lot of negative publicity with very little response from the industry.

Market research is a key ingredient in developing a national marketing strategy for fresh potatoes. This strategy is required if the industry is to build support for future marketing activities. It is essential to monitor public perceptions so we have an understanding of consumer behaviour and motivations regarding fresh potatoes. Tapping into their psyche provides the clues that can be used to strengthen the industry and build productivity.

Consumer perception is everything to any product. Your product might be the best on the market, but if users think it is inferior then business will suffer. This survey clearly highlights inconsistent consumer perceptions regarding potatoes. Spuds are a fantastic choice that is versatile, nutritious and can be cooked in minutes. Australians need to be reminded.

PT06022 The Bottom Line

- 21% of Australians are eating a lot less fresh potatoes than 5 years ago
- Diet and nutrition is a concern for consumers
- Many consider the spud to be inconvenient to prepare
- Wonderful opportunity to educate and alter consumer perceptions

Further information can be found at www.ausveg.com.au/levy-payers/login.cfm

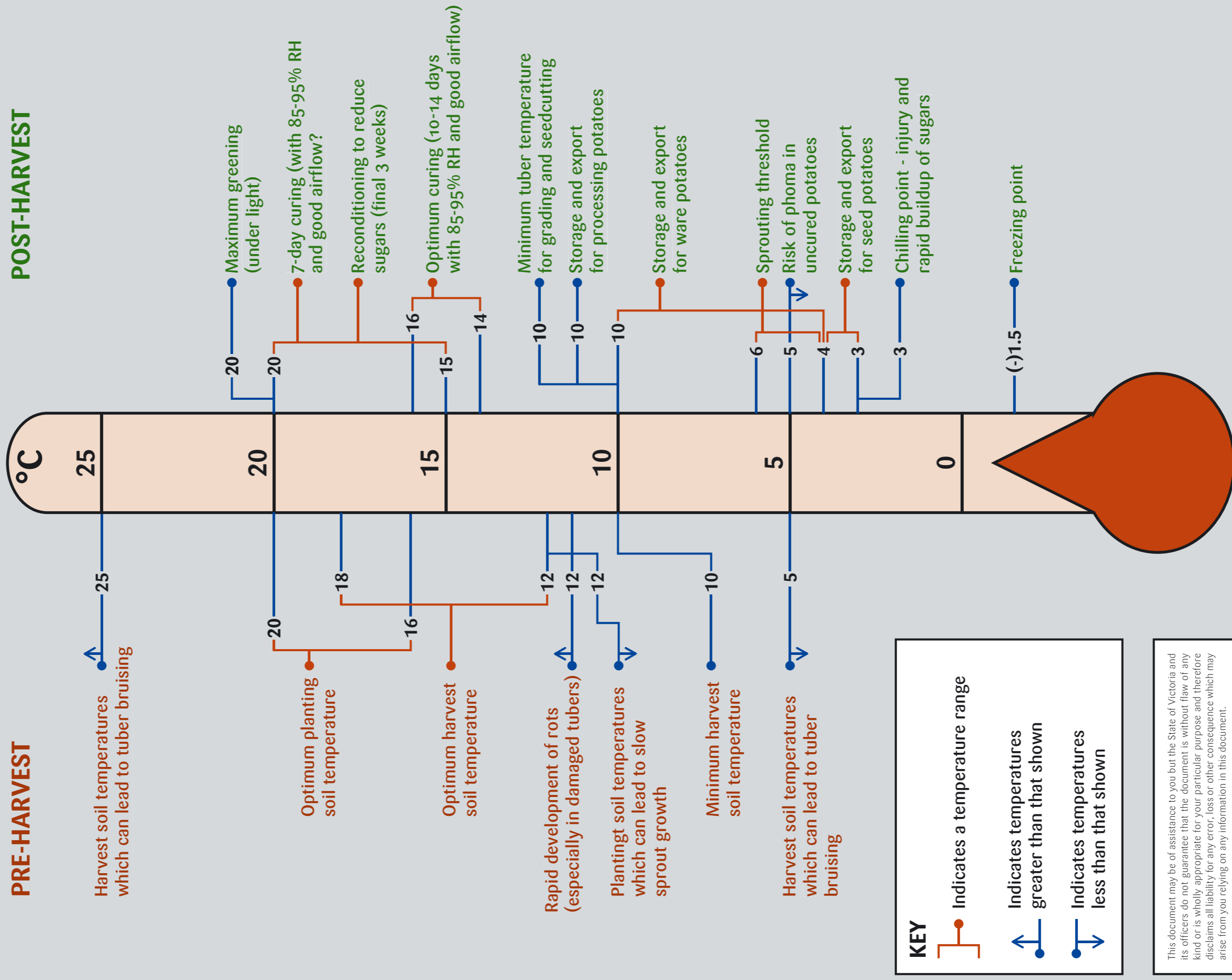


**Katie Fisher - Research
followthrough article**

**Katie Fisher - Research
followthrough article**

The Potato Thermometer

IMPORTANT TEMPERATURES IN THE POTATO PRODUCTION CHAIN



Exports an untapped opportunity for growers



Australian potato growers sell primarily to local markets. AUSVEG economist Ian James takes a look at the other options for growers.

The Australian potato industry has traditionally been domestically focused with most potatoes sold to processors or to the fresh market. Potato growers have been innovative in responding to changing consumer preferences with new varieties grown and improved presentation. Yields have generally increased over recent years as growers have adopted improved production techniques. However, some potato growers have continued to see their relative incomes decrease compared to other industries in the Australian economy. Growers' returns have been adversely impacted in most part by developments beyond the farm gate. Like all industries the potato industry has not been immune to rising cost pressures and the impact of foreign competition or potential threat from overseas.

Nonetheless the industry needs to seize the day. There is the 'great unwashed' potential out there for the industry. Today's consumer is better educated and more sophisticated in their buying of food products. Equally there is a desire to connect with the source of the food they are eating. The need for expertise to assist the development of new markets and to enhance penetration of existing markets was clearly recognised by the industry with the appointment of Matt Wickam as AUSVEG's Potato Marketing Development Manager. With adequate funding and resources there is a great potential for a significant expansion in domestic consumption of potatoes.

