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* Deceased

Cover image: Maureen and Barry Dobra
Photo | Rebecca Blackman, Leafy Variety Field Trial during May

Published by vegetablesWA
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For information on WA Grower advertising rates and sizing please go to: www.vegetableswa.com.au/wa-growers-magazine and click on the download media kit link.
Our first Leafy Variety Field Trial was an outstanding success. We had about 100 growers from afar afield as Albany and Manjimup as well as other stakeholders attend across the course of the day. They were able to look at the various varieties put on show by primary sponsor Bayer as well as Seminis, South Pacific Seeds, and Rijk Zwaan.

We also had a useful session on soil health from researchers Dr Doris Blaesing and Dr Len Tesoriero who were in attendance from the East coast. The networking and other discussions that went on across the day were fantastic. Thank you very much to Maureen, Barry and Kevan Dobra as well as their farm manager Steve Alley for hosting the event and putting on such a great display.

We hope that following this success we may look to put on similar events into the future.

As the peak body for rockmelon growers in West Australia, dealing with the fallout from recent listeria outbreak has been a key activity. We have been assisting growers directly through our Quality Assurance Coordinator, Joel Dinsdale and Market Development Manager, Claire McClelland, as well as various media responses and meetings with the Department of Health.

Food safety is going to become an increasingly important topic for growers to come to grips with as the demands of consumers and therefore the retailers become stronger in this area. Help is at hand though — please contact Joel if you’re looking for some training or advice.

I recently attended a meeting with a number of Wanneroo growers and Minister Alannah MacTiernan to primarily discuss issues related to potential water entitlement cuts. The Minister can be in no doubt about the effect that these cuts would have on individual businesses as well as the broader district. She also made the point that it will be up to growers to see whether they wish to come together as they have in the Southern Forest and Myalup districts in any possible irrigation scheme.

Biosecurity continues as a key issue for the industry given the Queensland Fruit Fly and Brown Marmorated Stink Bug detections made in Western Australia this summer.

Government will need to better invest in our protection whilst growers will need to do their own part by maintaining good on-farm biosecurity practices. If you need assistance with this please contact our Industry Extension Officers Sam Grubisa and Truyen Vo.

Our labour project which is looking at a possible horticulture visa and better regulation of the labour hire sector has continued with the University of Adelaide and Dr Joanna Howe. During March Dr Howe ran a range of focus groups with growers and workers occur across a number of growing regions. This should provide a sound evidence base to work with government in improving the existing regime.

If you are after any assistance or need further details please contact the office on (08) 9486 7515 or the staff members listed above.
VegetablesWA

President's Report

By Dan Kuzmicich
President, VegetablesWA

It has been a very dry summer here in the Gascoyne region with dusty and windy conditions for the most part. Growers have completed their planting, with most growers now harvesting.

It's at this time of year you see a landscape with a tinge of lush green across the plantations with crops overall looking very healthy and promising. March and April had some consistent hot days which boosted growth but incidents of heat stress did cause some dropped flowers. Overall the crop is looking in good shape for the for the long winter harvest season ahead.

When writing my report I always try to contact growers in all our growing regions to get a quick update. They are all telling me the same thing — “We are doing it tough”. There are many challenges we are all facing, but apart from the day to day issues, the cost of production compared to the return for product has become so tight that the grower can’t cover costs let alone make a wage for themselves. The question needs to be asked how do we become more efficient by cutting production costs WITHOUT compromising the quality of product? vegetablesWA benchmarking project can help here. Contact Bryn to find out how you can take part and truly understand your costs and how you can take control.

It turns into a very interesting conversation in how some growers are forward thinking and their ideas start appearing which make a lot of sense. I certainly enjoy those conversations as it gives me insight allows me to think outside the square. If there are any growers that want to talk through these ideas further, please give me a call I am always happy to have a chat.

Most growers should be aware of the potential changes to the water allocations in some regions, I urge all growers to be proactive in this process. As growers we should be across these situations as it could put us in a worse position than we are in at the moment for water supply.

The reduction of water allocation that is proposed will affect property owners in three ways:

1. Reduction of water allocation. Water has become an expensive commodity and dramatically affects the value of your property (just ask your bank manager).
2. The proposed price of water, per megalitre, which you as the purchaser will have to pay, up front, whether you use it or not. This concerns me greatly. For example in one region the proposed water price per megalitre is more than four times more expensive between growers in the same area. That has to be alarming.
3. If you access irrigation scheme water, you should be looking to asking for a guarantee of supply by the service provider to suit your individual business needs. As a producer you need to know how many litres per second will you be supplied, in writing and signed.

Water is an expensive commodity, it will attract speculators. This is happening now so I urge all growers to keep themselves informed of changes in their region, and get answers to any questions you may have regarding this matter. If you need any assistance contact vegetablesWA.

It’s that time of year again, Hort Connections Convention is in Brisbane next month and I urge growers to attend.

As I say every year, it truly is an excellent opportunity for you to be informed, look at new trends and connect with producers Australia wide and across industries. This event is expanding every year and it’s a must do to keep yourself informed and relevant in an ever-changing technologies and changing horizons for industry.

Give me a call on 0408 910 761 any time to discuss any issues.

More Information

Contact Dan Kuzmicich on 0408 910 761 or damir.kuzmicich@bigpond.com
Exactly this time last year I stated how relieved everyone was that it finally rained, this year has been very similar. I can only hope that there are follow up rains that push further inland to the grain areas.

PGA is currently touring the district areas holding meetings with growers. Due to deregulation the PGA has had to redo the constitution and we need to inform growers of the changes in a formal way. Also for discussion in the grower meetings is the TPP situation and export opportunities overseas.

No doubt there will be some feedback from these meetings and I will report the findings in my next presidents report. Contact Simon or Morena to find out when your district meeting will be held.

On the TPP issue, we move closer to a resolution. Whether that’s good, bad or indifferent at least we will know where we will sit as far as trading into the eastern sea board goes.

I did notice a biosecurity issue rear its head in the far north recently with the outbreak of citrus canker. The response by our departments was swift and hopefully there is very little chance of it moving south. I’m sure our citrus growers are very concerned. This incident has reaffirmed the importance of remaining vigilant in regard to our own biosecurity issues and maintaining good farm practices.

On our domestic front Manjimup has all but finished harvest, Albany seed growers enjoyed one of the best harvest periods in a long time and Busselton is well underway. Myalup district are just starting to lift their crops.

A shout out to Simon and Morena on their tireless work. It will be great to report some very positive results to do with our industry and that, hopefully will be soon, until then be safe.

MORE INFORMATION
To contact Vaughan call 0417 092 505 or email marybrook438@gmail.com
Growers resilience continues to be tested as prolonged difficult market conditions remain for the fresh and seed potato markets in WA.

The Manjimup/Pemberton summer harvest has been completed and growers generally have struggled for profitability. Anecdotally there have been less potatoes ploughed in than last season as growers make adjustments to plantings in a post deregulation/TPP environment.

As the harvest moves north into the Busselton/Myalup regions we are hopeful for improved returns for our members.

Slight increases in export seed production have been offset by reduced plantings of certified seed for the East Coast market due to the TPP incursion.

In more positive news, congratulations are due to the four successful applicants who received funding from the ‘TPP Recovery fund’ that will lead to increased markets and efficiencies to stimulate the WA potato industry.

It’s been wonderful to welcome Georgia Thomas to the team here at WA Potatoes. Georgia joins as project manager for the multiple components of the Industry Adjustment Package. Georgia’s extensive experience, particularly in marketing, adds significantly to the performance of WA Potatoes.

The Seed for Schools project is underway thanks to the efforts of Morena. This project is a great promotion of our industry to the families in our community. It will also provide content for our Todatoes campaign.

As the new financial year kicks in Morena and Georgia will start planning for the upcoming Royal Show. Watch this space for updates.

Market access to the East Coast is of course the most important current issue. As it stands, DPIRD have requested that CCEPP endorse our claim of area freedom from CLso. Several states and industries have supported this claim subject to ongoing surveillance. A surveillance paper has been prepared and this is currently being considered by Plant Biosecurity.

For Dickeya, (PDD) DPIRD has requested that other states provide feedback on whether they intend to implement restrictions or not given that there is potential wide distribution of infected seed potatoes to several states prior to February 2017.

This is a significant step in the overall process and places us in a much better position.

We look forward to more positive steps in the near future.

MORE INFORMATION

Contact Simon Moltoni on 0447 141 752 or email simon.moltoni@vegetableswa.com.au
The West Australian Vegetable Growers Association Inc. is turning 70 this year and it only seemed right to sit down with the vegetable industries pioneers to see how far it has come in the last 70 years.

We spoke to a number of the life members, past presidents, committee members and Clive Stevens, Sam Calameri, Figaro Natali, Jim Turley, Don Arbuckle and Nick Trandos were happy to share their stories.

**The beginning of WA’s vegetable industry**
Stories were told about the 18 and 1900s when the location of the Old Swan Brewery and St George’s Terrace were filled with vegetable gardens and livestock. The members recount their family’s past in different areas of horticulture such as pigs in Cottesloe and being some of the first to settle vegetable gardens in Spearwood.

By 1935/1936 the big thing in the industry was moving away from the swamps near the river out to the dry land. This was after pumping systems were brought into use as growers now had a way to water their crops when moving away from the river.

During WWII vegetable contributions to the war meant that vegetable growers were made to grow certain things such as bean seed and carrot seed. These seedlings were then passed on to another grower who grew the vegetables.

In the 1930s the main growers were Australians and Chinese, post WWII the Italians, Macedonians and Greeks arrived in Australia. This only seemed to
help the industry grow as more growers moved into the area. Moving into post WWII production, everything that could be canned was to be canned and anything that couldn’t was to be sold and eaten fresh.

The ending of the war also showed an over production of vegetables and there became a strong connection between vegetable and potato growers.

In 1948 the WA Vegetable Growers Association was formed to provide assistance to the vegetable growers in WA.

During the build up to the 1962 Commonwealth Games the government told vegetable growers to bulk up production for the influx of people. The result of this over production meant that the food that didn’t get eaten had to be ploughed in and wasted. This also drove prices down which was not a favourable result for the growers.

A changing industry
The move of growers from Spearwood to more rural areas like Myalup, Wanneroo/Carabooda and Gingin came from the change in transport from horse and cart to trucks. Having a truck meant moving farther from Perth was not an issue in getting produce delivered quickly. The growers could deliver produce at night and sell it in the morning. It was a very quick process from markets to green grocer and the better the cooling in the trucks the further out the growers could go. This was not the only reason for the move of growers to more rural areas. The growing urban suburbs were taking over and the growers were not welcome any longer as the land was better used for housing than for growing produce.

Vietnamese growers arriving in the 70s, the arrival to the industry didn’t displace any European growers they grew the industry in terms of tomatoes, capsicum, Asian vegetables and strawberries.
When the national body commenced it gave vegetable growers representatives from every state, which gave us a voice we hadn’t had before. Horticulture Innovation Australia then had the federal government agree that for every dollar raised they would give a dollar, this was the start of the federal levy system. From this a program was started to see how funds could be raised for research and development, as state governments were running out of money.

vegetablesWA put forth a proposal to get R&D and an extension officer in WA to the vegetable committee within Hort Innovation. The money that WA Vegetable Growers Association received was used to create the role of Industry Development Officer which is still an ongoing program today.

