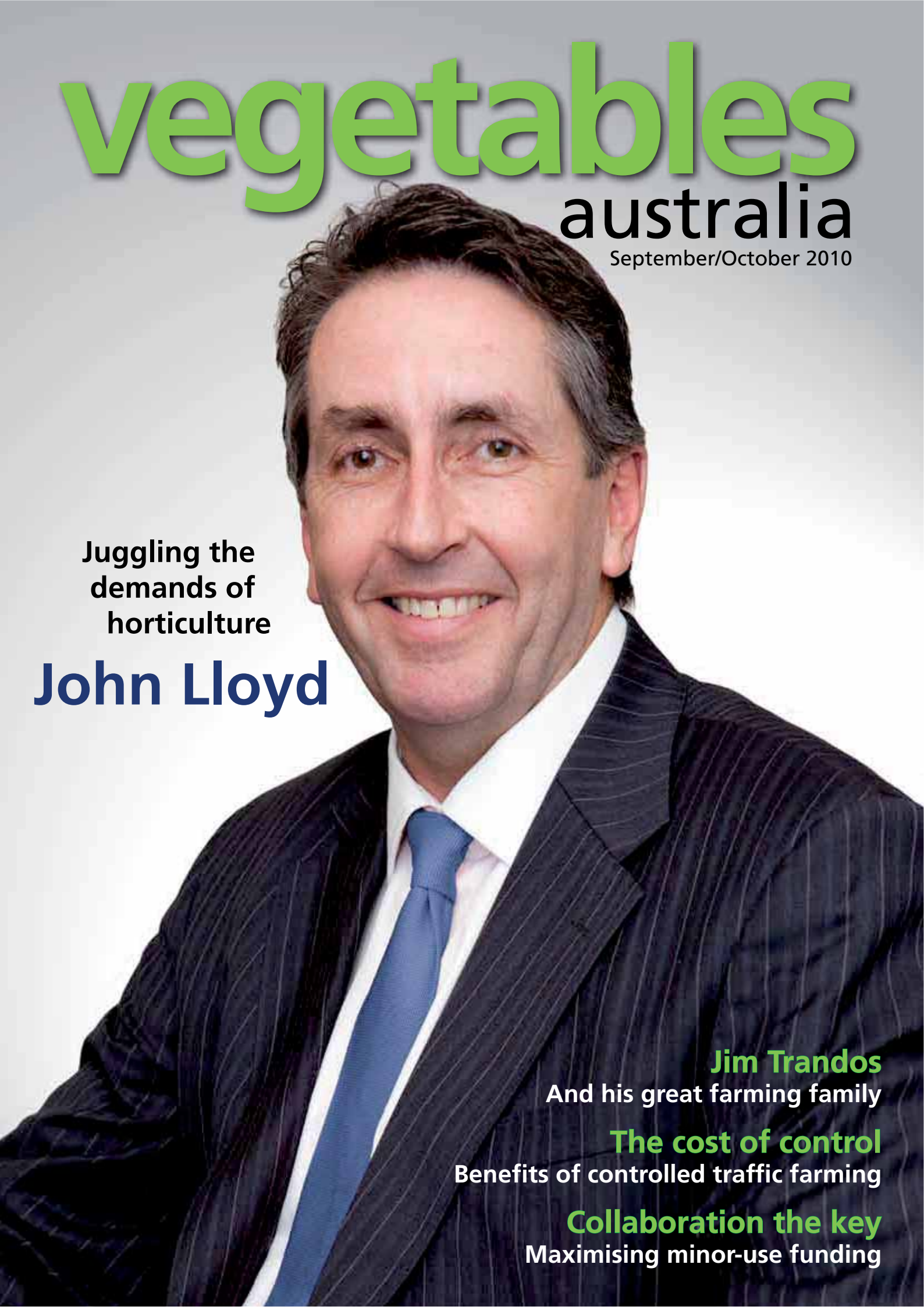
vegetables australia

September/October 2010



Juggling the demands of horticulture

John Lloyd

Jim Trandos
And his great farming family

The cost of control
Benefits of controlled traffic farming

Collaboration the key
Maximising minor-use funding

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vegetables australia

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AUSVEG

HAL
Know-how for Horticulture™

All research and development projects have been funded by HAL using the National Vegetable Levy and/or voluntary contributions from industry, and matched funds from the Australian Government. *Vegetables Australia* is produced by AUSVEG Ltd and is free for all National Vegetable Levy payers.

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FRONT COVER:

John Lloyd, CEO of Horticulture Australia Limited (HAL)

Photo by James Cunningham

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Nufarm

John Brent
AUSVEG Chaiman

It is with great excitement that I announce the location and dates for the 2011 AUSVEG National Convention, Trade Show and Awards for Excellence.

Growers and industry stakeholders will converge on Brisbane from 14-16 April 2011 with Queensland set to officially host the AUSVEG National Convention again, following the great success of the industry's inaugural 2010 Convention on the Gold Coast.

The 2011 Convention will be held at the five star Sebel-Citigate Hotel in Brisbane's inner CBD, next to the iconic Brisbane City Hall.

The 14-16 April time period will fit in with those delegates wishing to make the most of the Sunshine State's excellent weather and it ties in with school holiday periods on the East Coast of the country.

I am exceptionally proud to see this landmark event returning to my home State and I am excited by the challenge that confronts us, in building on the enormous success of the inaugural Convention held in May this year.

One of the major elements of the 2010 Convention was its enormous Trade Show and next year's show is already well on its way to eclipsing previous events.

The National Awards for Excellence will also return, recognising the achievements of the vegetable and potato industries' most successful members.

This will again be the biggest single gathering of vegetable and potato growers for the entire year, a claim no other conference event can make.

The event will inject more than one million dollars into the area's economy over three days and see upwards of one thousand visitors to the QLD capital.

I urge all vegetable growers and industry stakeholders to attend. For any convention enquiries please email convention@ausveg.com.au or call AUSVEG on (03) 9822 0388 for further information.

John Brent
Chairman
AUSVEG

Richard Mulcahy
AUSVEG Chief Executive Officer

By the time you're reading this, AUSVEG will have celebrated another significant milestone in our recent transformation.

The opening of our new offices situated in the inner suburbs of Melbourne, signifies another step forward in AUSVEG becoming a stronger and more financially stable organisation; one that is better placed to represent the interests of Australian vegetable growers.

AUSVEG's new offices, which are closer to the CBD, are ideal to accommodate the growing needs of our sector.

Already the new premises has played host to many meetings between AUSVEG and strategic partners, international delegations and colleagues from HAL, as well as the Vegetable IAC.

Another key component of our transformation—developing our media profile—continues to strengthen, with AUSVEG prominent in all forms of media over recent months in response to a range of issues, including the tragic tomato crisis in the Bowen region of Queensland.

In the modern world it is critical that AUSVEG has a strong profile in the media, allowing us to project the interests of growers into the public domain.

In other news, AUSVEG will hold its third international grower study for 2010 when a group of growers travel to the United States in October. An earlier tour of Israel, Spain and Germany, and the Young Growers Study Tour to New Zealand have both been conducted this year, with a large number of growers gaining insights into vegetable production practices overseas.

Not only is the knowledge gained from these study tours invaluable, the tours also present growers from all over Australia with a fantastic networking opportunity.

To enquire about future tours, please contact AUSVEG on (03) 9822 0388 or visit the AUSVEG website at www.ausveg.com.au.

Richard J Mulcahy
Chief Executive Officer
AUSVEG

Editorial

The heart and soul of every edition of *Vegetables Australia* is the Research and Development (R&D) projects that are facilitated by Horticulture Australia Limited (HAL) and funded by the National Vegetable Levy, with matched funds provided by the Australian Government.

In this September/October edition we again explore a number of projects, at different stages of their cycle, highlighting the results and expected outcomes that will benefit the vegetable industry.

On page 26, we update readers on the progress of the Vegetable Industry Development Program (VIDP), one year after the project was commissioned.

The VIDP represents a large investment of levy funding and its progress is of great interest throughout the industry.

We also look at new approaches to R&D and in particular the issues that surround the application of chemicals for registration on vegetable crops (page 18).

To maximise levy funding, researchers have sought to collaborate with scientists in the United States and Canada and have also been supported with funding from two of the major chemical manufacturers in Australia.

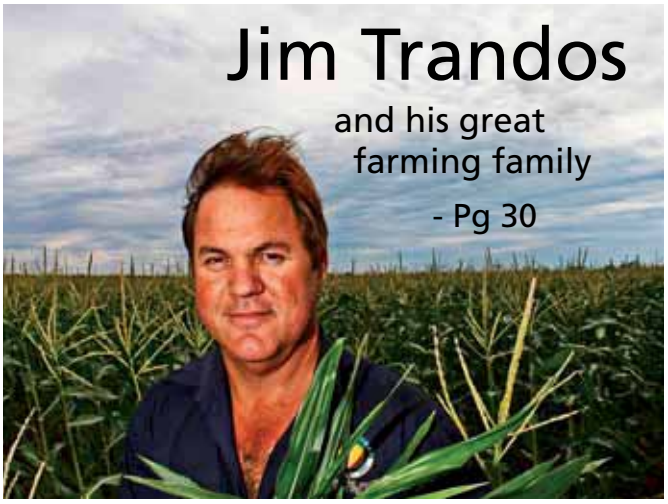
Included in this edition is an interview conducted with Mr John Lloyd, Chief Executive Officer of HAL (page 14).

Charged with the responsibility of juggling the demands of the vast number of industries that form together under the banner of horticulture, we sought Mr Lloyd's thoughts on the issues confronting the vegetable industry.

With spring now on our doorstep we have also provided the latest information on expected locust hatchings (see page 8), including tips for landholders and a list of key contacts.

Vegetables Australia prides itself on being the key communication tool between research bodies and growers, and included with your copy of the magazine is our annual Reader Survey, which we strongly urge you to fill out and return to AUSVEG.

We are determined to continue to improve our communication with industry members and through your feeback, we will better understand the needs of our readers.



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September/October

Growers brace for locust hatchings

Vegetable growers in Queensland, New South Wales, Victoria and South Australia are bracing themselves for expected locust hatchings in the coming weeks, as warmer weather arrives.

Due to what experts are calling 'perfect locust breeding conditions' earlier this year, growers across four states are facing a locust threat this spring.

Constant rainfall and warm weather are blamed for the increase in numbers, with eggs laid during April now the major concern.

The Australian Plague Locust Commission (APLC) are urging growers to be vigilant with hatchings expected in September and October and an update of the current situation can be found on their website.

It states that the migration to the south during April brought many swarms into the Murray Valley and Northeast regions of South Australia, Northwest and North Central Victoria and the Southern Riverina in New South Wales.

The APLC believes the outlook is for a serious widespread nymph (locust hatchlings) infestation in New South Wales, Northern Victoria and Eastern South Australia during spring, with some localised high-density hatchings in Southwest Queensland also possible.

The plague situation, where numerous regions across several states are affected by high densities of locusts, could continue during spring and summer if there is a high level of nymphal survival in spring.

Tips for Landholders

Throughout Australia, primary control of locusts is the responsibility of the landholder. Officers from the relevant state authorities (listed below) are available to provide technical assistance, undertake inspections and advise on control techniques.

These officers should be your first point of contact when reporting locust infestations or making enquiries about locust control.

The APLC also suggests the most effective way for landholders to control locusts is by ground spraying the hoppers when they have formed into dense aggregations called bands. The time available for controlling an outbreak of locusts is short. Hoppers take about five weeks to develop into swarming adults and are much easier to control at this early stage. The hoppers usually take one or two weeks after hatching to form into dense bands suitable for spraying.

Egg laying often occurs in areas where ploughing is not possible (for example, in hard soil along roads or tracks). Although there are a number of natural enemies of locusts such as birds, spiders and insects, none are able to effectively regulate locust numbers during an outbreak.

Landholders who wish to find out more or report sightings are urged to contact their state locust authority.

NSW: Local Livestock Health and Pest Authorities
www.lhpa.org.au/contact
Or
Industry Investment NSW
Hotline: 1800 814 647

VIC: Department Primary Industries Locust Hotline: 1300 135 559

SA: Primary Industries and Resources, Locust enquiries number: 08 8207 7885

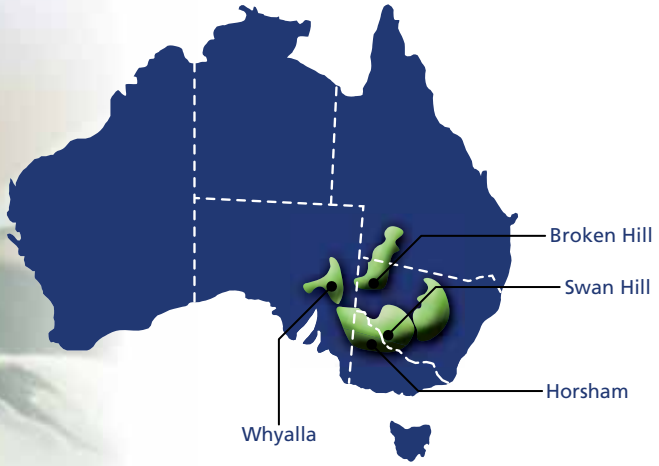
QLD: Biosecurity QLD
DPI&F: 13 25 23

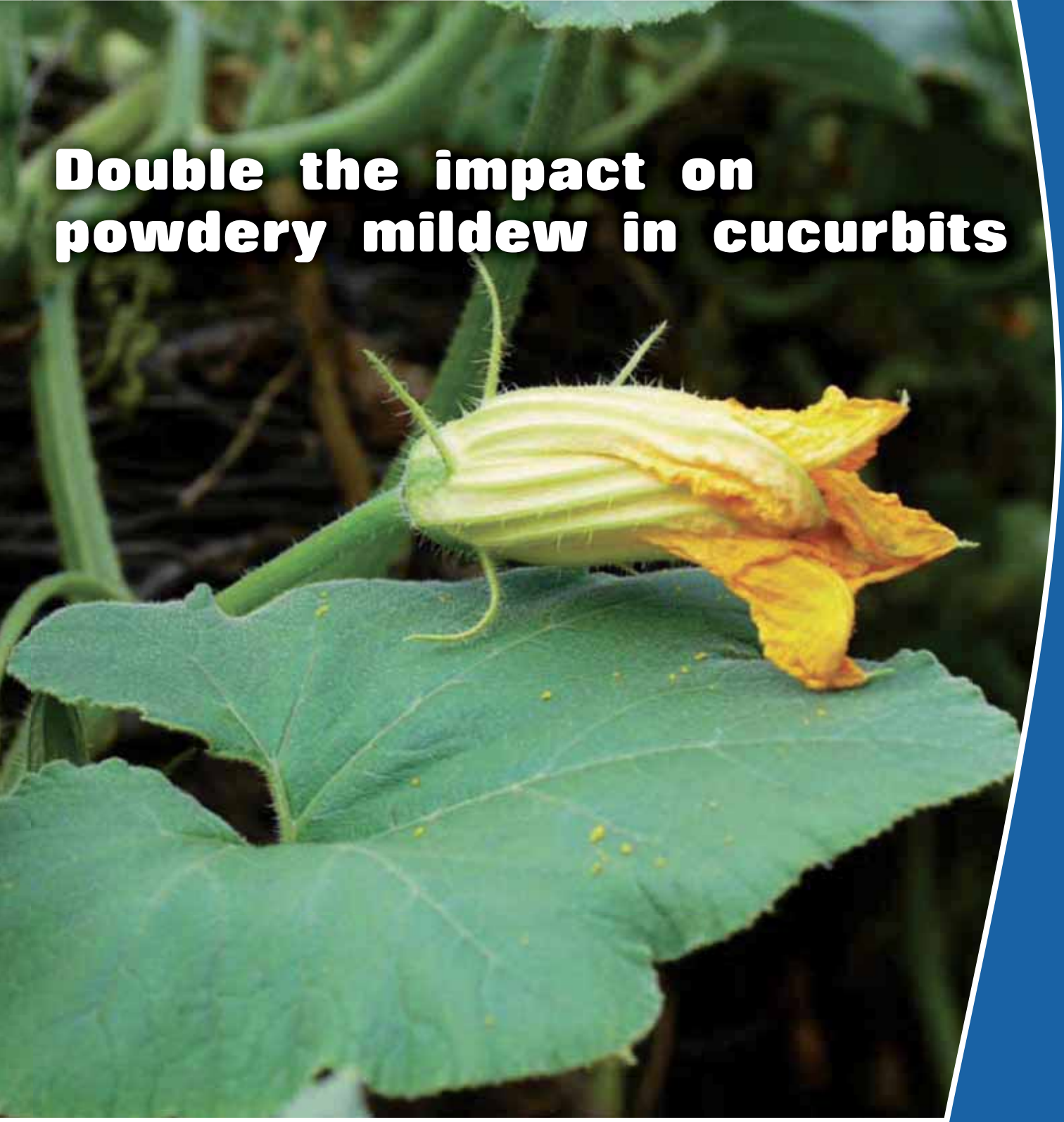
Australian Plague Locust Commission: 1800 635 962
www.daff.gov.au/animal-plant-health/locusts

Tips to deal with locusts

- Check spray equipment so when locusts are found there will be no delays treating them.
- Report sightings and hatchings immediately to help inform the overall campaign.
- Treat locusts when they are banding, as this is the most efficient and effective time.
- Check crop and pastures thoroughly, not just around boundaries.