But the industry should not confine its thoughts solely to the domestic market. In this increasing globalised world, attention needs to be paid to the potential to expand sales by increasing exports. In the past two factors, transport costs and quarantine issues, have limited the development of export markets.

While Australia's export of potatoes has been small, it might surprise some growers to know that over the last twelve months Australia exported \$35 million of potatoes, after peaking at \$48 million in 2002-03. (See table 1.) South Korea is the most important destination for fresh potatoes but Australian growers have important footholds in Singapore, Malaysia and the Philippines and a growing presence in the United Arab Emirates, Taiwan and Indonesia. Seed potatoes flow to similar destinations with Mauritius also an important destination. With increasing westernisation of diets in these countries, potato consumption is increasing, providing opportunities for Australian growers. There is also scope for the ongoing provision of the top quality potato seed that Australian growers produce as multi national companies relocate potato processing factories to these countries and seek quality product from local producers.

One of the roles of the economist at AUSVEG is to maintain a close working relationship with Plant Health Australia in respect of bio-security issues. Another is to look at barriers to trade and advise on appropriate courses of action. This is done in a number of ways but officially through membership of the Horticulture Market Access Committee (HMAC). This committee has a dual role. Firstly, to advise government departments on issues in relation to tariffs, quotas and other trade barriers as they apply to all horticultural industries, including potatoes. Secondly, to prioritise Bio-Security Australia's work in respect of bio-security work for market access into foreign markets.

The potato industry has been dealt a bad hand when it comes to trade barriers. Bio-security concerns, or more bluntly quarantine barriers, have been used effectively to exclude Australian potatoes from key markets. Just ask Tasmanian growers who have attempted to open up the opportunity to export potatoes into Japan. Or look at the enormous amount of work that Western Australia is putting in to develop an effective test for proving PCN (potato cyst nematode) freedom. There is nothing wrong in adopting a strict approach to the prevention of exotic pest incursions. However it is a different story when these concerns are used as a barrier to protect domestic producers from foreign competition.

Indeed, AUSVEG adopts an uncompromising stand in relation to bio security issues in Australia. AUSVEG wants to see a much tougher approach by the Australian authorities to any outside threat to the Australian potato industry's 'green' image. We have particular concern with the slowness of response to continuing outbreaks of PSTV (potato spindle tuber viroid) introduced through imported tomato seed. It appears that Australian authorities are much less resolute on these matters than their overseas counterparts.

But bio-security is only one part of the problem. The tariff and quota trade barriers faced by the industry are huge. There is a great deal of goodwill towards lowering trade barriers. Unfortunately the goodwill rarely turns into action. Australia imposes no tariffs on imported fresh potatoes into this country. Contrast this with our traditional major market for fresh and seed potatoes, South Korea. Korea imposes a tariff of 30% on imported fresh potatoes up until 18,800 tonnes. Any imports beyond that attract a tariff of 304%. On seed potatoes Korea allows 1,900 tonnes to enter duty free but then imposes a tariff of 304%. Get the picture? Well it isn't complete. Just in case anybody thought that they could get their potatoes in beyond the quota, they reserve the right to apply special safeguard provisions to protect the local industry.

At present Australia is involved in negotiations for trade reform under the so called DOHA round. These negotiations are multi-lateral i.e. whatever is achieved will apply to all countries. They have been stalled for some time but there has been some recent life Australia is also involved in negotiating Free Trade Agreements with a number of countries. Results achieved under these are restricted to those negotiated between the two countries. The election of the Rudd government has changed the focus of Australian negotiators. While both sides of Australian politics agree with pursuing both forms of agreement Labour has always favoured the multi-lateral path whereas the previous Government favoured bi-lateral agreements.

AUSVEG, through the HMAC was approached by the Australian negotiators involved in the DOHA round to prioritise the top three destination markets for negotiators to concentrate on in respect of the potato industry. The area is complicated but there is scope in these negotiations to revisit bi-lateral agreements where special provisions apply. One of the beefs of the potato industry is the raw deal that the industry got when Australia and Thailand signed a Free Trade Agreement. In

this so called free trade agreement all potato lines were treated as sensitive with special provisions to apply. Tariffs on imports of fresh and seed potatoes will remain until 2020 and at the start of the agreement in 2005 were set at 27% for the first 30 tonnes and then at 112.5% for any imports in excess of that volume.

AUSVEG sees potential for export in two areas. Firstly, seed potatoes into a number of developing countries including Indonesia, Thailand, The Philippines and Mauritius. Secondly, we also believe that there are important niche markets to be had for potatoes in the more sophisticated markets of Korea, Japan, Singapore and Taiwan and have had discussions with the Koreans on this issue.

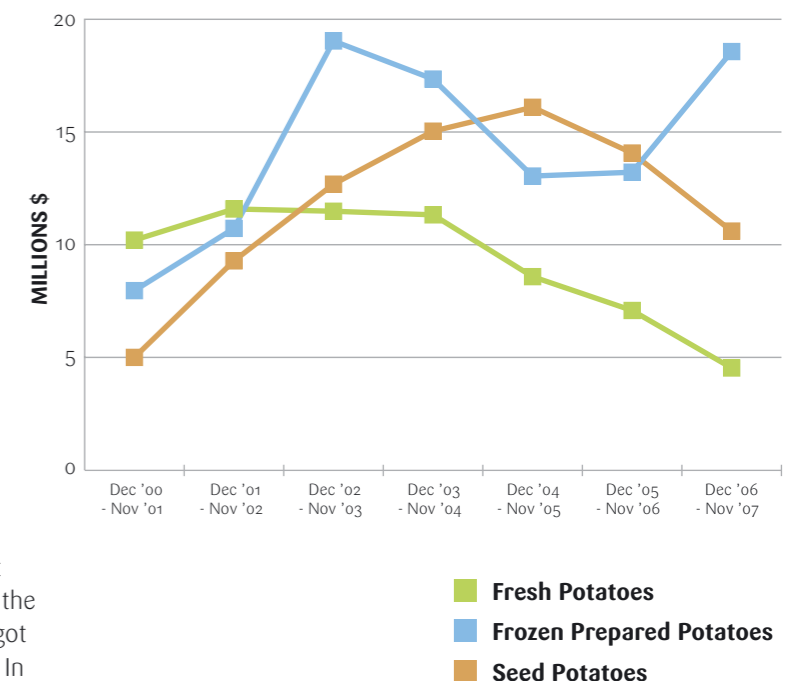
This was one of the criteria along with existing trade contacts and the benefits to the industry of removing trade barriers that was used to prioritise the list. In the end the shortlist consisted of:

- Potatoes into Korea
- Seed Potatoes into Korea
- Seed potatoes into Thailand

In the past there has been little attention paid to these matters and scant respect paid to the potato industry in official circles. AUSVEG believes that we need to make our presence felt and be treated as an important part of Australian agriculture. We need to take every opportunity to open up new markets and enhance grower returns. Some sceptics may argue that the chances of success are remote. But they said that about a small company in a small East European country. Just like Nokia let's hear it for the Australian spud industry.



TABLE 1. AUSTRALIAN POTATO EXPORTS TO THE WORLD - MILLIONS OF AUSTRALIAN DOLLARS



Potato growers well placed for PA

Improved yields and resource management through Precision Agriculture offer a timely shot in the arm for growers, but potato growers in particular are likely to benefit. Graham Gosper explains.

CSIRO Principal Research Scientist Rob Bramley lists two good reasons for believing that potato growers are well placed to take advantage of opportunities offered by Precision Agriculture (PA) in Australia.

“One is that much of the PA knowledge collected in recent years through viticulture and broadacre farming can be readily applied to potatoes,” he said.

“The other is that some of the best work involving the practical application of PA overseas has been done with potatoes.”

Rob has been at the forefront of PA research in Australia since the late 1990s. He initiated a PA project for the sugar industry before moving to Adelaide and heading the Precision Viticulture

Group within CSIRO Sustainable Ecosystems. Under Rob’s leadership, the group has helped to establish viticulture as a leader among horticulture industries in Australia in the use of PA.

Rob’s experiences have given him some unique insights into what PA really is and what it offers. “Essentially, there is no difference between ‘Agriculture’ and ‘Precision Agriculture,’ he said.

“However, PA utilises technologies and methodologies to enable growers to do better what they have been doing anyway. It represents a rejection of the ‘one size fits all’ approach of conventional agriculture in favour of practices that better match soil and crop requirements as they vary in the field,” Rob said.

“PA is all about gaining control over the production system through understanding the variation within it, so that any given management decision has an enhanced chance of delivering the desired or expected outcome, compared to conventional approaches.”

Rob says PA has the potential to deliver a new era of production control and efficiency and therefore profitability for potato growers and for growers in other horticultural industries.

“Development of effective PA strategies may enable potato growers to segregate products on the basis of quality attributes such as seed size and so achieve price premiums, to improve their management of inputs such as irrigation water,

fertilisers and sprays and so reduce input costs and to plant different potato varieties in areas best suited to their growing requirements thereby maximising returns,” he said.

Rob has some practical advice for potato growers who are keen to sample some of the opportunities offered by PA – begin with basic steps and don’t expect instant results.

“It is important to remember that almost all PA techniques rely on the gathering of accurate and extensive data over time,” he said. “Growers should recognise from the outset that the collection of such data will require considerable effort and commitment. “

“There is a saying that if you give a poor farmer PA he will still be a poor farmer. But if you give it to a good farmer he will get better. Growers should also remember there is no time like the present to begin gathering data. It is always better to have some data than none. Having said that, you don’t need to collect everything at once when starting with PA,” he said.

Rob said an EM38 or similar high resolution soil survey coupled with appropriate ground truthing (and an elevation model) would immediately provide information on variation in the land supporting a grower’s production system.

“Yield mapping would be another ideal early step, but would of course depend on the commercial availability of suitable yield monitors in Australia,” he said.

“In other crops, remote sensing is useful and cheap, but it is uncertain whether Australian potato growers have access to information as to when imagery should be acquired and how it should be interpreted. All these tools would provide information on variation in the production system and so provide growers with a basis to start thinking about the causes of this variation and what (if anything) they might do about it and of course, how they might take advantage of it.”

Rob has noticed signs in recent years of a resurgence of interest in PA as increasing numbers of growers become familiar with the new technologies that now service it.

“Greater use of Global Navigation Satellite Systems (GNSS), including the Global Positioning System GPS, and adoption of automated steering and guidance systems are both helping to drive interest in PA,” he said.

“Despite this progress the perception by some that PA is all just ‘too hard’ remains one of the main barriers to its adoption. Growers should remember that complex data analysis associated with PA is best done by consultants – growers don’t have to try to do everything themselves.”

Another significant barrier is the lack of support services available in Australia to assist grass roots adoption of PA.

Rob said the development of such services remained a major challenge for industries seeking PA advantages. The way growers use consultants would also need to change to allow effective PA development.

“Rather than relying on one consultant providing general agronomic advice, a range of consultants may be required for short periods with specialist skills in spatial analysis and mapping, in addition to agronomy and soil science,” he said.



CEO's message

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John Roach
 Chief Executive Officer
 AUSVEG
Representing Australian potato and vegetable growers




Vegetable Industry Awards 08



Nominate now for the 2008 Australian Vegetable Industry Awards!


The annual Australian Vegetable Industry Awards pay tribute to and acknowledge the individuals who have set a benchmark for excellence in the vegetable industry.

The 2008 award categories, Grower of the Year, Young Grower of the Year, Researcher of the Year, Innovative Marketing Award and AUSVEG Chairman's Award recognise all of industry and we need your help to find the best our industry has to offer.