**A modern era**
The biggest change has been the amount of financial resources available. The only finance the association received before the Fee For Service was introduced was by way of membership to the West Australian Vegetable Growers Association. The projects funded by industry are another source of income for vegetablesWA as though the Fee For Service does provide enough income to cover administration costs, the funding provided by industry allows projects such as Benchmarking, Export, QA and Field Extension Officers to be provided to growers.

vegetablesWA has had a few homes since its start in 1948. First located at 110 Havelock Street, then moved to Canning Vale. Joining the Potato Growers Association at 103 Outram Street in West Perth, the team has recently relocated around the corner from Horticulture House to 702-704 Murray Street. As the projects and team grew there was a need for a larger space.

**Birthday celebrations**

The WA Grower magazine has come a long way since it’s humble beginnings in the 1980s. The magazine has grown from a slim black and white monthly overview of the industry to a now 120+ page colour magazine that covers everything happening throughout the horticulture industry.
On a sunny day in May, vegetablesWA held their first seed variety trial. The leafy variety trial was held at Loose Leaf Lettuce Company in Lennard Brook hosted by Maureen, Barry & Kevan Dobra.

There was a large selection of green leaf varieties available for tasting and viewing such as head lettuce; iceberg, multileaf, cos, mini cos, baby gem cos, coral or baby leaf varieties; spinach, rocket, lettuce.

With primary sponsor Bayer and seed companies; South Pacific Seeds, Seminis and Rijk Zwaan providing significant information on growing conditions, seasons, yield and pest information on each of the varieties.

With over 100 attendees for the day it was great to see the industry involved in a significant trial. In addition to the trial vegetablesWA was able to have Dr Doris Blaesing and Dr Len Tesoriero speak to the crowd about soil health and soil borne disease trials in baby leaf crops. With having significant work being undertaken in these crops on the East Coast Dr Doris Blaesing is eager to have some additional trials undertaken in WA as the soil type is quite varied.

vegetablesWA staff were on hand to speak to growers and industry about their projects and how we might work together to move the industry forward.

If you are interested in working with vegetablesWA for an upcoming field day or variety trial please contact Christina Ford at Christina.ford@vegetableswa.com.au or (08) 9486 7515.
A decision was made last year by WA Potatoes to relaunch the program after a review of its importance in giving children all over Western Australia an insight into the planting, growing and cultivation of their favourite vegetables.

Schools who signed up received their packs which include potato seeds, an educational pack, potato scrubber plus garden tools donated by Bunnings Warehouse.

Bunnings Warehouse is also providing a School Sustainability Visit to WA Potatoes to use as an incentive for the participants to create their own fun recipe using their harvest. The visit will be a great reward for the best recipe submitted.

“The fact that we had over 305 schools sign up for this year’s Seed for Schools program demonstrates that we have an involved community, and people want to get on board with learning about, cultivating and eating our healthy potatoes,” said Simon Moltoni, Executive Officer from Potato Growers Association of Western Australia.

This year, seeds are coming from potato farmer Colin Ayres Seed Potato farmer from Bornholm, which is a cooler growing region during the summer months providing the perfect climate for Royal Blue Potatoes, a great variety for roast spuds.

The program to date has been a huge success with thousands of students across the state getting hands-on outside the classroom and having some fun while planting, fostering and learning about local potatoes.

**Recipes for the cooler months**

As the nights get cooler, warming potato recipes become the focus for the Todatoes campaign. Continuing with the fresh and modern approach to cooking and eating, Breadbox Marketing and PR will be creating six new recipes for the season. These recipes will be rolled out through the website and social media over the next couple of months.

**Shopalives**

The Todatoes shopalives displays will be continuing until the end of June at shopping centres that fit the key demographic for the potato market. Locations include Galleria Shopping Centre Morley, Garden City Booragoon, Karrinyup Shopping Centre, Lakeside Joondalup and Midland Gate. Check them out!

For more information please get in touch with us on morena@wapotatoes.com.au.
Your production

Sowing the seed for health in WA Schools

your
production
Tomato potato psyllid

Transition to management phase winds up

Transition to management followed national agreement that TPP could not be eradicated, and efforts should focus on developing strategies to help industry and government effectively manage the pest.

The plan aimed to improve the capacity of Australia’s horticulture sector to manage TPP, and build confidence around the status of the bacterium *Candidatus Liberibacter solanacearum* (CLso). The bacterium is associated with TPP in other parts of the world and causes the serious ‘zebra chip’ disease in potato.

CLso has not been detected in Australia to date.

Led by the Western Australian Department of Primary Industries and Regional Development on behalf of industry and state and federal governments, the plan included:

- targeted surveillance for TPP/CLso complex during Spring 2017 and Autumn 2018 in WA
- scientific research to improve understanding of TPP, its biology and options for control
- management of TPP through the development of national and enterprise management plans
- market access and trade.

Outcomes from the Transition to management phase are being used to inform future TPP/CLso research and management strategies which will be continued by AUSVEG through the role of the dedicated national TPP program coordinator and development of a National Management Plan for TPP.

The Transition to management plan was funded by Australian and state governments, and industry.
R&D results snapshot

1. Insecticides — laboratory trials
   - A list of 15 potential insecticides including Abamectin (Vertimec®), Cyantraniliprole (Benevia®), Spirotetramat (Movento®), Flocanamid (Mainman®), Spinetoram (Success®), Sulfoxaflor (Transform™), Methidathion (Suprathion), Methomyl (Methomyl 225), Chlorpyrifos (Chlorpyrifos 500EC), DC-164 (experimental chemical of Bayer Crop Science), Imidaclorpid (Confidor® 200SC), Eco-Oil®, AGRI-50NF, Paraffinic oil (SACOA BioPest), Azadiractin (Azamax)) were tested in laboratory bioassays for their toxicity against TPP life stages (eggs, nymphs, adults) in capsicum, tomato and potato.
   - These chemicals are registered in Australia for use against other sucking insect pests in capsicum, tomato, potatoes and other crops, but not currently registered for control of TPP. Field data will be required to support registration by the Agricultural Pesticides and Veterinary Medicines Authority.
   - 14 insecticides were tested as foliar application, and one (imidacloprid) was tested as soil drench.
   - Abamectin, spinetoram, methidathion, methomyl, chlorpyrifos, cyantraniliprole, DC-164 (experimental chemical) and sulfoxaflor are very toxic and caused 100% mortality to TPP matured nymphs (3rd-5th instar).
   - Azadiractin is very toxic to TPP adults. Spirotetramat, flonicamid, paraffinic oil, agri-50 and eco-oil in potato and capsicum are less toxic to TPP adults. Egg laying was observed with agi-50, eco-Oil, paraffinic oil, flonicamid and spirotetramat in all plant types but none hatched after seven days.
   - Of 13 chemicals tested against eggs, hatching was observed with spirotetramat, abamectin, methomyl, chlorpyrifos, eco-oil, paraffinic oil and azadiractin, but none developed to adult.
   - Imidacloprid soil drench is toxic to TPP life stages causing significant mortality for up to 10 days post drench.
   - To prevent insecticide resistance from developing in TPP populations, insecticides from different chemical classes need to be used in rotation.
   - Growers are encouraged to contact their chemical advisors to talk through an appropriate Insecticide Resistance Management strategy for their own business.
   - Insecticides are only effective against TPP and do not prevent the spread of CLso.

2. Biological control agents (BCA) — laboratory trials
   - Nine species of commercially-available BCAs were trialled, including six species of ladybird, an anthocorid bug, a mirid and a lacewing.
   - The lab trials indicate all BCAs will feed on TPP, but that some are more voracious feeders than others.
   - These initial results indicate more research is required to determine the most suitable biological control agents for TPP in different crops and growing conditions.

3. Efficacy of insecticides with BCA’s against TPP in capsicum, tomato and potato — glasshouse trials
   - Three applications, at 21 day intervals, of abamectin, cyantraniliprole and spirotetramat in capsicum, tomato and potato, and flonicamid in tomato effectively suppressed TPP populations
   - Three releases, at 21 day intervals, of mirid bug, Nesidiocoris tenuis in tomato effectively suppressed TPP populations in the glasshouse trial.

4. Post-harvest disinfestation — laboratory trials
   - DPIRD has identified a potential benefit in combining post-harvest disinfestation treatment for Mediterranean fruit fly and TPP for tomato, capsicum and eggplant.
   - Ethyl formate controlled eggs, nymphs and adults of TPP. Eggs were the most tolerant, requiring a higher concentration of 0.5 to 2% ethyl formate.
   - Ethyl formate did not cause phytotoxicity to chilli, cherry or round tomato, eggplant or capsicum at the maximum rate of 2%.
Transition to management lays groundwork for TPP research

The TPP R&D program was a major component of the Transition to management plan.

Department A/Director Horticulture Rohan Prince said R&D is critical to increasing our understanding of TPP in Australia and improving the capacity of growers to manage the pest.

“Developing our scientific understanding of TPP means we can assess what management options are most effective for Australian growing conditions,” Mr Prince said.

The WA Department of Primary Industries and Regional Development managed the research program which included:

- screening toxicity of conventional and biorational chemicals registered in Australia for other pest species, for use in TPP;
- screening the potential of commercially-available biological control agents (BCAs);
- evaluating the efficacy of insecticides in conjunction with BCAs;
- evaluating effectiveness of ethyl formate against TPP and phytotoxicity on host fruits which require disinfestation for interstate and international market-access; and
- a review of available literature to identify practical management strategies currently used where TPP is present elsewhere in the world, and to identify R&D knowledge gaps relevant to Australian conditions.

“While we have positive results from the desktop studies, and laboratory and glasshouse trials, further work in the field is needed to validate this research,” Mr Prince said.

“We are currently compiling our findings from the R&D program to provide to growers and industry over the coming weeks.”

“The Transition to management phase has provided a boost to TPP R&D in Australia and will continue to grow as the National R&D Program is progressed through the role of National TPP Coordinator.”

WA TPP surveillance update

The WA Department of Primary Industries and Regional Development has completed the autumn surveillance for TPP, with no detections of the damaging plant bacterium associated with the pest.

Department A/Director Horticulture Rohan Prince said it marked completion of the third surveillance round in WA since the pest insect was detected in Perth in February last year.

The detection of TPP has impacted on trade of a range of host plants and produce to other states, in particular potatoes which have been unable to enter these markets. This has been due to concerns about the status of CLso, which can be associated with this pest in other parts of the world.

“Central to surveillance activities has been testing TPP to confirm whether CLso is present,” Mr Prince said.

“We tested more than 10,000 psyllids with no detections of the bacteria.”

“This provides us with a high level of confidence that CLso is not present in WA and we will be presenting these results to other States through the Consultative Committee on Emergency Plant Pests.

“The department is continuing to work as a priority with government and industry partners to assist the assessment and recognition process for proof of absence of CLso.”

Surveillance was undertaken as part of the nationally-agreed Transition to Management Plan, and targeted known populations of TPP across the Perth metropolitan area and surrounds.

Mr Prince said the WA community had once again rallied to support surveillance efforts with 430 residents hosting sticky traps in their gardens during autumn to help capture TPP and meet surveillance targets.

“We would like to thank everyone who participated in TPP surveillance for their support of our valuable horticultural industries,” he said.

Other states around Australia have also implemented surveillance for TPP. To date, TPP has not been detected outside of Western Australia.
Enterprise management plans for industry

Industries affected by TPP need to have resources to effectively manage the pest, and demonstrate industry commitment to minimising the spread and impact of the TPP complex throughout the supply chain.

The WA Department of Primary Industries and Regional Development, in partnership with peak industry bodies, has developed industry-specific Enterprise management plans to help growers manage the TPP/CLso complex according to best practice standards.

Mr Prince said the Enterprise management plans are a tool for growers, containing the most current scientific information about the pest, and outline production and biosecurity strategies to manage TPP.

“The plans use existing good practice, biosecurity, and quality assurance and certification documents to build on current systems and avoid duplication,” he said.

