

vegetables australia



18 Fussy eaters
meet their match

26 Award winner
Rick Butler

46 Immunity responses
for plants

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2010 National Convention, Trade Show and Awards for Excellence



27 - 30 May 2010

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vegetables australia

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AUSVEG



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For more information visit www.ausveg.com.au

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A word from the AUSVEG Chairman

It is with no small amount of pride and thanks that I continue in my post as Chairman of AUSVEG, following the unanimous support generously extended at our AGM in November last year.

It is my sincere hope that with the continued support of the AUSVEG Board, state members, and the expertise of AUSVEG CEO Richard Mulcahy and his capable staff that AUSVEG will build on its successes in the past year and strive to surpass these, be they representing grower needs to policy-makers and state and federal governments, or providing first-class educational and social opportunities.

These include the upcoming new-look AUSVEG National Convention to be held at the Gold Coast in May this year, and the continued output under the

National Vegetable Levy investment program, such as EnviroVeg, the LOTE program (for growers who speak a language other than English), international growers study tours, and our stable of print and online communications.

With years of industry experience behind us, we understand the pressures and realities that growers face on a daily basis, and we aim to communicate on these issues with solutions, where possible, to decision-makers.

The recent announcements of strategic partnerships with industry leaders Elders, Syngenta, Dupont, Bayer CropScience and Terranova Seeds will further help us achieve these aims by allowing us to expand the resources from which we can draw to better inform, educate and represent growers.

In other news, interviews for positions on the Vegetable Industry Advisory Committee (IAC) and its supporting advisory groups are being held around Australia, and it is anticipated that an announcement about the revised groups will be made next month.

The rotation of IAC and advisory group members ensures that recommendations regarding investment decisions for the National Vegetable Levy best reflect the current priorities of growers nationally.

This process will ensure that growers continue to see a return on their levy investment. As always, benefits will be communicated to growers through this publication and via the grower portal on the AUSVEG website at www.ausveg.com.au.



John Brent
Chairman
AUSVEG Ltd

AUSVEG CEO Message

As a New Year begins, it is fitting that we look forward to the opportunities and challenges that lie ahead. AUSVEG and its state-body members met at our Annual General Meeting in Sydney in November last year to discuss issues of note and reaffirm our intention to continue to progress forward in our representation of growers and the industry. With support at state and national levels, growers can expect even greater representation at all levels of government and to policy-makers Australia-wide.

To help achieve this, AUSVEG has strengthened ties with major agribusiness organisations Elders, Dupont, Syngenta, Bayer CropScience and Terranova Seeds. These partnerships will increase the existing resources available to AUSVEG, its members and growers nationally, and provide more scope for finding workable solutions to a number of issues, including biosecurity and sustainable farming.

As a result of this partner-

ing there will also be greater collaboration on the new-look AUSVEG National Convention, Trade Show and Awards for Excellence, which will be held in Queensland in May.

This important event will see growers come together with the whole supply chain for a series of presentations by industry experts and leading Australians. Together with a comprehensive and exciting social program, the convention will be unlike anything the industry has seen before.

The convention's keynote speaker will be former Governor-General Major General Michael Jeffery, who has taken a keen interest in rural issues since his retirement in his Chairmanship of the Royal Flying Doctor Service.

A special breakfast will also be held at the convention to celebrate the achievements of women in horticulture. This function, held in conjunction with the McGrath Foundation, will raise funds and awareness

for breast cancer treatment.

In November last year I had the opportunity to speak with 180 growers and industry representatives at the opening of the Elders Bowen Branch in Queensland. This was a great opportunity to discuss issues and concerns with growers firsthand, and I thank Elders for supporting the EnviroVeg program by providing a venue for the final soil-health workshop for 2009.

Later this month, AUSVEG will conduct a growers tour around Israel, Spain and Germany to research cutting-edge irrigation technology and attend the Fruit Logistica Conference in Berlin. This event will assist growers to learn more about industry-leading best practice and the information garnered from this tour will be shared with growers nationally.

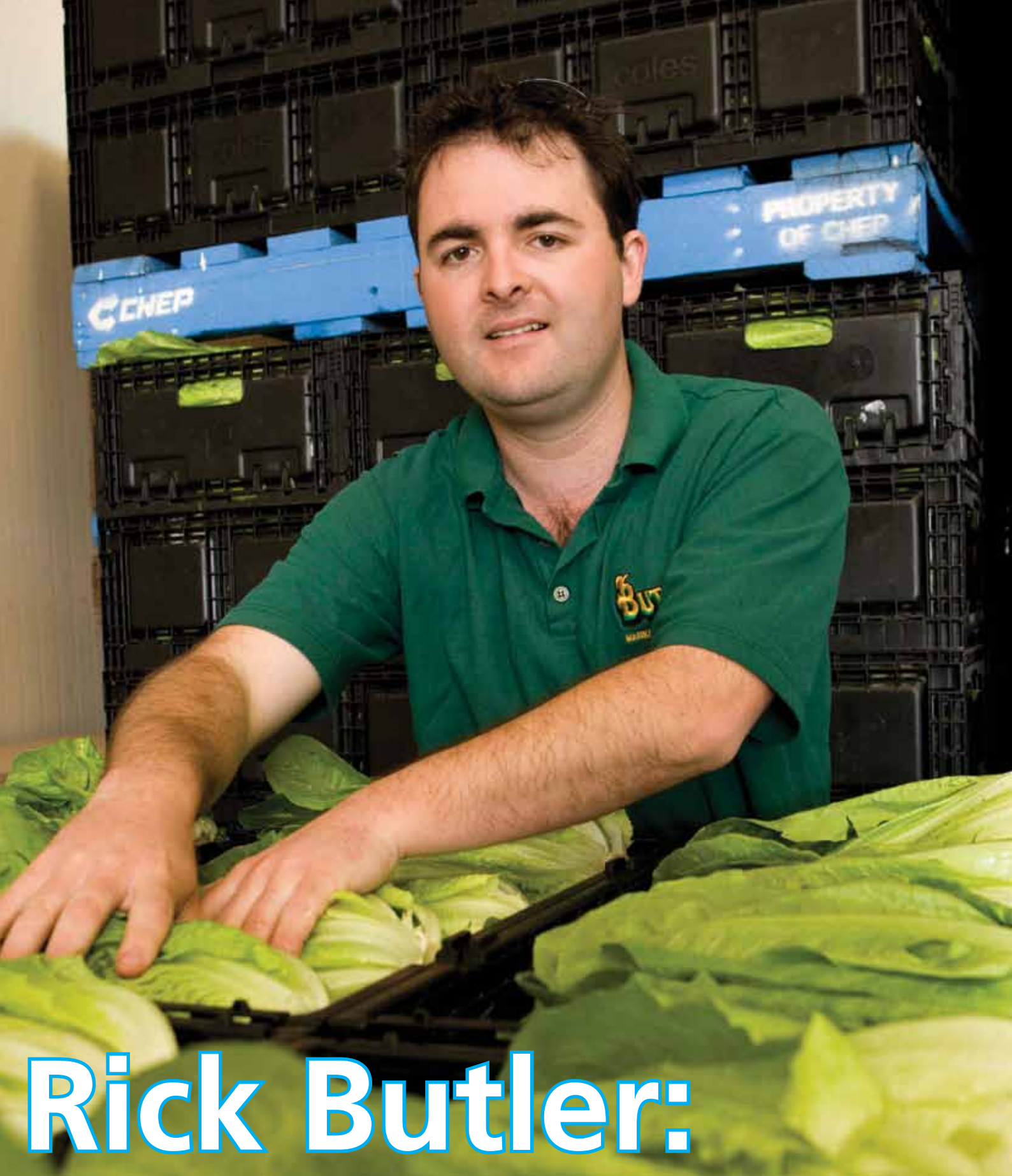
AUSVEG will offer further opportunities for growers to participate in international tours later this year, so keep reading *Vegetables Australia* or register

to receive the AUSVEG weekly email bulletin to find out more.

To share your thoughts about the industry, please email info@ausveg.com.au or call 03 9544 8098.



Richard Mulcahy
Chief Executive Officer
AUSVEG



Rick Butler:

The Butler did it

26

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january/february

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“ Morning irrigation of broccoli could lift crop profit by 22 per cent through the use of disease-tolerant cultivars. ”

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From the editor



Jim Thomson
Editor
Vegetables Australia

Remember a time when everything ground to a halt over the end-of-year period? Well, those days are long gone. As I write this, preparations are underway for a growers tour to Israel and Europe (including attendance at Fruit Logistica later this month) and it's full steam ahead as we race towards the inaugural AUSVEG National Convention in May, which is now only five months away. You can read more about these opportunities on pages 12 and 16 respectively.

For this issue's feature story, we talk with one of *Vegetables Australia's* favourite sons—Victorian grower Rick Butler. We check in with Rick to hear about his latest accomplishments, which include receiving the HAL Young Leader Award late last year [page 26].

As National Vegetable Levy investment continues to expand beyond its traditional production focus, further resources are being devoted to research beyond the farm-gate. A recent study into how children respond to different vegetables and preparation methods could hold the key to helping these sometimes fussy eaters increase their vegetable consumption. Hint: crazy colours are all the rage... [page 18].

Finally, there's the story of 'the little levi-able-vegetable that could': as consumers clamour for high-health foods, it may be worth the industry's while to inform them about the nutritional benefits of watercress, a new contender for the 'superfood' label [page 30].

All the best for the New Year and—as always—good growing.

Victoria



It was a busy end of year for VGA Victoria. In October, Luis Gazzola was re-elected as President at the 2009 VGA Annual General Meeting, and in November, VGA formed a partnership with the Department of Primary Industries' (DPI) Horticulture Industry Network (HIN) project to bring Industry Development Officers (IDOs) back to Victoria.

Launched by the Victorian Minister for Agriculture, Joe Helper, HIN is a joint initiative of the Victorian DPI and Victoria's horticulture industries.

VGA is one of 13 Victorian horticulture industries and associations to be awarded IDO grants. The funding will provide

three part-time IDOs: Ken Orr, Katie Fisher and Slobodan Vujovic. Contact details are available from VGA office.

In other good news, Victorian growers received top awards in 2009. Congratulations to:

- Rick Butler from Butler Market Gardens who received a 2009 Young Leadership Award, sponsored by Horticulture Australia Limited
- Frank Ruffo from Tripod Farms who was recognised with the National Agribusiness Primary Producer of the Year award
- Darren Schreurs for being the first Sustainable, Productive and Responsible Spray Applicator winner
- John Said from the Vital Vegetables Marketing Partnership (VVMP) who received the 2009 Hugh McKay Future Farming Award for research, devel-

opment, production and marketing of new novel vegetable products.

In 2010, VGA will move into a new phase with the continued development of its webpage. Take a look at www.vegetablesvictoria.com.au or www.vgavic.org.au.

President Luis Gazzola and the Executive Committee wish all Victorian vegetable growers a safe and healthy 2010.

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AROUND THE STATES

Western Australia



In October 2009 a key project for Western Australia's vegetable industry concluded. *Good practice and better environmental outcomes in vegetable production* was a project supported by vegetablesWA, through funding from the Australian Government's Caring for our Country program.

The project utilised a range of resources, including the vegetablesWA Good Practice Guide, to communicate sustainable farm practices. It relied on a high level of operational and technical support from the Department of Agriculture and Food WA (DAFWA) and projects funded through Horticulture Australia Limited (HAL).

Compost use in vegetable production on the Swan Coastal plain has demonstrated that increasing soil organic carbon (SOC) can improve grower returns by improving soil performance. This approach involved expanding good agricultural practice associated with growing the crop (irrigation, fertiliser and pest management) to include feeding the soil by implementing practices that build and maintain SOC and increase soil performance. Fertiliser savings alone can cover most of the cost of applying compost.

The project culminated in field days at six properties in various growing regions. Participating growers had the opportunity to see different production practices and applications of a range of practices aimed at producing viable crops with minimal environmental impact.

A full report of the field days is available from vegetablesWA.

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Queensland



Although Australian benchmarks for optimum application-rates for water exist for most horticulture crops, the same cannot be said about benchmarks for nutrient uptake.

Growcom's Land and Water division is working to develop activities and nutrient tests that will establish nutrient benchmarking for horticultural crops in the Burdekin/Bowen region during the next three years of the Australian Government's Reef Rescue incentive program.

Twelve growers are currently conducting trials on tomato, capsicum, green bean, sweet corn, zucchini, cucumber and sweet chilli and selected fruit crops on sites across the region.

Under the Australian Government's Reef Rescue incentive program, Burdekin horticulture growers have been asked to record data about fertiliser and water inputs for their crops.

The work involved in this trial includes soil and irrigation water sampling that is laboratory tested to ascertain nutrient levels. In addition to nutrient and water inputs, information about plant growth and crop agronomic performance is being kept. At the end of the crop season, plant parts are separately harvested and tested for nutrients. A second soil sample is also taken to find out the level of nutrients left in the soil after harvest.

This recording system gives crop managers information about the current nutrient input against the crop nutrient requirement. The nutrient budgeting of a crop can then be used as a reference for future crop requirements.

The first stage of this program has been finalised with positive results in terms of the acquisition of rates of nutrient uptake for nitrogen, phosphorous and potassium in nine horticulture crops.

The trials will be repeated to validate data and find recommended rates for the major nutrients in several crops. The immediate benefit of these trials for participating growers is that they can start using the acquired nutrient budgeting for crops on the rest of the farm.

With ongoing adequate government funding, this research could establish nutrient budgeting benchmarks for the wider horticulture industry in Great Barrier Reef catchments: a win for growers and the reef.

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General Council meeting to be held early in the New Year to discuss the revised levy-funded Vegetable Industry Development Program (VIDP). There are some concerns about the new program so the General Council will discuss these concerns about the program and its delivery then suggest viable alternatives that may provide a better return on levy funds.

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South Australia



After a highly successful road show to inform South Australian growers of the "modern award" legislation, plans are well under way for the New Year. Change of OH&S legislation and an introduction to the succession planning program being piloted in the Murraylands are two likely subjects for the first round.

Grow SA's Policy Council has been busy providing industry comment on issues such as the 30-year plan for Greater Metropolitan Adelaide, which amazingly chose to ignore the Blueprint for the Adelaide Plains that was produced by industry for the future of industry. New Year policy issues will include comment on the proposed removal of dimethoate and fenthion from use within the industry. This issue is of high importance to South Australian growers due to our Fruit Fly freedom status and is one where the state must not be drawn to the lowest common denominator.

Growers have called for a

New Chair for HAL

Three directors were elected to the HAL Board at the company's AGM last year.

There's a new face on the Board of Horticulture Australia Limited (HAL), after the election of director Selwyn Snell at the company's AGM, which was held in Sydney in November last year. Ken Boundy and Robert Seldon were also re-elected as directors.

Following the AGM, the Board elected office bearers, where Mr Snell was elected to the role of Chair and Professor Rob Clark was elected to the role of Deputy Chair.

"I am taking up the Chair's role at a very exciting time for HAL," said Mr Snell.