Australian Plague Locust Risk Zones for Spring 2010





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double trouble for powdery mildew

Crop Care

Tassie Grown

A new campaign launched last month by the Tasmanian Government in conjunction with Woolworths will promote 'Tassie Grown' produce, an initiative that will help identify Tasmanian-grown vegetables on local supermarket shelves.

Tasmanian Minister for Primary Industries and Water, Bryan Green, said at the launch the move was a boost for Tasmanian farmers and he encouraged other retailers to follow suit.

"Shoppers will be able to quickly identify locally grown food which is a great opportunity to show support for Tasmanian producers," he said.

Tasmanian Farmers and Graziers Association CEO, Jan Davis, welcomed the news and said it would benefit local growers.

"TFGA welcomes this initiative. Tasmanian farmers produce an amazing range of fabulous quality foods. We believe they are the best in the world, and consumers have shown they agree. We're pleased to see this being recognised at retail level," she said.

Woolworths Tasmanian Area Manager, Brett O'Dea, said the new shelf labels, stickers and signage would start appearing from early August on packs, on shelves and in the deli department across 28 Woolworths supermarkets in Tasmania.

O'Dea said the new labelling was part of Woolworths' longstanding commitment to Tasmanian agriculture and the promotion of the wonderful range of home-grown produce.

"The introduction of Woolworths 'Tassie Grown' labelling will give local farmers more visibility on the supermarket shelf and encourage Woolies' customers to buy even more Tasmanian produce," he said.

"More than 100 lines of fruit, vegetables, meat and fish will carry the 'Tassie Grown' labels, appearing on the pack itself, on the shelf for loose produce, or in the deli."

O'Dea said the appeal of Tassie Grown produce wasn't limited to local buyers.

"We know that customers all over Australia appreciate Tasmania's clean and green image, so, in addition to the new labelling within the state, Woolworths continues to promote the origin of many of its Tasmanian-produced products, including cheese, butter and vegetables, sold all over Australia."

Studying USA

A group of seven vegetable growers are about to begin an amazing experience, when they travel to the United States for a 12-day grower study tour.

The tour group will travel to the USA for 12 days from 13 - 24 October, visiting farms and farmers' markets, as well as DuPont's headquarters in Wilmington, Delaware. The tour also takes in the PMA Fresh Summit in Orlando, Florida.

International study tours provide growers with the opportunity to experience another country's culture and socialise and network with other Australian and international growers, while exploring farming practices overseas.

The tour cost is substantially subsidised by the National Vegetable Levy with matching funds provided by the Australian Government.

Places on the tour filled quickly, and expressions of interest have already been received for 2011.

Leading the tour will be AUSVEG Communications Coordinator, William Churchill, who said the tour presented growers with an amazing opportunity.

"The tour gives growers an opportunity to experience international vegetable production, and gain knowledge which ultimately will benefit the entire industry," Mr Churchill said.

"We will be visiting a number of vegetable farming operations, including large scale growers and farms that are successfully exporting their produce to Asia."

"These visits, along with the opportunity to meet other growers from around Australia, will be a chance of a lifetime for tour participants," he said.

i For more information contact:
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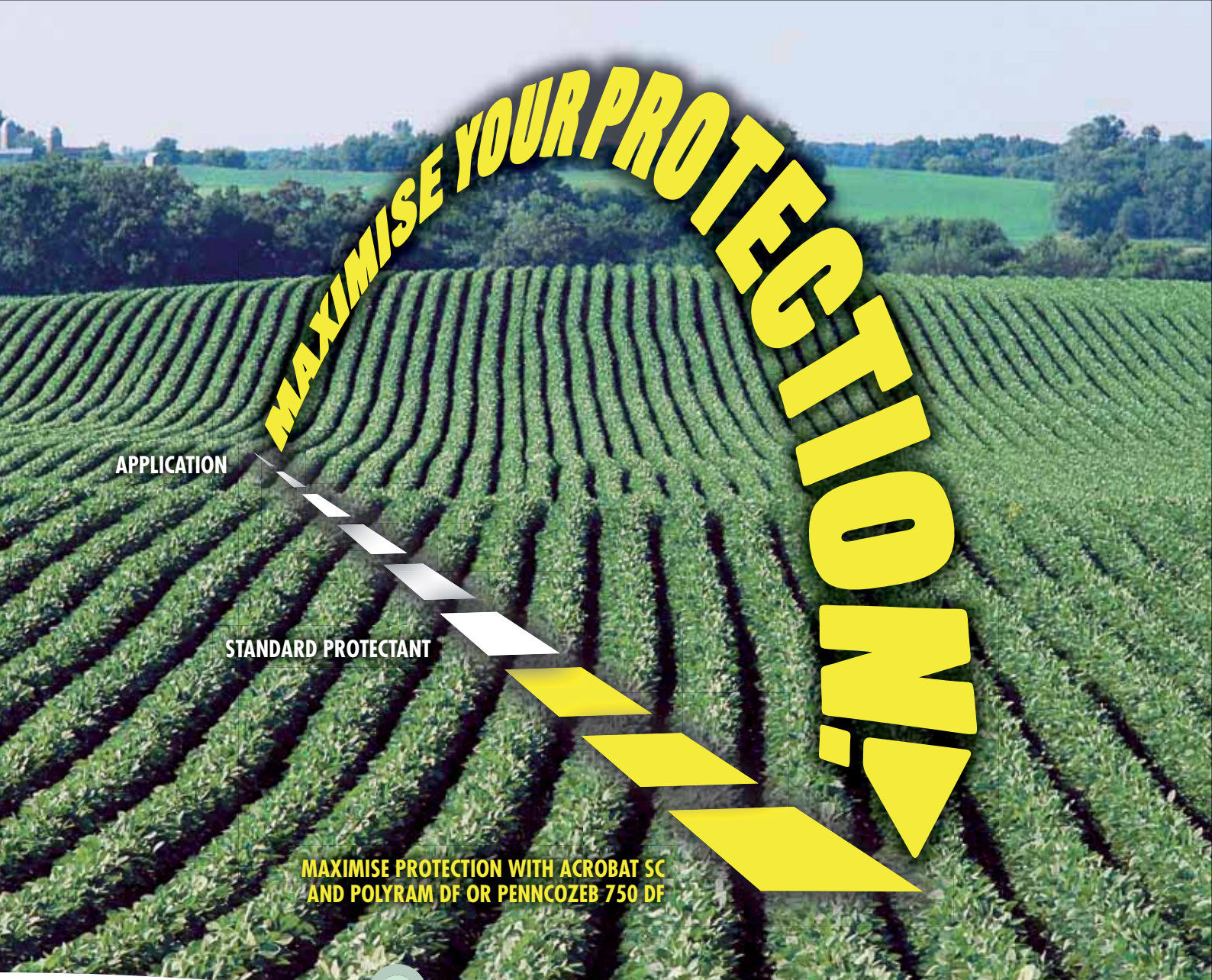
AUSVEG
Communications Officer
Email: <elizabeth.cox@ausveg.com.au>
Phone: (03) 9822 0388



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Ask the industry

with Scott Mathew

One of the major issues currently being forwarded to Syngenta by worried growers in the Eastern States and also South Australia, is what is going to happen in spring when the locusts hatch?

Question: When are locusts most likely going to become a problem?

At the present time I would be suggesting that growers keep their ears open to regional radio stations for updates as to the current situation, or they can visit the Australian Plague Locust Commission (APLC) website which is a great source of information (www.daff.gov.au/animal-plant-health/locusts). At this stage the best guess is that landholders should be keeping a close eye out for hatchings from mid-September onwards.

Question: When should we begin our control program if they become a problem?

Before deciding on the action needed to control locusts, first determine how much of your cropping program and individual crops may be at risk. As a general rule, immediate action will be required once crop damage from hoppers and adult locusts is being seen in your crops.

Question: How can we ensure we get the best results when controlling locusts?

Hoppers may be sprayed as long as the prevailing wind conditions are suitable and ensuring the spray hits the hopper band target. To achieve good control of locust bands, it is more effective and efficient to carry out control early i.e. when the locusts are banded together, and the locusts are in the 2nd and 3rd instars stage. If targeting adults, it is best to spray them while they are settled in the early morning or late evening.

Question: What products can we use for controlling locusts?

There are many insecticides currently used in vegetable crops that have activity on locusts, however, you will need to check for those that are registered or have been issued with a minor-use permit from the Australian Pesticides and Veterinary Medicines Authority (APVMA) on their web site (www.apvma.gov.au) under the minor-use permit heading.

In other news

A quick note for those growers who have heard on the grapevine about DURIVO, just letting you know that it has been recently cleared by the regulatory body, the APVMA, and will become commercially available this spring.
DURIVO® is a unique insecticide that when applied to the soil, provides long-lasting protection against an army of grubs, aphids, thrips and other pests in early season vegetable crops.

Ask the industry

If you have a question that you would like addressed, please ring Syngenta on 1800 067 108 or email *Vegetables Australia*: david.oneill@ausveg.com.au.
Please note that your questions may be published.

Juggling the demands of horticulture

Appointed to the position of CEO of Horticulture Australia Limited (HAL) in September 2009, Mr John Lloyd is charged with the responsibility of juggling the demands of the vastly different industries that are bound together under the banner of horticulture. Through precise and considered answers, Mr Lloyd reveals his approach to helping these industries maximise the benefits of levy and government expenditure, writes David O'Neill.

You have held senior positions with Incitec Pivot and Wesfarmers Dalgety. What attracted you to the position of CEO of HAL?

Well as they say, the older you get, the wiser you become, and I have worked in a variety of industries in a number of different roles. I have had some background in horticulture but not in the area of production.

Whilst working with Wesfarmers Dalgety (the company now known as Landmark), I was General Manager of their retail division and in that process I had some exposure to horticulture markets. I actually led expansion of the company into horticulture, setting up retail outlets in places like Tully, Gatton and Ayr.

One of the major aspects that attracted me to the role was that I would be working in agriculture. In many respects it's one of the best industries to work in. It's also one of the most difficult to work in, but agriculture appeals to me and the people involved in it appeal to me. I think it's the down-to-earth nature of the people, the robust discussions that take place. There isn't a lot hidden in agriculture, it can be political, but there aren't too many hidden agendas.

Horticulture producers are faced with numerous challenges. Were you aware of the severity of these challenges when you assumed the role?

In previous positions I had continuously been exposed to agriculture, and many challenges that face horticulture producers are the same problems other producers in agriculture face also. So yes I was aware of a number of the different issues important to growers.

I concluded that there were two main challenges for HAL. The first was internal, in regards to HAL itself, ensuring its role was more efficient and effective in its processes. The second was external and related to the function and role of HAL in the industry.

Nine months on, what are the major differences in your own mind in regards to horticulture?

I probably had a somewhat limited depth of knowledge of horticulture, and I am now absolutely blown away by what is happening in the industry. It is by far the most dynamic industry in agricultural Australia, and pretty soon we believe it will become the

biggest industry in agricultural Australia.

Horticulture is going through a rapid phase of capital investment, product development and, per se, growth and I don't see it stopping.

What do you perceive as the major challenges currently facing growers?

I think there are four main challenges, or rather four distinct categories confronting those in horticulture. Demand creation is one. Our industry produces products that make people live happier, longer, healthier and more productive lives, and the challenge is to better deliver this message to consumers.

The second category is what I like to call nuts and bolts challenges, and there are a number of them. Access to chemicals, access to genetics, access to water, peri-urban issues, labour and a whole raft of others that are critical to everyday vegetable production. In horticulture especially, there are more of these nuts and bolts type challenges than in other agriculture industries and that adds to the complexity of solving them.

The third area, representation of the industry, is related to both the previous two categories. Horticulture is a very strong industry that does not have—across all the industries—a strong voice and therefore will struggle to get access and build its rights to land and water issues, labour issues and chemical use.

The final category is investment in transformation technologies. These challenges are much more difficult to confront as transformational technologies are ones that you would invest in now, that would make the industry fundamentally different, but perhaps not within five years.

These are technologies relating to genetics, biotechnology, mechanisation, to significant advancements in water usage and these are difficult for people to invest in. In some industries that investment is taking place and it is only when there is market failure that HAL will become involved.

How do you juggle the demands on the vastly different commodity groups that are bound together under the banner of horticulture?

With some difficulty. It is one of the major challenges for HAL. If you compare horticulture to say the cotton industry, which is fairly succinct, the cotton industry produces essentially one product, produced by a limited number of growers in a defined geographic area and it has very few challenges with respect to extension. Horticulture is at the other end of the spectrum. It has upwards of 60 commodity groups. Some of those have very little in common. It is the most geographically diverse industry in Australia, and is demographically and ethnically diverse. There are 39 different member bodies of HAL and our role is to be accountable for the effective and efficient expenditure of both government and industry funds in research and development and marketing when appropriate, in horticulture.

Finally, what do you see as the future direction of HAL?

For me, it is about process, and having good processes in place so that the individual industries are well served according to the capacity of the organisation and the capacity of the levy being paid.

I don't see the direction of HAL changing in the coming years, but I believe it has changed in the last 12 to 18 months. HAL has become more focused on being an efficient mechanism and not assuming other roles. It will continue to drive its own efficiencies and ultimately put out better projects, more effectively and in a more timely manner.

The stronger and more capable peak industry bodies become, who for all intents and purposes are shareholders of HAL, then the stronger and better placed the individual industries will be. It is not specifically our role to help develop peak industry bodies, but it is in our best interests that they grow and mature.

We have another key stakeholder of course, which is the Federal Government, but it is the strength of our members which is critical to the continued growth of horticulture.