These plans bring together the best-available knowledge into one easily-accessible resource for growers, and include five key components:

1. How to identify TPP and the CLso bacterium
2. Risk pathways
3. Control and management options
4. Biosecurity awareness and implementation
5. Post-farm gate management

Drafts of industry-specific enterprise management plans have been completed taking on board feedback from industry stakeholders and scientists. Enterprise management plans will be made available through industry.

MORE INFORMATION

Visit agric.wa.gov.au/tpp for more information including how to identify, monitor and control TPP.

Pest and disease reporting and identification

Send a photo to DPIRD via the MyPestGuide Reporter app available from Google Play or App Store

Email photos with your name, address and phone number to DPIRD via padis@dpird.wa.gov.au

Call the Pest and Disease Information Service on (08) 9368 3080

For current updates on TPP in Western Australia, visit agric.wa.gov.au/tpp

This article is an initiative of the national TPP Transition to management plan

COST EFFECTIVE COMMERCIAL ORGANIC PELLETED FERTILISERS

A new levy-funded project involving research and horticultural industry groups is now underway, with a focus on promoting beneficial insects in vegetable crops. vegetablesWA shares an update on what the project will involve, how it will work with growers and what it aims to achieve over the next three years and the recent WA trip by the team.
An example is the use of strips of flowering crops like sesame in the borders of Asian rice fields. This simple approach has proven so effective at boosting beneficia ls and suppressing pests that farmers are able to reduce insecticide use by two thirds, while grain yields have increased by 5%. An overall 7.5% economic advantage of this innovative approach has led to its adoption across wide areas of East Asia.

A group of researchers led by Geoff Gurr at Charles Sturt University, including teams from University of Queensland, New South Wales Department of Primary Industries and IPM Technologies, are now developing equivalent approaches for Australian vegetable farmers. This project, managed by the Graham Centre of Agricultural Innovation will included carrot, sweet corn, capsicum, bean and brassica growers for this levy-funded project to determine what types of habitat management are best suited to local conditions.

The project Field and landscape management to support beneficial arthropods for IPM on vegetable farms (VG16062) is a strategic levy investment under the Hort Innovation Vegetable Fund.

**Using habitat management on-farm**
Natural pest suppression can be achieved by managing vegetation around the farm to harbour and support beneficial insects. An easy way to plan this is to remember that the key things beneficia ls need are: Shelter, Nectar, Alternative prey and Pollen (also known as ‘SNAP’).

Internationally, farmers are exploiting recent research that shows what types of vegetation are useful as ‘breeding grounds’ for beneficial insects, mites and spiders, and from which the beneficia ls can be attracted into crops. Other farmers are manipulating the vegetation within and around crop fields to encourage beneficia ls to ‘move-in’ and act as guardians, ready to attack pests as soon as they arrive.
Shelter can be provided by bushland or riparian strips and is especially important during periods of extreme weather (hot or cold) or as refuge when spraying is necessary in crops. Nectar can be provided by sowing narrow strips of plants in field margins; potentially these can be a secondary crop. Alternative prey are important to feed beneficials during periods when there are no pests present and can be provided by strategies such as a strip of wheat beside the crop. The wheat can support cereal aphids that do not constitute a risk to vegetable crops but are great tucker for beneficials such as ladybirds and lacewings. Finally, pollen is a protein-rich food that is especially important for hoverflies and, unless they are able to access this from patches of shrubs or herbaceous vegetation, they cannot reproduce.

While promoting beneficials using these ‘SNAP’ resources is potentially straightforward, there is a need for careful research. It is crucial to avoid using certain types of vegetation that might encourage pests.

An obvious example is that a cabbage grower will need to avoid brassica-family weeds that can support pest build-up. The research being conducted in this new project will also work closely with growers to identify habitat management strategies that are cheap and convenient to adopt, and don’t occupy too much valuable crop-growing area.

Other strategies to be considered include sequential planting so that beneficials can progressively move across a field from older to younger sections of crop, and mixing areas of crop species so that one provides SNAP resources to the second. Lucerne is potentially useful as a companion to vegetables because it supports many beneficials, but very few vegetable pests use it.

Habitat management in overseas vegetables

Around the world there has been a groundswell of interest in the use of habitat management strategies to promote biological control of vegetable pests. In California, lettuce farmers plant strips of nectar-rich alyssum plants to encourage hoverflies, which provide control of currant lettuce aphids.

Elsewhere, lucerne stands near crops have been used to provide shelter to beneficial insects and also lure mirid bugs and other pests away from protected crops.

In many studies, a mix of natural vegetation, shrubs and trees near fields provide shelter and food to beneficial insects.

In Japan, many okra growers now use sorghum strips to provide alternative prey in the form of aphids to beneficials.

Western Australia Trip

In early May team members, Syed Rizvi, Ahsanul Haque made a trip to Western Australia to study some of the farms in the Gingin area. This was an opportunity to get in the field and see what bugs were on offer. They were also able to visit the vegetablesWA leafy field trial where they connected with a number of growers and industry stakeholders. The next trip to Western Australia will be in June and the team will visit Gingin and Albany.

Flower power!

When given access to buckwheat flowers:

- Aphid parasitoids lived _4-5 times longer_.
- Lacewings laid up to _500 more eggs_.
- Hoverflies lived up to _30 days_ longer.
- Caterpillar parasitoid wasps _survived longer_ and parasitised up to 180 extra caterpillars.
- Orius bugs _lived longer_ and laid more eggs.
YOUR PRODUCTION

Ladybeetles, lacewings and hoverflies will be familiar to many growers, but remember that the larvae (‘grubs’) look very different to the adults. It’s worth becoming familiar with their appearance as they are voracious predators of pests such as aphids and small caterpillars.

The adults of all these beneficials feed on nectar and pollen, so providing flowering strips can be a powerful way of attracting them to your fields. The presence of these beneficials can keep aphids numbers from exploding in a crop — for instance, the common spotted ladybeetle can eat up to 2,400 aphids in its lifetime.

The aphid parasitoid *Aphidius colemani* lays its eggs inside the aphids including the green peach and cabbage aphid. A parasitised aphid (mummy) will appear discoloured and swollen compared with surrounding, healthy aphids.

There are also a range of caterpillar parasitoids that will parasitise eggs (*Trichogramma*), larvae or pupae (*Diagema*).

Australian studies have shown that by using Integrated Pest Management (IPM), beneficial insects can kill 70 per cent of pests in the field and leave a marketable crop with no yield loss.

Next steps

The research team is currently working with vegetable growers in New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania, gathering information on the best options for habitat management. Starting later in 2018, the researchers will be conducting on-farm evaluations of the most promising approaches. In 2019, the team will move into promoting the superior forms of habitat management for each crop type and region.

Early results show evidence of ‘edge effects’, such that the abundance of pests and beneficials in vegetable fields is strongly affected by the nature of the neighbouring vegetation.

This is promising. Encouraging vegetation that encourages beneficials, and removing or managing vegetation that supports pests, can deliver major benefits to growers. Surveys will continue to add information to the evidence base so that crop- and region-specific guidelines can be developed and promoted.

The research team will also be interviewing growers to better understand their needs and how current pest management strategies can be complemented by habitat management tools. This will ensure that the future guidelines are practical and easy to use.

MORE INFORMATION

This article was supplied by Geoff Gurr, Anne Johnson, Olivia Reynolds, Jianhau Mo, Syed Rizvi, Ahsanul Haque, Mike Furlong, Jessica Page, Scott Munro and Terry Osbourne. For more information, please contact Geoff Gurr at ggurr@csu.edu.au or (02) 6365 7551.
A trial site in Myalup will provide data on the impacts of various winter cover crop varieties on weed germination and growth.

In collaboration with Ivankovich Farms and the Department of Primary Industries and Regional Development (DPIRD), the University of New England (UNE) has recently commenced an on-farm trial of winter cover cropping and its potential use for weed management on Peter and Anthony Ivankovich’s carrot and onion farm in Myalup, south of Perth, Western Australia.

Weeds are a persistent problem for vegetable farmers and their staff, and have significant impacts on crop profitability, yield, quality and management in all crops.

The potential for weed growth within and between vegetable crop rows is high due to favourable growing conditions, regular disturbance, and lack of registered herbicides to selectively control broadleaf weeds.

Because of the ongoing importance of weeds, Hort Innovation is funding a project seeking to improve integrated weed management within the industry.

This work is being conducted as a major component of the Hort Innovation-funded project VG15070 ‘A strategic approach to weed management for the Australian vegetable industry’, which also involves winter and summer cover crop trial sites in Gatton, Queensland; Somersby, New South Wales; and Forthside, Tasmania.

Weeds are a persistent problem for vegetable farmers and their staff, and have significant impacts on crop profitability, yield, quality and management in all crops.

Research priorities include:

- understanding the ecology of high priority weeds in the industry and their response to various management methods;
- quantifying the weed seed banks on vegetable farms and linking these to farming practices;
- evaluating the effectiveness of supplementary cultural weed management methods, including biofumigant and green mallee cover crops and hand weeding;
- conducting an economic analysis of weed management costs and benefits; and
- delivering the industry’s first integrated weed management manual.

This four year project (due for completion July 2020) is led by Associate Professor Paul Kristiansen from UNE.

Associate Professor Kristiansen noted that ‘weeds are an ongoing challenge for vegetable growers in WA. The light sandy soils pose particular problems, so simply spraying out everything between crops is not always an ideal option’.

On-farm trial

Weed management effectiveness through winter cover cropping

BY MICHAEL COLEMAN
UNIVERSITY OF NEW ENGLAND
Cover crops have been shown to have some benefit in reducing the weed burden on vegetable farms, through suppression, competition for resources, or in some cases through their biofumigant effects which may inhibit seed germination and weed growth.

The Ivankovich Farms field trial is planned to take in two growing seasons of cover cropping. The first cover crops were planted in April, 2018

In this replicated trial, a range of cereal, grass, brassica and legume winter cover crop species have been planted:
- Field Pea
- Ryecorn
- Italian Ryegrass
- Caliente
- BQ Mulch
- A biofumigant mix, comprising White mustard, Rocket, and Turnip.

The UNE team has taken baseline soil samples from each winter cover crop plot. These will be used to count the number of viable weed seeds within each plot at the beginning of the two year trial. The site will be regularly monitored during the cover crop growing period as well as within the subsequent cash crops during 2018 and 2019.

Significant weeds that have already been noted on this farm include wireweed, wild radish, pigweed, fleabane, and sedges.

Over this period, the team will measure above-ground weed biomass (including identification of number and species of weeds present); the weed seed bank; and cover crop biomass and ground cover.

Information on how the cover crop species were managed from planting through to incorporation will also be collected. This information will be used to investigate the performance of each of the winter cover crop species being trialled in suppressing weeds.

Weed management is just one aspect that farmers need to consider when deciding whether to include a cover crop in their rotation, and which cover crop species may suit their needs best.

For Paul Kristiansen, ‘maintaining a cover of vegetation in the form of a cover crop will not only suppress weeds in between cash crops, but also protect the soil, conserve some soil moisture and add soil carbon’.

With the multiple benefits of cover crops in mind, team members from the Hort Innovation-funded project VG16068 ‘Optimising cover cropping for the Australian vegetable industry’ have become involved in the trial to monitor soil borne diseases within the cover crops. With a particular focus on the impacts of biofumigant crops on soil borne disease. Led by Doris Blaesing and John Duff, this team will also measure the glucosinolates found in the biofumigant cover crop species being grown on the site.

It is expected that some cover crop varieties will be more effective than others in suppressing weed germination and growth. This information will be included in the integrated weed management manual produced at the end of the research project to give farmers more information when deciding which cover crop species may be beneficial on their farm.