AUSVEG is seeking quality nominations from growers, industry organisations and committees, service providers, researchers - anyone who knows someone who is worthy of recognition. Even nominate yourself.

Nomination forms are included with this issue *Potatoes Australia*. Nominations close Friday, 29 February 2008.

For more information visit www.vegetableindustryawards.com.au or call the AUSVEG office on 03 9544 8098.

 The Vegetables WA 60th Anniversary Dinner will proudly host the award presentations, taking place at Burswood Entertainment Complex, Perth on 31 May 2008. Tables at the dinner can be arranged through Vegetables WA on 08 9481 0834.

The Australian Vegetable Industry Awards aim to:

- Identify and reward excellence across the vegetable industry
- Help unite the industry
- Demonstrate and share achievements and successful, innovative farming practices with the wider vegetable industry
- Promote vegetable industry excellence to the broader Australian community

AUSVEG is pleased to announce the 2008 award sponsors:

- Landini Grower of the Year
- Landmark Young Grower of the Year
- Bayer CropScience Researcher of the Year
- Brisbane Produce Market Innovative Marketing Award
- AUSVEG Chairman's Award



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INTERNATIONAL YEAR OF THE POTATO 2008 • INTERNATIONAL YEAR OF THE POTATO 2008 • INTERNATIONAL YEAR OF THE POTATO 2008

The story of the Potato

Around 750BC: Incas first discovered potatoes growing wild in the Andean Mountains of South America and began cultivating them.



1537: Spanish Conquistadors arrive in Peru and discover locals eating the 'papa' and worshipping potato gods. One of the most popular dishes involved laying the potatoes in the sun for several weeks and then trampling them with bare feet to squeeze out the liquids.

1565: Spanish explorer and conqueror, Gonzalo Jimenez de Quesada, brings the potato to Spain after sailors discovered eating potatoes was a good way to prevent scurvy at sea.

1585-87: The potato arrives in Italy, England, Belgium and Germany. Generally, it was viewed with suspicion and people were slow to adopt it as a food source.

1588: An Irish legend suggests potatoes wash up on Irish shores from Spanish Armada ships wrecked off the coast of Ireland.



1590: Explorer Sir Walter Raleigh plants a potato crop at Myrtle Grove, Youghal near Cork, in Ireland. Legend has it he presented potatoes to Queen Elizabeth I in England to be served in a banquet, but cooks unfamiliar with the potato threw them out and instead prepared a dish of boiled stems and leaves which made the attendees deathly ill.

1621: British governor of the Bahamas sends a gift box of agricultural products, including potatoes to the governor of the colony of Virginia, marking the first arrival of potatoes in America.

1680: Poor inhabitants of the Meuse Valley, in Belgium, are believed to have been the first to eat cooked chips, through the the custom of cutting potatoes lengthwise and frying them in oil to accompany their meal of small fried fish.

1719: Potatoes brought by Irish immigrants to Londonderry, New Hampshire are used to grow the first large scale crop of potatoes in America.

1767 and 1772: Following a period of captivity in Prussia (Germany) where he was fed only potatoes, french pharmacist Antoine Parmentier publishes pamphlets promoting the edibility of potatoes drawing the attention of Louis XVI and Marie Antoinette.

1774: Frederick the Great of Prussia orders his subjects to grow potatoes as protection against famine, threatening to cut off the nose and ears of any who refuse to eat them.

1788: Potatoes arrive in Australia with the First Fleet. Governor Phillip plants potato crop soon after arrival in Sydney Cove.

1780: The potato is accepted as a food crop in Ireland, due to being rich in vitamins and ability to be grown in tough conditions. It quickly becomes the primary food source.



1789: American President Thomas Jefferson serves fried potatoes to guests in the White House. Potato popularity and acceptance begins to increase in America.

1845: European potato crops are devastated by a fungus known as *Phytophthora infestans*, a disastrous potato blight. Of the countries affected, none suffered more than Ireland, with over a million people dying of starvation. Although there were other types of food available, Irish peasants were unable to afford anything other than the potato and as a result, starved.



1853: George Crum, a chef at an upmarket restaurant in Saratoga Springs, New York USA, invents the potato crisp. Annoyed that a customer sent his serving of potatoes back for being too thick sliced, George sliced them incredibly thin, fried them in hot oil and covered them in salt, before sending them back to the haughty customer. The customer loved his 'Saratoga Crunch Chips' starting a new snack food craze.

1840s: French fries, thin strips of sliced potatoes fried in hot oil, are reportedly sold on the streets of Paris by push cart vendors.

1875: Luther Burbank develops and sells the rights to the Burbank potato. Within a few years, a mutation of the potato variety being discovered in Colorado, the Russet Burbank, which is widely used today.



1950s: JR Simplot Company of Idaho invents the frozen French Fry and Jack Simplot makes a deal with McDonalds founder Ray Kroc to supply the expanding fast food chain, revolutionising the fast food industry.

1952: The first Mr Potato Head is invented.



The legacy of the Potato

It's been linked with black magic and rejected because it wasn't mentioned in the bible; yet entire countries have relied on it as a staple food source. Incas used it to predict the weather and its growth cycles were used as a measure of telling time. Sailors used to eat it to avoid scurvy at sea, while Europeans believed it was a cause of leprosy and would only feed it to prisoners. Throughout its colourful history, the potato has been loved, hated, sought after and shunned.

All over the world, the potato has become a staple in food supplies because of its high content of vitamins and its ability to be grown economically in a wide variety of climates. From its modest beginnings on the edges of Lake Titicaca in the Andean Mountains several thousand years ago, the potato has ingrained itself into cultures the world over.

In addition to worshipping potato gods, creating potato oriented pottery and using potatoes to treat injuries, Incas mashed

potatoes into a food substance called Chunu, which could be stored for up to ten years, creating an excellent backup to crop failures.

Throughout the Middle Ages, the potato would become an essential food source for much of Europe, allowing countries such as Germany, France and Ireland to stabilise their food supplies. As various countries adopted the potato, sharp increases in population growth following soon after acceptance of the potato, causing some people, including William Shakespeare, to suggest potatoes contained aphrodisiac properties.