> "I think it's the down-to-earth nature of the people, the robust discussions that take place. There isn't a lot hidden in agriculture, it can be political, but there aren't too many hidden agendas."

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Eyes turn to 2011

The 2011 AUSVEG National Convention, Trade Show and Awards for Excellence will be held at the five star Sebel-Citigate Hotel in Brisbane from the 14-16 April.

Great excitement surrounds the announcement after the stunning success of the event in 2010.

Expectations are high, that the 2011 National Convention, Trade Show and Awards for Excellence, will raise the bar once again and surpass the standards set at this year's event.

The Convention will bring together members from across the industry supply chain, creating an incredible networking opportunity, and a chance for growers to learn of the latest developments in the vegetable industry.

One of the major elements of the event will again be an enormous Trade Show, packed with all the major players from the supply and services sectors of the industry.

The National Awards for Excellence will also return, with the event celebrating the achievements of the vegetable industry's most inspiring members.

In the coming months, a number of high calibre speakers will be announced, with a strong entertainment program set to be a prominent feature of the event once again.

Growers and industry stakeholders are urged to save the date and take part in this crucial industry event.

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

Collaboration the key to Minor-use

Australian research projects are utilising data produced internationally to maximise minor-use investment and find crop protection tools for vegetable growers.

Horticulture producers around the world face similar problems in regards to the restricted use of pesticides for minor crops. Crops which are grown on 300,000 acres or less (most vegetable crops), are usually referred to as minor crops and are defined by the Australian Pesticides and Veterinary Medicines Authority (APVMA). The Australian vegetable industry needs to have access to a range of pest management technologies, including pesticides, because of economically damaging plant pests (diseases, insects, nematodes and weeds).

However, a lack of financial incentive for manufactures to register pesticides for these crops, often means some compounds, despite being effective on certain vegetable commodities, are not submitted for registration with the APVMA.

As a result, growers are often placed in situations where they risk severe crop losses from plant pests. On the other hand, they risk buyers rejecting their produce and other penalties if they are detected using agrichemicals that are not registered.

To fill the void, the APVMA, whose role it is to independently evaluate the safety and performance of pesticides and veterinary medicines intended for sale, have established the minor-use permits system.

This system adds some flexibility to the process by authorising the use of non-registered agricultural pesticides in specific crops and situations. However, off-label permits issued by the APVMA must still be supported with information and data that verifies that the permitted use will be effective and will not have any harmful effects on humans, the crops or the environment.

The vegetable industry's minor-use program, which is funded by the National Vegetable

Levy with matching funds provided by the Federal Government, manages the application for permits with the APVMA.

AgAware Consultant Mr Peter Dal Santo is the Pesticide Minor-use Coordinator and has been working in the area of minor-use for more than 10 years.

When you consider the number of different compounds available and the number of different vegetable crops, this work can be both expensive and time-consuming. In search of a more efficient and effective solution to pesticide access for the vegetable industry that results in the registration of new compounds, Mr Dal Santo has extended his search across the pacific and formed an alliance with America's IR-4 Program.

The IR-4 program has operated in the US since 1963 and addresses the pesticide access issue through a coordinated, prioritised and well-funded approach to the generation of essential data

continued over page ▶

The history of IR-4

The lack of available pest control products for minor food crops convinced the Directors of American State Agricultural Experiment Stations (SAES) to take action way back in 1963.

Working with the US Department of Agriculture (USDA), they organised the Interregional Research Project No. 4, now commonly known as IR-4.

IR-4 is a cooperative government and industry effort by the USDA's Agricultural Research Service (ARS) and Cooperative State Research, Education, and Extension Service (CSREES), the land grant university system, the US Environmental Protection Agency (EPA), the agrichemical industry, commodity groups and growers.

The IR-4 mission is to provide pest management solutions (chemical and biological) to growers of fruits, vegetables and other minor crops. In line with the mission, people who benefit from IR-4 are minor crop growers, food processors and consumers.

IR-4's success in providing pest management solutions can be measured by the large number of minor crop pest control clearances established or retained as a result of IR-4's efforts. An IR-4 clearance is defined as a pest control agent and commodity combination that supports a registration.

Registration of a specific use is the responsibility of the agrichemical manufacturer, who is the seller of the product. Over 5,500 food-use clearances, over 8,800 ornamental clearances and over 200 biopesticide clearances have been established since 1963. This is a testament to the success of the program.

Extract taken from the IR-4 Program's website
http://ir4.rutgers.edu/

for pesticide manufacturers to register specific uses.

"The major benefit of the IR-4 Program is that they are involved in the process from initiation to registration, and choose the best product that best suits the crop," Mr Dal Santo said.

In collaboration with the IR-4 Program, two recent Australian based projects—overseen by Mr Dal Santo—have been conducted, that will potentially benefit the industry though the sharing of usable data between the two countries, thus reducing the overall cost for accessing these minor-uses.

"The aim is to get new technologies into the industry and see them registered for use on vegetable crops," Mr Dal Santo said.

These projects have also seen leading agribusinesses, DuPont and Syngenta, contribute with substantial funding that demonstrates a willingness to support Research and Development (R&D) critical to the industry.

To find a new insect management tool for beans, peas and sweet corn, a study was undertaken to set a use pattern, withholding periods and Maximum Residue Limits (MRLs) for DuPont's Coragen Insecticide (chlorantraniliprole). A total of 11 residue trials were conducted during 2009 and 2010 in specified regions throughout Australia. The data generated through these trials will help set the parameters for Good Agricultural Practice (GAP) for the product and improve access to domestic and export markets. This data will also be used to support an application to the APVMA for registration of Coragen on bean, pea and sweet corn crops in Australia.

A second project was established to generate residue data for Syngenta's fungicide Switch (cyprodinil and fludioxonil) for use on leafy vegetables, and subsequent registration purposes in Australia.

This study was conducted at 11 different field sites in New South Wales, Queensland, Victoria and South Australia. It involved two or four applications of the pesticides on the target crops, sampling the crops at or around the normal commercial harvest time, and then analysing the sampled plant parts for residues of the target pesticide. A detailed study report on the field and analytical components was prepared and this was used as part of the registration applications to the APVMA.

> "The major benefit of the IR-4 Program is that they are involved in the process from initiation to registration, and choose the best product that best suits the crop."

The major outcome of these projects is that pesticides that could not be legally used by vegetable growers will now be available, once registered.

Mr Dal Santo will travel to the United States again later this year to attend the annual IR-4 Conference in October. "We will be looking to see if any of the planned trials to be conducted in the US will enable new products to be introduced in Australian and maximise the funding that is available," Mr Dal Santo said.

Leading up to the IR-4 Conference, a workshop attended by the key stakeholders in the IR-4 Program will take place in September, where a select number of 'A' priority projects for herbicides, fungicides and insecticides will be chosen. These priority projects will form the core of the IR-4 research program in 2011.

Mr Dal Santo said the trip would also lead to talks with those involved in a similar program in Canada, which may lead to even further international collaboration.

"They have a similar program in Canada, but instead of focusing on the crop, the Canadians focus on the pest and a look at developing a range of solutions for a specific pest," he said.

"Developing links with our international counterparts can bring about benefits in terms of time and costs and most importantly lead to the registration of more products for more crops in Australia."

IR-4 Food Use Workshop participants, come prepared with strategies that they know will best help the growers in their regions secure new pest management tools.

THE BOTTOM LINE

- Two recent Australian projects are following in the footsteps of the IR-4 Program; an American based research program, which facilitates registration of key chemicals for sustainable pest management in minor crops.
- Major chemical manufacturers, Syngenta and DuPont have provided significant funding to help Australian researchers and Minor-use Coordinator, Peter Dal Santo, find crop protection solutions for vegetable growers.
- Collaboration with American and Canadian researchers will help to maximise the benefit from current minor-use funding and lead to the registration of key chemicals for use on vegetable crops

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Phone: (03) 5439 5916
Project Number: VG08170 & VG08170

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Growers return with BIG ideas

Following nine days of touring the North Island of New Zealand, combined with attendance at the 2010 Horticulture New Zealand Conference, a group of young vegetable growers returned to Australia last month brimming with fresh ideas and ready to bring newfound inspiration to their businesses, writes Erin Lyall.

A group consisting of nine young Australian vegetable growers were exposed to growing, packing, and marketing operations across the North Island, as the tour wound its way from Auckland through the country's major growing regions. Following the farm visits, and the occasional stop to take in the magnificent New Zealand country-side, the tour concluded with growers attending the 2010 Horticulture NZ Conference.

International grower study tours allow participants the opportunity to visit impressive farming operations that they might not otherwise have the chance to see in Australia. This tour was no exception with New Zealand farm operators warmly welcoming the group and sharing their extensive knowledge of the vegetable industry.

Mr Michael Rieck, a 26 year-old grower of carrots, onions, beans and pumpkins from Kalbar in Queensland, said he gained a lot from the trip despite his initial hesitation about participating.

"The tour was excellent. It was good to go with a group of young people interested in farming. It's hard being in an industry dominated by an older generation and so to meet young people in the same boat as you is refreshing," he said.

Mr Rieck said he decided to attend the tour because he wanted to be a progressive farmer who goes out and finds new ways to be more efficient, and also see how people in different countries deal with factors such as weather and other problems.

"There's a couple of chemicals they use on onions that we haven't actually got in Australia. After doing some research I've discovered we are going to conduct trials of the chemicals soon. It was great to see something coming into the market before anyone else in Australia knew about it. We're planning on using it on onions as a fungicide. At the moment there's only one systemic chemical we can use on onions that's effective and we're worried about disease resistance, so it's good to know the chemical companies are developing systemic fungicides," he said.

Some of the most eye-opening aspects of the tour were the visits to the larger growers and pack house operations such as Wilcox in Pukekohe, which boasted an impressive packing and marketing side to its business, and Leaderbrand in Gisborne, which currently crops 3,000 ha in Gisborne and Canterbury.

Rockhampton sweet potato (known as kumara in NZ) grower, Brodie Wolfenden said the best aspect of the trip was seeing larger pack houses and the equipment used in their operations. Of Leaderbrand he said it was "hard to comprehend such a huge farm."

"The tour opens your eyes to the whole industry. The opportunity to go behind the scenes and see these pack houses, how crops are grown and talk to growers is really rare," Mr Wolfenden said.

As the tour took place during the heart of winter, many crops were not in harvest. On the last day of the farm visit component of the tour, however, a visit to a yam farm in Fielding at the very South of the North Island proved to be one of the most popular stops, with everyone thrilled to be able to get in amongst the crop and see it being harvested.

"The best day of the trip was seeing a farm like that and getting some mud on my boots. They had unbelievable soil, it was so light, and it was interesting to learn how yams were grown," Mr Rieck said.

After returning to Auckland from Palmerston North on a flight that passed over snow-capped volcanos, the group registered for the 2010 Horticulture NZ Conference in Auckland.

Mr Rieck, who hadn't been to an industry conference previously, said he didn't know what to expect but enjoyed his time there.

> "It broadens your mind and allows you to see how our New Zealand comrades manage, harvest, and sell their products."

"It was good to see how the New Zealand industry is dealing with things we don't have here like the emissions trading scheme. The Government are promoting it as a way to sell the New Zealand brand to export markets but it is also a tax on an industry that is already facing significant challenges," he said.

"They've been feeling the pinch with the global financial crisis and on top of that, they have had a tax affecting their profits," he said.

The Trade Show at the Conference also gave the growers an opportunity to chat with suppliers and members of the industry, which many found beneficial.

The tour was hailed a success by all those who participated. Victorian grower Andrea Hawkes of E. R. Hawkes and Son in Dromana described it as a wonderful opportunity to network with growers and suppliers from New Zealand, and other young growers from Australia.

"It broadens your mind and allows you to see how our New Zealand comrades manage, harvest, and sell their products," she said.

THE BOTTOM LINE

- A group of nine young Australian vegetable growers have returned from New Zealand after a nine day study tour of the North Island.
- The growers visited an array of different farming facilities and attended the 2010 Horticulture NZ Conference in Auckland.
- Participants hailed the tour a success with the knowledge gained and contacts made now sure to be utilised to help the young growers prosper in their businesses.

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Understanding ZYMV: a devastating virus disease of cucurbits

Research scientists from the Department of Agriculture and Food in Western Australia are tackling a devastating virus of cucurbit crops, aiming to understand how the virus works and develop effective strategies to minimise its impact on growers, writes Brenda Coutts and Monica Kehoe.

Cucurbit growers are all too familiar with the damage caused by viruses which reduce yields and affect the marketability of produce.

Zucchini yellow mosaic virus (ZYMV) has long been a problem for cucurbit growers in Northern Australia. The virus affects all types of cucurbit crops, including melons, pumpkins, cucumber, squash and zucchini.

When crops are infected before flowering and fruit set, yield is normally severely reduced and produce can be unmarketable due to quality defects.

Symptoms of ZYMV infection include severe mosaic and deformation of leaves, while infected fruit and vegetables tend to develop knobbly areas or become deformed. The virus is spread by a number of aphid species in cucurbit crops, especially the melon aphid. However, insecticides are not useful in controlling the spread of the virus, as they do not act fast enough to kill an aphid before it spreads the virus to a healthy cucurbit plant.

One of the project's aims was to identify where the virus survived between growing seasons. Extensive surveys of weeds and native plants growing around infected paddocks found ZYMV infects a native cucurbit Mukia maderaspatana and wild melons (afghan, paddy and prickly melons) growing on fencelines and road verges. From these plants aphids can spread the virus to newly emerging crops. The virus was also shown to be seed-borne at low levels in zucchini but not in pumpkin.

> "An unexpected finding from the research was that ZYMV could be readily spread from infected plants to healthy ones."

Hygiene Essential

An unexpected finding from the research was that ZYMV could be readily spread from infected plants to healthy ones by sap expressed from infected plants on footwear, cutting implements, and machinery tyres. However, using a 1:4 dilution of household bleach or 1:10 dilution of 'Farmcleanse' to clean implements will help significantly reduce virus spread.

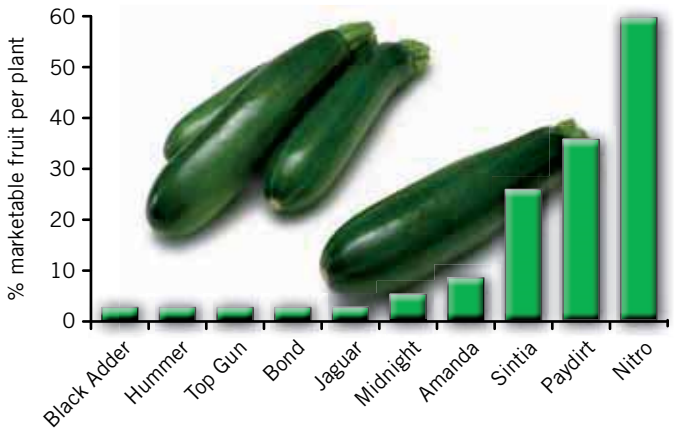
Resistant varieties

A component of the project was to assess the marketable yield of commercially available virus

Management strategies to reduce the spread of ZYMV include:

- Remove and destroy old cucurbit crops immediately after final harvest.
- Destroy any wild or volunteer cucurbit plants before planting.
- Remove any cucurbit plants showing virus symptoms, especially prior to fruit set.
- Plant a tall non-host border crop around cucurbit crops (plant four weeks prior to cucurbits).
- Plant cucurbits crops upwind from other crops.
- Employ good hygiene practices: Use a 1:4 dilution of household bleach for foot baths, and to wash equipment and machinery tyres, and avoid moving machinery from old to new crops.
- Use virus tolerant varieties when available.