"We have a new CEO in John Lloyd, we are in the process of developing a new five-year strategic plan and we have a Board of skilled directors that are committed to HAL delivering excellent services for industry.

“ We are developing a five-year plan and are committed to delivering excellent services for industry. ”

"While there are many challenges ahead for the industry, the unity of purpose of the organisation and its members will be fundamental to providing a competitive international position."

Praise for Steele Scott

A vacancy was created by the retirement of Dr Nigel Steele Scott, who did not stand for re-election after six years as a director and four years as Chair.

Mr Snell praised Dr Steele Scott for his service to HAL and horticulture generally.

"Nigel is held in high regard by his fellow directors and his contribution to HAL and the broader industry is gratefully acknowledged," he said.

Mr Snell is a non-executive director of Plant Health Australia and is Chairman of Indigo Pacific Ltd, Indigo Technologies Pty Ltd and The CyberInstitute, a subsidiary of the Australian Institute of Management (Qld/NT).

He owns and operates Barawyn Pty Ltd, a consultancy business that provides advice focusing on agriculture, horticulture, biosecurity, finance, biofuels and clean air emissions.

Briefly

New Vegetable IAC

As the three-year tenure of the existing Vegetable Industry Advisory Committee (IAC) draws to a close, interviews have been held around Australia for vegetable growers keen to help guide National Vegetable Levy investment by joining the IAC and its supporting advisory groups.

It is anticipated that the new IAC and advisory group members will be announced in February.

Vital Vegetables wins award

The Vital Vegetables Marketing Partnership (VVMP) and Clause Pacific have won the Hugh McKay Future Farming Award, which was announced at the 2009 Victorian Department of Primary Industries (DPI) Science Awards held in Melbourne in December last year.

The VVMP and Clause Pacific joined with their research partners to develop and deliver high-health vegetables to consumers. The first variety to be released commercially was Booster Broccoli; follow-up products are currently in development.

High cost for rural services

The extra costs faced by Australia's non-metropolitan residents when accessing essential government services—such as doctors, hospitals, schools, TAFE colleges and universities—have been quantified by research commissioned by the Australian Farm Institute.

The research showed that, on average, it costs rural residents five times as much to access essential services as it does metropolitan residents.

Findings have been published in the report *Essential Services in Urban and Regional Australia*—a quantitative comparison, which is available for purchase from <http://farminstitute.org.au>.

DBM risk for Lockyer Valley

The Queensland Department of Employment, Economic Development and Innovation (DEEDI) has warned growers in the Lockyer Valley to be on alert for diamondback moth (DBM).

"Annual monitoring carried out by Gatton Research Station officers has identified increased resistance to some of the newer insecticides commonly used for DBM control," said DEEDI Senior Horticulturalist David Carey. When combined with predictions of another hot, dry summer, this suggests perfect conditions for a DBM outbreak.

DEEDI has advised that current levels of resistance are not enough to render the chemical controls ineffective, as long as growers ensure good spray coverage. For more information, visit www.dpi.qld.gov.au or contact 132 523.

Call to arms for irrigation tool

Growers can test and provide comment on a new online irrigation planning tool.

Growers nationally can benefit from a new irrigation planning tool developed by researchers at Queensland Primary Industries and Fisheries (PI&F) that identifies information about water requirements for a number of crops across a range of climates.

A free online service, the CropWaterUse tool aims to help growers plan their cropping season based on their crops' water requirements. It can be tailored to suit growers' individual irrigation allocation or supply.

Growers and consultants can test the tool by visiting <http://cropwateruse.dpi.qld.gov.au>.

Lysimeter advantage

The tool was developed last year using a series of underground machines called lysimeters. Minister for Primary Industries, Fisheries and Rural and Regional Queensland, Tim Mulherin, said scientists installed the machines at sites around the state's south-east.

"A lysimeter is essentially two rectangular boxes, one made to fit inside the other, with the inner box attached to a data logger by sensors. Throughout the day the sensors measure how heavy the inner box is and the end result is a graph that plots the weight of the box, soil and

plants," said Mr Mulherin.

"By using lysimeters, scientists calculate the amount of water used by the plant by taking the difference in weight at 24-hour intervals and subtracting the evaporation rates recorded by a weather station."

The weight leftover from this equation is the weight of water that was used by the plant.

Feedback invited

Data collected from the lysimeters and other crop monitoring activities conducted by PI&F was used to develop the CropWaterUse tool.

According to PI&F Horticulturist Sarah Limpus, Crop-

WaterUse helps growers match irrigation availability to crop water requirements throughout the season.

"It also uses climates rather than specific locations for weather data and it can suggest irrigation requirements for dry and wet years. This can help growers and consultants understand crop water requirements based on historical seasonal rainfall patterns," she said.

"The tool displays the water requirements of critical growth stages and the duration of these stages in order to tailor irrigation to achieve maximum productivity in easily understood graphs that can be downloaded or printed in report form."

PI&F has invited growers and consultants to test and provide comment about the tool, so it can be modified to better suit the needs of industry.

"Also being developed is another web-based tool to complement CropWaterUse, which will be used as a tactical in-crop irrigation scheduling tool," said Ms Limpus.

"Outputs will include estimated irrigation schedule with current and predicted irrigation data to help with the 'how much irrigation and when' conundrum, yield prediction, stress and economic outcomes." **va**



Emerged sweet corn seedlings in a lysimeter. Image supplied by Sarah Limpus.

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Aussie growers head to Europe

Spain, Germany and Israel are on the itinerary for a select group of growers, keen to learn more about cutting-edge farming practices.

A group of up to 10 vegetable growers is set for the horticultural quest of a lifetime when participants visit the Fruit Logistica trade fair in Berlin, Germany, and view horticultural facilities and on-farm practices in Israel and Spain from 27 January to 12 February this year.

AUSVEG CEO Richard Mulcahy said the tour was an opportunity for participating growers to learn and network.

“The tour will take growers, who’ve shown passion for a prosperous vegetable industry, through horticultural regions in Israel and Spain. There they will learn about cutting-edge water management technologies and view innovative growing practices in climates similar to

“ Growers will be given a fantastic opportunity to connect with multiple sectors of the fresh produce industry. ”

those experienced in Australia,” he said.


Levy subsidised

Subsidised by the National Vegetable Levy and matched funds from the Australian Government, the tour will coincide with the Fruit Logistica trade fair in Berlin, Germany.

One of the largest international events of its kind, Fruit Logistica will feature more than 2,000 companies from across the entire industry. Each year it attracts 50,000 visitors from 120 countries.

“Growers will be given a fantastic opportunity to connect with multiple sectors of the fresh produce industry at Fruit Logistica. There growers will network and learn from international industry leaders,” said Mr Mulcahy, who has been asked by the AUSVEG Board to lead the tour.

The tour follows on from similar tours organised by AUSVEG, including a young growers tour to New Zealand in July last year, and a growers tour to California and the PMA Fresh Summit in October last year. It is anticipated that these tours will again be arranged for later this year. 

 For more information contact:
AUSVEG
Phone: 03 9544 8098
or visit
www.ausveg.com.au

Whitsundays brand launches

It is hoped that a regional brand for the Whitsundays will strike a chord with consumers.

As consumers clamour for more information about the environment credentials of their food—such as where it is produced—a number of regional brands are entering the market. They include the ‘Made in The Whitsundays’ brand, which was launched at the Brisbane Produce Market in October last year.

Broad coverage

The brand covers a multitude of produce and outputs, including vegetables, other agricultural products and tourism.

Speaking at the launch, Tim Mulherin, the Minister for Primary Industries and Fisheries and Rural and Regional Queensland, spoke of consumers’ increased interest in the provenance of food, spurred on by the rise in ‘buy local’ campaigns and the growth of farmers’ markets.

“The Whitsundays region is one of our most prolific vegetable and fruit growing areas, producing capsicums, tomatoes, chillies, eggplants, cucumbers and macadamias and contributing around \$300 million to the sector. In winter/spring, the rest of Australia is dependent on the northern food bowl for their vegies,” he said.


“ The Whitsundays brand provides an opportunity for growers in the area to connect with consumers. ”

Quality outputs

For Denise Kreymborg, Director of Enterprise Whitsunday and the Industry Development Officer (IDO) for the Bowen District Growers Association (BDGA), the campaign aims to have the Whitsundays be recognised for the quality of its outputs.

The brand provides an opportunity for growers in the area to connect with consumers by creating a point of difference from other available produce, she said.

A website has been launched to support the brand, including information about what products are available and how consumers can purchase them. [va](http://madeinthewhitsundays.com.au)

 For more information visit:
madeinthewhitsundays.com.au



Growers to benefit from industry partnerships

A series of strategic partnerships will see AUSVEG draw from the resources of agricultural service providers to better support and educate growers.

To help strengthen its support of growers and the national vegetable industry, AUSVEG has announced a number of strategic partnerships with leading supply companies in the past few months. These include partnerships with Syngenta, Bayer CropScience, Dupont and Terranova Seeds. The announcements follow on from a similar announcement about a partnership between AUSVEG and Elders, made in September last year [see *Vegetables Australia* issue 5.3, pp 8].

Household names

The decision to formalise the partnerships between AUSVEG and these companies will

have positive benefits for the Australian vegetable industry, in particular its growers, said AUSVEG CEO Richard Mulcahy.

"We are excited about the opportunities we foresee will arise from these new partnerships between AUSVEG and these industry leaders. The resources and influence these companies have in our industry will benefit Australian vegetable growers immensely," said Mr Mulcahy.

The partnerships will result in close collaboration between AUSVEG and these organisations on issues specific to the horticulture industry and enable growers to share in the collective expertise of the companies.

Household names for Australian growers, these companies

will make available resources that will cover the gamut of grower needs, including crop protection solutions, seed technology, rural services and pest control.

Increased involvement

AUSVEG Chairman John Brent said he and the AUSVEG Board were proud of the partnerships.

"We are extremely excited by these partnerships, especially after seeing the resources and technical knowledge that these companies can offer growers.

We are sure this will result in an improved Australian horticultural industry," he said.

Representatives from each of the companies, including Mike Guerrin, Elders Chief Operating

Officer; Graeme Iggo, Dupont Business Director, Crop Protection; Scott Ward, Horticulture and Summer Crops Portfolio Manager, Bayer CropScience; Paul Luxton, General Manager, Syngenta Australia; and Tony Higgs, General Manager, Terranova Seeds, spoke highly of the partnerships each company now has with AUSVEG and the benefits that these will bring to growers.

As part of these agreements, each company will be involved in a number of key industry events, including the AUSVEG National Convention, Trade Show, and National Awards for Excellence scheduled to be held in Queensland in May this year. **va**



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Program targets employment of next generation

A new venture between Bayer and Aussie Helpers aims to assist disadvantaged youth.

Bayer has joined forces with not-for-profit organisation Aussie Helpers in a new program to assist disadvantaged youth to develop skills and find employment in the rural sector. The venture aims to address issues such as high youth unemployment in rural communities and the ageing farming population in Australia.

"It's no secret that rural Australia has done it tough for a long time and, on the other side of the coin, there is a lack of employment opportunities for young people," said Aussie

training farm in Mathoura near the border of New South Wales and Victoria. The farm will help disadvantaged youth aged between 18 and 25 years develop skills and find employment in the sector.

In conjunction with the Work for the Dole scheme, the training farm will provide disadvantaged people with up to four weeks' training where they will be taught basic aspects about farming.

Successful graduates will then be placed on a host farm for five months, with the Australian

“There is a lack of employment opportunities for young people in rural Australia.”

Helpers founder Brian Egan.

"This means they leave for the cities and we have a shortage of our next generation of farmers, and we see increased social problems in the community."

Training and support

The program will establish a

Government subsidising their wage of \$250 per week while the host farmer supplies the trainee farmer with food, accommodation and training. **va**

i For more information visit: www.aussiehelpers.org.au

Scan for skills

Have your say about factors affecting workforce skills.

AgriFood Skills Australia has begun a national consultation process for the Environmental Scan 2010, which will focus on the skilling and workforce needs of the agrifood industry. Contributions and comments on the vegetable sector are invited. The Environmental Scan provides growers, enterprises and other industry stakeholders with an opportunity to influence factors that can dictate productivity—the skills and knowledge of their workforce.

Comments invited

AgriFood Skills Australia is interested in views on:

1. Factors impacting on agrifoods workforce skills and labour supply
2. Specific job roles and skills being affected
3. Magnitude of impact
4. What needs to be done to respond to new and emerging skill and workforce development needs

Further information is available from the AgriFood Skills website, www.agrifoodskills.net.au.

While the cut-off date for submissions was 31 December last year, the consultation process will continue into early-2010.

In light of this, submissions, concerns or issues to be included can be sent to <reception@agrifoodskills.net.au> (marked 'Environmental Scan submission'). **va**

i For more information contact:
AgriFood Skills Australia
Phone: 02 6163 7200

Correction

In the November 2009 issue of *Vegetables Australia* it was incorrectly reported that Victoria's state-specific strategic plan was an Australian first. The Tasmanian Vegetable Industry Strategic Plan 2007-2012 was developed by industry with the support of the Tasmanian Farmers & Graziers Association (TFGA) and the Tasmanian Government. *Vegetables Australia* apologises for any offence or confusion caused by this error. **va**

Recent minor use permits

Permit Number	Permit description (pesticide / crop / pest)	Date issued	Expiry date	States covered
ROOT VEGETABLES				
PER11439*	Pirimicarb / Sweet potato, brassica leafy vegetables, chicory, coriander / Aphids	16-Oct-09	30-Sep-11	All states except Vic
PER11732	Folicur (tebuconazole) / Carrots / Powdery mildew	20-Oct-09	31-Sep-11	NSW, SA, Tas

* Additional residue data required in chicory and coriander for the renewal of this permit

R&D project preview

Integrated weed management in vegetable brassicas

Project number: VG09137

Start date: August 2009

End date: May 2011

Project leader: Les Mitchell, Principal Project Biologist, Agrisearch Services

Email: les.mitchell@agrisearch.com.au

Phone: 03 5821 2021


While competition from weeds in direct-seeded brassica crops can result in plant losses, the brassica industry has developed an integrated approach to weed control. Cultural and herbicide methods are used to keep weed populations at low levels so that crops remain financially viable.

However, management of diseases, insects and nematodes can affect weed-control programs as damage caused by pests may limit a crop's ability to compete with weeds or make the crop more susceptible to herbicides.

The industry has highlighted several problems with current weed-management programs, including an over-reliance on too few herbicides. Contrary to grower belief, a wide selection of herbicides is available for bras-

sicas, including pre-emergent and early post-emergent herbicides and post-emergent grass selective herbicides.

The objective of this project is to help the brassica industry access tools and information for integrated weed management, including cultural and chemical management strategies. To do this, the project will:

- conduct on-site demonstrations for correct herbicide use in key growing areas, with a series of field days held at each location around six weeks after transplanting
- produce a grower resource for effective integrated weed management in brassicas
- develop new use-patterns with existing herbicides to improve weed control. 





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Countdown on for

National

Preparations are well under way for the 2010 AUSVEG National Convention.