Despite its popularity with sailors, Spain and South America, the potato was widely rejected as a food source when it first arrived in Europe, with people wary of the unfamiliar plant, and those who did often ate them raw, causing indigestion.

Not helping its case, the potato belongs to the Solanaceae family of plants, which also includes the tobacco and mandrake.



Mandrake is often associated with witchcraft and in the superstitious Middle Ages, there were those who thought the potato was the product of the devil, or witchcraft.

Despite the bad press, the potato was not without its fans. In an early example of reverse psychology, Prussia's Frederick the Great, in an effort to convince his people to eat potatoes, set a heavy guard around a crop of potatoes. The peasants, believing anything that heavily guarded would be worth stealing, promptly stole the crop and proceeded to eat them.

Today, over 8,000 varieties of the potato are grown in over 130 countries around the world, with 315 million tonnes of potatoes grown on an estimated 195,000 km in 2006. Half of that production is in developing countries, where, as in Europe in centuries gone by, the potato is proving again to be the solution to feeding the poor and the hungry.



INTERNATIONAL YEAR OF THE POTATO 2008 • INTERNATIONAL YEAR OF THE POTATO 2008 • INTERNATIONAL YEAR OF THE POTATO 2008

Spud-Busters: Busting the myths about potatoes

Potatoes and weight loss

Potatoes are not fattening. They are naturally low in fat, providing only approximately 612kJ (148 kcal) for a medium sized potato (175g).

Potatoes, when served with their skins, are packed with fibre, making you feel 'full' longer so you're less likely to overeat. Potatoes contain no cholesterol or salt.

Research shows that a low calorie diet containing several servings of complex carbohydrates and fibre-rich foods is the best way to lose weight and stay healthy.



Carbohydrates

Carbohydrates, found in food including potatoes, are the primary fuel source for the

body. For a person who is exercising heavily, about 60 per cent of their daily energy (calories) should be from carbohydrates.

The body prefers to burn carbohydrates for energy. While the body can also burn protein and fat for fuel, it prefers carbohydrates and the healthiest are the starches in natural foods - so potatoes are perfect!

The big advantage of getting your carbohydrates from potatoes, rather than pasta or rice, is that you also get an abundance of other vital nutrients, such as vitamin B6, vitamin C, protein, potassium, folate, niacin, thiamine and fibre.

Potatoes v. pasta and rice

Despite popular opinion, potatoes are actually lower in fat and calories than either pasta or rice.

Fresh potatoes are a healthy choice; low in calories, low in fat and packed with vitamins and minerals, as well as being a convenient choice.

Glycaemic index (GI)

Potatoes don't need to be avoided by those following a GI diet. A GI rating for a food ranks how quickly food effects your blood sugar response. Although potatoes have a high GI rating, they are usually eaten with other foods and this lowers the GI score as the meal will take longer to digest.

Cooked chips are high in fat

Although deep fried chips are higher in fat, most fries which can be cooked at home are able to be oven baked. Whilst it varies between products, oven baked fries can have a fat content as low as three per cent making them an excellent choice. Read the labels on the packet to be sure.

Potatoes and the environment

The potato produces more nutritious food more quickly, on less land, and in harsher climates than any other major crop - up to 85 per cent of the plant is edible human food, compared to around 50 per cent in cereals.

Consumption to be envied: The Ukrainian connection.

The Australian potato industry can only marvel at the popularity of the potato among Ukrainians. With a record high potato crop of approximately 20 million tons the Ukraine is now second to Russia for potato production in Europe.

The potato is a staple food in the Ukrainian diet where the average person consumes 150 kilograms of potato per year, which is more than their consumption of bread.

The Ukrainians began eating potatoes in the 17th century and by the end of the 18th century potatoes were grown in all areas of the Ukraine. Today according to the Kiev International Sociology Institute, about 70 per cent of the population, including those who live in cities, grow potatoes.

Ukrainian potato dishes are prepared in a traditional style with less emphasis on the healthy ideals we follow today. A favourite potato recipe is as follows; Holes are cut in potatoes and filled with small cubes of bacon fat. Seasoned with salt and pepper, rolled in foil and then baked in the oven. The baked potato is then served with a topping mix of herrings, vegetable oil, onions and lemon slices.

APRP Update

New Brand, New Opportunities!



As part of the communication plan for the Processing Potato Research and Development (PPR&D) program, a new branding strategy has been implemented to further establish and promote the program both locally and internationally.

Currently in Stage One, the program will now be known as the 'Australian Potato Research Program' (APRP). This name will incorporate the current and future stages of the program.

The new look logo will accompany all research undertaken within the Processing Potato Program and is a separate brand from the Potato R&D - National Potato Levy logo.

The new logo will be used on all project presentations, research, publications, and related correspondence for any work carried out under the Australian Potato Research Program, formerly known as PPR&D.

For further information, please contact ...



British Potato Council takes an interest in APRP



Research director of the British Potato Council, Dr Mike Storey, will be in Australia between the 5th and the 18th of March 2008, to conduct a series of presentations for grower/industry groups and carry out a review of the Australian Potato Research Program (PPR+D).

While in Australia, Dr Storey will travel to South Australia, Tasmania and Victoria to get an overview of current research activities and meet with industry organisations.

The British Potato Council (BPC) funds research and development, collects and provides market information, and promotes potatoes for UK and export markets. The BPC is funded by statutory levies, paid by producers and trade purchasers of potatoes in the UK.

For further information, please contact:

A U S T R A L I A N P O T A T O R E S E A R C H P R O G R A M

SPOTLIGHT ON:

Colorado potato beetle

(*Leptinotarsa decemlineata*)



Exotic threat to Western Australia

By John Botha, Darryl Hardie and Greg Power, Hortguard™ Initiative AGWEST

Common name

Colorado potato beetle, Colorado beetle, ten-striped spearman or ten-lined potato beetle.

Scientific name

Leptinotarsa decemlineata.