Figure 1. Percentage of marketable fruit per plant of green zucchini varieties when exposed to Zucchini yellow mosaic virus.



tolerant cucumber, pumpkin and zucchini varieties when exposed to early virus infection in field conditions. All five cucumber varieties tested (Camelot, Gremlin, Lancelot, Khassib and Nouran) were resistant to ZYMV. For seven of the 10 'tolerant' zucchini varieties examined, less than 10 per cent of the yield was marketable (Figure 1).

The highest marketable yield was found with varieties: Nitro and Paydirt. Though these varieties still became infected, it occurred at a slower rate than the others tested. For butternut pumpkin, the marketable yield of the resistant variety Sunset was five times that of the susceptible variety Butternut large, while for grey pumpkin types, the resistant variety Sampson yielded three times that of the susceptible variety WA Grey and double the marketable yield of the other resistant variety Dulong.

Virus strains

Analysis of ZYMV-infected plants collected from Queensland (Ayr and Bundaberg), the Northern Territory (Darwin), Victoria (Swan Hill) and Western Australia (Carnarvon and Kununurra) identified three different strains of ZYMV.

The strains from QLD, Victoria and Carnarvon are closely related whereas the NT and Kununurra strains are different. Notably, the Kununurra strain appears to be the most virulent and is readily able to infect a number of commercial 'virus tolerant' pumpkin and zucchini varieties.

The other strains are milder but when infection occurs early there can be considerable yield losses.

Slowing the spread

In an attempt to delay the spread of ZYMV into a pumpkin crop until after fruit set, field trials using a tall six metre-wide border of a non-host crop of millet were done.

The border crop was planted four weeks prior to the cucurbit crop to act as a cleansing barrier so that infective aphids lose the virus when they feed on it and are no longer infective when they reach the pumpkin crop.

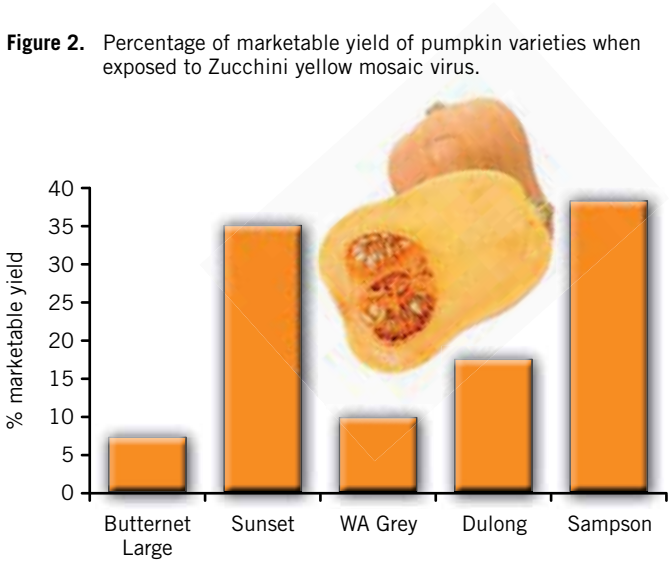
There was a 20 per cent reduction in ZYMV infection in the crops with the barrier compared with those without the barrier.

Other field trials showed that by planting upwind of a virus source—such as an old crop—rather than downwind, virus levels could be reduced by 40 per cent.

This project was commissioned by Horticulture Australia Limited and funded by the National Vegetable Levy with matched funds from the Australian Government.

The authors would like to acknowledge Denis Persley (DEEDI).

Figure 2. Percentage of marketable yield of pumpkin varieties when exposed to Zucchini yellow mosaic virus.



THE BOTTOM LINE

- Researchers from the Department of Agriculture and Food, Western Australia, have examined the cause of zucchini yellow mosaic virus (ZYMV) and developed strategies to combat the costly virus.
- Results show using resistance varieties, implementing strategies to slow the spread, and ensuring machinery and footwear are cleaned properly can have a significant effect on reducing the virus in cucurbit crops.

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VIDP

The Vegetable Industry Development Program: One year on

The Vegetable Industry Development Program was designed to assist the industry in reaching the long-term goal of increasing the value of fresh, processed and packaged vegetables in real terms by stimulating and meeting consumer preference for Australian products in domestic and global markets.

The Vegetable Industry Development Program (VIDP) is made up of six sub-programs which are outlined below. Together their objective is to ensure that:

- The industry is better able to communicate the benefits and qualities of Australian vegetable products to consumers;
- Decision-making in the industry is increasingly market driven;
- More growers are actively seeking to evolve their business model to meet new marketing challenges;
- Findings and outputs from research are increasingly applied by industry stakeholders in decision making;
- Industry is using findings and outputs from research to effectively formulate policy and manage the image of the industry;
- A new generation of leaders are active in the industry.

One year after its commencement, *Vegetables Australia* profiles each of the six core sub-programs of the VIDP and reports on the outcomes that have been delivered for growers so far.

Economics

The Economics sub-program, managed by vegetable industry Economist, Ian James, encourages growers to view their farms as businesses and cultivate an approach to these businesses that reaches beyond the farm gate.

According to Mr James, the sub-program's major aim is to build a base of data in three specific areas. The first is in regards to the production value of vegetables, the number of growers in Australia and the vegetables they produce.

The second area of data is concerned with trade, looking at the import competition growers are facing and analysing possible export opportunities.

The last category of data required is on the financial performance of growers and the key factors impacting on their costs of production and ultimately their returns.

Mr James said this data was being used by the industry to form policy and also to show growers what is likely to be a key driver in their profitability, both now and into the future.

"The data allows the industry a framework for effective contribution to policy formation, whether it be to do with labelling laws, import competition or other crucial issues facing the industry.

From an individual grower point of view, the data helps to identify trends or provide options that may enhance their profitability," he said.

In his role, Mr James sits on a number of industry committees to provide the economic knowledge that is crucial in determining the direction of industry investment.

His role also includes contributing to industry development courses, and communicating economic summaries, evaluations and comparisons through various industry publications such as *Vegetables Australia* and the *AUSVEG Weekly Update.*

Achievements of year one:

- Improved and expanded data now available on the industry.
- Broadened growers understanding of economic issues beyond the farm gate.
- Economic analysis provided to support industry policy positions.
- Communicating with growers through presentations, articles for industry magazine and involvement in industry committees.

Areas for development in year two:

- Focus on vegetable growing as a business and the need to generate profitable returns on capital.
- Market access issues.
- More intensive use of data to assist industry development.
- Use of economic expertise to assist other researchers in enhancing the development of the vegetable industry.

Consumers and Markets

The Consumers & Markets sub-program is managed by freshlogic, a market analysis and consulting firm specialising in food and agribusiness based in Victoria. This component of the Vegetable Industry Development Program is designed to help growers understand the various distribution channels that service vegetable consumers and how they can be best influenced and managed to the growers' commercial advantage.

Importantly, the program has profiled in detail consumer behaviour in relation to the buying and preparing vegetables.

In the first year of operation, the Consumers and Markets sub-program has completed a number of tasks that have provided growers with a better understanding of markets and consumer behaviour.

Director of freshlogic, Martin Kneebone said that all available vegetable market data has been consolidated, which had led to the development of a vegetable market model used in the creation of quarterly market reports. This work has confirmed that the growers are supplying a retail fresh vegetable market with an annual value of $5.8 billion.

"This model defines the vegetable market size in volume and value, by state and by vegetable category, providing growers with a view of the market they previously haven't had," he said.

"This is a great platform for the project, as it means for the first time we have the capacity to align the volumes and values that flow through the vegetable supply chain, with the vegetables consumed at household level," Mr Kneebone said.

Informing growers

Through linkage with the specialised consumer panel, Mealpulse™ which receives 15,000 consumer responses per annum, the industry now has access to detailed data on consumer behaviour in relation to vegetables, Mr Kneebone said.

Market information has been flowing out to growers through the weekly *Veginsights* newsletter.

The newsletter collates and reports on weekly market variables and includes key findings from the consumer panel such as vegetable wholesale prices, weather patterns, retail vegetable promotional activity, as well as drawing insights from other vegetable related news internationally.

Each weekly edition of the newsletter is emailed to a growing database and is then made available on the AUSVEG website for registered members.

Another output of the program in year one has been the publication of two comprehensive quarterly market profiles, for Q4-2009 and Q1-2010, which have defined settings for how the market works and profiled the impacts on vegetable trading conditions and market values.

As an example of the data available through the program, the most recent report profiled household consumption trends (reflected in the graph below), showing the changes in household vegetable spending over the two quarters and how the more affluent younger singles and couples have increased their vegetable expenditure in the first quarter of 2010.

The frequency and content of these information outputs will be constantly reviewed and adjusted if they can be improved according to Mr Kneebone.

"Now that the program platforms for data collection and the tools for analysis have been established, the focus will move to packaging and parcelling the findings so they can be used by growers." Mr Kneebone said.

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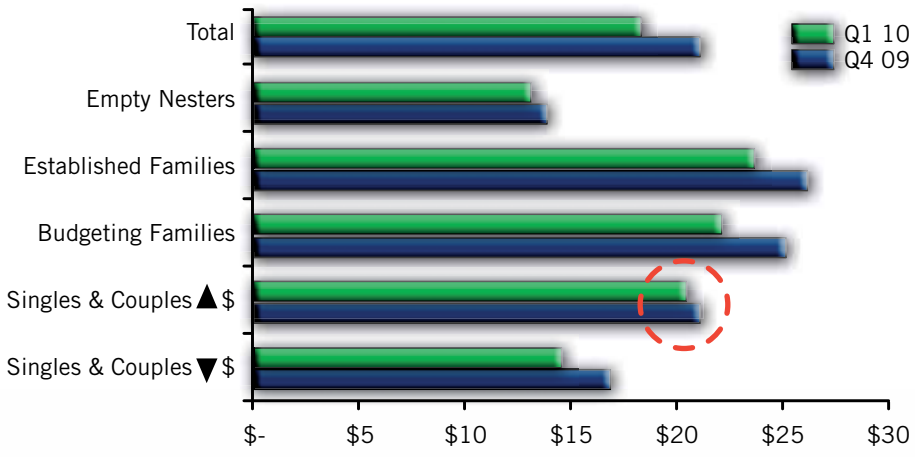
Weekly vegetable spend per household segment



People Development

The People Development sub-program aims to foster the skills and capacity of growers and other stakeholders within the vegetable industry. Led by Dianne Fullelove, the program is based on increasing networks between growers with a view to developing leadership and business skills for individual growers and the industry as a whole.

Ms Fullelove believes a number of the programs developed under the banner of people development are having an impact in the vegetable industry.

One such program, 'Growing Business', is a business skills program designed to assist vegetable growers to maximise their businesses potential.

It includes information on financial management, managing staff, risk assessment and business planning. Growing Business will be delivered in Bowen QLD and Virginia SA with funding through the federal Enterprise- based Productivity Places Program. "The first of these workshops will be held in November, continuing through to 2011," she said. At the moment we also have two workshops registered with FarmReady, which provides funding for growers to attend these workshops," Ms Fullelove said.

A workshop on 'Managing staff' will be held in Devonport in Tasmania from 5-6 October and growers are encouraged to register their interest. Another key component of people development is the Growing Leaders program, which has just finished for 2010 after a final workshop and graduation ceremony was held in Canberra at the beginning of September.

Growing leaders

The program aims to develop future leaders and Ms Fullelove said its impact can be measured by the number of graduates from the previous program who are now in leadership positions within the industry.

"Another indication that we are having an impact is with the Nuffield scholarships. We have four vegetable growers going through for the final national interviews. The four candidates are of an extremely high calibre, which shows we are developing future leaders in the vegetable industry"

Leadership activities in the vegetable industry are supported by a mentoring program, "Mentoring Future Leaders." The program provides a network of support for leadership graduates to apply their skills in business or industry roles.

Individuals interested in becoming a mentor or seeking mentoring support are encouraged to contact Dianne Fullelove on 0413 101 646 or email: diannefullelove@optusnet.com.au.

Integrated Pest Management

The Integrated Pest Management (IPM) Coordination sub-program began in April 2010 and is in the early stages of its role to plan, coordinate, monitor and support the development and adoption of best practice IPM technology.

At this stage the sub-program is a 12-month pilot project, which involves reporting to the program's National Coordinators and close liaison with the InnoVeg sub-program, to ensure that resources are identified and packages are developed that meet the high priority needs of the vegetable growing regions.

The program will also work closely with the Knowledge Management sub-program to ensure relevant resources and tools can be accessed via the AUSVEG website.

The IPM team is headed by project leader, Lauren Thompson, and contains a number of experts for the many different fields covered by the program.

According to Ms Thompson, there is a perception in the industry that a huge amount of funding has been attributed to IPM and little is known about the outcomes of these projects.

"The outputs of these projects aren't readily available, so we need to work closely with the Knowledge Management team to ensure the research outcomes are available on the website," she said.

"Because the sub-program is a 12-month pilot project, it is about laying the foundations to ensure the growers reap the benefits of IPM research in their businesses."

Three major aims of IPM sub-program

1. Consolidate and coordinate IPM investment for the benefit of the Australian vegetable industry.
2. Enhance the opportunities for market access while consolidating profitability and sustainability within the vegetable industry supply chains.
3. Develop IPM packages and tools for the vegetable industry (using results from the latest R&D) and facilitate their uptake within industry.

Knowledge Management

The Knowledge Management sub-program is led by Mr Steve Spencer, also part of the team at freshlogic. In its first year the program has undertaken a major information gathering task, compiling Research and Development (R&D) outcomes in a manageable and more accessible location.

This process has resulted in the development of a new AUSVEG website, now operational with a function to allow growers to access R&D outcomes in the form of user-friendly search engine.

"Our main priority in our first year was to build a comprehensive database of key R&D outcomes, ensuring they were in a summary format so growers were able to more easily understand their outcomes and find solutions to their problems," Mr Spencer said.

"We aimed to build a platform in a robust, flexible structure which is durable and will be relevant for many years and that is readily accessible by growers, researchers and other industry participants." The platform will house R&D and other technical and extension materials that are of practical use on-farm.

The second element of the Knowledge Management team's work was to design and develop a suitable website platform that matched the industry requirements and the requirements of AUSVEG as the peak industry body.

In the future

Mr Spencer explained that now that the website was built and running, the focus had shifted to building the information recources and improving the function of the website.

"Our role is to essentially interface between the other sub-programs of the program, ensuring the new materials and results that are coming out of those programs are accessible to industry," he said.

"We will also continue to develop the search engine and improve the depth and usefulness of that resource."

"Over time, more practical materials and aids will be added to the platform."

> *i* To provide feedback or search for R&D outcomes visit: www.ausveg.com.au

InnoVeg Update

The InnoVeg sub-program formally commenced in April 2010 with RMCG contracted to undertake the development and coordinate the delivery of the program.

Since commencement, the RMCG team (Anne-Maree Boland, Kristen Stirling, Charles Thompson and Doris Blaesing) have been working with other sub-programs to determine opportunities for development of packages of information and their delivery to industry.

A comprehensive discussion paper has now been completed which facilitated the development of the InnoVeg sub-program strategy.

This paper includes an analysis of:

- The demographics and production value of the Australian vegetable industry.
- Identified industry needs from 2008 industry surveys.
- Industry development models used in other primary industries.
- Current extension theory and knowledge around Practice Change.
- A proposed development model for the InnoVeg sub-program.