Former Governor-General Major General Michael Jeffery will deliver the keynote address to delegates at the 2010 AUSVEG National Convention, set to take place in four months' time.

The AUSVEG National Convention, Trade Show, and National Awards for Excellence are to be held at Conrad Jupiters Hotel Casino on the Gold Coast, Queensland, from 27 to 30 May 2010.

Major General Jeffery was Governor-General of Australia between 2003 and 2008. Prior to this, he served operationally in Malaya, Borneo, Papua New Guinea and Vietnam where he was awarded the Military Cross and the South Vietnamese Cross of Gallantry.

Following his retirement from the role of Governor-General, he has taken a keen interest in rural issues including his Chairmanship of the Royal Flying Doctor Service.

In addition to Major General Jeffery, the speaker program will include a first-class line-up of interesting and informative presenters from such diverse areas as politics, business, research and development (R&D), retailing and sport. Details of the speaker program will be announced shortly.

Super social program

The convention's social program

will feature prominently in 2010, providing an opportunity for delegates to informally catch-up with colleagues and peers, and network in a relaxed environment.

The program will include a golf competition held at one of the Gold Coast's leading golf courses on Sunday 30 May, and a "Kids' program" for families attending the convention that will include visits to some of the Gold Coast's famous theme parks.

The social program will open with a Poolside Welcome Reception, which will also be the formal opening of the AUSVEG National Convention, Trade Show and National Awards for Excellence. It will take place in the surrounds of the Conrad Jupiters Pavilion Poolside. All delegates are invited to enjoy hospitality including dinner at this relaxed meet-and-mingle.

A special theme night will be held on Friday 28 May for delegates to enjoy.

Worthy cause

The "Women in Horticulture" breakfast will be held on the morning of Saturday 29 May. A McGrath Foundation event, the breakfast will recognise the significant contributions made by women to the horticulture industry—particularly in the area of finance—and raise awareness and money for breast

cancer treatments. A fantastic event for a worthy cause, the breakfast is not to be missed.

Up to 70 companies will demonstrate industry-specific goods and services to growers at the Trade Show, giving delegates from all sectors the opportunity to avail themselves of the latest products, technologies and services that the industry has to offer.

The Trade Show also creates a platform for growers to talk face-to-face with industry representatives and service providers to discuss solutions for challenges they experience on- and off-farm.

Industry support

The Vegetable Industry Advisory Committee (IAC)—along with the vegetable industry Working Groups—will conduct meetings on the Gold Coast to coincide with the convention. Consultants and projects leaders associated with the Vegetable Industry Development Program (VIDP) are also expected to meet at this time.

These IAC makes important recommendations to the Board of Horticulture Australia Limited (HAL) about how the National Vegetable Levy should be invested. The committee's presence at the convention is an indication of the level of support the event has amongst key industry stakeholders.

“Up to 70 companies will demonstrate industry specific goods and services to growers at the Trade Show.”



Convention

Levy payer meetings for both vegetable and potato levy payers will take place on Friday 28 May at 2:30 pm at Conrad Jupiters Hotel Casino.

It is also planned that participants in the Vital Vegetables program, including members of the governance board as well as marketing and research partners, will meet at this time. The AUSVEG Board of Directors will also meet on the Gold Coast during the convention, ensuring that all major stakeholders will attend the event.

Strategic benefits

Key strategic partners for the event include Elders, a leading rural services provider; Syngenta, industry leader in crop protection solutions; Dupont, one of Australia's best

regarded crop protection and seed technology suppliers; and Bayer CropScience, a globally-recognised provider to the horticulture industry.

In addition, AUSVEG has announced that Bayer CropScience will sponsor a Sporting Celebrities Lunch, which will be held on Saturday 29 May in the Trade Show area. Bayer CropScience offers growers a comprehensive portfolio of agricultural products, including crop protection and plant biotechnology.

Previous conferences organised by AUSVEG have focused on R&D and have been funded in part or mostly through grower levies. This will be the first occasion for which AUSVEG will rely on industry support to stage what will be a remarkable event

that will build on the success of previous conferences.

Celebrate excellence

The 2010 National Awards for Excellence will be held with a gala dinner on Saturday 29 May. The awards ceremony is a dedicated evening to recognise the contributions and achievements made by growers, researchers and other industry leaders. A selection of new award categories will be added to this year's stable of awards; more details will be announced shortly.

To assist delegates wishing to attend the convention, AUSVEG has negotiated heavily-discounted accommodation rates at Conrad Jupiters Hotel Casino. Details of these special offers and registrations costs will be distributed to the industry in the

coming weeks.

Delegates interested in receiving a convention brochure, companies wishing to display at the Trade Show or businesses wishing to become strategic partners with AUSVEG should call 03 9544 8098 or email <info@ausveg.com.au>. Delegates are encouraged to get in early to take advantage of the early-bird rates on offer. **va**



More information will soon be published on the AUSVEG website: www.ausveg.com.au

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Fussy eaters meet their match

Boiling unusually-coloured vegetables could be the best way to increase children's vegetable consumption, writes CSIRO researcher Astrid Poelman.

Many Australian children do not consume the recommended daily intake of vegetables. As taste and other sensory qualities, such as appearance and odour, contribute to children's willingness to eat vegetables, a research team at CSIRO Food and Nutrition Sciences conducted a study to identify how children respond to different vegetables and preparation methods.

"It is not well understood how children's acceptance of vegetables is influenced by the way vegetables are prepared for eating," said Dr Conor Delahunty, Research Group Leader, Health and Sensory Sciences at CSIRO.

"It is also of interest for us to understand how atypical vegetable colour—such as green cauliflower—is perceived by children, and whether this might be used as a means of

“Based on appearance alone, children expected to prefer the atypically coloured vegetables.”

overcoming established low acceptance.”

Boiled, baked or stir fried

The study, which was funded by the National Vegetable Levy and matched funds from the Australian Government, tested children's acceptance of three types of vegetables: sweet potato, cauliflower and green beans. These varieties were selected by members of the Vegetable Industry Advisory Committee (IAC) as representative examples of different vegetable categories.

Four preparation methods were also selected:

1. Boiled vegetable of typical colour (orange sweet potato, white cauliflower and green beans)
2. Short boiled or mashed vegetable of typical colour (mashed for sweet potato and short boiled for cauliflower and beans)

3. Baked or stir fried vegetable of typical colour
4. Boiled vegetable of atypical colour (white sweet potato, green cauliflower and yellow beans).

A group of 104 five- or six-year-olds was used to measure children's acceptance of different vegetable varieties and preparation methods. In addition to this, parents of the children tested supplied information about how vegetables were prepared in their homes, and their children's usual acceptance of vegetables.

To quantify the sensory characteristics of the selected vegetables (such as appearance, odour, taste, flavour and texture), a trained sensory panel was used. The panel was a group of people who objectively identified and measured the sensory properties of the vegetables and preparation methods.

Embrace the unusual

Before the children tasted the vegetables, they were asked to state their expected preference. Based on appearance alone, they expected to prefer the atypically-coloured vegetables.

After the samples had been tasted it was found the method of preparation did affect the children's acceptance of the vegetables—but not in every instance. For example, there were no significant differences in acceptance between the sweet potato samples prepared in different ways, even though they differed in odour, colour, taste, flavour and texture.

However, there were significant differences in acceptance of the four cauliflower samples; boiled cauliflower of both typical and atypical colour was preferred to baked cauliflower. Cauliflower samples boiled for different times were different in texture but their acceptance levels were the same. While green cauliflower was slightly more 'bitter' in taste than white cauliflower, it was liked equally.

There were also significant differences in acceptance between the four bean samples; short boiled and atypically-coloured beans were liked more than stir fried beans.

Home truths

The selected preparation methods were commonly used in the children's households, but children were unfamiliar with the atypically-coloured varieties. Most parents (72 per cent) used strategies to make vegetables more attractive to their children, such as combining with other ingredients or mixing the vegetables in a dish.

Flavour, texture and appearance aspects were frequently mentioned as reported reasons for children liking or disliking a vegetable, and odour was often mentioned as reason for dislike.

Not surprisingly, vegetable acceptance was higher for children who reportedly liked the target vegetables in the study or who liked many vegetables. Acceptance was also higher when the home preparation method was similar to that tasted for the study.

Preparation method became more important for acceptance for children who reportedly liked fewer vegetables as these children displayed a wide range of liking based on how the vegetables were prepared.

According to responses from the trained sensory panel, baking or stir frying imparted a more intense 'odour intensity'

and 'browned flavour' for two of three vegetables—cauliflower and beans. These preparation methods also imparted a more intense 'oily mouthfeel' and 'oily flavour' than other methods.

For the children, the 'odour intensity' and 'browned flavour' presented a barrier to consumption. However, differences in texture and flavour characteristics imparted by different boiling times, as well as small differences in sweetness or bitterness, neither hindered nor encouraged consumption.

From this study, it can be inferred that preparing atypically-coloured vegetables for children may help increase children's vegetable consumption. The atypical colours led to a higher expected preference, which encouraged the children to try the sample. Upon tasting, atypically-coloured varieties were equally acceptable in taste to the typically-coloured varieties.

Atypical advantage

In light of this, it is recommended that the vegetable industry consider marketing and/or developing atypically-coloured varieties for children.


Health professionals and others who give advice to parents,

such as the "Go for 2 & 5" campaign, are recommended to consider how preparation may influence acceptance, particularly for children who do not consume their recommended daily intake of vegetables.

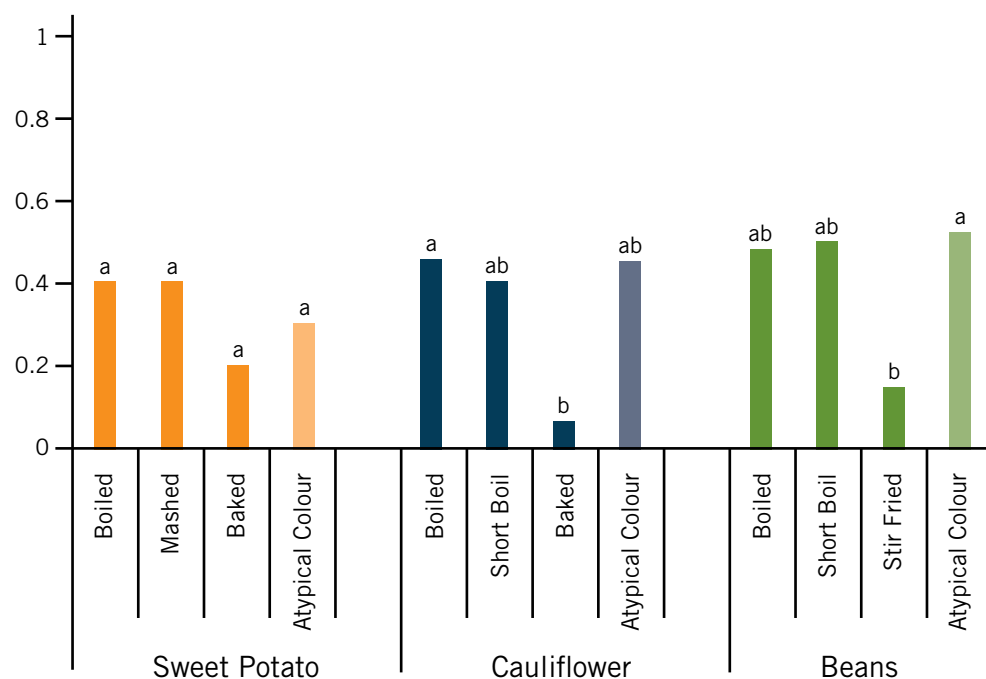
The study found that boiled vegetables have a higher acceptance among children than baked or stir fried vegetables. The length of time vegetables were boiled did not have a large effect on acceptance levels.

Familiarity was also found to be a factor in acceptance, which suggests it is important to expose children repeatedly to the same preparation methods.

"This research has shown that vegetable type and preparation methods are important for vegetables acceptance, in particular among children who are not currently eating vegetables in recommended quantities," said Dr Delahunty.

"Optimal preparation methods for a wider range of nutritious vegetables should be determined, and this knowledge used to assist parents to improve their children's diets." 

Mean liking for selected vegetables and preparation methods



Samples within a vegetable type that share the same letter were not significantly different from each other

THE BOTTOM LINE

- A levy-funded project has researched children's acceptance levels of selected vegetable varieties and preparation methods.
- Boiled vegetables that are atypically-coloured, such as green cauliflower or yellow beans, had higher levels of acceptance.
- It is recommended that the industry look at marketing atypically-coloured vegetables at children to help increase vegetable consumption.

For more information contact:
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 or visit
www.ausveg.com.au/levy-payers
 Project number: VG08049
 Keywords:
 Children's preferences

Unified outlook at AUSVEG AGM

A successful 2009 was celebrated at the AUSVEG AGM last November, with all involved setting their collective sights on future opportunities.

Improved, united and strengthened were the sentiments expressed at the AUSVEG Annual General Meeting (AGM) held on 30 November last year in Sydney.

Elections were held on the day of the AGM, with John Brent being re-elected without opposi-

tion to the position of Chairman. Geoff Moar was re-elected to his position of Director representing New South Wales, and Dr Elizabeth Duncan was re-elected unanimously as Deputy Chair.

All states, including Tasmania, participated in the AGM and AUSVEG Board Meeting, along

with other Board Directors, State Executive Officers, AUSVEG CEO Richard Mulcahy, and two AUSVEG staff members.

Comments on AUSVEG “having lifted its game” and “moving forward” were frequently heard from many of the vegetable and potato

industries’ leaders over the course of the day.

Preceding the AGM was a Board Meeting and a separate State Executive Officer meeting, where the harmonisation of minor use programs was discussed.

While the AGM was scheduled



[From left] Deputy Chair Dr Elizabeth Duncan, Chairman John Brent and CEO Richard Mulcahy at the AUSVEG AGM last November.

for only half an hour, it ran for a further 45 minutes due to the enthusiasm of those in attendance when discussing AUSVEG's progress.

A fruitful year

AUSVEG Chairman John Brent began the meeting by thanking the Directors and noting the company's efforts over the year to work through issues, unite and move ahead in a positive and determined manner.

Financial matters were discussed, with thanks attributed to Dr Elizabeth Duncan for her time spent assisting the new CEO in ensuring AUSVEG's finances are in order.

Mr Mulcahy updated those in attendance on AUSVEG's development over the past 12 months, speaking in particular of the progress the company has made since he joined as CEO in April 2009.

He noted that communications—including the strengthening of AUSVEG's public profile—and increased information flow to stakeholders had been a major focus.

Strategic advancement

AUSVEG's position as an industry leader has improved significantly in recent months, with financial improvements and extended communication efforts helping achieve this.

The acquirement of several strategic partnerships between AUSVEG and companies such as Elders, Syngenta, DuPont, Bayer CropScience and Terranova Seeds have served to bring independence to the company and allowed AUSVEG to do more for growers alongside the existing research and development (R&D) work, including policy submissions to Government on behalf of Australian growers.

Several representatives from these strategic partners spoke at a lunch following the AGM, speaking of their desire to connect with customers and engage with growers.