The UNE team is very grateful to Peter and Anthony Ivankovich for their generous support of this project, Ian Guthridge and Graham Blincow from the DPIRD Manjimup office for completing the cover crop sowing activity, John Cross and Grant Swan (David Grays) for their assistance with crop establishment and monitoring, and Dave Stewart (Elders), Doris Blaesing (RMCG) and John Duff (Qld Department of Agriculture and Fisheries) for their advice.

For more information on this project, please visit www.une.edu.au/iwmvegetables
Who recalls food in Australia?

The Food Industry Recall Protocol provides information on recalling food in Australia and guidance for food businesses on developing a written food recall plan. A food recall is action taken to remove from distribution, sale and consumption, food which is unsafe. This means food that may cause illness or other physical harm to a person consuming the food.

Who recalls food in Australia?

FSANZ can’t order or force a food recall. Only Australian states and territories have enforcement powers to mandate, order or force a recall if necessary.

Food Businesses
- Must notify their business customers and local food enforcement agency that a food recall is needed.
- Must provide information to FSANZ about the recalled food.
- Must notify the public of the recall.

Enforcement Agency
- Confirm that a recall is needed and work with the food business to recall the food.
- Check that the business is effectively recalling the food.

FSANZ
- Coordinates the recall with the relevant jurisdiction and food business.
- Informs government, industry and international government contacts of the recall and advises consumers via the FSANZ website and social media platforms.

The three primary objectives of a food recall are to:

1. Stop the distribution and sale of the product as soon as possible
2. Inform the government, the food businesses that have received the recalled food and the public (consumer level recalls only) of the problem
3. Effectively and efficiently remove unsafe product from the marketplace.
This Protocol helps food businesses plan for and respond to a need to recall potentially unsafe food by setting out:

- the roles and responsibilities of food businesses and government during a food recall
- the key steps in the food recall process
- the legal requirements for food businesses in relation to food recalls
- important elements of a food recall plan.

The *Food Industry Recall Protocol* includes:

- how to write a food recall plan for your food business
- contact details for FSANZ and state/territory food enforcement agencies
- an explanation of how recalls are classified
- examples of problems and suggested actions
- examples of recall notifications and press advertisements.

**MORE INFORMATION**

Download the full *Food Industry Recall Protocol*

Plant disease specialists from around the country are combining forces to combat some of the biggest threats to Australian vegetables through a $16 million initiative.

Being delivered by Hort Innovation, and led by the Queensland Department of Agriculture and Fisheries with support from government agencies and research institutions from across the nation, the five-year effort aims to reduce the effects of diseases that can impact on growers.

Hort Innovation Vegetable Fund Manager Tim Archibald said the ambitious national project would support the sustainability of some of Australia’s favourite vegetables.

“Over recent years the vegetable industry has faced some crippling diseases — the Green Cucumber Mottle Mosaic Virus threatening capsicums, cucumbers, pumpkin, squash and lettuce in the Northern Territory, Western Australia and Queensland being one example,” he said.

“While incidences of disease in vegetable crops are rare, and do not pose a risk to human health, when an outbreak happens it can devastate growers.”

Mr Archibald said Australia is considered one of the safest food suppliers in the world with strict protocols in place along all stages of the commercial supply chain.

“The research will include the innovative use of Area Wide Management, a technique that encourages growers to approach pest management as a group in a geographic area, rather than on individual farms. Traditionally used to control pests, this technique will target thrip, aphid, leafhopper and whitefly transmitted viruses, as well as the management of bacterial leaf diseases.

The development of useful, rapid, innovative diagnostics for viral and bacterial pathogens will also be a priority, along with improving the vegetable industry’s preparedness in managing key exotic threats, through contingency planning and increased awareness.

To help advance the country’s plant pathology and entomology capacity, the project will also include an investment in three PhD students, recent post-graduates and early career scientists.

Queensland Department of Agriculture and Fisheries science director Dr Tim Smith said this exciting and hugely collaborative project is expected to take disease management in Australia to a new level.

“Surveys will be undertaken to monitor the distribution and diversity of viruses, vectors and bacteria in vegetable crops around Australia. We will also be conducting trial work on new crop varieties, chemistries and biological control agents,” he said.

Plus, we’ll look at control options such as wind breaks, irrigation management, planting practices and crop rotation.”
This project will be conducted in conjunction with a $21 million Australian plant pest surveillance technology research project announced last year, and also the nation’s Plant Biosecurity Research Initiative. This project will also link with the Improved Soilborne Disease Diagnostic Capacity for the Australian Vegetable Industry program, led by South Australian Primary Industries and Regions SA.

**MORE INFORMATION**

Additional project partners include the Victorian Department of Economic Development, Jobs, Transport and Resources; The Northern Territory Department of Primary Industry and Resources; the Western Australia Department of Primary Industries and Regional Development; the University of Tasmania and various consultancies.

This project has been funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

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We understand that producers working in the horticulture sector face a unique set of challenges, which often present opportunities. You need to adapt to rapidly changing weather conditions, crop development, emerging technologies, price fluctuations and varying global economic conditions.

To find out more about Rural Bank’s range of specialist farm finance products and services, contact Stephen Fidge, Gingin Community Bank Manager on 08 8575 1560 or Agribusiness Relationship Manager, Garry Harvey on 0437 393 910.
Food safety
what do you need to know?
For those following the news, it’s no surprise that major retailers have made some adjustments to product testing requirements in fresh and frozen categories following some recent high-profile food safety issues.

With food safety firmly in mind, we need to ensure that we are meeting our minimum requirements for product testing and Quality Assurance (QA) scheme compliance. It is important that all members of the supply chain (whether producer/grower, packer, ripening facility, etc) are able to clearly demonstrate that they are fully meeting their obligations under the certification requirements of HARPS and base scheme rules.

In Western Australia, Total Quality Assurance Systems in Canning Vale have for many years provided a co-ordinated food safety testing program for the horticultural industry.

I sat down with Chris Hall TQAS’s Managing Director to answer some frequently asked questions on testing to meet QA base scheme requirements.

Q: If a grower is asked to provide evidence of third party testing — what do they need to get tested?

Typically, the answer depends on the requirements of the base QA scheme that your business is meeting. For those growers that need to meet the requirements outlined in Freshcare Food Safety & Quality Edition 4 (FSQ4), they will need to complete a micro analysis for water (for washing, cleaning and irrigation) as well as a product test for chemical residues, heavy metals and (if required by your customer) a micro analysis for E. coli and Salmonella spp.

For those operating under Safe Quality Food Edition 8 (SQF) — there may also be a requirement to submit microbial swabs of selected surface areas to demonstrate effective control of microbial contaminants including E.coli, Salmonella spp and Listeria spp.

Q: Why do we need to undertake analysis of water, products and swabs?

To verify and validate that the processes that are being undertaken in the HACCP Plan/ GFSI base scheme are effective in controlling chemical and microbial hazards.

Q: Who is responsible for ensuring that testing is completed as per the base scheme requirements?

Ultimately it is the grower’s responsibility to ensure that the appropriate testing has been completed to meet the base scheme’s requirements. However, HARPS requirements outline that the supplier (i.e. market agent/packer) must meet the testing requirements outlined by the customer (i.e. the major retailers and third-party customers). This may mean that market agents will assist growers to ensure that the appropriate testing has been completed to ensure compliance is met for all parties in the supply chain.
Q HARPS and Freshcare mention “NATA” in their scheme documents. What is NATA accreditation and how does it relate to my QA base scheme?

NATA (National Association of Testing Authorities) is the independent body that certifies the laboratories technical competencies to approve their analysis processes. Analysis that is not completed by a NATA approved laboratory is not deemed to be meeting ISO/IEC 17025 which means the lab has not met international testing standards and cannot be approved by your base scheme.

Q I grow several different vegetable crops — do I need to complete product testing for all lines?

If those lines are being supplied to any of the major retailers, then each commodity type will need to be analysed to ensure the HARPS requirements are being met by all parties in the supply chain.

Q I am a new grower — what testing do I need and how do I go about getting testing completed?

The testing which you will need to do depends upon the requirements of your accredited QA program and the requirements of your customers. It is a question that is best answered following a briefing on an individual basis as there are not necessarily hard and fast rules. Basic information on product testing is available from TQAS.

Q What chemicals are required to be tested in a residue test?

Testing for the 125 chemical compounds which are listed in the industry’s standard AT3 Full Residue Analysis test is a minimum. Additional chemical compounds should be tested where other chemicals are being used in production or post-harvest treatments.

Q Are there any requirements that need to be met when submitting samples?

Yes, depending upon the sample, the type and the analysis that is required, there may be a need to keep samples cold or a larger volume sample may be required to complete the analysis in the lab as examples. Again, it depends on the circumstances. If growers are unsure they should contact the agency that undertakes their sample testing.

MORE INFORMATION

Have you got a burning question relating to Quality Assurance or do you need assistance to service your QA system? If you do, please send your questions to Joel Dinsdale joel.dinsdale@vegetableswa.com.au.

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1800 062 332 | www.harvesttrail.gov.au
Closed Loop provide a range of organic recycling solutions to transform your business’s food waste into compost that is both valuable and versatile.

**Overview**
Closed Loop’s organic recycling units are fully contained, commercial on-site composting units that can reduce food waste volume by up to 90% in 24 hours.

**Easy and odour-free composting**
Their units decompose and homogenise food organic waste in an aerobic environment using controlled temperatures, agitation, airflow and organic starter material.

All you have to do is add food and organic waste throughout the day, including fruit, vegetables, grains, dairy, meat, fish, poultry, eggshells, crustacean shells and liquid.

The unit features a sophisticated ventilation and deodorisation system that promotes decomposition without any unpleasant smells.

**Turn food waste into an asset you can use**
Within 24 hours, the original material will be reduced by up to 90% — transformed into a concentrated compost you can use in many different ways, including:

- In your crop or field.
- Donating your compost to a local community initiative.
- An employee collection program to engage and reward staff with a compost collection box to take home.

**Organic recycling tailored to your needs**
Before recommending a Closed Loop Organics unit, we perform a full audit of your business and waste streams, as well as suggesting a location for installation of the unit.

As your sustainability partner, Closed Loop will also implement a communication plan to help your staff and contractors understand and engage with the program.

Closed Loop Organics units are available in sizes to process between 20kg to a tonne of food waste a day (see following page).

**MORE INFORMATION**
For more information go to their website www.closedloop.com.au
CLOSED LOOP ORGANICS UNIT SPECIFICATIONS

Closed Loop’s organic recycling units are fully contained, commercial aerobic on-site composting units that can reduce food waste by up to 90 per cent in 24 hours.