Background

Both the larvae and adults of the Colorado potato beetle, *Leptinotarsa decemlineata*, feed on the leaves of the potato. Adult beetles are easily confused with the beneficial aphideating ladybird because they too are brightly coloured and similar in size and shape.

Distribution

Before commercial potato growing, Colorado potato beetle occurred on wild plants of the Solanaceae (nightshade) family in North America (USA down to Costa Rica). It was brought into France from America. From there it spread through parts of Europe and Asia. It has also been reported from Africa (Gabon*), but does not occur in Australia.

*doubtful record

Potential impact

The Colorado potato beetle is one of the most widespread and destructive pests of cultivated potato. The adults and larvae feed on the leaves and stems of the potato plant and if not controlled they strip and kill the plants. Tubers do not develop and overall yield can be reduced by up to 50%. Populations of the beetle are liable to expand considerably under favourable weather conditions, and this pest is also suspected of transmitting several potato pathogens including spindle tuber, bacterial wilt and ring rot. Climate matching with other parts of the world, indicates that in WA the areas from

Jurien southwards, including Perth, Bunbury, Augusta, Manjimup, Frankland, Narrogin, Albany and Esperance would provide a suitable habitat for this pest.

Plants affected

Colorado potato beetle attacks mainly Solanaceae such as *Solanum tuberosum* (potato), and other cultivated crops such as *Lycopersicon esculentum* (tomato) and *S. melongena* (eggplant), as well as wild hosts including *S. elaeagnifolium* (silverleaf nightshade) and *S. rostratum* (buffalo burr) which occur in Western Australia respectively as declared and pest plants (DP & PP), and can act as a reservoir for infestation. *Nicotiana tabacum* (tobacco) and *Hyoscyamus niger* (black henbane) are also hosts.

Season of occurrence

The overwintering beetles emerge from the ground in spring or early summer, depending on the climate and their physiological state. There is usually a mass emergence over 1 or 2 days. Flight muscles are often weakly developed and only a small proportion of beetles will fly from the field of origin. Under optimal conditions the cycle from egg to adult can take as little as three weeks, and the beetle can go through three complete generations per year.

Symptoms

Adults and larvae feed on the edges of leaves and may quickly strip the foliage of young plants. They eventually strip all leaves from the haulm. In rare instances the tubers are also eaten. Characteristic black and sticky excrement is left on the stem and leaves by the larvae and adults.

Edited and published by Information Services, Agriculture Western Australia, Locked Bag No. 4, Bentley Delivery Centre, WA 6983

Chips a look at what's new in potato information and technology



FEATURE - GENOTYPE EFFECTS ON POTATO CHARACTERISTICS

This feature article summarises four recent scientific papers that describe how the genetic background of a potato plant can have a major influence on a wide variety of biologically and commercially important characteristics.

In the first paper (Davis et al.), 49 commercial potato cultivars were assessed in field and greenhouse studies for resistance to two aphid species. Although there were considerable differences between cultivars in their response to each aphid species, these resistances were not significantly correlated. Green peach aphid populations increased slowest on Russet Norkotah and fastest on Red La Soda, while potato aphid populations grew slowest on Aracy and fastest on Irish Cobbler.

The second paper (Wegener & Jansen) demonstrated that the resistance to soft rot caused by *Pectobacterium carotovorum* was greater amongst 10 purple-fleshed potato cultivars than amongst 10 white/yellow-fleshed potato cultivars. The extent of rotting on tuber halves of purple-fleshed cultivars was 29% lower than white/yellow-fleshed cultivars, and this was highly correlated with three components: the presence of anthocyanins, higher concentrations of soluble phenols and elevated polyphenol oxidase activity.

Anti-oxidant compounds were also the subject of the third paper (Reddivari et al.). This study, with 25 genotypes at two Texas locations over 2 years, demonstrated that antioxidant activity, total phenolics, total carotenoids and phenolic composition differed between genotypes, and that the genotype effects were larger than location and year effects. Several genotypes were stable between locations and years, and these would be a good choice as parents in breeding programmes.

The potato processing characteristics of specific gravity and chip colour are the subject of the fourth paper (Andreu et al.). This research used genetic markers to separate 42 genotypes into contrasting groups for each of the two characteristics. These markers explained a significant proportion of the variation in the characteristics and can be used in potato improvement programmes to select breeding lines with the desired processing trait.

Resistance to green peach aphid, *Myzus persicae* (Sulzer), and potato aphid, *Macrosiphum euphorbiae* (Thomas), in potato cultivars. Davis et al. (2007) *American Journal of Potato Research* 84: 259-269.

Soft-rot resistance of coloured potato cultivars (*Solanum tuberosum* L.): the role of anthocyanins. Wegener & Jansen (2007) *Potato Research* 50: 31-44.

Genotype, location, and year influence antioxidant activity, carotenoid content, phenolic content, and composition in specialty potatoes. Reddivari et al. (2007) *Journal of Agricultural and Food Chemistry* 55: 8073-8079.

Genetic markers for processing traits in potato. Andreu et al. (2007) *Crop Breeding and Applied Biotechnology* 7: 67-73.

The potato family tree!

In the potato version of a family tree, the Laboratory of Plant Breeding at Wageningen University, the Netherlands, has created a Web-accessible interface to allow people to investigate the ancestry of a large number of potato cultivars. Now you can find the great-grandparents of your favourite potato!

An Online Potato Pedigree Database Resource. Berloo et al. (2007) *Potato Research* 50: 45-57.

Research summaries

DISEASE CONTROL

Tuber soft rot and concentrations of *Erwinia* spp. in potato-washing plants in South Australia. Over a 4-year period, potato tubers and water samples from four washing plants in South Australia were collected, and levels of bacterial soft rot infection on tubers and *Erwinia* spp. in wash water determined. An average of 26% of tubers collected from the field developed soft rot, but this increased to 64% or more after tubers had been immersed in water. There was a further increase in incidence and severity of soft rot after tubers were treated to remove adhering soil. The most severe rotting developed when tubers were immersed in water containing high levels of *Erwinia* spp., suggesting that soft rot disease may be reduced by frequently replacing potato wash water with clean water. Wicks et al. (2007) *Australasian Plant Pathology* 36: 309-312.