It was noted that AUSVEG's public affairs and advocacy work is set to gain force in 2010 and beyond. Mike Redmond, CEO of the Virginia Horticulture Centre in South Australia, stated he and other State Executive Officers were keen to be involved and provide input, as it is in the industry's interest to hold an official and united position on policy matters.

Further positive outcomes of the strategic partnerships include this year's AUSVEG National Convention, Trade Show and Awards for Excellence, to be held at Conrad Jupiters Hotel Casino on the Gold Coast in May.

The Convention will be an unprecedented event for the vegetable and potato industries and would not be possible without the support of AUSVEG's industry partners.

“AUSVEG's public affairs and advocacy work is set to gain force in 2010 and beyond.”

Progress made

After the CEO finished speaking, discussion was opened to the floor. State Executive Officer and Executive Officer of vegetablesWA, Jim Turley, requested a formal acknowledgement in the minutes regarding the work the CEO and AUSVEG staff have put in to improve the company's position and move forward for the good of the industry.

Industry issues such as a potential grower registration program to improve biosecurity standards as well as the need to encourage healthy eating and increased vegetable and potato consumption by younger generations were also discussed, led by VGA President, Luis Gazzola.

Those in attendance were impressed and pleased with AUSVEG's outcomes over the past 12 months with Mr Brent closing the meeting by declaring, “I'm pretty proud of the progress that's been made”. va

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Keep it under control

Australian growers' interest in controlled traffic farming is on the rise, despite a lack of appropriate harvesting equipment, writes Angela Brennan.

Controlled traffic farming (CTF) is the way of the future for intensive vegetable production, not only in Australia but also throughout the developed world. This was the overwhelming consensus of a group of nine Australians that included growers, contractors and industry representatives who participated in a two-week study tour of CTF through Denmark, the Netherlands and the UK in June last year.

The tour, which comprised farm visits and a two-day workshop, covered the topics of CTF developments in machinery and navigational technology, environmental and climate change issues, and benefits to production and on-farm economics. Subsidised by the National Vegetable Levy, it was the first vegetable-focussed international study tour of CTF undertaken by an Australian group.

"The compatibility of the group and the opportunity to toss around ideas of what we saw in Europe and from our own experiences of CTF in Australia was outstanding," said Peter Aird, an agronomist with Serve-

Ag. "We are all keen—Europeans and Australians—to develop a fully-integrated CTF system," he said.

Forward thinking

Put simply, CTF is an approach to farming that aims to keep the soil in the best condition possible by driving on the same tracks, year in, year out. The drive track is permanently compacted and no machine goes where the crop is grown.

The benefits of CTF include increased yields of better quality, better soil health and more efficient use of nutrition, vastly improved filtration, reduced energy use, and increased carbon storage/reduced greenhouse emissions.

Over the past decade, Dutch and Danish organic produce farmers—whose work depends on good soil preparation—have increasingly adopted CTF on-farm. With the advent of satellite guidance, which makes it possible to return to the same tracks within an accuracy of two centimetres, Dutch growers in particular have shifted CTF thinking for vegetable produc-

tion from "too hard" to "quite possible".

While the finances of installing satellite guidance are significant for most growers, the current design of harvesters poses a larger problem. It is generally accepted that Australia leads the world in CTF for the dry-land grain and sugar industries, but vegetable harvesters need major design changes to achieve a season-to-season CTF system.

Lessons from abroad

European farmers have adopted a seasonal method (SCTF) that maintains the same tracks for all pre-harvesting operations, but accepts that harvest traffic will be random. The Australian tour group sees this as an interim measure.

"SCTF cannot be seen as a viable other option. Frankly, it defeats the purpose of CTF, because harvesters—the heaviest machines of all—destroy the crop zone by driving on it and this needs to be rehabilitated with tillage," said Mr Aird.

"SCTF is better than nothing because the growth zone gets only one lot of traffic and the

“No-one is prepared to give up CTF once they’ve had a go of it.”



This Netherlands farm uses satellite guidance for inter-row weeding.



Clod windrowing for potato planting on 3.2-metre track centres at a farm in Denmark. Images supplied by John McPhee.

tracks can remain tracks all the time, but for CTF to be successful we need fully-integrated harvesting equipment.”

Both European and Australian vegetable growers are working towards this, but progress is slow.

“Developing small-crop CTF-compatible harvest machinery, particularly for root crops such as potatoes and carrots, is one of the worldwide challenges facing full implementation of this system,” said tour group leader John McPhee from the Tasmanian Institute of Agricultural Research (TIAR) at the University of Tasmania.

“It is difficult for growers to demonstrate the value of a fully-integrated system without appropriate harvest machinery, and manufacturers are reluctant to provide suitable equipment to a small, unproven market,” he said.

Tour participants agreed that this problem is economic, not technical. “The day will come when harvesting machines are completely reinvented to suit CTF,” said Mr McPhee.

No going back

Tour participant Joe Cook, a contractor from north-west Tasmania, believes contractors could play a positive role in influencing manufacturers. “CTF is a no-brainer,” he said, “but the manufacturers are not going to make the machines if there is no call for them. Contractors can increase the viability of CTF by building this demand among their customers.”

A highlight of the tour for Mr Cook was the showcasing of the gantry system used in the UK for grain production. “This is the ultimate machine for CTF systems. It is not yet developed for intensive vegetable production but the gantry demonstrates the technological potential for this industry,” he said.

Ed Windley, a Queensland grower of sweet corn, green beans, onions and carrots was the only non-Tasmanian on the trip.

“Tasmania is leading the way on CTF in vegetable production in Australia, but interest is growing in the other states,” he said.

“It is a new method of growing, and that is one of our challenges. Vegetable growers do not have room for experimentation. The seed and crop inputs are too expensive to risk failure. We use smaller machines with more interchangeable parts than most cane and grain producers, and so have more machinery to adapt. While there is genuine interest in this new technology, many growers are watching how this trend develops,” said Mr Windley.

“One thing is certain; of all the people we met on this tour, no-one is prepared to give up CTF once they’ve had a go of it.” Other members of the group were growers John McKenna, David Addison and Michael McCarthy, contractor Damian Darby, and Jason McNeill of Tasmanian Department of Primary Industries, Parks, Water and Environment.

THE BOTTOM LINE

- Controlled traffic farming (CTF) techniques are being adopted by European vegetable growers to increase crop yields and maintain soil health.
- A group of Australian growers and industry representatives toured Europe last year to research the latest in CTF technology.
- While cost impacts are a consideration for Australian growers, there is limited harvesting equipment available that meets CTF specifications.

For more information contact:
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 Phone: 03 6421 7674
 or visit
www.ausveg.com.au/levy-payers
 Project number: VG08124
 Keywords: Controlled traffic or visit these websites:
 Australian Controlled Traffic Farming Association: actfa.net
 CTF Europe: controlledtrafficking.com

Tomato growers discuss levies

In a first for Australia's fresh tomato industry, a meeting was held late last year to discuss the benefits of establishing national R&D and promotional levies for the commodity.

Representative field and greenhouse growers from around Australia met in Sydney in November last year to discuss issues affecting the fresh tomato industry. The main topic was whether national levies should be established to support research and development (R&D), promotion and biosecurity arrangements for fresh tomatoes.

Leading by example

Attending growers were addressed by Antony Allen, Chief Executive Officer of Avocados Australia, who spoke of the avocado industry's experience following the establishment of national levies, and the benefits these levies have brought to growers and consumers.

He reported on R&D and promotional activities that had a supply-chain focus. According to Mr Allen, these activities have

helped ensure that good-quality fruit reaches consumers and growers receive better returns.

He told attendees that the well planned, long-term integrated R&D and promotional program has seen the annual consumption of avocados in Australia increase from less than 1 kg per person to 2.7 kg per person over 18 years.

Hugh Tobin, AUSVEG Communications Manager, clarified to the group how decisions about levy funded projects are made.

"There was some confusion about how the levy would be collected and as a result of the meeting the growers now have a clearer understanding of the role of an Industry Advisory Committee (IAC) and the purpose of a peak industry body," he said.

Biosecurity concerns

Rodney Turner, General Manager of Plant Health Australia (PHA), outlined how biosecurity cost-sharing arrangements between industry and governments at state and national levels are now possible when an industry signs the Emergency Plant Pest Response Deed (EPPRD).

The EPPRD is a legally binding agreement between PHA, the Australian Government, all state and territory governments and national plant industry body signatories.

Industry signatories can be involved in biosecurity policy-making and can help manage incursions of exotic pests or diseases. There is also the opportunity for growers to be reimbursed if they are required to destroy affected crops. At present, the fresh tomato industry is vulnerable to pest incursions as

it is not a signatory to the deed or a member of PHA.

Further discussions

Facilitating the workshop was Richard de Vos, a strategic planner for rural industries. Mr de Vos took the group through a priority-setting session where it was concluded that the major issues faced by the industry were market related. Market information, consumer research and promoting tomatoes were seen as high priorities and activities that national R&D and promotional levies could support.

The group recognised that field growers have not had the opportunity to discuss national issues or levies to the same extent as greenhouse growers, who meet at events such as national conferences.

In light of this, it was decided that field tomato growers needed to meet again to discuss options for the establishment of national levies.

AUSVEG Chairman John Brent said that most horticulture industries in Australia had established national levies, and were reaping the benefits of these strategic investments.

"The establishment of fresh tomato levies would be an important step for the industry—both in improving productivity through R&D and by giving tomato growers protection against pest and disease incursions through the establishment of a biosecurity levy," he said.

The workshop was organised by Jonathan Eccles on behalf of AUSVEG, Horticulture Australia Limited (HAL) and the Australian Hydroponic & Greenhouse Association (AHGA).



i For more information contact:
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Ask the industry

Phil Hoult, Technical Services Lead for Syngenta Crop Protection, responds to questions, concerns or problems you have about protecting your crops.

Can chemical controls assist transplanted crops?

For growers who transplant crops, it is critical that seedlings are in good condition. Plants should be acclimated to the shock and stress of transplanting into the field by slowly altering the growing conditions of the greenhouse so these conditions are no longer optimal—these plants are said to have been “hardened off”.

Care should be taken not to over-harden seedlings, as this can lead to bolting or setbacks in maturity.

Shock to the system

Even with best seedling management, conditions at planting may not be optimal and weather conditions that are particularly hot, dry or windy can induce or

exacerbate “transplant shock” in seedlings.

Transplant shock is the environmental change in moisture, temperature and humidity that seedlings experience after they have been transplanted. It can damage roots and shoots of young transplants. Signs of transplant shock include wilting, root death, leaf drop and even seedling death.

Reducing transplant shock

In some situations, soil-applied insecticides can positively affect the health of seedlings, helping to reduce the effects of environmentally-induced stress.

Thiamethoxam is a Group 4A insecticide known as a neonic-

otinoid; this group also includes imidacloprid. However, despite being from the same group, these products behave slightly differently.

The mechanism for how thiamethoxam helps reduce the effects of problems such as transplant shock is complex, but effectively the insecticide triggers an interaction of specific proteins with various stress-defence mechanisms of the plant, allowing them to better cope under tough growing conditions. This is known as the Thiamethoxam Vigour Effect. Treated plants tend to be more tolerant towards these stress factors.

Depending on growing conditions and environmental

factors, treated plants can grow more vigorously under sub-optimal conditions, giving them a better chance of reaching their full potential.

Globally, thiamethoxam is registered for use in a range of crops. Currently it is registered in Australia for use as a soil-applied insecticide for sucking pests in tomatoes under the brand Actara. Further registrations are planned for use in crops that will benefit Australian vegetable growers. **va**

i If you have a question to ask the industry, email <editor@ausveg.com.au> or ring the Syngenta Technical Product Advice Line on 1800 067108. Some questions may be published.

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The Butler

Award-winning grower Rick Butler is one to watch. At only 31 years of age, this industry leader, mentor, equipment designer and advisory group member is showing no signs of slowing down. Words by Jim Thomson.

It was all but inevitable that Victorian grower Rick Butler be a recipient of the 2009 HAL Young Leader Award, which was announced in November last year. Over the past few years, Mr Butler has been one of the few young growers who have thoroughly involved themselves in industry affairs—both in a formal and informal capacity. Along the way, he's discovered that the more he puts in, the more he gets back.

At 31 years of age, Mr Butler—a sixth-generation farmer—is already Managing Director of Butler Market Gardens. He farms 80 hectares in

Heatherton, about 30 minutes from Melbourne's CBD, growing spring onions, Asian vegetables, decorative lettuces, herbs and rhubarb.

Working full-time at Butler Market Gardens since he was 18, he has amassed considerable industry experience. He's taken part in a young growers tour to America; he's a member of the Production Advisory Committee, which recommends levy investment proposals to the Vegetable Industry Advisory Committee (IAC); he's completed his Certificate III in Horticulture and a Diploma in Production Horticulture Management;

he was a member of the 2009 Australian Vegetable Industry Conference steering committee; and he received a Victorian Government grant to develop and manufacture a soft-vegetable washing machine—which he spoke about to 400 delegates at a conference in Spain in 2008.

In his spare time, he's started a summer work program for students from his old high school, providing them with the opportunity to earn money and learn about the horticulture industry.

Balancing act

This all-encompassing style is

indicative of Mr Butler's work ethic. His Certificate III and diploma were both obtained while he was working full-time, familiarising himself with all aspects of the business.

"I started working full-time in 1996. For the next four years, I got as much experience as I could in all areas of the company, including transport, marketing and production," he said. These initial four years also saw him studying two nights each week. "The benefit of me working full-time was that I had experience in most of the subjects' prerequisites. I would ask my lecturers to come to the farm



did it

“After joining the Production Advisory Group, my knowledge increased and I was able to network with other people in my industry.”

and assess what I was doing. If I met the requirements, they would usually pass me for that subject,” he said.

If he didn't have enough experience in a subject, he would enroll to complete the required work. This combination of practical and theoretical education was a great combination.

“For many growers, information is either passed on by previous generations or taught by peers. However, some aspects are better taught in the classroom. For example, pest control is a very heavy subject in regards to production horticulture. You have to identify

different types of pests such as thrips and aphids and that can be difficult,” he said.

“It's a similar situation with weed control—you have to identify all the different weeds so that if you use chemical controls, you use the right product. The combination of in-field and classroom education works well.”

The next generation

Mr Butler is keen for production horticulture skills to be passed on to the next generation. This is why he trains selected members of his staff in all aspects of his business, and why he started

the graduate program at Butler Market Gardens.

For students, it's an opportunity to earn some money in the break between school and university; however, it doubles as a way of introducing non-industry people to horticulture and teaching them about the different employment opportunities.

“I might not get someone to work with me, but I may get them to work in the industry, or teach them a bit more about it. I'm in my third year of this initiative and am looking at employing a couple of people this summer,” he said.

Every second year he attends a careers night at the school to talk with students about career paths in horticulture.

“The average age of farmers in Australia is about 58. Many people from my generation have left the industry, which is partly to do with land availability. For example, if a farmer sells his land as he reaches retirement, it’s very difficult for his son or daughter to find suitable land to start up a vegetable-growing business.”