**CL010s**
- Capacity/day: 20kg
- Electricity usage/month: 500kWh (maximum)
- Electricity requirements: AC 240V
- Power rating: 50Hz, 2.1kW
- Overall footprint (mm): 1160 (w) x 620 (d) x 1030 (h)
- Overall dry weight: 240kg

**CL030s**
- Capacity/day: 60kg
- Touchscreen Controls | Automatic Operation
- Electricity usage/month: 1100kWh (maximum)
- Elec. requirements: AC 3 phase, 20 amp, 5 pin dedicated outlet
- Power rating: 415V, 50Hz, 4kW
- Overall footprint (mm): 1960 (w) x 870 (d) x 1250 (h)
- Overall dry weight: 450kg

**CL050s**
- Capacity/day: 100kg
- Touchscreen Controls | Automatic Operation
- Electricity usage/month: 1700kWh (maximum)
- Elec. requirements: AC 3 phase, 20 amp, 5 pin dedicated outlet
- Power rating: 415V, 50Hz, 6kW
- Overall footprint (mm): 2155 (w) x 1060 (d) x 1350 (h)
- Overall dry weight: 660kg

**CL0100s**
- Capacity/day: 200kg
- Touchscreen Controls | Automatic Operation
- Electricity usage/month: 3500kWh (maximum)
- Elec. requirements: AC 3 phase, 20 amp, 5 pin dedicated outlet
- Power rating: 415V, 50Hz, 13kW
- Overall footprint (mm): 2584 (w) x 1250 (d) x 1580 (h)
- Overall dry weight: 1100kg

**OPTIONAL FEATURES**
- Load cells for accurate measurements of inputs and outputs (CL030 and above)
- Internet connection for SMS Alerts and remote connection (CL030 and above)
- 120 Litre Bin Lifter (CL0100)

**PLEASE SEE ADDITIONAL INFORMATION FOR DELIVERY, SITE AND INSTALLATION REQUIREMENTS**

Contact Closed Loop now to improve the environmental, financial and reputational performance of your business
An Ozito-brand oscillating tool purchased from Bunnings provided one of the integral components to an Australian-made capsicum-picking robot prototype.

"Harvey", the harvesting robot, gave live demonstrations at the Future Farming Masterclass at AgroTrend at Bundaberg, Queensland.

Harvey is the product of a Queensland University of Technology research team which is exploring the possibilities of robotics in agriculture in order to reduce the burden of labour costs for growers.

The one-armed robot is designed to travel down a row, either in a field or within a greenhouse, detect a ripe capsicum and pick it from the bush.
It uses camera sensors and algorithms to “see” the capsicum, before engaging an arm equipped with a cutting tool and suction cup to remove the fruit before delivering it into a container.

The seemingly simple task for a human provides a number of challenges for robot designers and programmers.

QUT lecturer, Dr Chris Lehnert, spoke on the development of Harvey.

He said while robots were already widely used within industries such as car manufacturing, translating similar technology to agriculture was difficult due to the uncertainty of tasks and variables.

One of the trickier parts to making Harvey was getting the grip right.

“One thing is grasping. It’s very challenging for a robot to do this in the real world,” Dr Lehnert said.

Work continues on improving Harvey’s ability to locate ripe fruit when lighting conditions change with the time of day or whether conditions which affect camera sensors.

The device essentially builds a virtual three-dimensional image of each fruit to assess where it is and which part is the peduncle (stem) to cut.

This involves computer-based “deep learning” so the unit can identify between fruit, leaves and stem.

“So just detecting the location of a fruit is actually quite difficult,” Dr Lehnert said.

**Capsicums the pick of crops**

The team decided to focus on picking capsicums because about 80% of Australia’s capsicums are grown in Qld, as well as it being a fairly robust fruit and the general layout of its growing environment can be more easily negotiated by a robot.

He said with 20–40% of production costs being labour-related, coming up with something to reduce that would have major impacts for Australian horticulture.

Apart from a reduction in wages, Dr Lehnert said robots also reduced the safety risk in some tasks for human workers.

**A simple approach**

Keeping it simple was part of the focus for the QUT team.

The basic components of Harvey include several motors, sensors, a robot arm, an onboard air-compressor, cameras, a cutting tool and a suction cup.

Dr Lehnert said it was about realising what would be useful for humans to use and therefore making that usable for a robot.

That meant trips to retail shops, like Bunnings, to see what was available that could be incorporated or modified.

Another facet in using common, workable items within Harvey was utilising the computer operating system, Linux, instead of the more commercial and widely used Windows platform.

A project in the Netherlands managed to harvest about 33% of the capsicums from a plant in a trial, at about 94 seconds per capsicum.

QUT’s testing has found Harvey can manage closer to 70% of fruit at about 20–22 seconds per piece.

**More to come**

Moving the project forward, Dr Lehnert said it would be ideal to work with growers and plant breeders in order to come up with a system that could improve the likelihood of robot harvesting.

He said the idea of a fruit with a longer peduncle could provide easier robotic harvesting.

Other aspects being considered include crop recording to help with a farmer’s decision-making (such as numbers of fruit picked) and perhaps autonomous operation where the device could dock itself in order to recharge and deliver the harvested fruit.

**MORE INFORMATION**

The AgroTrend event was a joint initiative of Bundaberg Fruit and Vegetable Growers and Central Queensland University.

The program was assisted with funding from the Qld Government’s Engaging Science Program and VegNET, Hort Innovation and the Australian Government.
With support from Hitachi and funding from the Japanese Ministry of Internal Affairs and Communication (MIC), the Quasi-Zenith Satellite System (QZSS) from Japan has been tested in Australia over the past few years to accurately position and guide tractors and UAVs.

Previous demonstrations have shown that the QZSS can accurately position autonomous tractors working in rice fields (Jerilderie, NSW), Sugar Cane fields (Mackay, QLD) and UAV’s in avocado fields (Bundaberg, QLD) but the latest demonstration of the satellites’ accuracy was conducted on a mixed asparagus and banana farm in Carnarvon, WA.

There is an ever-greater need to use high-precision positioning technologies in agriculture, but in order to use traditional high-precision positioning techniques, such as RTK, terrestrial communications, such as base stations and Wi-Fi, must also be prepared in addition to the positioning receivers. Because of these local requirements, the wide spread proliferation of this high-precision measurement of positioning is progressing slowly, as the users themselves are responsible for all associated costs. On the other hand, the preparation of base stations and other aspects of a terrestrial communications environment are not necessary for high-precision positioning using the signals transmitted from the Quasi-Zenith Satellite System.

In Carnarvon, the QZSS receiver and antennas were simply mounted on a UAV and the UAV was then flown with a multispectral camera on board to generate a multispectral map of the farmland.

The demonstration wanted to highlight the precision of QZSS positioning (horizontal and vertical). During the trials, the accuracy of the QZSS positioning was shown to be better than ±10cm (in both the horizontal and vertical axis). Plus to give a meaningful practical application of the solution, the UAV was used to identify the position of weeds and then compare those positions to the actual status on the farm.

This is to assess the feasibility in the future of using a QZSS guided UAV to accurately spot-spray herbicide, thereby freeing up man power and reducing on farm herbicide inputs.

These tests were very beneficial, demonstrating on the banana fields an 81% or better accuracy of locating all weeds and a 92% level of accuracy when the weeds were 10cm or larger in size.

The demonstration system also showed that the time required for larger farm operations (15ha and above) to survey the grounds to identify weeds can be reduced using a satellite guided UAV.

**MORE INFORMATION**

Full operation of the Quasi-Zenith Satellite System for Australia is expected to begin in late 2018. For further details, contact Hitachi Australia; Derrick Thompson phone: (02) 9888 4146 Mobile: 0428 507 164

Japanese Ministry of Internal Affairs and Communication (MIC) have funded the project.
your industry
We at the Department of Water and Environmental Regulation have the state government responsibility for managing the state's water resources and how they are used.

**Gnangara groundwater: what's the plan?**

To make sure we have Gnangara groundwater for now and the future, we have begun working on the next Gnangara groundwater allocation plan, consulting with the Water Corporation and water users to find practical pathways to bring the system back into balance by 2030.

This will be a challenge. We will help in any way we can by promoting innovative water projects, building capacity in water efficiency, sharing research and exploring new water supply options with water users.

To help guide the rebalancing, we will set new limits on groundwater availability as part of the next allocation plan. This may also include changes to how we license groundwater.

What ‘rebalanced’ looks like will be developed through the planning process over the next year. We will focus on achieving a productive and sustainable groundwater supply and a healthy environment in the face of an ever-drying climate.

In developing the plan, we will work with water users to identify how to phase in new solutions and minimise impacts on people and businesses.

We are also taking a longer view. Our parallel work on Perth and Peel Water @ 3.5 million is assessing the water demand outlook and considering the water supply strategies to meet water needs, particularly non-potable water needs, for a city growing to 3.5 million people by around 2050.

Stretching over 2200 square kilometres under the Swan coastal plain, the Gnangara system is Perth’s lowest cost and largest source of good quality water. It is a crucial component of Perth’s drinking water supply (Integrated Water Supply Scheme, operated by the Water Corporation).

The Gnangara system provides almost half of all the water used in the Perth metropolitan area each year. It supplies water for agriculture, parks, ovals and gardens, and water for Perth’s scheme supply — distributed by the Water Corporation. Gnangara groundwater also supports environmental features such as lakes, wetlands and deep rooted vegetation.

In the Gnangara system, deeper water is up to 35,000 years old and the geological structure is much older (up to 175 million years old). The system is made of many layers of sand, sediment and clay.
Pores between the sand hold water, which mostly comes from winter rainfall making its way down through the soil to recharge the aquifers. The system contains three main aquifers (see Figure 1).

Groundwater is a shared resource. The shallow Superficial aquifer, known as the Gnangara Mound, is mostly used by local governments, schools, industry, farmers and households that take water from bores.

Some is used for Perth’s scheme supply which also sources water from dams, desalinisation and recycling. The deeper Leederville and Yarragadee aquifers are mostly used for scheme water supply.

The Jandakot groundwater system, south of the Swan River, is a similar but smaller system that is also used by local water users and for scheme water supply.

FIGURE 1 The Gnangara groundwater system has three main aquifers and supports Perth’s water supplies, wetlands and vegetation
Gnangara groundwater supports households, businesses, parks and gardens, through about 2600 water licences to take groundwater and 70 000 domestic bores.

How is Gnangara groundwater used?

- **Perth’s scheme water**: Gnangara groundwater provides at least 110 billion litres or 110 gigalitres (GL) a year for Perth’s scheme water supplied by the Water Corporation (enough water to meet the needs of over 800,000 people).
- **Domestic garden bores**: We estimate 70,000 individual households take about 36GL a year through domestic bores to irrigate gardens and for use by livestock (exempt from water licensing).
- **Horticulture and viticulture**: Horticulturalists and farmers take more than 60GL of groundwater a year to irrigate locally grown vegetables and fruit.
- **Public open space**: Local councils, schools and sporting clubs take about 45GL a year to irrigate parks, sports ovals and other public open spaces.
- **Commercial purposes**: Local businesses and other commercial industries take over 10GL a year to irrigate grounds or to use in production of goods and services, such as construction.
- **Pine plantations**: Pine plantations intercept rainfall and reduce or prevent recharge to groundwater.

Gnangara groundwater is Perth’s lowest cost water source and the economic benefits have been estimated at a total net present value of $6.7 billion¹, which is equivalent to about $400 million a year.

How much water is used from the Gnangara groundwater system?

In 2016–17, about 287GL was allocated from the Gnangara system — enough water to fill Optus Stadium 287 times or 114,800 Olympic swimming pools.

Over 40% of this went into the Water Corporation’s Integrated Water Supply Scheme, and about 45% was used for local parks and grounds, horticulture and businesses (see Figure 2).

About 13% was taken by householders for gardens using domestic bores.

What can we do to secure our groundwater future?

To maintain groundwater as a viable resource for ongoing use and other public and environmental benefits, we need to stabilise groundwater levels and enable some key areas to recover.

There are many ways to do this. To help achieve a better balance, some local governments and businesses are already investing in water-efficient technology, investigating managed aquifer recharge and applying water-sensitive urban design.

New urban developments can also be an opportunity to promote alternative, local water supply solutions that are fit-for purpose, especially for public open space.

All water users will need to consider options like these and use water more efficiently to adjust to reduced groundwater availability.

¹ Marsden Jacob Associates 2012, Assessing the value of groundwater, Waterlines report, National Water Commission, Canberra
Strategies to rebalance Gnangara groundwater in a drying climate by 2030

We can achieve this by working together
Share information, work together and form partnerships to build capacity and find water solutions.