Performance of dimethomorph + mancozeb applied to seed potatoes in early management of late blight (*Phytophthora infestans*). Due to the systemic action of dimethomorph in this fungicide mixture, healthy seed tubers were protected against *P. infestans* infections and detached foliage was protected against artificial inoculation of *P. infestans*. The experiments were carried out under greenhouse and field conditions (three seasons and two locations) with five cultivars (Kennebec, Shepody, Spunta, Russet Burbank and Ranger Russet). Protective effects were observed up to 30 days after emergence in greenhouse experiments and up to 28 days after emergence under field conditions. Seed treatment with the dimethomorph + mancozeb fungicide mixture can reduce the requirement for spraying early in the season. Caldiz et al. (2007) *Potato Research*.

In-furrow applications of metalaxyl and phosphite for control of pink rot (*Phytophthora erythroseptica*) of potato in New Brunswick, Canada. *Phytophthora erythroseptica* inoculum was applied to potato fields, either in-furrow as a vermiculite slurry at planting or as a zoospore drench in soils adjacent to potato plants along with treatments of metalaxyl-m (Ridomil Gold 480EC) and phosphite (Phostrol) applied at planting in-furrow. Metalaxyl-m treatment significantly reduced the mean percentage of diseased tubers (both by numbers and weight) compared with phosphite-treatment, which was similar to inoculated control plots with no fungicide treatment. The cultivar Shepody was significantly more susceptible to pink rot than Russet Burbank in both years of the trial. Al-Mughrabi et al. (2007) *Plant Disease* 91: 1305-1309.

AGRONOMY - IRRIGATION AND SOIL COMPACTION

Efficiency of nitrogen fertiliser for potato under fertigation using a nitrogen tracer technique. Four levels of nitrogen fertiliser (70, 140, 210 or 280 kg N/ha) were applied in five equally split-applications under either fertigation (drip) or furrow irrigation to potatoes grown in autumn or spring on a heavy clay soil in the Hama region of Syria. Regardless of the sowing time, higher marketable tuber yield was obtained by fertigation than furrow irrigation, but the magnitude of the increase was greater in autumn. The response to the different levels of N fertiliser did not differ significantly between the irrigation treatments. Data from the nitrogen tracer indicated that N recovery increased with decreasing levels of N fertiliser and that furrow irrigation resulted in greater movements of nitrate below the rooting zone than drip fertigation. Janat (2007) *Communications in Soil Science and Plant Analysis* 38: 2401-2422.

Effect of drip tape placement depth and irrigation level on yield of potato. One of the main challenges with subsurface drip irrigation is determining the optimum installation depth of the drip lateral, as this varies with soil structure, texture and crop root development pattern. This experiment was carried out on a sandy loam soil with cv. Kufri Anand over 3 years and used three irrigation levels (60, 80 and 100% of crop evapotranspiration) and five depths of drip tape placement (0, 5, 10, 15 and 20 cm). Regular tests of flow rates indicated good performance of the irrigation system. When the drip tape was placed at 0 or 5 cm, significant upward movement and loss of water was seen. At deeper placements, the soil surface remained relatively dry. On average, maximum yield was obtained by applying 100% of the crop evapotranspiration (23.6 cm of irrigation water) and by placing the drip tape at 10 cm depth. Neelam & Rajput (2007) *Agricultural Water Management* 88: 209-223.

Bacterial pathogens recovered from vegetables irrigated by wastewater in Mexico. Micro-organisms were measured in a range of vegetables, including potatoes, which had been irrigated with untreated waste water in Morocco. There were high levels of enterococci, faecal coliforms and total coliforms, but coagulase-positive *Staphylococcus aureus* was not detected. It was concluded that these vegetables posed a serious health risk to the consumer. Ibenyassine et al. (2007) *Journal of Environmental Health* 69: 47-51.

NUTRITION

Glycemic index - a review and implications for the potato industry. The glycaemic index (GI) ranks carbohydrate foods according to the degree to which they cause blood glucose to rise after the food is eaten. Foods that cause a rapid rise (high GI) are not recommended for diabetics. The starch in cooked potato is rapidly broken down to glucose, giving a moderate to high GI. However, GI can be influenced by other components of a meal, or even a previous meal. Another indicator is glycaemic load (GL), which takes into account the actual amount of carbohydrate consumed per serving. Because of the high moisture content of potatoes, the GL is generally moderate. GI and GL differ between potato cultivars and can be modified by processing methods. More research is needed to define the GI and GL of potato cultivars and other factors that may affective the levels of these indicators in potatoes. Lynch et al. (2007) *American Journal of Potato Research* 84: 179-190.

Umami compounds are a determinant of the flavor of potato (*Solanum tuberosum* L.). Umami, a 100-year-old Japanese concept of flavour, is one of the five individual tastes sensed by receptors on the tongue, together with salty, sweet, bitter and sour. It is an almost savoury taste that is thought to be important for potato flavour. The research described in this paper assessed the levels of some major umami compounds (glutamate, aspartate, GMP and AMP) in boiled

potato tubers. The potato cultivars used in the work had previously been assessed for sensory quality. There were strong positive correlations between umami concentrations and flavor attributes and acceptability scores from a trained taste evaluation panel. Morris et al. (2007) *Journal of Agricultural and Food Chemistry* 55: 9627-9633.

Diagnosis and natural course of allergy to cooked potatoes in children. Surprisingly some children are allergic to potatoes. In this study, 36 children under 3 years old with positive reactions to screening allergy tests were further investigated, with 17 shown to have a clear potato allergy. The majority of them presented with eczema symptoms but others also showed a range of additional symptoms, including anaphylaxis. Nearly all of these children had previously demonstrated other food allergies and a high proportion of them subsequently developed clinical pollen allergy. By the time the children were 9 years old, most of them had developed tolerance to cooked potato. Swert et al. (2007) *Allergy* 62: 750-757.