According to Mr Butler, a number of factors are at play here, including urban sprawl and the availability of water.

“Sometimes you have the soil, but you don’t have access to the water,” he said.

Unexpected benefits

These are some of the issues that are brought to bear in his capacity as a member of the Production Advisory Committee, which makes recommendations to the Vegetable IAC about how the National Vegetable Levy should be invested.

Mr Butler’s introduction to the Production Advisory Group came after he participated in a young growers tour to America in 2006, which included a visit to the PMA Fresh Summit. Following this, he applied to be a member of one of the five advisory groups. His acceptance and subsequent participation proved to be a fantastic learning experience.

“I used to be very sheltered back in my company, doing what I was doing and looking after myself, but when I started to get involved in what was happening out there it opened my eyes. My knowledge increased and I was able to network with other people in my industry,” he said.

“This was a very good thing because there are not many people my age—or friends of mine—who are farmers. To be able to mix and talk turkey about my industry to peers is hugely beneficial.”

Water wise

Not short on initiative, Mr Butler

has also turned his hand to designing equipment by developing a soft-vegetable washing machine, which is now available for other growers to purchase or adapt to suit their requirements.

In 2006 and 2007 he developed the washer with funding received from the Victorian Government’s Smart Water Fund. The washer captures and filters water for reuse, unlike many other washing systems that use water only once.

The three-phase cycle strains grit and sand from the water into one tank, traps organic matter from the water in a second tank and stores water in a third tank before it is fed back through the machine.

In the second stage of filtering, a biocide additive is added to combat bacteria build up in the water. This is monitored by probes in the water tanks that advise a computer of the water’s bacteria levels and the required amount of biocide to remove and prevent further build up.

“There was a Smart Water Fund grant available and I saw

“If young farmers give a little bit to the industry, they’re going to get back 10 times more than what they give.”





Rick Butler [right] receives the 2009 HAL Young Leader Award from Dr Nigel Steel Scott, then Chairman of HAL, at the awards ceremony in Sydney last year

an area of my business where I could improve my practices and increase my capital," he said.

Growers who are interested in viewing the washer are welcome to visit Butler Market Garden or meet with the manufacturer, Tripax Engineering.

"If growers want to use something similar on their farms, they contact Tripax and have it built. While I designed it, I do not have a patent on it. As it was partly funded by the Smart Water Fund, the washer is meant to benefit others, not just me," said Mr Butler.

Since its completion, there has been national interest in the washer, with at least six growers either inspecting the machine or having a version of it adjusted to their needs.

"As I grow many Asian vegetables and decorative lettuces, I designed it to suit my business. Other people might be herb growers, for example, and they would need a smaller version."

In 2008, he presented at a Rijk Zwaan Salanova conference that was attended by 400 delegates from around the world.

"I spoke about my washing system and how Salanova lettuce is developing in Australia as a product at a retail level," he said.

Worthy winner

All this work culminated in Mr Butler being nominated for the HAL Young Leader Award, which he received at a ceremony in Sydney in November last year.

"For a grower, it's humbling to receive such an award," he said.

In the meantime though, he shows no signs of slowing down. He'd like to continue his work helping to oversee the investment of levy funds—but with a slight change of focus.

"I'd like to perhaps move from the Production Advisory Group

into the Marketing or Consumers Advisory Groups because I have a lot of experience with supermarkets. Production was my area of expertise but now I'm more into the sales and marketing of the company," he said.

He also has his eye on trips further afield than the regular visits to Sydney that are part and parcel of being an advisory group member.

"Every second or third year I like to go overseas; I can't afford to leave the business every year."


This could see him attending another PMA Fresh Summit, and—in a way—coming full circle. After all, it was attending the PMA Conference back in 2006 that saw him fast-track his involvement with the wider industry.

A firm advocate for young growers to step up and assume greater leadership positions in the industry, Mr Butler leads by

example.

"I'd like to encourage other people to apply to join the advisory groups or get involved with their state associations. If young farmers give a little bit to the industry, they're going to get back 10 times more than what they give," he said.

He also mentions the support mechanisms in place to help growers make this transition. "There's a lot of support through AUSVEG, they've supported me extremely since the PMA tour back in 2006," he said.

"The opportunities are there. A stepping point would be to participate on a growers tour and understand that growers' levies are paid towards these activities—they benefit both individuals and the industry as a whole." 



Wonderful watercress

While it could be leading the “superfood” charge, watercress remains underappreciated in Australia, writes Principal Horticulturalist John Fennell.

Consumer interest in healthy eating and high-health foods is on the rise. While no single food can totally support good health, some foods are informally referred to as “superfoods” because they are especially rich in health-promoting nutrients such as antioxidants or phytochemicals (bioactive plant compounds). These foods pack a comparatively-high nutritional punch.

Sweet potatoes, broccoli, kale, blueberries and wild salmon are often cited as high-health foods. It may also be worth the vegetable industry’s while to consider watercress as a contender for the superfood label.

Nutrient rich

Research has shown that, gram for gram, watercress is a better

source of vitamins C, B1, B6, K and E, iron, calcium, magnesium, manganese and zinc than many other vegetables. While raw broccoli has more vitamin C and magnesium than watercress, in Australia broccoli is usually cooked before it is eaten.

Watercress is brimming with beta-carotene and vitamin A equivalents—as well as being important antioxidants, these are needed for healthy skin and eyes—containing more than four times the amount of some of the other superfoods mentioned above.

Additionally, watercress contains greater quantities of lutein and zeaxanthin, which are carotenoids that act as antioxidants—meaning they can mop up potentially damaging

“Watercress contains more than four times the amount of beta-carotene and vitamin A equivalents than many other superfoods.”

free radicals. Quercetin, a type of flavonoid and powerful antioxidant, is also found in greater quantities in watercress than it is in tomatoes.

Watercress is a particularly rich source of phytochemicals called glucosinolates that, when eaten, break down to isothiocyanates. It is these compounds that give watercress its peppery taste and some of its strongest health benefits.

Positive results

Results of clinical trials with watercress at the University of Ulster in Northern Ireland have recently been published and can be found at

www.watercress.co.uk/medical.

The first trials, conducted within a laboratory, treated human cells with watercress extract. This treatment slowed the growth of cancer cells and stimulated the ability of cells to resist DNA-damaging agents that are thought to induce cancer.

These trials were followed by dietary trials with 30 men and 30 women, of which half were smokers. Trial participants consumed 85 grams of watercress each day for two months. These trials showed that eating watercress significantly reduced DNA damage to blood cells, which is considered to be an important trigger in the development of cancer. The benefits were greatest in the group of smokers, who started off with lower antioxidant levels compared with the non-smokers.

Increase consumption

While research projects such as these indicate that consumption of watercress may have considerable health benefits, in

Australia it is an underappreciated commodity.

In the UK, watercress has been eaten for centuries where it is consumed as a salad leaf. In fact, watercress, spinach and rocket (WSR) is the UK's most popular salad mix. In stark contrast to this, watercress consumption in Australia is comparatively low. Many Aus-

tralian supermarkets position it as a herb rather than as a salad option.

A study on watercress production was funded by Rural Industries Research and Development Corporation (RIRDC) and a report titled *The Potential for Watercress Production in Australia* can be obtained from RIRDC.

The report details field and hydroponic production methods and provides results of consumer evaluations. While many immigrants responded favourably to watercress, less experienced consumers found the taste to be quite strong. However, they also stated that the WSR mix was a satisfying option.

It remains to be seen whether watercress's profile in Australia will increase, but as the nation's palate becomes familiar with new tastes and ingredients, it may be worth the industry shining a spotlight on this superfood that is currently waiting in the wings. **va**

Glossary of terms

Antioxidant

A substance that removes potentially damaging oxidising agents—such as free radicals—in living organisms.

Free radical

An unstable element in the body that is believed to be overproduced as a result of chemical pollution. The presence of free radicals may lead to cell damage.

Phytochemical

A chemical compound that occurs naturally in plants. The term generally refers to chemicals that may affect health, such as beta-carotene or glucosinolates. **va**

THE BOTTOM LINE

- With consumers' increasing interest in high-health "superfoods", the nutrient-rich watercress is a likely candidate to be given this label.
- Gram for gram, watercress is a better source of vitamins C, B1, B6, K and E, iron, calcium, magnesium, manganese and zinc than many other vegetables.
- Although under-consumed in Australia, the potential to increase watercress consumption is an opportunity that the industry may want to explore further.

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To download the *The Potential for Watercress Production in Australia* report visit:
www.rirdc.gov.au



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Early-bird irrigation reduces disease

Growers who are keen to increase profits and reduce the incidence of fungal diseases on-farm should be mindful of when they irrigate their crops, discovers Graham Gosper.

Vegetable growers are already reaping the benefits of a study that has found simple changes in the timing of overhead irrigation can dramatically reduce fungal disease infections and help boost farm profits.

Researchers found that early-morning irrigation reduces the risk of white blister in red radish, broccoli and spring onion crops, and that the risks are further reduced by growing disease-tolerant varieties.

Victorian Department of Primary Industries (DPI) Plant Pathologist Dr Liz Minchinton said the study involved a three-month broccoli irrigation trial near Werribee in Victoria and surveys of more than 20 red radish and spring onion crops near Melbourne.

“The trial revealed that irrigating broccoli crops at night can double the incidence of white blister compared with early-morning irrigation around 4 am,” said Dr Minchinton.

The survey found red radish crops irrigated around 6 am showed significantly lower incidence of white blister compared with those irrigated in the evening—from 8 pm to midnight—over three of the four seasons surveyed.

“Results from the trial indicated morning irrigation of broccoli could lift the crop contribution to farm profit by five per cent but by a much larger 22 per cent through the use of disease-tolerant cultivars,” said Dr Minchinton.

“We had expected greater

improvements in profit but various limitations during the trial, including a lack of water, impacted on the findings.”

“Morning irrigation of broccoli could lift crop profit by 22 per cent through the use of disease-tolerant cultivars.”

Working together

The irrigation study is just one part of a national Horticulture Australia Limited (HAL) research project led by Dr Minchinton that aims to help growers develop cost-effective ways to better combat fungal diseases.

The project, which began in 2007, is a collaboration between researchers at the Queensland Department of Employment Economic Development and Investment (DEEDI), the University of Queensland, South Australian Research and Development Institute (SARDI),



The incidence of fungal diseases such as white blister [above] in broccoli crops may be reduced by the timing of overhead irrigation. Images supplied by Dr Liz Minchinton.



Changes to irrigation schedules may positively affect the health of radish crops.

Peracto Tasmania, the Horticulture Research Institute in Warwick (UK) and the Victorian DPI.

The overall aim is to investigate the economics of managing downy and powdery mildew and white blister by irrigation, nutrients and disease-predictive models, with a view to reducing fungicide usage.

As well as carrying out the irrigation study Dr Minchinton and her team are concentrating on benchmarking and developing disease-predictive models for downy mildew and white blister. They are also working with a UK Horticulture Research Institute team to develop a spore sample detection kit.

The University of Queensland and DEEDI researchers are developing and benchmarking models for powdery mildew that are being trialled on zucchini and cucumber crops in Queensland. SARDI researchers are investigating the effect of nutrient practices on fungal disease development.

Excellent advice

Dr Minchinton said the irrigation study involved a valuable exchange of information between growers and researchers during

the trial and crop survey.

“Several growers reported beneficial results and a big difference in fungal disease activity after varying their irrigation routines during the survey,” she said.

“The feedback since has been good with both Victorian and interstate growers saying we have been spot-on with our advice.”

Details of the project’s findings have been circulated among growers through a field day at the broccoli trial site and at steering committee updates. The research team is now surveying growers to measure the take-up of findings.

Reduce infections

According to Dr Minchinton, while the irrigation findings do not provide a complete solution to fungal disease, they will assist growers keen to employ integrated pest management (IPM) strategies.


“They show that by adopting better irrigation protocols growers can reduce fungal infections and hopefully get greater efficacy from their fungicides,” she said, adding that work on the other sub-projects is progressing well and the project is on target for completion by November this

year.

A key section of the work in Victoria involves identifying precise protocols for the management of downy mildew in lettuce crops. Trials are well advanced near Cranbourne to examine management protocols for downy mildew, which have been developed overseas.

The team is working to incorporate the best aspects of the overseas models into one that will suit Australian conditions and can be used in association with local weather stations.

Dr Minchinton said the spore sample detection kit, which is being developed with the assistance of UK growers, will be a big help in the battle against white blister in intensive vegetable-growing areas such as those around Melbourne, Devonport in Tasmania and Manjimup in Western Australia.

“It will give growers the ability to accurately measure disease spore activity in the field. By combining that information with weather station readings they will be able to better target chemical spraying and reduce costs. By the end of the project we will have a prototype that will need validation in the field,” she said. 

THE BOTTOM LINE

- Early-morning overhead irrigation of red radish, broccoli and spring onion crops can reduce the risk of white blister.
- Irrigating disease-tolerant broccoli crops at this time instead of in the evening could increase crop contribution to farm profits by 22 per cent.
- Well-timed overhead irrigation can assist growers who are keen to adopt IPM strategies on-farm.

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www.ausveg.com.au/levy-payers
 Project numbers:
 VG07070, VG01045
 Keywords: Predictive models

ECONOMIC OUTLOOK

Large-scale farming positioned to absorb

The latest annual ABARE survey clarifies key industry trends regarding the

The previous issue of *Vegetables Australia* relayed the broad results of the latest economic survey of vegetable growers conducted by the Australian Bureau of Agriculture and Resource Economics (ABARE) [see issue 5.3, page 11].

This article highlights key findings of the *Australian Vegetable Growing Farms: An Economic Survey, 2007/08* but is by no means comprehensive. Further analysis of the data will be undertaken on behalf of the industry. The data and information gained from this survey helps identify the industry's strengths and weaknesses, and supports industry efforts to improve productivity and profitability.

The survey, which is the third of four commissioned by the industry to understand the financial and socio-economic characteristics of vegetable farms, was conducted by interviewing growers in all states and the Northern Territory. Statistical techniques were applied to eliminate bias in the selection of growers.

The financial data collected in 2009 relates to the financial year 2007/08 to accommodate the filing of taxation returns. The survey averages the financial data collected; it does not represent the position of individual growers.

Financial performance

The vegetable industry's financial performance deteriorated in 2007/08. On average, returns from vegetable growing fell with receipts down (6.3%) and costs up (1.6%). Following this

trend, partial data for 2008/09 indicates that receipts may have fallen again.

On average, farm cash income was \$166,000 in 2007/08, but larger growers received better returns. An estimated 13% of growers had negative farm cash income in 2007/08 (receipts minus costs) and were either using past savings, debt or off-farm income to sustain their operations.

This is not a sustainable position. A large number of growers were working for income below the imputed value of their labour and family labour em-

ployed on-farm. Farm business profit (farm cash income plus changes in trading stock minus depreciation and imputed labour costs) was negative for an estimated 56% of growers.

On a more positive note, lack of equity does not appear to be a barrier to adequate returns. Vegetable farms with low equity (less than 70%) generally had higher cash income and business profits than the norm.