Sustainable groundwater

- Reduce groundwater abstraction.
- Increase recharge through planned land-use changes.
- Use science and research to find the best solutions for each location.

Water efficiency and innovation

- Improve water-use efficiency to reduce water demand.
- Enhance urban design to reduce demand and increase recharge.

Alternative sources

- Reduce reliance on groundwater by using fit-for-purpose alternatives.
- Increase groundwater replenishment and managed aquifer recharge in the best locations.

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Trusted WA brand celebrates 50 years

Service sets Mirco apart for expanding Baldivis business

**BALDIVIS** grower Sam Calameri has fond memories of purchasing the first tractor ever sold by brothers Vince and Peter Mirco, Mirco Bros.

It was in 1978, 10 years after Mirco Bros was established and they had just expanded into selling machinery to service the local farming community.

As the family owned and run company celebrates its 50th year, Sam recently caught up with Mirco Bros Director Michael Mirco and Sales Manager Rob Illiano to reflect on their longstanding affiliation.

“We’ve still got that tractor,” Sam laughed.

“And after all these years we’re still working with Mirco — and that’s because of the service.

“Back then, Vince and Peter would take the shirts of their backs and give to you — that’s how much they cared about their customers.

“If we had a breakdown on a Sunday, they would happily open the shop to help us out. People weren’t just their clients, they’re friends.”

That relationship has only strengthened over the years and Sam said Mirco played a key role in his family’s business, Baldivis Farms, providing quality products and service to help them produce premium produce.

Farming in Baldivis since 1974, Sam and his family partners currently grow carrots, cauliflower and potatoes over 40 hectares.

They also have a 7000m² greenhouse with Nutrient Film Technique (NFT) system used to grow decorative lettuce, marketed as Fresh Focus.

The greenhouse is the most recent addition to the farm and Sam said it was a vital step of diversification to help them achieve economy of scale, which was a constant struggle.

It allows them to grow 1.5 million plants per year, in 12 cycles.

“It’s precision farming and there is no room for error,” Sam said.

“Growing like this has made us look for more precision in our broadacre farming too.”

Another factor in their success has been a focus on premium nutrition during the growing process, which is why Sam said Haifa was their preferred brand of fertilisers, recommended and supplied by the team at Mirco.

Through their fertigation system, they apply Haifa Multi-K (potassium nitrate), MKP (mono-potassium phosphate) and Cal (calcium nitrate) to their broadacre crops and MAP (mono-ammonium phosphate) in the greenhouse through the NFT system.

“The quality is outstanding,” Sam said.

“It’s easy, flowable and doesn’t cause blockages like many other products do — we don’t have time to be messing around with that.

“Presentation is important and it’s something Haifa does really well, from the actual product through the packaging.”

**MORE INFORMATION**

www.mircobros.com.au
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Marty Collins
0429 372 607

Local food growers in the Manjimup-Pemberton area have shown their support to a proposed irrigation scheme by signing up to the water sales process as part of the Southern Forests (SF) Irrigation Scheme project.

Located in one of the State’s most significant horticultural regions, the proposed Southern Forests Irrigation Scheme will improve water storage and distribution through a new dam, pipeline and pumping infrastructure, allowing for the movement and trading of water between growers in the Pemberton and Manjimup region.

The SF Irrigation Co-operative, who will own and operate the scheme once finalised, was impressed with the support offered by the local community through applications received for both summer and winter scheme water.

With the official water sales process formally closing on 28 February, the significant support of the local industry showcased the growers’ desire and need for a sustainable and dependable water source in the region.

With submissions exceeding the initial water sales target, the SF Irrigation Co-operative will now start working through the engineering aspects — such as designing the scheme and how to incorporate as many growers as possible.

In addition to private and State Government funding, the project is actively seeking an additional $40 million in funding from the Commonwealth Government’s National Water Infrastructure Development Fund.

**MORE INFORMATION**

For more information, visit the Southern Forests Irrigation Scheme webpage on the Water for Food website or contact Eugene Carew, Project Manager, on (08) 6552 1980 or eugene.carew@dpird.wa.gov.au.
When you’re putting as much effort into your business as you do, you need a reliable partner that understands the needs of your business. As many of the country’s leading nurseries and vegetable growers know, the team at Nunhems partners with their customers to find the best vegetable varieties. As well as offering a wide range of proven varieties, Nunhems continues to invest in breeding programs to ensure they have the next generation of genetics that will enable their customers to succeed into the future.
DPIRD Updates to look at future trends in horticulture

The Department of Primary Industries and Regional Development (DPIRD) will host the 2018 Western Australian Horticulture Update on August 16 and 17 at Crown Convention Centre.

DPIRD’s Managing Director of Research, Development and Innovation, Mark Sweetingham said the update will help strengthen Western Australian industry-government partnerships and collaboration and allow all levels of industry to interact and collaborate.

“The focus this year is on the future trends affecting the WA horticulture industry, including the changing retail landscape and how shifts in consumer decision-making is impacting growers,” Dr Sweetingham said.

Keynote speaker and event MC, Tristan Kitchener from Kitchener and Partners said “it’s really important for producers to understand who their customer is.” Tristan has a background in retail and management consultancy and routinely provides advice and support along the grocery value chain.

The update will help encourage profitable business approaches to support growth within WA and the horticultural industry by having information sessions on benchmarking and financial information and showcase growers who have implemented innovative practices on-farm and in production.

Other highlights of the event include:

- the introduction of precision agriculture and the value in gathering data
- research updates from biosecurity experts and ag scientists
- Wines of WA will host a wine tasting session on day one and the Cancer Council of WA will present a WA fresh produce ‘Crunch&Sip’ morning tea on day two.

DPIRD thanks event sponsors Perth Markets Limited, C-Wise, Bankwest and the Royal Agricultural Society of WA for their support of the event.

The 2018 WA Horticulture Update is also supported by vegetablesWA, Pomewest, WA Citrus, the Agricultural Produce Commission and Wines of WA.

More Information

For further details in relation to the event please visit the website www.agric.wa.gov.au/horticulture/western-australian-horticulture-update-2018 or contact Kirrily Palmer at kirrily.palmer@dpird.wa.gov.au.
Western Australian Horticulture Update

Crown Convention Centre
Thursday 16 August
Friday 17 August

Program highlights:

- Tristan Kitchener as MC and keynote presenter
- Hear from leading WA growers
- Bryn Edwards from vegetablesWA with Planfarm’s Paul Omodei
- Hitachi’s Derrick Thompson
- Jenny Atkins and Shannon Wright from Cancer Council of WA talking about promotional campaigns and how industry can benefit
- Julia Balderstone presenting on the Coles Nurture Fund

- Claire McClelland from vegetablesWA
- Dr Michael Considine and Cathy Bondonno from the UWA
- DPIRD research updates on biosecurity
- Wines of WA tasting session
- Rural Financial Counselling Service of WA
- Royal Agricultural Society of WA
- Small Business Development Corporation

Keynote speaker
Tristan Kitchener

With a background in retail and management consultancy, Tristan Kitchener provides advice and support along the grocery value chain.

Tristan will be presenting at the WA Horticulture Update on the implications of the changing retail and consumer environment and HARPS.

Registration and full program details coming soon.

For more information in relation to this event please visit www.agric.wa.gov.au/horticulture/western-australian-horticulture-update-2018 or contact kirrily.palmer@dpird.wa.gov.au
The Gascoyne Food Council is working on a number of initiatives as the rockmelon season kicks off. The Rockmelon Challenge is aiming to drive sales of local produce through consumer awareness and directly through Perth restaurants and bars.

A successful Facebook competition during May gave away a $200 Westfield Voucher to the most popular photo (pictured). The competition achieved reach of over 8,500 people, 150 engagements and was shared 63 times over the two week period on the Gascoyne Food Council page.

A separate unpaid post announcing the winning photo also boosted exposure with an additional 1400 people reached and 153 likes, primarily attributable to the beautiful photo.

Chef Stuart Laws is also using his Chef Direct role to create a campaign with local restaurants and bars, encouraging them to add rockmelon to the menu for the month of June.
His efforts have already been rewarded, with Long Chim creating a “Rock n Roll Highball” cocktail, that is available now. A media campaign will be created to support participants.

“As the representative organisation for Carnarvon food suppliers, we want to use our platforms to help boost sales of local rockmelons as much as we can,” said Gascoyne Food Council Chairman Michael Nixon.

“Rockmelons are not only delicious, but they are naturally hydrating and full of incredible nutrients too,” Michael added.

MORE INFORMATION
For more information please contact Doriana Mangili on admin@gascoynefood.com.au.
The Gascoyne Food Council has resurrected its Chef Direct program with a fresh approach and a new man and a van. Led by acclaimed Chef Stuart Laws, the program is focused on achieving long-lasting results through a measured, professional system focusing on accountability.

Exposure achieved through the Gascoyne Food Festival has meant that Perth chefs are now much more aware of the amazing produce available in the region. The Chef Direct program is capitalising on this awareness and providing chefs with access to farm-direct prices for seasonal produce, including second and third grade lines that often end up as waste.

It is early days for the program, however regular deliveries are underway with several venues including Refresh Juice, Vans Cottesloe and Bib & Tucker are making the most of Carnarvon-grown bananas, limes, dragon fruit and more. The main season kicks off soon and with delivery routes in place, it is expected that orders will increase.

As the program builds, steps are now in place to develop an e-commerce website to enable an easier ordering process. The customised design that will make it easy for growers to update with their produce availability. Plus the website will be visually appealing for the chefs and restaurateurs, with information about fresh Gascoyne produce and their producers, encouraging them to shop online via the simple wholesale shopping cart.

Stuart is passionate about supporting local produce and helping farmers make a living.

“This is a great opportunity to be a leader in the industry and capitalise on the farm to table movement that has been developing over the last 10 years or so and really showcase all that this remarkable region has to offer. In the age of social media, we have the ability, in real time, to advertise where our product is coming from and who is producing it. Consumers love a story and we have an amazing one to tell,” said Stuart.

“For far too long the farmer has drawn the short straw and received too little for their hard work whilst the middle man makes huge profits. Let’s go large scale paddock to plate and deliver a fairer price to the farmer and consumer. Let’s bring back tasty produce that’s picked at its best for flavour, not its best for storage. And let’s reduce the waste caused by ridiculous specifications that make great produce unsaleable,” Stuart added.

MORE INFORMATION

More information please contact Stuart at chefdirect@gascoynefood.com.au.
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You forget how big Western Australia is until you have to travel from Albany to Carnarvon and that’s not the whole state. Two visits to each of these regions may have boosted the kilometres on my car, however it has given me a greater insight into the growers, their trials and tribulations and the similarities between these two isolated regional communities.

Attending Albany Farmers Market on a drizzly Saturday morning at the end of February, was an explosion of colour resulting in a bootful of beautiful produce. In March I travelled again to Albany with CEO John Shannon and Quality Assurance Coordinator Joel Dinsdale for a grower group meeting.

A farm tour including taste testing hydroponic greens and a vegetablesWA update, concluded with a dinner of locally grown produce.

The four-man Carnarvon tour, featuring Bryn Edwards, Joel Dinsdale, Truyen Vo and myself, in early March and the whirlwind trip for the Soil Borne Disease workshops in May, allowed the team to connect with many of our northern growers on a range of topics. A short visit to Geraldton covered Quality Assurance, Benchmarking and welcoming new growers and providing them with details on what vegetablesWA can offer and assist them with.