Consultation with key stakeholders was the next step and this occurred across Australia in May and June of 2010. This consultation was designed to understand regional needs and priorities, determine the activities undertaken by state associations/organisations and identify potential InnoVeg delivery partners.

"One of the major findings was that the needs of different regions and states were different and any strategies need to be region specific," Ms Boland said.

A paper summarising the outcomes from the state consultations has been completed and includes a 'blue-print' for the InnoVeg program. It details possible sub-projects and potential development packages and will be finalised once the delivery partners have been selected.

Activities for next 12 months

A draft 'blue-print' will be developed further with a final suite of sub-projects listed and described.

Ms Boland said the 'blue-print' will detail the proposed activities (what information packages will be developed and how they will be delivered).

A number of industry packages will be developed and delivered in regions by identified delivery partners.

To date, this has involved reviewing and assessing currently available tools and resources in conjunction with the Knowledge Management sub-program.

"All these processes are designed to get the latest findings out to growers, making sure growers are aware of how to access information that can improve their businesses," Ms Boland said.

Seventh sub-program approved

A seventh sub-program of the Vegetable Industry Development Program: The Collaborative Industry Organisations sub-program, is currently pending consideration by HAL regarding its commencement date, but has been endorsed by the Vegetable IAC. The program will involve engagement between vegetable growers and their state vegetable bodies to deliver information and products from the other sub-programs of the VIDP to the key vegetable growing regions of Australia.

A great farming family

After being crowned Grower of the Year for 2010, Jim Trandos spoke to *Vegetables Australia* about his newfound recognition, the highs and lows of life on the farm, and the family he credits with his success, writes David O'Neill.

The profile of Western Australian grower, Jim Trandos, has certainly grown since winning the 2010 Grower of the Year Award at the AUSVEG National Convention. But the countless articles, magazine spreads and newfound recognition hasn't changed his perspective on what it really takes to be successful in the vegetable industry.

It was clear in his acceptance speech, and has been a common theme in the many interviews conducted with Mr Trandos since, that the individual honour doesn't sit too well with the humble sweet corn and bean grower.

Instead, he is keen to shift the focus to his family. For as he explained, he is just one part of the unique business that trades as Trandos Farms.

Now into its third generation, and based across three locations in WA, the family's heritage in growing vegetables dates back to 1939.

According to Mr Trandos, winning the prestigious award had been great for all the family; his father and uncle who took over the business from their father, and his brother Arthur and cousin Michael, all of whom play a pivotal part in the success of Trandos Farms.

"We've each got our role in the business, and no one is more important than the other," Mr Trandos said.

"It is quite humbling the response we've received from other growers, co-operatives, and the people we do business with."

"It was great for my dad in particular, who was there on the night and who has done a lot for the industry and has always had its best interests at heart. I don't think of it as an individual honour, there are very few people in this industry who are doing what they're doing without a huge amount of support from their family."

> "We've each got our role in the business, and no one is more important than the other."

Following the sun

Trandos Farms' venture north to Broome has been well-publicised and played a major part in Mr Trandos' win. Unable to source quality produce and sufficient volume from existing northern growers, it was out of necessity that the family took the plunge and began growing sweet corn in the red soils of the Kimberly region.

"In order for us to truly specialise in what we were doing, which was corn and beans, we had to follow the sun and commit ourselves to a farm, take the risk, bite the bullet and hold the responsibility for our future in our own hands," Mr Trandos said.

The search began for land, that was accompanied by a sufficient

Photos provided by vegetablesWA

continued over page

water supply and a climate that provided viable conditions.

Despite a number of challenges in the initial years that impacted on the business financially, the risks were slowly rewarded when Trandos Farms joined forces with melon producers, Roper River Agriculture. Together they purchased Shelamar station, 200km south of Broome. The partnership, which sees melons grown on one side of the 8000 hectare station and sweet corn on the other, means that some resources can be shared.

This has allowed the business to overcome some of the logistical headaches that are inevitable with operating a remote property.

While visitors to the property fall in love with the contrasting scenery of fresh green crops growing out of the brilliant red soil, for Mr Trandos, it is the commercial appeal of the farm that is far more important.

"People see the red dirt, and crops seemingly growing in the dessert and get caught up in the romance of it all, but I can't look at it that way. I look at it is as a farm, a commercial proposition, and a big financial risk," Mr Trandos said.

"People see the red dirt, and crops seemingly growing in the dessert and get caught up in the romance of it all, but I can't look at it that way. I look at it is as a farm, a commercial proposition, and a big financial risk."

Good quality water, soil that retains that water and a climate ideal for growing sweet corn has seen the property develop and prosper over recent years. According to Mr Trandos, the business has also been blessed by a hardworking and enthusiastic farm manager at Shelamar.

"Will Burnheim, a young guy out of New South Wales with a wheat and cattle background has done a great job over the last couple of years, and what he lacks in experience, he certainly makes up for with enthusiasm," Mr Trandos said.

With the operation now functioning without constant costly visits, Mr Trandos dedicates most of his time to managing the product lines and product development side of the business on his southern properties based in Wanneroo and Guilderton.

Further expansion is already on the horizon for Trandos Farms, following the purchase of another property in Gingin, a former sheep farm currently being transformed into a market garden.

And while their growing capacity is directly linked with

their viability, according to Mr Trandos quality is still the most essential component of achieving success in vegetable production.

"The bottom line is you have to produce a good product," he said. "You can put all the infrastructure in place, use the latest machinery and you can market your product endlessly, but all people really care about at the end of the day, is the quality of your product."

"You must produce a good product consistently throughout the year and prove to be reliable."

Family first

Not only has Trandos Farms managed to grow quality produce over a number of years, but they have managed to stay a tight-knit family despite the demands that come with operating a business in a challenging industry.

"We are very lucky that we are all still involved in the business and all have a role to play," said Mr Trandos "I'm not sure if it's because we've always had some wise heads around who make sure any disputes were solved pretty quickly, but we are unusual in that there are very few disagreements."

Despite the success of the business, and the family connection to growing vegetables, Mr Trandos admits as a young man he found the work demanding, and acknowledges that it was a pretty brutal upbringing.

"I worked from the knees up and never really appreciated farming as much as I do now explaining it to my teenage daughter and realising how much is involved in growing vegetables," he said.

"There is so much to it. We have to decide on the variety, grow and nurture the seed, and then on-sell and market the product. In that process we have to consult agronomists, ensure our accreditations are in place; we have finance people involved and freight to consider. I enjoy sorting through the different challenges that are all part of growing vegetables."

Having industry representative organisations functioning well has a significant impact on growers, according to Mr Trandos.

"The fact that bodies such as AUSVEG and vegetablesWA are being managed well gives growers enormous support and confidence that their interests are being looked after," he said.

Finally, we asked Mr Trandos about the level of pride he must feel to have had continued success as a family business; to have overcome the challenges as a family and to be enjoying the success together.

In response, Mr Trandos again spoke with humility, redirecting this praise to countless farming families around the country.

"Australia is made up of fantastic farming families, regardless of what they grow or produce," he said.

"I know how difficult it is for farming families, and I'm not only proud of my own family, but of all those great Australian families still finding a way to make a living from farming."

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Preparing to export

The vegetable industry is on the front foot to address the often complex requirements to access potential export markets. Through the development of residue management strategies and action plans, export opportunities and possible restrictions for 11 key commodities can be more easily understood.

Export of Australian horticultural commodities can be damaged by failure to meet the standards set by countries importing our produce. Such breaches can also potentially impact on the livelihoods of growers, and affect access to international markets for the entire industry.

Kevin Bodnaruk, from AKC Consulting, is leading a Horticulture Australia Limited (HAL) commissioned project, funded by the National Vegetable Levy with matched funds provided by the Australian Government, to address the issues of residue management and export compliance. These elements were highlighted as issues warranting investigation to maintain and expand export markets, an area considered an avenue for growth in the vegetable industry.

"Exports markets are seen as one way to offset the impact of imported produce, which appears to be on the rise," Mr Bodnaruk said.

"Overseas markets can potentially become revenue streams for growers, that can add value and increase their profitability."

Addressing the problem

According to Mr Bodnaruk, the project was established to examine potential issues of residue non-compliance in export markets.

In the short-term, the project is attempting to identify potential pest management alternatives, which could aid in achieving compliance with standards set by importing countries.

"Different countries have different regulations, or requirements on imported produce, and these regulations can vary from commodity to commodity," Mr Bodnaruk said.

"Because of different use patterns what might be approved under Australian standards may not pass Maximum Residue Limits (MRL) in importing countries. So it is important to know where disparities sit and why."

Examining export issues for 11 key commoditites

- beans
- beetroot
- broccoli
- cabbages
- capsicums
- carrots
- cauliflower
- celery
- leeks
- lettuce
- sweet corn

The project has sought to address these issues, firstly through the collation of information on current pesticide standards to identify any disparities. Secondly, it is also comparing regulations across a number of existing and potential international markets including Japan, Taiwan, Malaysia and throughout Europe.

Mr Bodnaruk said that is was important to determine potential alternative options that could facilitate compliance in nominated export markets.

"It is important to determine what gaps exist in current data and therefore what research might need to be done to fill those gaps," he said.

From a longer-term perspective, the project is assessing current options against potential regulatory pressures (both domestically and

continued over page ▶

internationally) that could affect long-term availability.

"Major regulatory bodies, such as the European Food Safety Authority, the Australian Pesticides and Veterinary Medicines Authority (APVMA), the US Environmental Protection Authority and standard setting bodies such as the Codex Alimentarius Commission (Codex), play a key role in the export debate through their reviews of new and existing chemicals," Mr Bodnaruk said.

"Understanding the issues arising from these reviews can be of value in identifying those chemicals that may be problematic, or provide solutions from a compliance perspective into the future."

Mr Bodnaruk explained this element as the need to be proactive, as by monitoring international standards this ensures Australian producers are not disadvantaged in future export opportunities.

"Any potential alternatives that are identified that could be pursued to help address domestic needs as well as export compliance are provided to Mr Peter Dal Santo who coordinates minor-use within the vegetable industry," he said.

Progress

This project is not due for completion until 2011 but has already made significant gains in understanding the complex requirements involved in exporting vegetables.

Liaising with chemical manufacturers, and international and domestic regulatory organisations, AKC Consulting have taken a thorough approach to the research, which has led to data being gathered on all of the major pests and diseases of the 11 commodities and the various chemicals approved for their treatment.

The industry now has at its disposal a listing of Maximum Residue Limits (MRLs) for the nominated export markets for the 11 different crops, and can see what levels need to be reached to achieve compliance in these markets.

"We have undertaken residue risk analyses by comparing Australian MRLs with those of a range of importing countries and are now in a relatively good position to understand the MRL requirements of our key trade partners," Mr Bodnaruk said.

A key outcome of this project has been the ability to identify alternative options that could be pursued from a long-term strategic pesticide access perspective, which can then feed into other industry funded work such as Minor-Use (MT10029) and IPM Co-ordination, Mr Bodnaruk explained.

Due to the strengthening Australian dollar, the opportunity to export may not be as appealing as it once was, but according to Mr Bodnaruk the data now available will provide the industry with a number of benefits both now and in the future.

"If the dollar drops, or niche markets are uncovered overseas that provide Australian growers with a window of opportunity, the industry now has in place relevant data that can help them take advantage of these potential export markets," Mr Bodnaruk said.

THE BOTTOM LINE

- To address the often complex requirements stemming from potential export markets, residue management strategies and action plans have been developed for 11 key commodities.
- The industry now has at its disposal a listing of Maximum Residue Limits (MRLs) for the nominated export markets for the 11 different crops, and can see what levels need to be reached to achieve compliance in these markets.
- The project identifies potential pest management alternatives which could aid in achieving compliance with standards set by importing countries.

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Growing with EnviroVeg

After 40 years growing vegetables and witnessing a generation of farming practices come and go, Maureen Dobra is still excited by the benefits of joining the EnviroVeg Program.

Environmental Management was hardly a concern when Mrs Dobra and her husband, Barry, began growing vegetables almost 40 years ago. However, a sustainable approach to farming is now one of the cornerstones of their business: The Loose Leaf Lettuce Company Pty Ltd. Reversing the often customary practice in the horticulture industry, Mrs Dobra and her husband, who were originally onion and carrot growers, actually inherited the company from their daughters, Deanne and Simone.

The business, which operates on two farms in the Gingin region North of Perth in Western Australia, began as a sideline to meet a client's request for tiny lettuce leaves. The concept quickly developed into a thriving business, one that is now harvesting upwards of four tonne of leaves each day in peak season.

The Dobra's were part of a pioneering group of growers who adopted the EnviroVeg Program after its launch more than three years ago.

Becoming involved was an obvious choice according to Mrs Dobra, who said the philosophies of the program aligned with the values of their business.

"We wanted to be better stewards of our land, and wanted our consumers to know we are taking care of it and farming sustainably," she said.

"We wanted to play our part in changing our planet, improving the management of our waste, our water, our chemical use, all that sort of stuff."

Joining the program in its early stages was also an appealing factor for Ms Droba, who said they were able to grow with the program.

"It was great to start on the ground floor of a program, a program that we knew would become more important in years to come," she said.

"If you are involved at the beginning, you are more aware of developments as they happen."

Though there are many benefits that come with joining the EnviroVeg Program, keeping a tidy farm was a simple advantage that made the farm easier to manage.

"As well as benefiting from sustainable practices, we found the result was a neat and tidy farm. You want your house to be tidy, well it is the same with your farm. People are happier because everything is in its place and the place is definitely easier to manage."

Water wise

The Loose Leaf Lettuce Company, like many growers across Australia, need a plan to improve their water use efficiency.

"One of our major issues is water and with EnviroVeg our water efficiency is a lot better. We are not drowning or water logging our land," Mrs Dobra said.

"The chemicals and fertilizers are therefore more accurately sprayed and we are not draining our future water resources."

In analysing germination and yields on the property she discovered that the current sprinkler system in use was not spraying in a uniform way and would often leak. After changing the system to a more uniform spray, this reduced the leaks and increased germination and yield.

Mrs Dobra also found that they were over-irrigating on the property. Working with the WA Department of Agriculture, the Loose Leaf Lettuce Company installed Lysimters, which is a device for collecting water from the pore spaces of soils and determining the soluble content that is removed in drainage.

As well as the over-use of water, they found that nutrients in soil were often leaching out of the root zone. This resulted in a change in water use practices and irrigating only twice a day.

Remaining under the water allocation set by the relevant authorities, Mrs Dobra said would always be a constant challenge for the business.

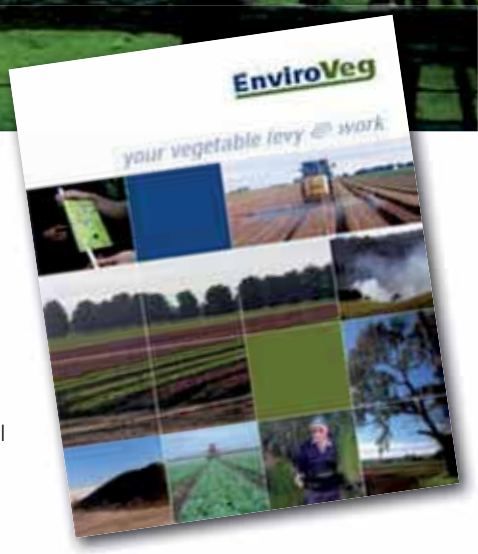
"You need water for long-term sustainability, and through the EnviroVeg Program we are confident of remaining under our allotment going forward."