Increased costs

Hired or contracted labour remains the major cost for vegetable growers, who are more

exposed to labour costs than other agricultural industries.

In 2007/08, labour costs rose moderately. The big cost increases were in interest paid, which reflects higher official interest rates, and fertiliser costs. Interest paid as a proportion of total costs rose from 4.7% in 2006/07 to 6.9% in 2007/08. Fertiliser costs rose from 8.9% to 10.6%.

Scale of operations

The financial data for 2007/08 confirms that of previous surveys, in that scale of operations impacts on financial performance. The rate of return

Table 1. Financial snapshot of the industry

Variable	2005/06	2006/07	2007/08
Cash receipts (\$)	431,133	569,549	570,089
From vegetables (%)	86	88	83
Cash costs (\$)	303,084	397,555	403,992
Farm cash income (\$)	128,049	171,994	166,097
Farms with negative cash income (%)	18	17	13
Farm business profit (\$)	46,043	82,292	74,889
Farms with negative business profit (%)	54	59	56
Rate of return excluding capital gain (%)	2.5	4.2	4.0
Rate of return including capital gain (%)	9.8	7.7	4.1
Farm capital at 30 June (\$)	2,750,649	2,606,899	2,872,202
Farm debt at 30 June (\$)	164,985	262,522	378,346
Equity ratio (%)	94	90	87

Source: Australian Bureau of Agriculture and Resource Economics



operations better increased costs

performance of Australian vegetable farms, writes Industry Economist Ian James.

for growers with less than five hectares under vegetables was negative 1.1% while the largest growers had positive rates of return on capital of 9.2%.

Undercover versus field

In general, undercover growers' financial performance was lower than for field producers with rates of return on capital employed of 1.1% compared with 4.1% for field growers. This was still better than the rates of return on broadacre farms surveyed by ABARE in 2009.

State variations

South Australian and Queensland growers' financial returns, on average, were lower in 2007/08 but growers in all other states performed better. Tasmanian growers showed the most improvement in 2007/08 but their farm cash income remains the lowest of all the states.

Seasonal conditions

Climate can impact on returns. The majority of growers reported that seasonal conditions in 2007/08 were below average with 17% describing the conditions as drought. Seasonal conditions were worse across southern Australia; 92% of growers in South Australia, 87% in Victoria and 76% in Tasmania described conditions as below average or worse.

In contrast, 61% of growers in New South Wales, 62% in Queensland, 76% in Western Australia and all growers in the Northern Territory described conditions as average or above.

“The majority of growers reported that seasonal conditions in 2007/08 were below average with 17 per cent describing the conditions as drought.”

Irrigation

More than 90% of vegetable growers rely on irrigation. Groundwater bore is the major source of water and is particularly important in South Australia, Western Australia and the Northern Territory. Irrigation schemes are important in the eastern states, while Tasmanian growers rely heavily on on-farm storage dams.

Pests and diseases

This is a top priority for vegetable growers. Almost all growers follow a set pest and disease monitoring program. Pest and disease control is seen as the most important priority for research and development.

Selling methods

The major destination for vegetables is the local capital city wholesale market, except in the Northern Territory and Tasmania. Reflecting the unique nature of some vegetables produced in the Northern Territory—such as okra and snake beans—the majority of vegetable production is sent interstate.


In Tasmania, vegetables are largely sold direct to vegetable processors.

Relationship with main buyer

Seventy-nine per cent of growers rate the relationship with the main buyer of their produce as good or excellent. Only 11% of growers rank the relationship as poor, with the level of discontent being highest in Victoria and Queensland.

Grower management and awareness

Grower responses to questions centred on the long-term viability of their operations, which shows a clear understanding of the issues they confront and a high level of sophistication as to the necessary course of action. Inadequate rates of return may be an inhibiting factor in taking this action.

Greater mechanisation and use of technology were seen as important, as were higher-yielding varieties. Scale of operations was an important consideration for Tasmanian growers. In terms of impediments, farm input costs were seen universally as the major threat. 

THE BOTTOM LINE

- According to a national ABARE survey, in 2007/08, average returns from vegetable growing fell with receipts down (6.3%) and costs up (1.6%).
- Scale of operations impacts on the financial performance of farms. The largest vegetable growers had positive rates of return on capital of 9.2%.
- Growers consider pest and disease control to be the most important priority for research and development.

 To download *Australian Vegetable Growing Farms: An Economic Survey, 2007/08* visit: www.abareconomics.com



Improve environmental outcomes with grower/NRM partnerships

Growers need to work with NRM Regional Bodies to increase their involvement in catchment planning, writes EnviroVeg Consultant Dr Siwan Lovett.

EnviroVeg

As Australia is home to a wide range of vegetable-growing environments, 56 Natural Resource Management (NRM) Regional Bodies have been established to manage and protect the nation's natural resources.

An integrated NRM Catchment Management Plan—developed with local communities and supported by government and the best available science—has been developed for each of the 56 regions. These plans consider the environmental, social and economic impacts of NRM decisions on a regional basis, and aim to improve the sustainable management of natural resources on a regional scale.

Every grower in Australia lives and works in one of these NRM

regions, yet in previous projects that investigated the links between NRM Regional Bodies and growers it was discovered that there was a low level of awareness and involvement by vegetable growers in local decision-making processes and catchment planning.

Get involved

Vegetable production relies on access to secure, good-quality water—it is a fundamental issue for the ongoing viability of the sector. Growers need to be aware of the NRM Catchment Management Plans for their region to know what is likely to occur in terms of future water allocation and land-management strategies.

One of the best ways to do this is for growers to be involved in the decision-making processes governing land and water management in their region.

Over the past 12 months, a project called *Building Partnerships with NRM Regional Bodies using EnviroVeg as a Resource Management Tool* has worked with vegetable growers and NRM Regional Bodies to look at ways the two groups can work more closely together.

Through this project a sample of NRM Catchment Management Plans was reviewed against the EnviroVeg manual—a key document for growers that contains management advice for improving on-farm environmental and productivity

outcomes.

Linking the two documents revealed that growers complying with the EnviroVeg manual management recommendations generally met their local NRM Catchment Management Plan objectives and targets. This meant that these growers were also likely to qualify for incentive funding to assist them with environmental projects on-farm, such as tree planting, fencing and stream restoration.

As Harley West, Landcare Coordinator from the Queensland Murray Darling Committee said: “From the perspective of the NRM ‘industry’, the EnviroVeg manual does a lot more than promote ‘smart’ farming practices. It also introduces the essentials

of sound NRM, for example, the continuous-improvement cycle, the whole-of-farm approach, the recognition of biodiversity as an issue to be considered, and the benefits of working with neighbours to develop group or sub-catchment plans”.

Contact your local NRM body

Work will continue through the EnviroVeg program to build stronger relationships between growers and their local NRM Regional Bodies, as the two groups need to work together to grow a sustainable future.

To learn more about the NRM Regional Body in your area and possible incentive payments for on-farm environmental projects, visit the Horticulture for Tomorrow website, www.horticulturefortomorrow.com.au, or the Australian Government NRM website, www.nrm.gov.au.

EnviroVeg informs industry

Twelve EnviroVeg workshops were presented across Australia in 2009.

Growers are under increasing pressure to demonstrate their environmental credentials, as consumers demand more information and assurance that the food they eat is produced responsibly.

EnviroVeg has supported growers in responding to these demands and adapting their farming practices accordingly by running a series of 12 workshops in locations across Australia in 2009.

Attendees included growers, industry suppliers and retailers, and NRM groups.

- Four workshops focused on applying the EnviroVeg manual on-farm, providing practical assistance, guidance and ongoing support.
- Four considered climate change impacts on the sector, with location-specific presentations and workbooks developed to provide growers with information about predicted climate change impacts and possible strategies for mitigating and adapting to those changes in their region.
- Four focused on managing healthy soils and promoted products from the Healthy Soils for Sustainable Farms Program. They also provided growers with access to the latest information on soil testing, soil productivity and soil-management practice.

To read more about a soil-health workshop held in Bowen, see page 41.

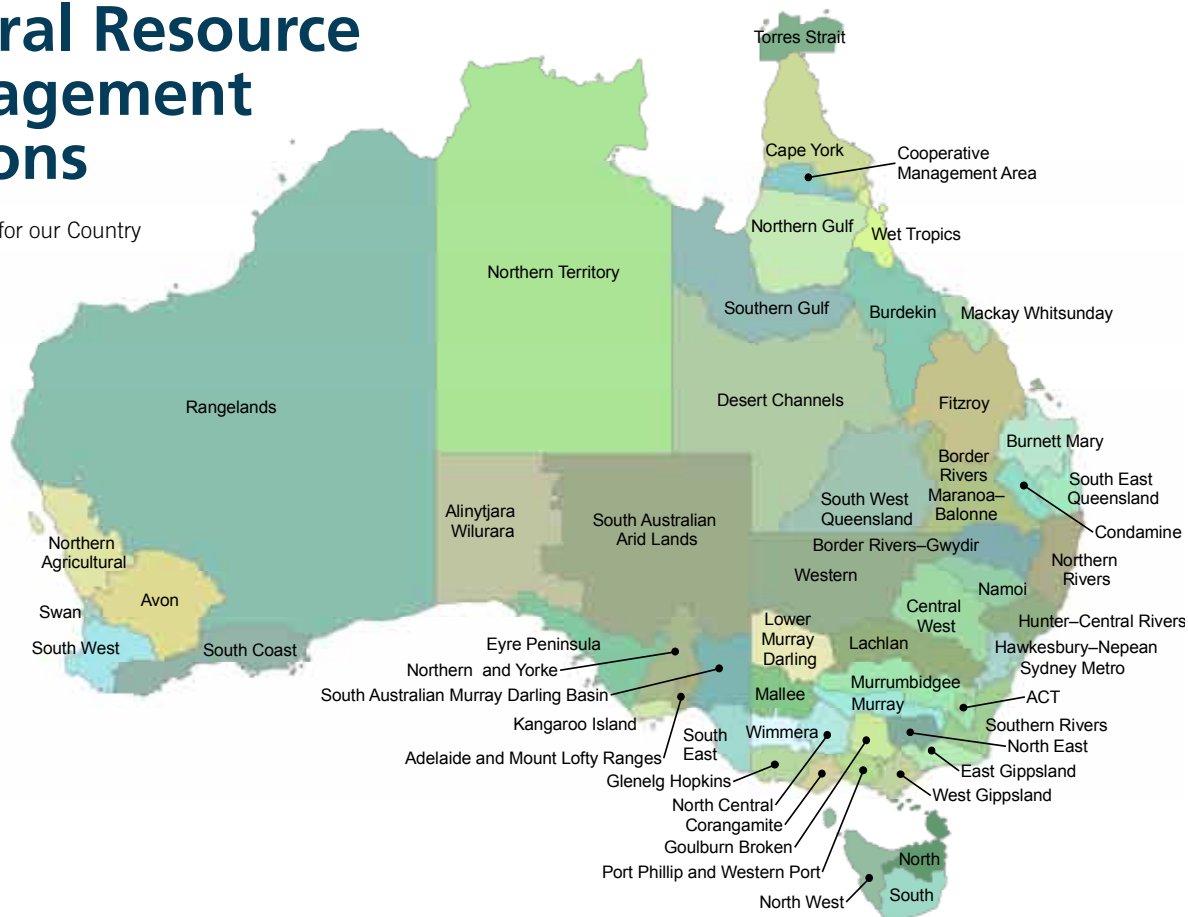
New pages on the EnviroVeg website provide information about the workshops, along with further resources for growers about climate change, healthy soils and using the EnviroVeg manual and self-assessment checklist as part of their farming business.

i For more information visit the EnviroVeg pages of the AUSVEG website:
www.ausveg.com.au

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Natural Resource Management Regions

Source: Caring for our Country



Young growers expand their business horizons

Queensland's young vegetable growers had an action-packed 2009, cultivating new ideas and networks, and developing their business skills.

Last year, the Queensland Department of Employment, Economic Development and Innovation (DEEDI) received funding from the National Vegetable Levy and matched Australian Government funds to roll out a two-year industry development project that aims to improve the business of growing vegetables for the state's young producers.

Project leader and DEEDI Horticulture Industry Development Officer (IDO), Clinton McGrath, said the project would benefit young people working in the industry.

"The project is aimed at young vegetable growers who want to expand their businesses and examine other business opportunities through a greater understanding of production drivers, business finances, marketing and establishing networks," he said.

"The two core principles of the project are to strengthen internationally-competitive Australian vegetable supply chains and motivate growers through

visionary leadership and change management.

"We engage with value chains, provide participants with tools and opportunities to assess the current performance of their businesses and the costs and benefits of using other models, and create tailored skill-development programs."

Dual focus

The project was designed through focus groups set up in key Queensland vegetable-growing regions—one in the Lockyer Valley and west Moreton, centred in Gatton; and the second on the Darling Downs, centred in Stanthorpe.

"The young growers' focus groups drive the timing and information delivered at project activities," said Mr McGrath.

Grower Brent Story from Story Fresh, a Cambooya-based lettuce processing operation, is enthusiastic about the project. Mr Story is a member of the Darling Downs group.

"This project offers a great

opportunity to develop industry contacts, gain knowledge to improve workplace systems and develop business skills, such as cash flow management," he said.

Industry experts

The project kicked off at two industry seminars in August 2009 at Gatton and Stanthorpe. Topics included vegetable consumer research, disease and pest management, and overseas vegetable-production trends.

There was also a study tour of vegetable production sites on the Darling Downs and Lockyer Valley in August with nine participants. The tour included visits to Grassdale feedlot, a cotton farm and the Dalby Bio-refinery.

Mr McGrath said the tour exposed participants to other agricultural industries and methods of doing business, such as forward selling and contract marketing.

Last year's initiatives wrapped up in December with seminars in Gatton and Stanthorpe, both

of which had exceptional line-ups of key industry speakers.

At the Gatton seminar in November, presenters included:

- Young Kalbar farmer Ed Windley who discussed a European study trip that focused on controlled traffic farming (CTF) [see page 22]
- Researcher Julie O'Halloran from DEEDI, who spoke about the economics of CTF in the Lockyer
- Carmen Quigley from Bayer CropScience, who presented on new chemistry for controlling sucking insects
- Researcher Sarah Limpus from DEEDI, speaking about a new decision-support tool on water use efficiency [see page 11].

Presenters at the Stanthorpe seminar in December included:

- Martin Kneebone from freshlogic, who spoke about the Consumers and Markets sub-program of the Vegetable Industry Development Program (VIDP). This



The August 2009 tour group at Max Durham's hydroponic farm in Gatton: [from left] Ross Cannavo, Mark Best from DEEDI Toowoomba, Tim Harslett, Nathan Clackson, Tim Carnell, Grant Sweet, Clinton McGrath from DEEDI Applethorpe, Mick Simpson, Michael Sippel, and Jamie Day.

presentation was conducted as a webinar [see panel]


- Carmen Quigley from Bayer CropScience, who presented on new chemistry for controlling sucking insects.

Cutting-edge communication

Mr McGrath said that this year's program includes business skills workshops, more seminars, a soil workshop, a value chain workshop, and another short study tour investigating the supply chain.