Attending UNE’s official ‘Sow day’ at Ivankovich Farms and spending time with Dr Len Tesoriero and Dr Doris Blaesing, both in Carnarvon and at vegetablesWA’s Leafy Variety Seed Trial in Gingin, has again grown my knowledge in cover crops, bio fumigation and the like.
A huge thank you goes to the Dobra family and the Loose Leaf team for undertaking a brilliant job in growing and presenting vegetablesWA’s very first Leafy Variety Seed Trial. Steve and his team took on the responsibility of seeding, feeding and nurturing the produce and I don’t know what they did, but the Rocket was delicious!

Even the weather behaved, at Maureen’s insistence I’m sure, delivering a day of sunshine. A special thank you goes to all the growers who attended. We know walking away from the garden for a day can be difficult and we hope that you took something more than just the goodie bags away with you.

Back in the office the vegetablesWA team have been working hard to bring relevant workshops, information sessions and training events to you, our growers.

With emails being fired off North, South, East and West, multiple team meetings and endless conversations starting with me standing in a doorway saying “Hey…I’ve had a thought…..”, there will no doubt be more to come. If you have any ideas for events you’d like to see in your region, don’t hesitate to get in touch.

Ensure you keep an eye on the e-news and your inboxes for the final dates of these events:
- Freshcare Training with Joel Dinsdale — Wanneroo and West Perth (June)
- Harps Session with Joel Dinsdale — West Perth (June)
- DPIRD: Key to Financial Management — Wanneroo (June)
- Hort Connections (June)
- Veginnovations (July)
- DPIRD: Key to Financial Management — Carnarvon (August)
- DPIRD: Key to Financial Management — Manjimup (September)
- Grower Group Tour (October)
- Industry Summit (October)
- DPIRD: Key to Financial Management — Geraldton (November TBC)

As we head into winter with it’s dewy mornings and promises of rain…I can’t lie, I don’t miss the ‘joy’ of struggling into my cold, yellow, plastic overalls with frozen fingers, while wearing gumboots. Or pulling my beanie down low to protect my frost-bitten ears from the pre-dawn breeze, that drops the temperature thanks to my friend ‘the wind chill factor’.

Stay warm, stay dry and for now enjoy the cool. It’s WA…summer’s heat is always just around the corner.

MORE INFORMATION

For more information or to see Sam contact her directly on 0427 373 037 or email sam.grubisa@vegetableswa.com.au

Geraldton: Discussing benchmarking with Bryn Edwards & Truyen Vo.
Managing a crisis in the vegetable industry

Many growers and industry members may be unaware that a Crisis Management Team, facilitated by AUSVEG, has been funded and trained to effectively respond to any crisis that may negatively impact growers, consumers, industry assets or the reputation of the vegetable industry as a whole.

AUSVEG provides an outline of the role of the Crisis Management Team and its objectives moving forward.

A number of recent events have, directly and indirectly, negatively impacted the vegetable industry’s growers, market position, supply chain and reputation with government, retailers and customers.

These events range from accidental contamination of fresh produce to significant workforce issues and unrest.

A crisis management plan has been funded by the industry and developed to respond to a crisis that could affect the industry’s reputation. As a result of AUSVEG’s role in facilitating this plan, a team within AUSVEG has undergone issues management and crisis communications training to work with relevant stakeholders, authorities, the supply chain and the media to manage the issue to protect the industry’s reputation.

What is a crisis?

A crisis is any event that is likely to endanger health or the environment, or seriously impact an industry’s reputation or ability to conduct business. It is important to note that with a crisis, there is a high potential for adverse impact beyond the initial event.
Examples of crises that could affect our industry include, but are not limited to:

- Accidental or deliberate contamination;
- Threats/blackmail/extortion;
- Theft of dangerous chemicals;
- Significant workforce issues or unrest;
- Market fraud or manipulation;
- Biosecurity incidents (or failure to report); or
- Food safety incidents (or failure to report).

**What does the AUSVEG Crisis Management Team do?**

When a crisis is occurring, the AUSVEG Crisis Management Team works on two areas: **crisis management** and **crisis communication**.

**Crisis management** is a coordinated action that responds to a crisis, both during the immediate event and after the event has passed. It involves assessing the potential impact of an event, providing resources, advice and expertise to minimise the reputational and physical damage of the event, and to bring the crisis under control as quickly and effectively as possible. After an event, it is also important to take away key learnings from how a crisis was managed to capture post-event insights to help prevent future crises and to manage them better.

**Crisis communication** relates to what is said during and after a crisis. It is important that messages across the industry in the event of a crisis are consistent and coherent; to do this, the AUSVEG team works with all relevant stakeholders to ascertain facts to communicate an accurate and consistent message to industry members, stakeholders and the public.

**What should I do if there is a crisis or potential crisis?**

If a crisis should ever occur, growers and industry members are strongly encouraged to contact the AUSVEG Crisis Management Team on 1300 855 170 or (03) 9882 0277.

This will allow AUSVEG to work with you to protect your reputation and that of the industry. Calls to this number will be answered 24/7 and immediate advice will be offered by the call handler.

Early notification and preparation are critical components to an effective industry response and are essential for AUSVEG to activate its Crisis Management Plan. In the event of a potential or emerging crisis, it is always best to be as prepared as possible. If you think something could be a potential crisis, let the AUSVEG team know so that we can best serve the industry.

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**MORE INFORMATION**

The project, *Crisis Management Awareness for the Australian Vegetable Industry*, has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government.

Project Number: VG15016

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**Vegetable industry crisis preparation guide**

If you suspect a crisis is imminent or if you are experiencing a problem that could become a crisis:

1. Call the Crisis Hotline on 1300 855 170.
2. Refer all enquiries (especially media enquiries) to AUSVEG on (03) 9882 0277.
How much water is available between Gingin and Moora and where it can be taken from are just some of the questions a $5.1 million groundwater investigation by the Department of Water and Environmental Regulation will help resolve.

Over the next eight months up to 21 new exploration bores will be constructed across the Dandaragan Plateau to provide new data on the quality, quantity and flow direction of groundwater in this area.

This information will help the department establish if there is more water available for agriculture and industry, and where to access it.

The investigation will also assist in the management of water use around Gingin Brook, which relies on groundwater to support its flow and has experienced up to a 40% decline in streamflow since 2010.

The first bore drilled in the investigation near Rowes Road hit water at 200m with initial tests suggesting the quality as suitable for most types of agriculture.

The area coined as the Northern Food Corridor by the Wheatbelt Development Commission already has substantial irrigated horticulture with olives, grapes, citrus, mangoes and stone fruit produced in the shires of Gingin, Dandaragan and Moora.

Water Minister Dave Kelly said the investigation would support agricultural growth in the area while managing the impacts of climate change on regional aquifers and Gingin Brook.

“This is a high value horticultural area with a large number of groundwater and surface water licences,” he said.
It will also identify potential areas where taking more water is sustainable, and complements previous groundwater investigations in the Dinner Hill and Gingin areas.

“This area is already an important agricultural and horticultural area for the State, and this investigation will increase certainty about water resources so that businesses looking to establish or expand irrigated agriculture, or other industries that need water, will have a clearer idea of what can be achieved.

Meanwhile the Department of Water and Environmental Regulation is continuing to engage with surface water and groundwater users around Gingin Brook and Lennard Brook, to help manage demand and stream health in fully allocated areas that are feeling the pinch from climate change.

Environmental officer Adam Green said the department was keeping local community informed of new science, management and other issues in the catchment.

“We have been reaching out to landholders in the area so everyone is aware of the water situation and how they are able to help,” he said.

“Our message to groundwater and surface water users is to work together, particularly during summer, to minimise impacts to streamflow, the environment and other water users.

“Water users can help by being smart with their water use.

“This includes only taking what is needed, spreading the take of water through the week or arranging to stagger take with neighbours, irrigating before 9am or after 6pm, and taking efficiency measures.

“Live streamflow data is available online through the department’s River Levels webpage available from www.water.wa.gov.au and is useful for observing periods of low flow and considering how you may be able to preserve flow for other users and the environment during this time.

“This includes both shallow and deep bore owners in properties adjacent to the stream where groundwater use has been shown to impact streamflow at a distance of 400m.

“Landholders adjacent to the brooks can also visually check flow during hot weather and observe whether enough water is passing downstream for neighbours and the environment.”

MORE INFORMATION

Contact Department of Water Environmental Regulation via their website www.dwer.wa.gov.au
The McGowan Government will turn on the tap to irrigated agricultural development in the Pilbara, with a $5.9 million project to lay the foundations for new businesses and jobs.

The Transforming Agriculture in the Pilbara (TAP) project will ground-truth soil and water resources in the region for potential horticulture, fodder and field crop production for a range of development sizes.

The project will build on the recently completed Pilbara Hinterland Agricultural Development Initiative, which identified more than 10 areas with prospective land and water resources, including De Grey River, Shaw River, Oakover River, Robe River and Newman areas.

Initial findings have identified a potential water supply in the Pilbara of at least 100 gigalitres, which if verified, equates to up to 12,000 hectares of irrigated land to add to the region’s current fledgling industry of 2,750ha.

The three-year project will undertake soil surveys to identify suitable areas for agricultural production.

The project will work in partnership with industry on prospective irrigation systems research activities to optimise productivity from suitable land and water resources.

TAP will also investigate the potential for commercial production of native foods for premium markets, including Split Jack, native pear and northern sandalwood.

OPHTALMIA Dam (near Newman).

THE three-year project will undertake soil surveys to identify suitable areas for agricultural production.
THE Newman area has been identified with prospective land and water resources.

Agriculture and Food Minister Alannah MacTiernan said “there is great untapped agricultural potential in the Pilbara; we want to unlock those opportunities to diversify and build greater economic depth in the region.

“The TAP project will prove up the resources in the region, providing potential investors with the confidence to pursue opportunities to develop horticulture and fodder and possibly grain production.

“The project will also work with existing landholders to assess the resource potential for smaller, intensive irrigated agricultural opportunities to be integrated into their businesses. Our Government is committed to working hand in hand with Pilbara pastoralists and traditional land owners on realising a shared vision that will produce benefits for future generations.”

MORE INFORMATION

Contact Department of Primary Industries & Regional Development on their website www.agric.wa.gov.au

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Horticulture production in the Gascoyne is set to expand over the coming months, as the first four of 22 new production bores come into operation to boost the water supply for irrigated agriculture.

The McGowan Government has invested an additional $400,000 to bring the initial bores online early to supply 1.9 gigalitres per year, increasing potential agriculture production in the Carnarvon horticulture district.
The four bores are part of the new northern borefield, developed by the State Government’s Gascoyne Food Bowl Initiative, to increase the total water supply by four gigalitres/annum and pave the way for an additional 400 hectares of horticultural land.

A 24.5 kilometre pipeline will deliver water from the new northern borefield, supported by a reliable, efficient and cost-effective electric power supply.

Once fully operational, the new production bores will open the way to new investment in the Gascoyne, adding potentially $35 million to the value of production.

The funding will also support a sand spear trial to test water quality and the suitability of accessing water when the Gascoyne River flows.

Agriculture and Food Minister Alannah MacTiernan said “our Government’s new investment in this project will allow a phased approach to full operation of the borefield, meaning local growers can access additional water next year until the Gascoyne land release is finalised.

“The State Government is working closely with the Gascoyne Water Co-operative and local growers to identify the next steps in maximising irrigation water supply to allow the region to grow and flourish.

“There is great potential to diversify and increase production in the district and capture new domestic and export markets, which will generate new jobs in the Gascoyne and beyond.”