Agronomists

Under the guidance of EnviroVeg, the Dobra's have utilised the expertise of an agronomist, who on a weekly basis measures the nitrogen levels in their soil and ensures the correct amount of fertiliser is being used.

"40 years ago we didn't wear boots and gloves or other safety equipment, we just pretty much did what our parents told us to.

Using an agronomist has certainly cut our fertiliser down and made us think more about what we are putting into soils," Mrs Dobra said.



Farm planning

Despite having many environmental practises already in place, Mrs Dobra said there was always room for improvement.

"We plan to adopt more practices on our second farm and make sure it is operating in the same sustainable way our major farm is," she said.

"We have started planting native bushes on our boundaries, after recognising that areas of natural bushland on our main farm attract birds and wildlife that help control pests in our crops.

"Constructing gravel roads along our fence lines in place of fire breaks will also help protect the soil and stop weeds growing and spreading on our farm," she said.

"We will also be repairing our fence lines so we can separate our land from kangaroos and other wildlife."

Benefits

Mrs Dobra urged other growers to join the program and reap the rewards.

"You might think you're not doing lot in terms of looking after the environment, but when you stop and look at, you actually find you're doing quite a lot."

"People might look at the paper work that needs to be complete to begin the program, but once the template is done, it is very easy to complete each year."

"You will be very surprised by what you already have in place that is contributing to sustainable farming."

Mrs Dobra described the benefits as having a two-fold affect, increasing productivity and profitably, but also decreasing the environmental impact of farming.

"Implementing the EnviroVeg practices is financially beneficial and if you get results from these practices then you will be more inclined to put the profits back into your farm," she said. "Profitability and sustainability are definitely linked."

Finally Mrs Dobra identified consumer attitudes as an area where EnviroVeg can have an impact on your business.

"Consumers are becoming more aware of environment issues, and simply having the EnviroVeg logo on your packaging may persuade consumers to buy your product over someone elses," she said.

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Janet Elliot, Loose Leaf Lettuce Company

On the road to promote

EnviroVeg has gone on the road in recent months to spread the word about benefits growers can experience by joining the program, writes AUSVEG

The EnviroVeg Program has been reaching out to growers with two information sessions entitled: *Managing for Healthy and Productive Soils* completed in recent months.

The first of these sessions was held at the Virginia Horticulture Centre in Virginia, South Australia on Friday, 23 July. Dr Ian Porter, the Principle Research Scientist in Plant Pathology with the Victorian Department of Primary Industries (DPI) was the keynote speaker for the session.

Dr Porter spoke to the assembled growers on soil health projects run by the DPI that seek to increase productivity, through improved soil health management techniques.

Senior representatives from Elders, Boomaroo Nurseries and the Department of Immigration and Citizenship also spoke at the session, while AUSVEG CEO, Richard Mulcahy, underlined the transformation of AUSVEG and the new direction of the organisation.

A second session followed in Bundaberg on Monday, 9 August. The turnout was encouraging with over 50 people in attendance. Mr John Bagshaw, Senior Extension Horticulturalist with the Queensland Department of Employment, Economic Development and Innovation (DEEDI) delivered the keynote address.

> “The turnout was encouraging with over 50 people in attendance.”

Mr Bagshaw's presentation focused on the role that organic carbon plays in maintaining healthy soils and he emphasised the importance this has on yields.

Mr Rohan Davis from Incitec Pivot also addressed the audience, discussing the nitrification process and the optimal application of fertilisers for increased yields.

At both sessions AUSVEG Environment Coordinator Darcy Boyd presented and outlined the benefits of the EnviroVeg Program. He explained how the programs principles can be used by growers to make positive changes that are both

AUSVEG CEO Richard Mulcahy speaks at the Virginia EnviroVeg seminar

Huge turnout for the EnviroVeg seminar in Bundaberg

EnviroVeg

sustainable farming practices, and the Environment Coordinator, Darcy Boyd.

economically and environmentally effective.

An overview of the EnviroVeg Manual was also provided at the sessions and practical applications that growers can implement within the Soil & Nutrient Management section of the manual were discussed.

This section includes simple practices such as adding mulch to soil beds to reduce evaporation and improve soil structures, through to the more involved aspects of testing soil health for salinity, sodicity and acidity.

Future information sessions are planned for other key growing regions in Australia, as EnviroVeg seeks to engage growers and gather support for the program. Once involved in the program growers will be able to access the latest information on soil health and other environmental issues.

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Environmental Strategy for the Vegetable Industry

AUSVEG to provide leadership and direction with the formation of a three year environmental strategy.

AUSVEG is currently in the process of writing a three-year Environmental Strategy for the vegetable industry. As the peak industry body representing the interests of Australian vegetable growers, AUSVEG will provide leadership and direction on this important issue for the industry.

Developing an Environmental Strategy is crucial to the promotion of environmentally responsible farming practices that do not have a negative effect on the profitability or viability of Australian vegetable growers.

EnviroVeg will be a key driver in the implementation of this strategy once it is finalised.

The Environmental Strategy will be released to the vegetable industry later this year.

Feedback on the strategy will be invited prior to its release and a Grower Survey will be initiated following its release to seek and gauge the uptake of the strategy and the EnviroVeg Program in general.

Proactive approach to CLA

Currant lettuce aphid (CLA) is already a major pest in the lettuce industry just four years after being discovered in mainland Australia. Until now little has been known about its resistance to chemicals, but new Australian research is certain to change all that, writes Karen Shaw.

New research into Currant lettuce aphid (CLA) has developed a methodology to monitor CLA's resistance to one of the major chemicals being used in the field to control it. According to Senior Research Scientist, Dr Grant Herron, the study will provide baseline data for resistance testing, giving growers more confidence when using this chemical in the future.

Dr Herron is a specialist in insecticide resistance and management for Industry and Investment NSW. This research was commissioned by Horticulture Australia Limited (HAL) and funded by the National Vegetable Levy with matched funds provided by the Federal Government

Dr Herron said that the results of the research were vital to the industry. "This gives us the first real step to an understanding of measuring resistance against the most common chemical currently being used against CLA-imidacloprid (Confidor®)."

As well as lettuce, CLA also affects chicory, endive and radicchio. It was first detected in Tasmania in 2004 but quickly spread to become a threat to crops in all Australian states by 2006. Unlike other aphids, this particular species colonises in the lettuce hearts making them unfit to sell. Living in the heart also makes spraying and chemical control difficult.

Dr Herron said that many Australian growers were controlling CLA by using a prophylactic insecticide treatment—which meant treating and spraying everything as a seedling drench. "This kills all insects, the good ones and the bad," he said.

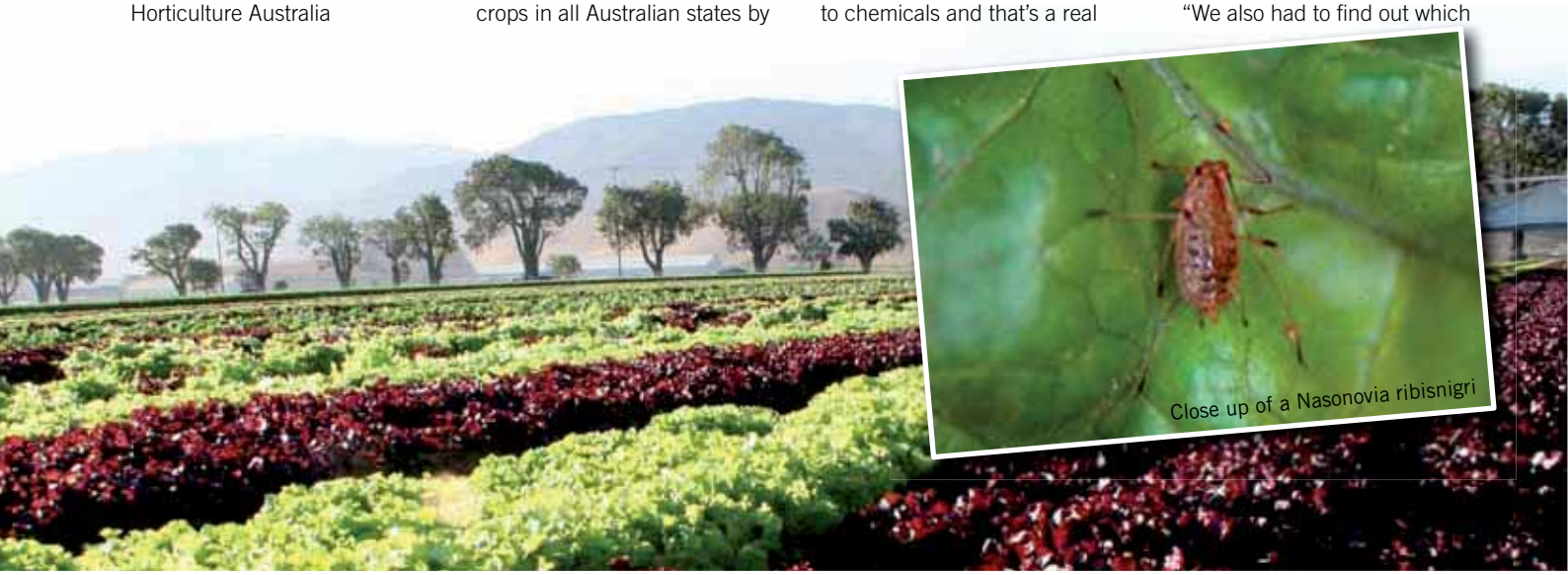
"We also know from experiences overseas that CLA can quickly develop resistance to chemicals and that's a real danger for us here too."

"Because the pest is so new to Australia, we've had little research on the aphid itself and more importantly, had no knowledge or tests available to track its resistance to the chemicals our growers are using."

Dr Herron said the first part of the trial involved establishing and growing aphids in culture, and collecting different strains of CLA from stocks around the country.

"One of the difficulties of the project was keeping them alive in captivity long enough to use in the research," he said.

"We also had to find out which



Close up of a Nasonovia ribisnigri

lettuces were the best performers to use in the trial. CLA susceptible lettuce was sourced from wholesale seed distributors and growers as well as commercial retailers. The experiment evaluated Cos, Iceberg and Butter varieties for use with CLA."

"But we found that the Cos lettuce was best; it had a tougher and larger leaf and better veins on which the aphid could feed."

The research involved cutting a small disc-shaped piece of lettuce. This was then placed onto a bed of three ml of cooling agar in a 35mm petri dish. Dr Herron explained that the leaf actually sealed itself to the agar, and this provided a flat surface on which the aphid could feed and also meant the pest couldn't hide underneath it.

Dr Herron then tested six different leaf samples and each leaf was sprayed with a different concentration of Confidor, except for a control leaf, which was only sprayed with water. The aim was to monitor the insect's response to the specific concentrations of the chemical and how quickly it controlled the insect over time. This was then compared with the leaf in the control dish.

The study's final report states that the data was sufficient to interpolate a discriminating dose for the purpose of resistance monitoring at each withholding period tested.

Dr Herron said there were many difficulties in this initial research project, but was happy with the progress in this area of study.

> "One of the difficulties of the project was keeping them alive in captivity long enough to use in the research."

"It was hard to keep the CLA alive in captivity for long enough to undertake the experiment and we also had difficulty finding and growing susceptible lettuce varieties," he said.

"However, the results from this project are important and show that we are on the right track to developing a methodology to measure CLA resistance to imidacloprid (Confidor®). I'm certain that the knowledge we now have will result in better outcomes in future."

"According to Dr Herron it was important that this work continued, to refine the methodology, and also to look at this pest's resistance to other chemicals that are currently on the market, such as dimethoate (Rogor®) or new ones about to be released.

He believes that growers need to tackle this pest in the field using a combination of the currently available methods.

"A few growers have started using Integrated Pest Management systems for control with varying results," he said.

"But one of the best options is to plant CLA resistant lettuces and there are now quite a few available on the Australian market."

THE BOTTOM LINE

- Research has been conducted into developing resistance methodology for one of the major chemicals used to treat Currant lettuce aphid (CLA).
- Data gathered in trials was sufficient to interpolate a discriminating dose for the purpose of resistance monitoring at each withholding period tested.
- Further work can now be undertaken and compared to this baseline data.

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Fascinated by pesticides

Chief Executive Officer of the Australian Pesticides and Veterinary Medicines Authority, Dr Eva Bennet-Jenkins, speaks to *Vegetables Australia* to set the record straight about how the organisation operates.

Dr Eva Bennet-Jenkins is not your average CEO. At the helm of the Australian Pesticides and Veterinary Authority Medicines Authority (APVMA) for the last three years, she admits to finding the work of the APVMA and the world of pesticides and their regulation fascinating.

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

The APVMA's role is to independently evaluate the safety and performance of pesticides and veterinary medicines, and it was at the recent AUSVEG National Convention, that Dr Eva Bennet-Jenkins took the opportunity to clarify the workings of the organisation.

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

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

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

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

Growers' best interests

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

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

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

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

Food Standards Australia New Zealand Amendment Bill 2010

An Australian Senate committee has urged the passage of legislation to hasten the setting of pesticide Maximum Residue Limits (MRLs). The Senate Community Affairs Legislation Committee supports the *Food Standards Australia New Zealand (FSANZ) Amendments Bill 2010,* which was introduced in Parliament 13 May 2010. It has been proposed that the *Food Standards Australia New Zealand Act 1991* be amended to enable the Australian Pesticides and Veterinary Medicines Authority to vary the Maximum Residue Limit Standard in the *Australia New Zealand Food Standards Code*.

Under the current arrangements, the APVMA, after registering agricultural or veterinary chemical products or conducting a review based on scientific evaluations, notifies FSANZ to incorporate the MRL variations in Standard 1.4.2 of the Code. The average time between notification from the APVMA and the MRL is approximately 12 months but can be even longer. Under the proposed legislation this time will be reduced to less than four months.

The new Bill will remove duplication of administrative processes, but the scientific assessment required to ensure the safety to human health and the environment remains unchanged. The Code will retain its current structure whereby no chemical residue in food is legal, unless there is a relevant prescribed MRL standard in the Code. MRLs are specific to the chemical product and to the produce on which the product may be used.

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

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

family we try to see whether we can extrapolate between the different leafy vegetables.

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

Data sharing

The three main things that the APVMA needs to assess when issuing a chemical permit, according to Dr Bennet-Jenkins, are: the Maximum Residue Limit for a food, efficacy and crop safety. During all the stages that are required to issue a chemical permit, Dr Bennet-Jenkins said that the needs of the grower are never forgotten, though she is aware that some growers view the APVMA as an impediment.

"The people who work at the APVMA do an enormous amount of work trying to help growers. They keep the growers needs very close to their heart.

There is a lot done at the international level, by urging global companies to remember the needs of small and minor commodity producers and their need to access new technology just as much as the needs of the major commodity producers," she said.

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

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

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

What can growers do?

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

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

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

Under proposed new legislation (see break-out box on page 44) the APVMA will be responsible for amending the Food Standards Code and for related legal processes.

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

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

"Industries in need of permits will need to factor in this time period as well as the time period that it takes for the APVMA to assess and issue the permit," she said.

"So put your application in at least 6 months ahead of when you want to use the chemical under the permit, so that the MRL will also be in place to allow sale of the produce."

"Make the system work for you."

The cost benefit of control

Researchers and extension officers from the Department of Employment, Economic Development and Innovation (DEEDI) believe the results of a recent study into the economic benefits of Controlled Traffic Farming (CTF), show that the innovative system can significantly reduce costs for growers.