"Growers are driving the priorities within this initiative, which is funded by Horticulture Australia Limited using levy funds. Our role is to ensure effective linkages between the young growers and industry leaders and innovators at both the state and national level," he said.

"Cutting-edge e-communication technologies are being used to fast-track these contacts and networks."

A project blog allows growers and presenters to remain in contact online, and provides a forum for them to discuss industry tools and initiatives and post questions for advice or feedback. 



DEEDI Horticulture IDO Clinton McGrath [left] with grower Brent Story. Images supplied by Louisa McKerrow.

A word to the web-wise

Technology is helping growers access outputs and information from the new Vegetable Industry Development program.

THE BOTTOM LINE

- Young growers in the Gatton and Stanthorpe regions in Queensland have access to a series of tours, seminars and workshops that aim to increase their business skills.
- These initiatives also provide opportunities for networking, as several key industry stakeholders are involved.
- Online technology, including blogs and webinars (web seminars) have been incorporated to ensure group members remain in contact.

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www.ausveg.com.au/levy-payers
Project number: VG09081
Keywords: Business skills

Having a direct line of contact to the project leader of the Consumers and Markets sub-program, which is part of the Vegetable Industry Development Program (VIDP), was a bonus for a group of Stanthorpe growers who attended a seminar as part of the Queensland Department of Employment, Economic Development and Innovation (DEEDI) young growers business advice project.

Fourteen growers attended the evening. In addition to them receiving information about industry trends and irrigation monitoring tools, a web seminar (webinar) was presented by freshlogic Director Martin Kneebone, manager of the Consumers and Markets sub-program.

The webinar was arranged following a presentation to growers in the Stanthorpe region by

AUSVEG CEO Richard Mulcahy, who outlined aspects of the VIDP being conducted by freshlogic.

Grower benefits

Hot on the heels of the inaugural Veginsights, a weekly newsletter that details market update news to growers, Mr Kneebone spoke to the group via a phone-link, talking them through an on-screen presentation that he controlled remotely from the freshlogic office in Melbourne. Also in attendance at the Melbourne location was AUSVEG Communications Officer Erin Lyall.

Speaking with *Vegetables Australia* before the webinar, Mr Kneebone discussed the genesis of the webinar and the range of services and information available to growers as part

of the VIDP Consumers and Markets sub-program.

"Clinton McGrath from DEEDI invited me to participate in the webinar, which was an opportunity to increase growers' awareness of information contained in communications such as Veginsights—the sub-program's flagship output," said Mr Kneebone.

As initiatives such as webinars are resource-intensive—and thus difficult to offer on a regular basis—growers can best benefit from the sub-program by registering to receive the weekly Veginsights, the quarterly market summary and consumer insight reports, and an annual situation and outlook review that includes an overview of market trends.

continued page 40

Consumer trends

The information provided in these outputs is derived from a wide array of sources, including Mealpulse and Adwatch.

Mealpulse is a nationally-weighted panel of Australian consumers that collates 14,000 responses per year about consumer food purchases and purchasing behaviour, while Adwatch collects and analyses all retail food advertisements that feature fresh and processed vegetable products.

Veginsights uses these and other information sources to track, profile and communicate to growers how many food shops consumers make each week, the breakdown between purchases at supermarkets and specialty stores—such as independent greengrocers—and how often consumers eat at home.

Seasonal conditions and their impact on consumer preferences are also tracked and profiled. For example, in late-November last year, consumer preferences shifted between soft cooked vegetables and salad components due to the weather and changes in promotional activity

from retailers.

Mr Kneebone said that as market information is constantly changing, it's important that growers keep abreast of market and consumer trends.

"The vegetable sector has huge amounts of switching in terms of what consumers purchase, week in, week out. It's valuable to understand these movements, and lay the groundwork for how these trends can affect growers' businesses," said Mr Kneebone.


He cautioned that while there were no silver bullets when it came to bridging the gap between the farm-gate and purchasing decisions that consumers make, outputs such as those provided by the Consumers and Markets sub-program can help growers better understand the market.

Approach restaurants

Some food for thought for growers is the knowledge that consumers are more frequently preparing and consuming food at home, and that about 70 per cent of food expenditure each week is devoted to take-home food.

"Consumers are making six or seven shopping trips each week—which includes visits to supermarkets, specialty outlets and restaurants. The number of trips has reduced slightly over the past year as consumers have sought to economise," said Mr Kneebone.

He also suggested that growers consider other avenues for selling their produce, such as approaching distributors who service restaurants.

"Talk with these distributors and their restaurant customers about how they use your product and how you can value-add. Perhaps there something you can do on-farm that makes it easier for them to use the product in their kitchens," he said. 

“The vegetable sector has huge amounts of switching in terms of what consumers purchase, week in, week out.”

i To register to receive Veginsights visit www.ausveg.com.au or call 03 9544 8098



Martin Kneebone, freshlogic Director, conducted a webinar with growers in Stanthorpe.

Strong turn-out at Bowen soil health workshop

Bowen growers came out in good numbers for an EnviroVeg soil health workshop and the opening of the new Elders premises.

The first of two EnviroVeg 'Managing soil for optimal health and productivity' seminars was held on 11 November last year at the impressive new Elders premises in Bowen. This seminar built on the success of previous EnviroVeg seminars in Wanneroo in Western Australia, Cowra in New South Wales and Stanthorpe in Queensland, and attracted approximately 30 growers from the Bowen district.

It was a fitting location, as the district's vegetable industry produces \$300 million annually and employs approximately 2,300 people. Seminar attendees were treated to informative and professional presentations designed to help them manage soils that are productive and sustainable under the intended land use.

Speakers included AUSVEG CEO Richard Mulcahy; Craig Paterson, Regional Sales Manager for Elders North Queensland; Carl Walker, President of the Bowen District Growers Association (BDGA); Chris Monsour of Prospect Agriculture; and Stephen Ziebarth of fertiliser supplier Yara. Following the presentations, participants discussed the seminar at the Elder's premises.

Elders opening

The next day, AUSVEG CEO Richard Mulcahy attended the official opening of the Elders Bowen Branch, a state-of-the-art facility in one of Australia's pre-eminent vegetable growing regions.

Following an address from Elders Chief Operating Officer, Mike Guerin, the ribbon was cut by legendary Australian cricketer and Elders Ambassador, Glenn McGrath.

Festivities continued that evening with a dinner held to celebrate the opening. The assembly—consisting of more than 180 local growers and industry stakeholders, Elders

staff and Mr Guerin—was treated to addresses from Richard Mulcahy, who offered insights into the future directions of the industry, and Mr McGrath, who regaled attendees with tales from his international cricketing career.

Mr Mulcahy was impressed by

“The Bowen district vegetable industry produces \$300 million annually and employs approximately 2,300 people.”

grower involvement in the two events.

“I thank the staff of Elders Bowen for their enormous support in accommodating us for the seminar. In particular, I thank the local growers for attending the seminar and the

dinner in such large numbers. Finally, Carl Walker and Denise Kreymborg of the BDGA were of enormous assistance on the ground and they made me aware of many of the issues facing growers in the district,” he said.

the opportunity to speak with the CEO of the peak industry body and find out what AUSVEG can provide for them and other growers nationally. It also enabled them to make AUSVEG aware of the various issues they face,” he said.

Denise Kreymborg, Industry Development Officer (IDO) for the BDGA, said that the AUSVEG visit to Bowen was a step towards building stronger relationships and linkages between industry, growers, and peak horticultural bodies.

“The visit was well received, with BDGA recognising the need for industry bodies such as AUSVEG, government and growers to work more closely and collaboratively for a sustainable future for the horticulture industry,” she said. 

Direct communication

For Craig Paterson from Elders, the opening provided an opportunity for Mr Mulcahy to converse directly with growers. “The visit of Richard Mulcahy to the Bowen area gave a large number of the district's growers



[From left] AUSVEG CEO Richard Mulcahy and Elders Chief Operating Officer Mike Guerin with Australian cricketing legend and Elders Ambassador Glenn McGrath at the opening of the new Elders premises in Bowen.

High-health foods the way to go



Dr Tim O'Hare [right] with laboratory technician Lung Wong. Images supplied by Dr Tim O'Hare.

For researcher Tim O'Hare, the best way to protect the Australian vegetable industry from cheap imports is to isolate and increase the health-properties of locally-grown commodities, discovers Brea Acton.

Dr Tim O'Hare found himself working in the area of health-based plant research almost by accident.

"I realised one day that the majority of research projects I was working on had closer relations to human health than to any other topic," he said.

Already working as a Plant Physiologist with the Queensland Department of Primary Industries and Fisheries (now known as Queensland Primary Industries and Fisheries), in 2003 Dr O'Hare joined the functional food research team, of which he is now Focus Team Leader.

Functional food, also known as medicinal food, is defined by its health-promoting properties, extending beyond the basic nutritional benefits of many fruits and vegetables to develop a food's capacity to prevent disease.

"My main role is investigating which fruits and vegetables have specific health benefits, and then enhancing the level of beneficial phytonutrients through breeding strategies," he said.

"This involves developing research projects in conjunction with plant breeders, analytical biochemists, and animal physiologists."

Emphasise the assets

Dr O'Hare is currently working on a number of projects, including an investigation into lycopene, the red pigment in tomatoes, as a prohibitor against various types of cancer; researching zeaxanthin, which gives corn its golden-yellow colour, as a means of slowing down macular degeneration, the leading cause of blindness in Australia; and looking at the anti-carcinogenic properties of

Asian leafy vegetables such as daikon and radish sprouts.

His initial interest in research stemmed from a curiosity about

plant behaviours.

"I was really interested in how plants worked, and what we could do to manipulate them," he said. "Working with something that you like eating definitely helps."

His background is in agricultural science, and in 1988 he completed a PhD on the mechanisms controlling flowering in lychee trees, at the University of Queensland.

In 1989, he joined the Department of Primary Industries and Fisheries (DPI&F) as a post-harvest plant physiologist, focusing on tropical fruits. From there, he moved into the area of Asian leafy vegetables, research that took him to China to work with local vegetable researchers. With his vast experience, and obvious interest in the health properties of plants, it is no wonder that he is now working in the area of functional food.

“One means of staying competitive is to produce high-value products with characteristics that the basic commodity doesn't have.”


Offer high-value products

He said he would like to see people eating more fresh fruits and vegetables, and consuming less vitamins and pills, but admits that selecting produce can be confusing.

"People realise that fruit and vegetables are good for them, but have little idea about which ones are better, and for what purpose. One problem is that a substantial level of clinical evidence is required before a health claim is allowed, and this can be a slow and expensive process," he said.

Looking ahead, he is hopeful that the Australian fruit and vegetable industry will continue to be a competitive player against the rise of cheaper imports.

"More and more, we will see cheap fruit and vegetables being imported and I don't believe we will be able to compete with nations who pay their labourers extremely low wages. One means of staying competitive is to produce high-value products with characteristics that the basic commodity doesn't have, such as the super-yellow sweet corn or the high-lycopene tomato.

"I want to see the survival of a thriving Australian fruit and vegetable industry. We need to think strategically for the future." 



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Dr Tim O'Hare career timeline

1981-1984

Bachelor of Agricultural Science
(The University of Queensland)

1985-1988

PhD (The University of Queensland)
Control of Flowering in Lychees

1989-1991

DPI&F Walkamin Research Station (north Queensland),
focusing on tropical fruit research

1992-1999

DPI&F Hamilton Laboratories (Brisbane), areas of research
included tropical fruit, Asian vegetables and fresh-cuts

1994-1996

Graduate Diploma in Biotechnology
(Queensland University of Technology)

1996-1998

DPI&F Queensland Agricultural Biotechnology Centre
(Brisbane)

2000-current

Queensland PI&F Gatton Research Station (Lockyer Valley),
focusing on functional foods



Timely investment for protection against pests

A four-year project dedicated to helping growers of Asian vegetables combat pests and diseases has led to a number of significant outcomes, including increased adoption of IPM.

For the more than 1,600 growers of Asian vegetables in Australia—many of whom speak a language other than English (LOTE)—the battle against pests and diseases must be waged daily.

The popularity of Asian vegetables in Australia is increasing, with the Asian vegetable industry in Australia now worth more than \$150 million annually. In 2007, according to data supplied by the Australian Bureau of Statistics, leafy Asian vegetables were the 12th most valuable vegetable produced in Australia.

For this increasingly important industry sector the four-year

project—Integrated management strategies for pests and diseases of Asian vegetables—was a timely investment.

The project's four main aims were to:

- Identify key diseases and pests causing losses in major cropping regions
- Develop and evaluate effective disease and pest scouting/monitoring and management practices
- Conduct on-farm trials to demonstrate IPM improvements
- Facilitate adoption of sustainable disease and pest-management strategies.

Successful strategies

In good news for growers, the project found that IPM strategies were effective for leafy Asian vegetable commodities; however, the success of these IPM techniques was dependent on growers' capacity to monitor crops for pest activity.

Many of the trials were conducted in the Sydney Basin, which has a high concentration of LOTE growers who grow Asian vegetables.

"In this region it was found that IPM strategies achieved equivalent or better management of two-spotted mites and diamondback moth compared with the use of synthetic

pesticides only," said Project Leader Len Tesoriero from NSW Industry and Investment.

New pest

For leafy Asian brassicas, two foliar diseases featured prominently—white leaf spot and downy mildew.

Interestingly, the key pests identified in baby leaf crops were different to expectations. Cabbage cluster caterpillar was a significant pest, while the striped flea beetle—originally a new and emerging

THE BOTTOM LINE

- A four-year project has helped Asian vegetable growers to identify major pest and disease threats, and establish effective IPM systems.
- The use of bilingual field officers is needed to continue the education of growers who speak a language other than English.
- Current minor use permits for chemicals used by Asian vegetable growers have expiry dates that will require either re-issuing or full registration in the near future.

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www.ausveg.com.au/levy-payers
Project number: VG04032
Keywords: Integrated
management strategies



Len Tesoriero [right] discusses disease symptoms with a group of Vietnamese growers at a field day in the Sydney Basin.

Asian Vegetable Profile

Gac

Momordica cochinchinensis (Lour.) Spreng

Otherwise known as: Spiny bitter gourd, spiny cucumber, sweet gourd, baby jackfruit, cochinchin gourd

Background

Relatively unknown in western culture, gac is a distinctively coloured dark-orange gourd that is rich in phytonutrients, including lycopene and beta-carotene. Some studies indicate that, relative to weight, gac contains 70 times the amount of lycopene found in tomatoes and 10 times the amount of beta-carotene found in carrots.

A relative of bitter melon, gac has a mature size of about 13 cm in length and 10 cm in diameter, and is either round or oblong.

Where and how does it grow?

Grown in South-East Asia, gac has a limited harvest season

that peaks between December and January.

Gac is a dioecious vine, which means the male and female plants are separate. In the absence of male plants, gac can be produced in female plants only by using growth regulators.

Plant cultivation can occur from seeds or root tubers. Seeds need to be planted in well-drained soils, and usually germinate in seven to 10 days.