GENETIC TECHNOLOGIES

Listed below are three research articles that review the application of molecular transformation technology for the genetic improvement of potatoes. The first (Chakravarty et al.) describes previous achievements and current trends along with biological and practical requirements. In addition, problems and public concerns are discussed. The second (Ghosh & Jepson) is actually a series of papers that comprise an expert consultation on strategies for assessing the effects of GM crops on the environment. The topics range from experimental design to farm-scale evaluations and include a regulatory paper from New Zealand as well as several papers from South America, one of which looks at the problems of hybridisation between wild and cultivated potato species. The third paper (Rommens) discusses the new technology of intragenics, where the advantages of molecular genetics to introduce new traits into potato varieties can be used without the perceived disadvantages of introducing genetic material from other species.

Genetic transformation in potato: Approaches and strategies. Chakravarty et al. (2007) *American Journal of Potato Research* 84: 301-311.

Genetically modified organisms in crop production and their effects on the environment: methodologies for monitoring and the way ahead. Ghosh & Jepson, eds. (2006). *Expert consultation: report and selected papers*. FAO, Rome, 18-20 January 2005.

Intragenic crop improvement: Combining the benefits of traditional breeding and genetic engineering. Rommens (2007) *Journal of Agricultural and Food Chemistry* 55: 4281-4288.

Popular articles

POTATO WORLD

Consequences of water properties often underestimated. This article describes how the temperature of the mixing water can have a considerable influence on the effectiveness of crop protection chemicals. Hydrogen bonding between individual water molecules gives water its liquid properties. As the temperature of water increases, the hydrogen bonding decreases and the solubility of dissolved chemicals increases. For most crop protection chemicals the ideal temperature is 18-28°C. Above 30°C the high solubility of chemicals can cause crop damage that would not be seen at lower temperatures, and so dose rates should actually be lowered at these high temperatures. Number 3, 2007, p. 7.

Snippets from www.potatonews.com

Listed below are a small selection of the articles that are posted on the Global Potato News website. Please visit the site for further details or follow the links.

JUNE 2007: NEWS HEADLINES.

Netherlands: Promising perspective for potato proteins. As part of the process of extracting starch from potatoes, the company Solanic is producing potato protein products. Using a new separation technology that reduces energy and water consumption, the potato juice is turned into a dry, high molecular fraction that mainly comprises the protein Patatin and a low molecular fraction that ends up as a liquid product. The "quality" of the potato proteins, scored on factors such as the amino acid content, digestibility and presence of anti-nutritional factors, is even better than soy protein. Another advantage of potato protein over proteins extracted from other plant foods, such as cereals and legumes, is that the potato protein remains soluble after the extraction process. The potato protein products also have good foaming, emulsifying and bio-functional properties.

United States: Diet with potatoes associated with reduced risk of developing type 2 diabetes: new study. Researchers at the University of Melbourne and the Cancer Council Victoria, Australia, have found that the risk of developing diabetes is increased with a dietary pattern characterised by meats and fatty foods but reduced by a dietary pattern characterised by a variety of salad and cooked vegetables, including potatoes. In addition, a recent study at Tufts University, USA, has indicated that weight loss can be achieved by a reduced-calorie diet comprising a variety of cooked (but not fried) vegetables, including potatoes, regardless of whether the diet has a high or low glycemic index or glycemic load (<http://www.prweb.com/releases/2007Potato/Diabetes/prweb526557.htm>).

United Kingdom: Scientists create a new technique to combat potato scab. There are a number of strains of *Streptomyces scabies*, the pathogen that causes potato scab. Recently, DNA tests have been developed to differentiate between the strains, as they may differ in their ability to cause disease. The molecular probes target the thaxtomin biosynthetic genes. Thaxtomin is a protein that breaks down the walls of growing cells, enabling the bacterium to infect any elongating part of the potato plant that is underground. When the bacteria infect potato tubers they produce raised or pitted scab-like lesions.

**DECEMBER 2007: NEWS HEADLINES.**

United Kingdom: Potential for potato growers to cut costs. At the "British Potato 2007" conference, speaker Andrew Kneeshaw discussed how growers must concentrate on finding ways to reduce energy consumption in potato stores. With increases in energy costs of up to 60% in the past 2 years, improving general management, maintenance, control systems and store structure, along with making good refrigeration and fan choices, can have a significant impact on profitability.

Australia: McCain Foods Australia/New Zealand received grant to reduce water use. A government grant of A\$635,474 will be used to develop systems to increase the amount of internal water recycling and eliminate water use in certain parts of the food production process. McCain Foods is one of the largest users of the Ballarat water supply and it is expected that the project will help to reduce demand for potable water at McCain by 50%. In addition, the project will provide opportunities for other manufacturing firms in the region to learn about ways to establish water-saving initiatives.

Australia: South Australian potato growers soon to collectively bargain processor contracts. A draft ruling by the Australian Competition and Consumer Commission will allow potato growers to collectively bargain with McCain Foods and Safries processors. This follows a similar ruling released recently for the Victorian Potato Growers Council, and has the potential to achieve "more efficient outcomes" for South Australian potato growers.

New Zealand: potato growers invest in future capability. In an exciting initiative that coincides with 2008 being the declared International Year of the Potato by the United Nations, Horticulture New Zealand has launched four new PhD research programmes. The students will work with the country's leading potato and potato disease scientists at Crop & Food Research. One of the projects is embedded in Crop & Food Research's internationally-recognised breeding programme and biotechnology team. The second project will focus on potato water-use efficiency, studying physiological characteristics such as photosynthetic capacity, stomatal resistance and leaf canopy expansion. Another project will investigate the molecular factors controlling potato tuber expansion and eventual tuber size, and work towards the goal of producing gourmet potatoes of specific dimensions. The fourth project will determine the virulence of *Rhizoctonia*, a major pathogen of agricultural crops, responsible for canker and black scurf. The funding demonstrates the commitment of potato growers to developing future capability in their industry and is a great endorsement of the research done by Crop & Food Research.

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