For the past 18 months DEEDI has been working with vegetable growers in the Lockyer and Bremer catchments who are in the process of implementing a Controlled Traffic Farming (CTF) system, to evaluate the economic benefits of implementation.

The study has been undertaken as part of the broader DEEDI FarmFLOW project, which involves working with horticultural producers to improve soil and nutrient management practices for productivity and profitability gains, as well as minimising potential soil and nutrient losses off-farm.

CTF refers to maintaining machinery traffic in the same wheel tracks over consecutive crops. With this technique, research shows that soil and productivity may improve as crops are not growing in compacted areas. Soil structure, infiltration and water use are said to also improve and erosion risk may be reduced.

Machinery efficiencies are also believed to improve by trafficking permanently compacted wheel tracks. Global Positioning Systems (GPS) are often the key tool in CTF, to manage farm traffic and achieve accuracy in the alignment of wheel tracks.

Previous research has estimated that 20 per cent of tractor power is used compacting the soil, and 25 per cent goes into breaking up clods created by compaction.

Real benefits

To support the belief that CTF would bring about cost reductions for vegetable growers, a case study was launched based on a 80 hectare family-owned fruit and vegetable cropping business in the Lockyer Valley in South East Queensland.

The grower co-operator was concerned about the damage done to his soil through machinery traffic, particularly at harvest, and interested in improving the quality of the soil. The opportunity to reduce operations and inputs where possible was also motivation for implementing a CTF system.

While some benefits of CTF are now widely being accepted, the

> “The co-operating grower identified the possibility of achieving up to four per cent yield gain with a CTF system due to soil quality improvements.”

[Top and below] examples of compacted areas between crops

main aim of this research was knowing just how the technique affects the 'bottom line' for vegetable growers through improved farm operation efficiencies and reduced input costs.

According to DEEDI Senior Extension Officer, Dr Julie O'Halloran, the cost benefit analysis was directed by the grower, who had input into what was a practical and realistic approach to the practice changes and expected benefits from a CTF system. Data for the analysis was collected from the grower, who also had input into reviewing and auditing the analysis.

An initial investment of $71,000 to install precision GPS guidance systems in two tractors was required. This technology provided increased precision to help control machinery traffic. The grower then worked through the changes to the farming operations based on a controlled traffic system.

Two key analyses were applied by DEEDI Agricultural Economist Jim Page:
1) An analysis of machinery operations with or without CTF.
2) An analysis of crop gross margins with or without CTF.

Machinery operating costs and associated labour

Changing to a CTF system resulted in differences in the number, type and power requirements of machinery operations. Significant savings of $216.80 per hectare in fuel, oil, repairs, maintenance and labour, were found by using CTF. Simple return on investment in GPS guidance was estimated to be 37.6 per cent of variable costs and 26

Table 1. Reduction in fuel and carbon dioxide (CO2) emissions.

Tractor	Reduction in tractor hours per year with CTF (hours)	Fuel savings per year with CTF for each tractor (Litres)
Tractor 1 (82.4 pto kW)	184	5299
Tractor 2 (57.6 pto kW)	86	3798
Tractor 3 (29.6 pto kW)	92	580
Tractor 4 (24 pto kW)	71	501
Total reduction in carbon emission (kg/ ha/ yr)		344 kg CO2
Total fuel saving as a percentage		40.42%

continued over page

per cent of total costs.

Reduced Fuel Consumption

Reduced fuel consumption due to changes in machinery operations on the 80 hectare property was one of the key benefits of a CTF system identified in the study.

Results for the largest tractor used showed tractor hours reduced by 184 hours per year, thus saving an estimated 5000 litres of fuel. Even for the smallest tractor, the estimated reductions in tractor hours and fuel consumption were substantial. Carbon dioxide emissions were also reduced as a result of CTF on the 80 hectare property (see Table 1).

Machinery operation cost savings are the result of many small gains including reduced power requirements.

CTF reduces the area of compaction and tillage requirements, and elimination of some machinery operations may be possible due to GPS guidance technology.

Table 2. Gross margin gains with CTF

Yield gain	Average gain per crop ($/ha)	Allow for double crop ($/ha)	Sum of CTF gain for 80 ha double cropped farm ($/year)
0%	$122	$244	$19,540
1%	$318	$636	$50,904
2%	$498	$995	$79,609
3%	$725	$1,451	$116,050
4%	$926	$1,853	$148,215

> “Significant savings of $216.80 per hectare in fuel, oil, repairs, maintenance and labour were found through using CTF.”

Gross margins

The co-operating grower identified the possibility of achieving up to four per cent yield gain with a CTF system due to soil quality improvements. The analysis identified possible gross margin gains with a CTF system even without any yield increase (see Table 2).

THE BOTTOM LINE

- Researchers and extension officers from the Department of Employment, Economic Development and Innovation (DEEDI) have undertaken trials with Queensland growers to examine the economic benefits of Controlled Traffic Farming.
- Results show significant costs may be saved by using this technique including a decrease in the machinery power required and the flow-on effect this has on fuel usage.
- Growers involved in the trials have also identified the possibility of achieving up to a four per cent yield gain with a CTF system due to soil quality improvements.

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Reducing the listeria risk

Efforts to reduce contamination of leafy greens caused by the harmful bacteria Listeria monocytogenes have been strengthened by new research carried out in Victoria and Queensland.

Commonly found lurking in the refrigerator section among the soft cheeses, sliced meats and salads, the bacteria Listeria monocytogenes is a consumer's worst nightmare and a potentially deadly human pathogen. About 60 cases of *listeriosis* (caused by Listeria monocytogenes) are officially reported each year in Australia; with infants, the elderly, pregnant women and those with suppressed immune systems among the most vulnerable. Symptoms include fever, muscle aches, vomiting and diarrhoea, and up to a third of cases prove to be fatal.

Increasing concern worldwide about the risks associated with Listeria monocytogenes has emphasised the need to boost both vigilance and surveillance measures starting at farm level. However, a number of obstacles have been getting in the way of effective management.

Many Australian growers have no idea how this bacteria enters farming land to contaminate their crops, and remain equally as baffled when it comes to identifying reliable methods of reducing the incidence of Listeria monocytogenes in the field.

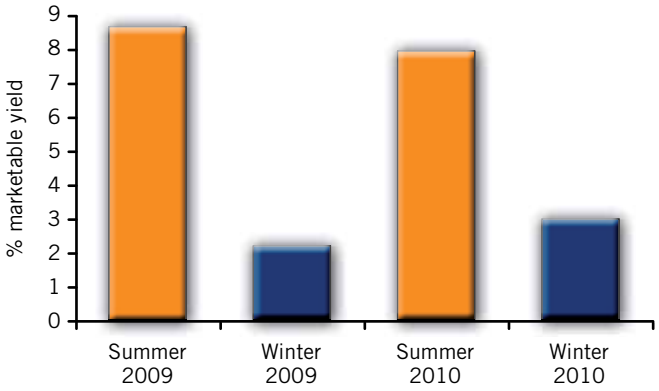
Global FS Senior Consultant, Dr Robert Premier, has recently completed a two-year study which has targeted both of these important issues.

His research has not only helped to pinpoint a possible source of the bacteria on Australia vegetable farms, but has identified possible measures to reduce the contamination in leafy vegetables and herbs.

Samples of produce, soil, water and manure were taken from vegetable growing sites in Victoria and Queensland.

After testing in both summer and winter for the presence or absence of Listeria monocytogenes, it soon became clear that the number of positive samples was higher in summer, when a majority of hay feeding takes place.

Table 1. Detection of Listeria monocytogenes according to the seasons



- Overall produce showed a higher rate of Listeria monocytogenes detection in summer than in winter

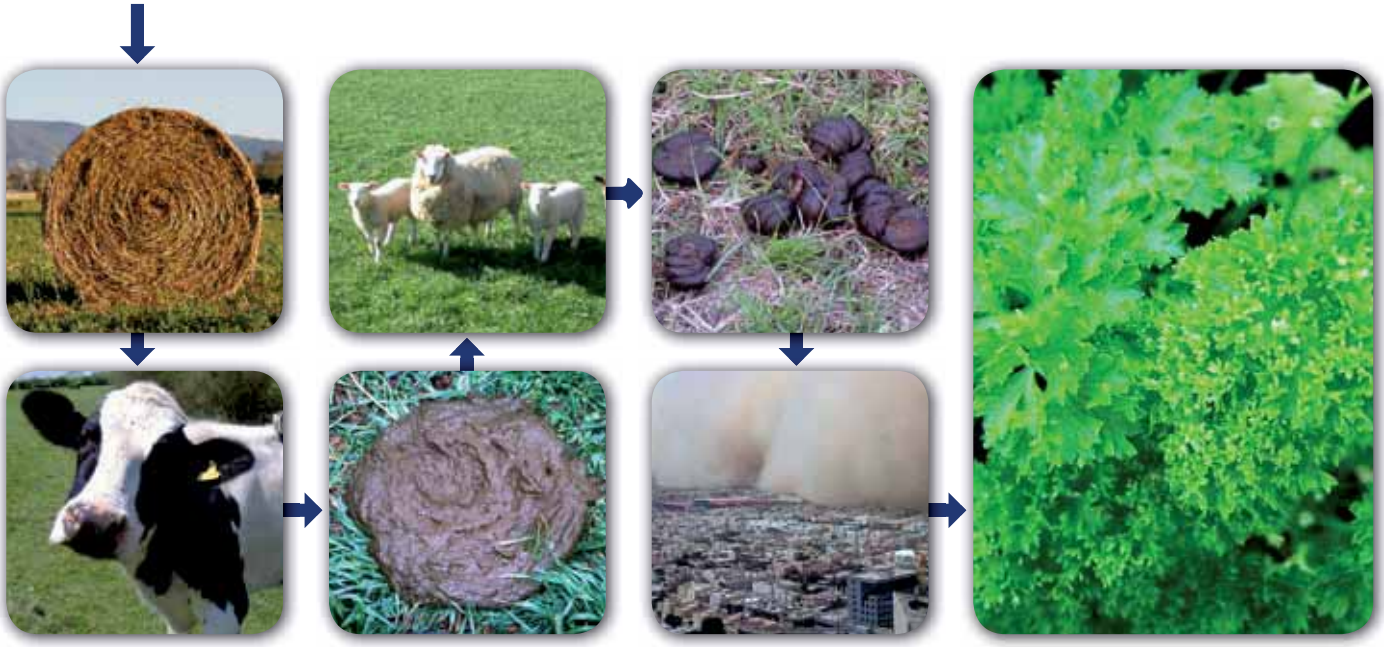
The testing also highlighted a possible pathway to infection, with anaerobic baled hay identified as a likely culprit.

"When the hay is fed to and ingested by ruminants, the Listeria monocytogenes passes through the animals without causing infection to them and remains trapped in their faeces," Dr Premier said.

"The faeces dries out in hot weather, and strong winds spread the dust particles carrying the Listeria monocytogenes long distances, where it then contaminates crops."

Table 2. The pathway of Listeria monocytogenes from paddock to plate

Listeria monocytogenes cycle



Leafy herbs and vegetables such as curly parsley show higher levels of detection than smooth leaf salad vegetables, such as cos lettuce, and Dr Premier advises growers to consider selecting varieties with fewer lobes in order to avoid trapping dust.

"There's no point worrying too much about nearby animals grazing on grass unless they are fed on hay; it is more a matter of avoiding irrigation before an extreme wind event, as wet leaves will attract dust," he said.

Growers are also advised to water immediately after strong winds in order to rinse the dust away from plants, and to preferably wait 48 hours before harvesting. Produce should then be placed in a turbulent wash system containing sanitised water.

"Simply rinsing off the dust by static dripping isn't thorough enough," said Dr Premier.

Supermarkets displaying due diligence have set very tight compliance specifications for vegetable growers in the wake of detections, and pre-testing of products for the presence or absence of Listeria monocytogenes is now a condition of supply. While there is no shortage of tests available, Dr Premier recommends that growers request an Australian-standard method, or a National Association of Testing Authorities (NATA) accredited equivalent, which specifically tests for Listeria monocytogenes and indicates the actual quantities of bacteria detected per gram.

"You need a test based on Australian standards so that it can stand up in a court of law and you need a test that has been shown not to give false positives or false negative results," he said.

"There are many strains of Listeria in the environment but only Listeria monocytogenes is pathogenic to humans so it is important to specify a test for this strain when sending produce out for testing."

In addition, not all isolates of Listeria monocytogenes are virulent and some may not cause disease in humans."

With further advances in research, Dr Premier believes that in the future, it may even be possible to test for virulent Listeria monocytogenes as opposed to non-virulent strains.

Information based on the findings of this project and recommendations for reducing the incidence of Listeria monocytogenes on produce before delivery to markets is being reproduced in an information fact sheet which will be available soon from AUSVEG.

> "Simply rinsing off the dust by static dripping isn't thorough enough."

This study was commissioned by Horticulture Australia Limited and funded by the National Vegetable levy with matched funds provided by the Australian Government.

THE BOTTOM LINE

- A recent project allows vegetable growers to understand the causes and source of Listeria monocytogenes which can be harmful and potentially fatal to humans.
- Outbreaks of infection were found to increase during summer with warmer temperatures prevalent.
- Strong winds which carry the virus in the particles of animal faeces have been determined as the source of contamination on vegetable farms.
- Several strategies have been suggested by researchers to stop outbreaks and ease the compliance specifications set by retailers.

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Aussie growers better placed

Data on the cost of production and rates of return on Australian vegetable farms, favourably compares to similar data produced on growers from the United States, writes industry conomist Ian James from the Vegetable Industry Development Program.

A paper entitled Australian vegetable growing farms: an economic survey 2007-08 was published by the Australian Bureau of Agricultural and Resource Economics (ABARE) in September 2009. Similar data on production costs and rates of return were also collected in the United States for 2004-06 and published in a paper by the US Department of Agriculture in December last year. Though the Australian data is more recent, comparing the two is a valuable exercise to show Australian growers how they compare with their US counterparts.

Cost structures

Comparisons show that the cost structures of American and Australian vegetable farms are similar in many respects.
In both Australia and the US, labour—either hired or contracted—is the largest cost on vegetable farms, accounting for around 30% of costs. However, labour costs in both countries vary depending on geographic location, the size of the farm, and whether vegetables are grown for processing or fresh markets.

In both countries labour costs become a more critical factor as the size of the farm increases. In southern USA, where vegetables are mainly grown for the fresh market, labour costs account for over 36% of total costs. In the Midwest where vegetable farms are more focused on producing vegetables for processing, labour costs as a proportion of total costs are much lower at 28% due to greater use of machinery for harvesting.

In Australia, labour as a proportion of total costs is lower in New South Wales compared to the national average because vegetable farms are on average smaller and more reliant on family labour.

> “Australian vegetable growers, averaged over the two years, were most profitable in Queensland and least profitable in Tasmania.”

In contrast, hired labour and contractors represent around 36% of total cash costs in Queensland where scale of operations are larger and production is focused on the fresh markets. Labour costs, together with spending on fertiliser and chemicals and seed and plants, accounted for 51% of total cash costs in Australia in 2006-08, compared to 56% in the US in 2004-06.

Income and profit

For the purposes of comparison, the latest US figures have been converted into Australian dollars based on average exchange rates for the period. The table below provides a basis for comparing the profitability of vegetable farming in the US and Australia. The figures are averaged across farms and do not indicate the income, costs and profitability of individual growers.