Preparation and cooking

In Vietnam, gac is used for a dish called *xôi gac*, in which the aril and seeds of the fruit are cooked in rice, imparting their color and flavor. The vast majority of gac's lycopene content is contained in the aril, which is the red oily sacs that surrounds



the seeds.

Gac has a very mild taste, sometimes described as slightly sweet or nutty. In recent times, it has been marketed in non-Asian countries in the form of a dietary supplement because of its reportedly high phytonutrient content. [va](#)

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pest—could potentially become a major pest, based on the extent of damage to some Chinese cabbage crops, according to Dr Victor Rajakulendran, an entomologist at NSW Industry and Investment who worked on the project.

While some pests posed little threat to crops in the project's early stages, they became more prominent in the later stages.

"Initially, pest levels were quite low—perhaps because of the drought. However, as the project progressed, pest levels increased significantly. Rutherglen bugs were a particular problem," said Dr Rajakulendran.

In test sites in Victoria and New South Wales it was found

that pest pressures changed according to seasonal conditions. For example, thrips levels were low in winter months, but reached very high levels towards the end of spring.


Face-to-face education

Mr Tesoriero said that through communications with growers, the project successfully changed grower practices, leading to improvement of farm- and crop-hygiene practices, weed control and crop residues.

It was during this contact and field visits that growers learned more about IPM practices, including scouting crops for pests, the role that beneficial insects play, and the use of 'soft' chemicals that target pests but

not crops.

"However, as language difficulties continue to be a barrier for many growers, the project's final report recommends that bilingual field officers will be critical to facilitate the continued education of growers in order to sustain an IPM approach in LOTE communities," said Mr Tesoriero.

"It was also noted that current minor use permits have expiry dates that will require either re-issuing or full registration in the near future, to ensure that growers can still legally use these controls to protect their crops." 

“Bilingual field officers will be critical to the continued education of growers to sustain an IPM approach in LOTE communities.”

Systemic acquired resistance: boosting nature's defences

Brassica growers may soon have a new line of defence against clubroot as researchers investigate new ways to boost plant immunity to the disease, discovers Youna Angevin-Castro.

Researchers at the Victorian Department of Primary Industries (DPI) are one step closer to confirming the potential to enhance the natural resistance of Brassica plants to clubroot. Although research is still preliminary, early results suggest that it is possible to trigger systemic acquired resistance (the plant equivalent of an immune response in humans) to enhance the plant's immune response and provide long-lasting disease suppression of clubroot and white blister in Brassica crops.

Helping plants help themselves

Systemic acquired resistance (SAR) is a broad physiological immunity in plants that can be triggered by treatment with a biological or chemical agent.

Not unlike vaccination in humans, SAR boosts a plant's natural ability to fight disease when exposed to pathogens. Senior plant researchers Caroline Donald and Robert Faggian have been leading the research, and say that this novel approach to managing clubroot may provide growers with a

additional tool for dealing with the problem," said Ms Donald.

She highlighted the research in human medicine and animal health into enhancing immunity to disease, and said that this is an area that has been somewhat overlooked in plant pathology—particularly in the Australian vegetable industry.

"Although plants operate under a different system to animals and people, they do demonstrate metabolic and physiological responses that we could say are similar to human immune responses," she said.

Proof-of-concept studies were conducted on a weedy Brassica species called *Arabidopsis*.

"We used *Arabidopsis* as the model plant because we have a lot of background information on how clubroot affects this species specifically. From a molecular perspective, the genome of this plant has been fully sequenced, which makes it particularly valuable for our research. This enables us to identify if a specific gene has been switched on or switched off and this subsequently indicates if an immune response is being triggered," said Ms Donald.

“Not unlike vaccination in humans, SAR boosts a plant's natural ability to fight disease when exposed to pathogens.”

viable alternative to chemical treatments for the disease.

"Soil-borne diseases still remain a problem in agriculture and access to chemical treatments for these diseases is becoming increasingly difficult. We wanted to investigate alternatives that might provide growers with an

Interest abroad

Previous research by Arati Agarwal, who now works on the project as its principal researcher, underpins the study. Ms Agarwal conducted a microarray study [see panel] to examine minute changes across the entire plant genome of *Arabidopsis* (some 22,000

Glossary of terms

Systemic acquired resistance

A broad, physiological immunity in plants that can be triggered by treatment with a biological or chemical agent. It is the plant equivalent of an immune response in humans.

Gene expression

The process by which the genetic code found in DNA is translated into a functional product, such as a protein, in an organism.

Arabidopsis

A small, weedy member of the Brassica family, commonly used as a model organism in plant biology. The first plant species to have its entire genome sequenced.

Microarray study

A scientific experiment that investigates the expression of certain genes within a biological organism under specific conditions. For example, a plant infected with a disease may express different levels of specific genes to one that is not.

Chitinase

A digestive enzyme that breaks down chitin, a compound found in the cells walls of some microorganisms and some animals. [va](#)



Members of the SAR research team: [from left] Dr Ian Porter, Caroline Donald and Arati Agarwal, all from Victorian DPI, with visiting German colleague Professor Jutta Ludwig-Mueller.

genes) when challenged by the soil-borne clubroot disease.

This initial research, which has attracted international interest, sparked the idea to focus on plant immunity.

Having demonstrated 'proof-of-concept' in *Arabidopsis*, the research has moved on to investigate SAR in broccoli. Despite being a tougher, more complex system, initial outcomes are promising.

Salicylic acid (SA) has been used to induce SAR and expres-

sion of the chitinase gene has been isolated as a marker for demonstrating SAR induction. The team has been successful in inducing a SAR response in broccoli and is now working to optimise rates of SA application and confirm the result using two more marker genes.


Commercial delays

The team has presented its early findings to growers, with strong support from producers for the research. However, Ms

Donald warns that the commercial reality of SAR treatments may be five or more years away.

"While we're excited about the potential for SAR in the field, there are some significant commercial considerations that may prevent this research from translating into a commercial reality," she said.

"A lot of this inducer work has been undertaken successfully in the cotton industry, which is a large, valuable crop, making it attractive to chemical

companies. However, generating the same interest for the vegetable industry will be far more challenging. Each crop will require individual registrations, and unless we can find a commercial partner who is committed to the process, it may be several years before growers will be able to use this technology in the field." 



Clubroot causes root galls in Brassica species. Images supplied by Caroline Donald.

THE BOTTOM LINE

- Systemic acquired resistance (SAR) is the plant equivalent of a vaccination for humans: both offer protection against disease.
- Preliminary research has indicated that the development of SAR practices to help Brassica plants protect themselves against clubroot and white blister may be possible.
- Although this initial R&D is positive, the relatively small size of commodity-specific markets in the vegetable industry means that commercial development of SAR is still several years away.

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 Project number: VG07010
 Keywords: Immune response

Banding together for food security

Dr Marco Ferroni, Executive Director of the Syngenta Foundation, visited Australia in November last year to address organisations about the imperative for bolstering global food security. According to Dr Ferroni, Australian farmers could help to raise productivity in 'lagging' nations by sharing knowledge as well as yields. He spoke to Jenan Taylor about how this can benefit local growers.

What are the most important agriculture synergies shared between developing nations and developed countries such as Australia?

Several sources come to mind:

- R&D in agriculture and the life sciences in developed countries, including Australia, is known to generate important spillovers (i.e. technology) that benefit agriculture in developing nations
- International trade in agricultural and food commodities, such as grains and high-value products like vegetables, helps supply and stabilise markets for the benefit of producers and consumers in both developed and developing countries
- Biodiversity is one of the most important global public goods that benefits all nations. All countries, whether developed or developing, should contribute to the conservation of biodiversity as a resource for agriculture everywhere.

With the global credit crunch and a raft of other financial pressures how can more investment in agricultural infrastructure in developing nations be encouraged from public and private sectors in Australia?

Stepping up investment in agriculture is clearly important in food-insecure economies where people's livelihoods depend on agriculture, such as in Sub-Saharan Africa. Investment in agriculture in developing countries is a task for the governments of those countries, the international donor community—of which Australia is a highly respected member—and the private sector.

Australia has vast and unique knowledge and expertise in water management and drought-infrastructure technology. Sharing and transferring this knowledge to drought-prone areas in developing countries can be of great help.

It is true that much of the world is currently experiencing financial pressures. But agriculture is a priority and I am encouraged by recent pronouncements by the leaders of the G8 countries to the effect that they want to take decisive action to help develop agriculture and improve food security in poor countries.



What checks are in place to avoid potential problems that private research investment in biotechnology might bring to smallholder farms in the developing world (e.g. corporate monopolisation of industries, newer forms of colonialism)?

Small farmers in developing countries are like farmers everywhere: they want technology, services and access to markets. Biotechnology is one of the arrows in the quiver of technologies.

Research investment in biotechnology is dominated by the private sector—public sector R&D in agricultural technology is in decline. An important question is: why this is so? However, the really relevant question is how are the gains from innovation in biotechnology distributed between the innovators, farmers and consumers?

Agricultural economists have studied this for specific innovations over the years. They found that all constituents tend to benefit. One study calculated that 33 per cent of the benefits from Bt cotton accrued to input suppliers during the 2002 crop year in India, whereas 67 per cent accrued to farmers. Many of the adopting farmers were small farmers.

I have seen repeatedly in developing countries that even very modest farmers will buy and adopt new seeds and other inputs if they think that this will help them raise their yields.

The Australian vegetable and potato sectors are being adversely impacted by the flood of cheaper imports from overseas—including from some developing nations. How can investment in R&D in industrialising nations advantage Australian growers who are already on the back foot because of this?

Agricultural businesses are under constant pressure to innovate. Some industrialising countries are gaining ground in specific areas of production—such as year-round vegetable growing in greenhouses, and hydroponics—leading to advantages in competitiveness and delivery to markets.

Australian growers are known for their skill and dedication. Their ability to adjust to new competitive conditions is not in doubt.

Cite an example of how the vegetable sectors in developed nations have benefited from private and public collaborations of support of poorer nations.

The World Vegetable Center in Taiwan (AVRDC) has a huge collection of germplasm for something like 300 different types of vegetables from more than 100 countries. The Center actively exchanges genetic resources and expertise among national programs, regional organisations, and the private sector in many developing and developed countries.

What types of vegetable commodity R&D investment are being planned for the south Asian and sub-Saharan Africa regions?

Vegetable production in the countries of south and South-East Asia has significantly increased in quantity and quality over the past 20 years owing to research, genetic improvement and the widespread adoption of varieties developed by public entities and private companies based in this region and in Europe, the US and Japan.

The already mentioned contributions from AVRDC in providing genes for disease and pest resistance in Asian and African markets are also to be acknowledged. In India, Bt brinjal (eggplant) has recently been approved for commercialisation by the Indian biotechnology regulator.

“Australian growers are known for their skill and dedication. Their ability to adjust to new competitive conditions is not in doubt.”

Are there any particular lessons that the Australian potato and vegetable industries can learn from R&D investment schemes in developing nations?

The initiative ‘Papa Andina’ is a regional effort that promotes technological, commercial, and institutional innovation in the potato sector in Bolivia, Ecuador and Peru. What the effort shows is that it is possible to innovate along the value chain following business principles in partnership between the public and the private sectors. This creates value for all participants, including small-scale potato growers in the highland regions of those countries.

What scope is there for direct participation by individual Australian growers who might be interested in investing in R&D in poorer nations?

There are opportunities for knowledge sharing and transfer in terms of advanced agricultural technologies between Australian growers and counterparts in developing nations. Helping with field trials and organising field visits to Australian farms could be another area where contributions would be welcome. **va**

CALENDAR OF EVENTS

January 2010

27 January - 12 February

AUSVEG Growers Tour to Israel, Berlin and Spain

Includes attendance at Fruit Logistica in Berlin from 3-5 February

For more information:

Website: www.ausveg.com.au

Phone: Erin Lyall at AUSVEG on 03 9544 8098

February 2010

28 February - 3 March

Global Biosecurity 2010

Safeguarding Agriculture and the Environment

Brisbane, Queensland

For more information:

Website: www.globalbiosecurity2010.com

March 2010

2-4 March

Growers Leaders Program 2010 – First Residential

Brisbane, Queensland

For more information:

Phone: Jill Briggs at Rural Training Initiatives on 0409 455 710

May 2010

16 - 21 May

Ninth Annual Produce Executive Program

Mt Eliza Centre for Executive Education, Mt Eliza, Victoria

For more information:

Email: Program Manager Anita Pike at apike@streamwise.com.au

27 - 30 May

AUSVEG National Convention 2010

Includes announcement of the 2010 AUSVEG National Awards for Excellence on 29 May.

Conrad Jupiters Hotel Casino, Gold Coast, Queensland

For more information:

Phone: AUSVEG on 03 9544 8098

September 2010

8 – 10 September

Asia Fruit Logistica 2010

Hong Kong

For more information:

Website: www.asiafruitlogistica.com

October 2010

15 – 18 October

Produce Marketing Convension (PMA) Fresh Summit Convension

Orlando, Florida, USA

For more information:

Website: www.pma.com/freshsummit/2010/index.cfm

November 2010

24 – 26 November

Eurofruit Congress Southern Hemisphere 2010

Uruguay

For more information:

Website: www.sh-congress.com

Email: info@eurofruitcongress.com



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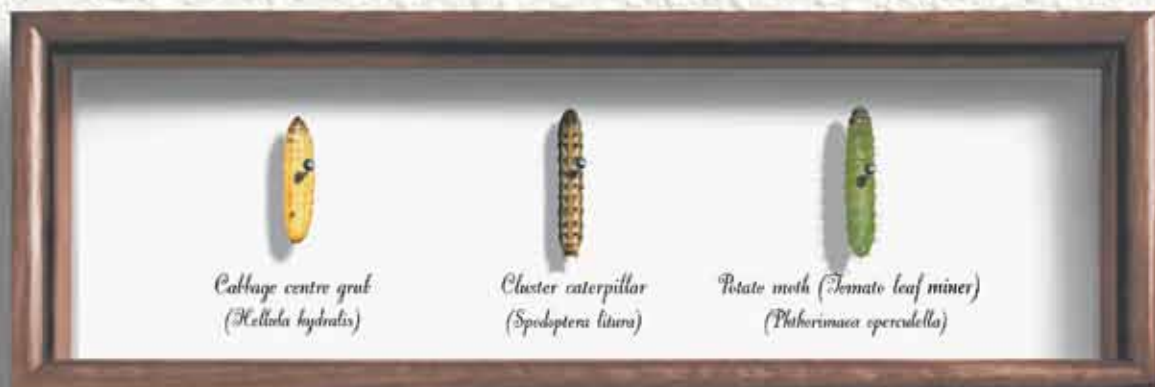
*Cabbage white butterfly
(Pieris rapae)*

*Native budworm
(H. punctigera)*

*Diamondback moth
(Plutella sylvatica)*

*Cotton bollworm
(H. armigera)*

now controls more vegetable pests in even more crops



*Cabbage centre grub
(Heliceta hybridus)*

*Cluster caterpillar
(Spodoptera litura)*

*Potato moth (Tomato leaf miner)
(Plithorimaea operculella)*

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