Both receipts and costs were higher on Australian vegetable farms. Average total cash receipts per farm in Australia in 2006-08 were 15.4% above the equivalent US figures for 2004-06, while Australian cash costs exceeded US costs by 4.7%. As a result, the cash expense ratio, which measures

Table 1. Vegetable farm costs in the USA (2004-06) and Australia (2007/08)

Cost Category	USA (% of total)	Australia (% of total)
Labour	30.2	28.8
Fertiliser & chemicals	17.7	14.9
Seed & plants	8.2	7.3
Interest & insurance	10.1	2.2
Rent & insurance	5.0	5.8
Utilities	4.0	2.3
Repairs	5.7	8.7
Fuel & oil	5.1	6.8
Other	14.0	23.3
TOTAL	100.0	100.0

Table 2. Vegetable farm income and profit in the USA and Australia

Average per farm (All figures in Australian dollars except where stated)	USA 2004-06	Australia 2006-08
Total cash receipts	493,805	569,819
Total cash costs	382,699	400,774
Costs as % of receipts	77.5	70.3
Farm cash income	111,106	169,045
Farm business profit	61,884	78,591

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total cash costs as a percentage of total cash receipts, averaged 70.3% in Australia over the period 2006-08 compared to 77.5% on US vegetable farms over 2004-06.

Average farm cash income in Australia in 2006-08 exceeded that of US farms in 2004-06 by 52%. Farm business profit, which takes into account the imputed cost of own and family labour, depreciation and stock changes, was also on average, 27% higher than in the USA. The gap between cash income and business profit implies greater non-cash costs on Australian vegetable farms.

This may be due to higher imputed values for own and family labour on Australian farms than in the US.

In both countries there are significant variations in rates of return based on farm size and geographic location.

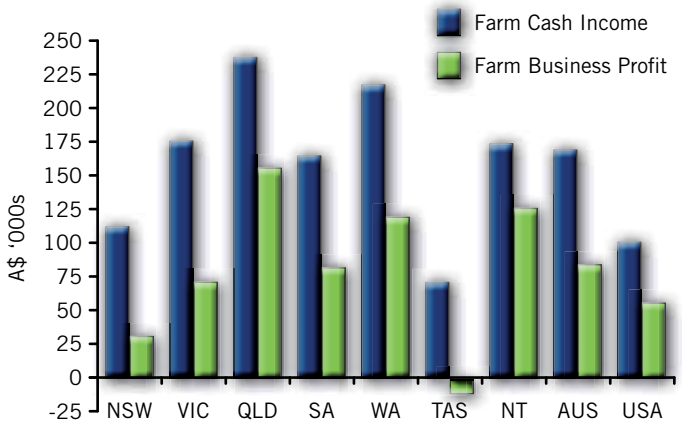
Farm size is not a necessary condition for profitability but it does play an important role. In the US the largest farms were, on average, clearly profitable on economic criteria.

Whereas the smaller farms were not only unprofitable, but were not generating sufficient cash receipts to cover cash costs. In Australia 15% of growers failed to cover their cash costs of production. In both the US and Australia there are a large number of vegetable growers who are clearly non-viable on purely economic criteria.

This suggests that a number of growers, probably small in scale, remain in the industry for reasons other than achieving economic rates of return. It also suggests that these growers rely on other sources of income either in other agricultural pursuits or off-farm income in order to survive.

In the US vegetable farms were more profitable in the west of the country and least profitable in the north-east. As shown in the table below Australian vegetable growers, averaged over the two years, were most profitable in Queensland and least profitable in Tasmania.

Table 3. Farm Cash Income & Business Profit



THE BOTTOM LINE

- Recent economic data produced here in Australia and in the US, shows that in terms of profitability, Australian vegetable growers compare favorably to their American counterparts.
- In both countries, it appears the size of the vegetable farm has a strong correlation with profitability.
- Australia vegetable growers' averaged over the two years were most profitable in Queensland and least profitable in Tasmania.

i Ian James is Project Lleader for the Economic Sub Program of the Vegetable Industry Development Program VIDP.

Around the states

Victoria

Looks like our regular cold, wet winters are back. Most vegetable crops in southern Victoria have stopped growing and several local lines are in short supply. Plantings are continuing, however, and there could well be a glut of produce come spring. Vegetable sales are very slow and many growers will remember this as the worst winter market for many years.

Victoria is also facing what could be the biggest locust plague in 75 years. Large numbers of locust eggs are expected to hatch in late September and early October. Growers across North Western Victoria are preparing to control, with locust hoppers on their land. Growers in other areas are also on alert as locust swarms can travel on the wind up to 800 km/day. For more information contact the DPI Locust Hotline on 1300 135 559.

The VGA are working with DPI Victoria to provide Industry Development Officer services to Victorian growers. IDO activities have so far included regional group meetings and training workshops that have been well supported and appreciated by growers.

The Annual VGA Golf Day was well supported by golfers and industry. Over 100 players and guests enjoyed a fun filled round of golf in sunshine following early rain. VGA Vic expresses its gratitude to EE Muir & Sons and the Melbourne Market Authority for sponsoring this event and for the excellent prizes donated by our industry associate members.

Marketing and vegetable imports were among the topics discussed at the vegetable industry Partnership Night at Lindenow on 7 July 2010. Organised by vegetable grower and industry leadership graduate Andrew Bulmer, the event attracted over 100 local growers, support businesses and local government representatives and was well reported in the local press.

The VGA's 2010 Annual General Meeting and Dinner will be held on Friday, 15 October at the Crown Plaza Hotel on Spencer Street in Melbourne commencing at 4pm. After six years service, Luis Gazzola is stepping down as VGA President. The positions of Vice-President, Treasurer and the Executive Committee, will also be declared vacant. These roles are critical to the success of our Strategic Plan and the recognition of our Association.

We encourage all grower members to call on possible candidates for these positions and urge them to nominate.

Members will receive a meeting notice and nomination form early in September. So come along to the Annual General Meeting and have your say in the future leadership and direction of your Association.

For the latest Victorian vegetable news and information, take a look at our website at VegetablesVictoria.com.au.

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Queensland

Lessons from the Green Revolution

Director-General of the International Rice Research Institute (IRRI), Dr Bob Ziegler, told participants at a food security meeting last month that with the right research and development policy settings, the prospects for feeding the world are far from bleak.

The IRRI has offices in 14 countries with more than 1000 scientists dedicated to the one crop. Its head office in the Philippines is known as 'The home of the Green Revolution in Asia' and aims to reduce poverty and hunger, improve the health of rice farmers and consumers, and ensure that rice production is environmentally sustainable.

As the review by the Productivity Commission trundles on about whether-or-not investment in the rural R&D Corporations is a beneficial use of public money, it is worth considering Dr Ziegler's remarks.

Dr Ziegler's presentation at the Department of Employment, Economic Development and Innovation (DEEDI) explained that when IRRI was established in 1960, widespread famines were predicted to sweep the world.

In 1968, prominent economists predicted that India could not possibly feed an extra 200 million people by 1980 and that hundreds of millions would starve. Yet within six years India was self-supporting in cereal crops, as a result of dwarf rice varieties developed as part of 'The Green Revolution' aimed at increasing yields through technology.

The result is that today rice yields are more than 4.5 t/ha on average, up from 1.5 t/ha in 1960. In the same period this increased production saw the price of rice decrease, ensuring hundreds of millions of people had access to a cheap staple.

The audience heard that in order to keep the price of rice affordable with forecast world population, an additional 114 million tonnes of rice per year would need to be produced by 2035.

With floods predicted to be more common across Asia, the IRRI is developing a rice variety that can survive being submerged in flood waters for up to 17 days. This flood resistant variety is expected to become the basis for all modern varieties.

So what does increasing rice output in Asia have to do with growing fruit and vegetables in Australia? Firstly, the Green Revolution in Asia proved it is possible with the right investment in science to increase production dramatically and feed a much larger population.

The second is that Australia, through both government and private institutions, will need to increase R&D investment if we are to maintain food security in this country.

This particularly applies to our industry, where the numbers of graduates in horticulture related disciplines are declining along with general investment in R&D.

While it is true that the IRRI has received significant funding from the Bill Gates Foundation, such private investment funds are scarce and it is the responsibility of governments to get behind worthwhile investment such as this for the public good.

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Western Australia

vegetablesWA has significantly expanded its capacity to deliver for Western Australian growers as the industry continues to face significant challenges.

Charlotte Butler has commenced work as our new Field Extension Officer.

Charlotte comes from a vegetable and flower growing family at Nowergup in WA.

She holds degrees in Horticulture and Economics and has most recently worked at the Department of Agriculture and Food WA in entomology.

John Shannon has been appointed as Policy and Program Manager, following a period in the role of Field Extension Officer and a career performing policy and program work at the Department of Agriculture, Fisheries and Forestry in Canberra.

Our former Program Manager, Georgia Thomas, is now working as vegetablesWA's Marketing Manager to deliver a new Marketing Strategy and Activity Plan for the WA vegetable industry.

This plan will incorporate the results of State Fee For Service, National Levy and Promoting Australian Produce (DAFF) funded market research.

The plan is very collaborative and aims to draw together a range of partners in government and industry to increase sales of vegetables. Georgia also retains her position as Executive Director of Marketing and Retail at Western Potatoes Pty Ltd, managing the company, staff and extensive program of activities.

vegetablesWA is also about to launch its Upskilling Water Managers Program, which will enable Western Australian growers to use the latest computer modelling to calculate precise irrigation requirements based on crop growth stage, local daily evaporation rate and soil type.

This will make the existing Vegetable Irrigation Scheduling System (VISS) even more powerful and enable growers to use their water and fertiliser much more efficiently.

Finally, vegetablesWA is continuing its strong advocacy on behalf of growers on the issues of proposed state fertiliser regulation, electricity costs and water.

Jim Turley
Executive Officer
vegetablesWA
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Email: pga-vga@vegetableswa.com.au

New South Wales

What a triumph for horticulture in NSW! Ridley Bell, the owner of the blueberry farm and nursery "Mountain Blue Orchards" on the fertile, undulating Alstonville Plateau on the NSW north coast, has taken out the NSW Farmer of the Year title for 2010. With 35 years of experience in the industry, Ridley has been a pioneer in the development of the blueberry industry in Australia. Today a number of varieties released by Ridley are being grown both in the Northern and Southern states of Australia and internationally.

In 1978 Ridley was instrumental in setting up the Australian Blueberry Growers Association to service the blueberry industry.

The annual Awards are coordinated by the Association and Investment and Industry NSW, with support from The Land and the Royal Agricultural Society of NSW. The winner was announced at the NSW Farmers' Association's Annual Conference last month in Sydney, which is also where we held our annual Horticulture Committee AGM and Conference. It is the major policy forming event for the Association's Horticulture Members for the year and brought together 55 producers and industry stakeholders, such as representatives from Industry & Investment NSW to discuss current and emerging issues.

The Horticulture Conference was proudly sponsored by Syngenta, Kleenheat Gas, WFI, PrimeSuper, NAB and Mitsubishi Motors.

In terms of representation, I will be continuing in the position of Chairman of the Horticulture Committee for the next 12 months. Also continuing in their roles on the Horticulture Committee are Geoff Moar, Jeff McSpedden, Chris Nelson, Fred Haskins and John Cade. Barney Hyams is joining the Horticulture Committee for the Riverina Highlands District and I welcome him to the Committee. I look forward to working with the Committee in the next 12 months on issues that are important to our horticultural industries.

Recently, Brassica growers in Bathurst and Sydney took part in workshops to update growers on Brassica research that is funded by the National Vegetable Levy and the Australian Government through HAL.

Researchers Cate Paull and Greg Baker from South Australia and David Carey from Queensland covered topics including Insecticide Resistance Management, Compost and the Brassica ICM toolkit.

Feedback from the workshops has been very positive and it highlights the importance of growers being able to spend time with research providers, to learn about new information and technologies, and also to provide feedback and advise researchers of their key questions.

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NSW Farmers' Association
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South Australia

In a bid to boost and meet the rising demands of the horticulture industry, Grow SA is developing the industry in the South East of the State. Grow SA have at least six growers in the South East that have already expressed interest in growing vegetables for Virginia farmers. The South East may be destined for a large horticulture industry and can expect to see greenhouses pop up in the next five to 10 years. There has been perception among landowners that conditions were too cold and wet for the industry to be sustainable in the South East, even though these conditions have proven to be successful in other countries such as New Zealand and the Netherlands, who also experience colder and wetter climates.

Grow SA tapped into the labour market earlier this year by preparing Burmese refugees living in the South East for the horticulture industry. With the support of the Productivity Placements Program offered by the State Government, the training arm of Grow SA was able to offer funded training for the refugees. The Burmese have been provided with a "pyramid of training: in quality assurance, occupational health and safety regulations and the use of equipment in the packing of food. Training began in February and we have found the Burmese population is very horticulture oriented. About 100 people are already available for employment. Last month a further 17 people commenced training. There is now a ready source of Burmese refugees, who with a background in horticulture, will help develop the industry in the South East.

The South East, which has been overlooked in the past because of distance, could provide the perfect midway point for fruit and vegetables to be transported to both Adelaide and Melbourne.

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Tasmania

$3 million for Simplot gas conversion

Vegetable processor Simplot has been promised $3million from Federal coffers to help convert from coal power to natural gas: a project that protects 600 jobs and ensures the Ulverstone and Quoiba plants are sustainable for the next 15 to 20 years.

At the State Election, Premier David Bartlett promised $2 million to upsize the gas pipeline to the Simplot factory so it suited the future needs of the Ulverstone community as well.

At separate announcements, Federal Labor MHR Sid Sidebottom and Liberal candidate Garry Carpenter both gave election commitments for their parties to give the $3 million that would help Simplot switch from coal to gas and keep the company here.

It gives greater certainty to 500 north-west vegetable farmers who supply Simplot.

Tasmanian Farmers and Graziers Association (TFGA) Chief Executive, Jan Davis, said that the association welcomed any move that helped make Simplot in Tasmania more competitive.

TFGA has been in discussion with the State and Federal Agricultural Ministers on the ongoing viability of vegetable growing in Australia and the importance of maintaining a viable vegetable processing industry.

Simplot Executive General Manager Supply Chain Division, Mr Sergio Canale, said the Ulverstone and Quoiba plants would have a secure future because of the gas project.

Mr Canale said Simplot would be able to cut energy bills by replacing coal boilers with a gas-fired cogeneration system to produce electricity and steam. It reduces carbon dioxide emissions by 39,000 tonnes a year.

"This was a very attractive project but also a very big project for us and the amount the government has offered (both State and Federal government funding) now means this project will go ahead," Mr Canale said.

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Minor-use permits

Permit Number	Permit Description (pesticide/crop/pest)	Date Issued	Expiry Date	States covered
PER12002	Ecocarb (potassium bicarbonate) / parsnip, radish, swede, turnip, snow peas and sugar snap peas / Powdery mildew	15-Jun-10	5-Sep-12	All states except Vic
PER10748	Tilt (propiconazole) / silverbeet / Leaf spot, Powdery mildew & Rust	12-Aug-10	30-Jun-12	All states
PER10903	Flint (trifloxystrobin) / cucumber & capsicum (protected) / Powdery mildew	18-Aug-10	31-May-13	All states except Vic
PER11989	Tramat (ethofumesate) / spinach, silverbeet, onions / weeds	17-Aug-10	31-Jul-13	All states except Tas/Vic
PER11852	(fenhexamid) / capsicum & lettuce (field and protected crops) / Grey mould (Botrytis cinerea)	13-Aug-10	31-Jan-13	All states except Tas/Vic