MORE INFORMATION

Contact Department of Primary Industries & Regional Development on their website www.agric.wa.gov.au
University of New England researchers, from the Precision Agriculture Research Group (PARG), have been working with the Queensland Department of Agriculture and Fisheries to determine the potential for yield prediction from crop sensing imagery in carrots and sweet corn across sites in WA, SA, Tasmania, NSW and QLD.

Yield prediction could be used by the vegetable industry for product yield forecasting and marketing. Predicting yield based on crop biomass could also identify potential areas of variability which could then be investigated further or to generate profit/loss maps.

Figure 1 illustrates a comparison of high resolution satellite imagery and the associated predicted yield map in carrots. The results from these sites have shown good relationships between biomass vigour and total yield (tonnes/ha). Figure 2 depicts the process for generating predicted yield values from satellite imagery.

High resolution satellite imagery at crop harvest was classified into vigour zones based on NDVI values, followed by intensive yield assessments at replicated sample points in each vigour zone. It is the relationship between these measured yield points and crop reflectance data that is used to generate predicted yield values. This information is then compared alongside the grower’s pack out data from the corresponding field.
From this data we can also estimate potential yield ranges and class individual fields into yield zones and quantify and localise underperforming areas (Figure 3).

Over the last 12 months, project staff have been able to demonstrate a good relationship between crop biomass (vigour) and yield as the basis for this yield prediction work. However, yield forecasting will only be beneficial to the vegetable industry if it can be achieved well in advance of harvest. The next phase will be to determine how early a crop imagery can be captured and still be used to predict yield. The first site for earlier season crop sensing will be at Center West, WA in June this year.

This project is working with growers across Australia to implement a range of precision agriculture technologies and assess their potential in vegetable systems including:

- EM38 soil mapping
- Crop sensing imagery for various applications
- Strategic soils and plant sampling
- Yield monitors and
- Variable rate applications.

**FIGURE 2** A schematic of the process from satellite capture to creating the forecasted yield maps for the grower

*This yield map can be used as an extra data layer alongside any yield monitor or packout data.

**What is NDVI?**

NDVI is the most robust and widely applied vegetation index. It is a ratio of two spectral bands (Red and near infrared (NIR)) that are highly related to crop biomass:

$$NDVI = \frac{NIR - Red}{NIR + Red}$$

From this data we can also estimate potential yield ranges and class individual fields into yield zones and quantify and localise underperforming areas (Figure 3).

**FIGURE 3** An output of this component of the project is a yield forecast map derived from the yield samples taken from the GPS referenced sample points in the field. A breakdown of the different yield levels is provided to accentuate the differences in yield in the field and locate underperforming areas in the field

Source: Angelica Suarez Cadavid, UNE (2018)

**MORE INFORMATION**

For more information on this project, please contact:

- Julie O’Halloran: (07) 5346 9528 or julie.o’halloran@daf.qld.gov.au
- Angelica Suarez: (02) 6773 1832 or lsuarez@une.edu.au

This work is part of the national Hort Innovation funded project ‘Adoption of precision systems technologies in vegetable production (VG16009)."
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The Dwellingup Pumpkin Festival was held on Easter Saturday, 31st March within Dwellingup Primary School. The festival has been running for 22 years and is the main fundraising event for the primary school.

The Dwellingup Pumpkin Festival grows in strength and popularity and this year’s event saw a record attendance. Attendance numbers weren’t the only record however, with the ‘Pumpkin King’, Robert Giumelli, taking out the state record for the heaviest pumpkin — smashing the record of 16 years.

Mr Giumelli’s pumpkin weighed a whopping 361 kilograms and beating the record is something he’s been working on for the past nine years. He’s now got his sights on the national record.

Mandurah local, Robert Fleming, took out first prize in the heaviest home garden grown category and later donated the pumpkin to Foodbank WA.

If you haven’t been to the festival, it’s definitely one you should check out next year.

With market stalls, lots of entertainment including a circus show, bouncy castle, face painting, live music, mini golf and giant chess, with proceeds benefiting the local primary school.

MORE INFORMATION

For further details on next year’s event be sure to follow Dwellingup Pumpkin Festival’s Facebook page www.facebook.com/dwellinguppumpkinfestival/
Providing insight, tools, resources and contacts to help **you** develop value-added vegetable products that **catch & keep** consumer interest.

### Western Australia: Perth

**Date:** Tuesday 10th July 2018. 0830 - 1600hrs.

**Venue:** Perth Markets Fresh Idea Centre (Canning Vale)


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**Previous VegInnovations participants said:**

- “this was a fantastic opportunity”
- “great to see examples of what can be done”
- “provided a great networking opportunity”
- “thought provoking, entertaining and informative”

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This project has been funded by Hort Innovation using the vegetable research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit [horticulture.com.au](http://horticulture.com.au).
Pemberton farmer, Glen Ryan, was the South West Soil Health champion at this year’s Talkin’ Soil Health Conference. Here we find out how he has been improving his soil over the past 10 years.

How long has your family farmed in the Pemberton region?

My father started here in the mid 1960s. I’ve been farming with my brother Dean and father Tony for 35 years. We’re a family operation where everybody is involved and all on the same page.

We’ve grown potatoes for a long time and also run beef cattle. Just recently we diversified into seedless lemons, avocados and kiwifruit.

What issues were you having that changed the way you farm?

We noticed about 10 years ago that the quality of our potatoes was starting to deteriorate and so were our soils. So, we started to focus on trying to rebuild our soils. We came across a good soils advisor, Deb Archdeacon, who helped put us on the right path.

How have you tried to turn that around?

Soil carbon had been stripped from the soil a fair bit. So, we started using compost. We also got our pH right, which got out of balance. Then as we started growing pastures, we were introduced to green manure crops to amend the soil. What we wanted was to have plants that would grow all year round. Obviously, summer gets pretty warm, so that was our challenge. So, we started a trial with support from South West Catchments Council where we tried to source and test out as many pasture species as we could.

I think we started with 16 different species, and we’re down to six now, maybe seven, that will survive in our environment, and that’s really exciting.

Selecting the species to trial and sourcing the seed wasn’t too hard, but we seeded the trial in about February which made things challenging. So, we used travelling irrigators. It was also after potatoes and the ground was quite compacted, so it was also a challenge to get the ground into a reasonable condition.

We prepared the ground as best we could, but then we had issues with different sized seeds in the seeder. We had to broadcast some and did the best we could and ended up with a really good germination.

The sorghum and millet came through magnificently and probably put everything else to shame to some degree. But over time, other things started to come through like chicory, sunflowers, lucerne, serradella, cocksfoot, arrowleaf and storm (white) clover. Others, like Gatton panic and plantain we didn’t see at all.
When the crop got to a reasonable height we put the cows in. It was only a small trial in a large paddock and the cows went straight to the normal oats, rye grass and clover. They barely touched the trial patch, which didn’t surprise me. Then we irrigated and got it going again and the cows came back about three weeks later. They had a little go at it and then wandered off. But by the fourth graze in late autumn, they virtually went straight to the trial patch. Now the cows go to the chicory and eat it right down, especially in late spring and summer and autumn. I think these new species add something to their diet that they need or lack at certain times of the year.

What benefits are you seeing?
I am very confident that we are seeing benefits in the cattle. They are healthier, quieter and more content. They seem to have less calving issues than they did 10 or more years ago.

We are also seeing benefits in the soil, potatoes, pasture and in other crops.

The oats grow massively tall and we don’t graze until it dries out in summer. The cows then smash it all down to create a mulch.

The cows go out and they don’t come back in. Then the oats self-sow in autumn and winter and all the trash breaks down a little bit. Then before we put the potatoes in, we mulch and incorporate it all into the soil as a brown manure. The ground just softens right up and the soil becomes alive with microbes.

Has the practice of growing pastures all year round had any effect on your weeds?
Weeds were a huge problem for us with potatoes because we are working the ground. Capeweed was a big problem, as was deadly nightshade, fat hen, and Prince of Wales feather. Capeweed was also a problem in pastures and we used to spray it all the time. Since we have remedied our soils we don’t see much capeweed here at all.

We were putting some seedless lemons in a pretty rough paddock that is very clayey, so we gave it about three years of these pasture species beforehand and it has turned that paddock around. It has turned into really good soil and that’s really encouraging. We also incorporated biochar prior to planting the lemons.

We are finding that if you get your soil right and you’ve got something to host soil microbes all year round, then your soil is pumping all year round and the advancement happens much quicker than if you only had growth for eight or nine months of the year like we used to have.

How do you rotate back to potatoes?
We are on a five-year rotation with potatoes. The year before potatoes we take all the perennial pasture species out, which is a bit unfortunate, but we have to put a break crop in to cleanse the soil. So, around April or May we seed down to Saia oats.
The other weeds are on the periphery and just not as common as they used to be. I have been told, and I am assuming that it is true, that weeds are there to do a job, and if your soil deteriorates then they proliferate to try and bring the nutrient from the sub soil up. As soon as the soil has come good, then the weeds don’t have a role anymore.

**How has your fertiliser use changed?**

We were really heavy fertiliser users 10 or so years ago. We were probably over-catering, putting a bit extra on just to make sure, without much science behind it. The mentality probably stems from the early days when the soil was traditionally low in nutrients, especially phosphorus. We used to see a huge response, but as time passed and phosphorus banked up, you didn’t see a response, but we carried on with that strategy.

We’ve conducted a few trials with Deb Archdeacon looking at fertiliser inputs and have been able to reduce them quite significantly. We found that we had to use them more frequently, but with the overall output of fertiliser less than it has been in the past. We have very high phosphorus-buffering soils and have found that applying phosphorus to pastures two to three times a year has made a huge difference to their growth. We are also using slow release fertilisers on the tree-crops.

Microbes don’t like excessive fertiliser, so we wouldn’t have got the benefits from the green and brown manures if we’d continued with extremely high fertiliser rates.

**Have you done a cost benefit analysis?**

Perennial pastures are costly and that’s where we had to quickly weed out the species that weren’t going to perform for us. We had to get our cost back. You know how much it costs but what cost do you put on having healthy soil? How do you cost the increased health of the cattle? It’s extremely difficult to put a value on.

We just think it’s a “no brainer”. We think the benefits far outweigh the cost of the seed and getting them established.

We are working the ground all the time with the potatoes on a rotation so it’s easy enough for us to seed those paddocks down, but to go through and do the whole farm, which is 600ha, the costs would be significant. We are lucky that we only need to do about 50ha each year in paddocks that have just come out of potatoes. Those paddocks are getting renovated every five years. The other paddocks where we haven’t actively sown perennials are getting seed transported through the cattle, so species like chicory and some of the other species are popping up in those paddocks too.

Has going down the road of improving soil health made you more content with farming?

I am the sort of person who thrives on a bit of a challenge. It puts a bit of fire in my belly. My brother Dean and father Tony are the same, always keen to try different things. It is exciting when you’ve got something to look forward to, like seeing if applying compost with fertiliser reduces the phosphorus locked up in the soil, or trialling biochar on the tree crops. Those sorts of things give you a little bit of excitement because you can see the potential. If you do the same thing day in day out, things get pretty dull and boring.

We need farming to be a bit exciting to keep our workers interested and to get kids back to the farms. Education is paramount, and with technology changing rapidly, our younger adults need to go to the cities to educate themselves, up-skill and experience different aspects of life. But we need them to come back and bring their new skills with them.

Farmers are a bit of a dwindling commodity, so we need to make farming more attractive and exciting.

**MORE INFORMATION**

For more information contact Wendy Wilkins, Sustainable Agriculture Project Manager, on (08) 9761 4184 or wendy.wilkins@swccnrm.org.au

This project is supported by the South West Catchments Council through funding from the Australian Government’s National Landcare Program.
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The Soil Wealth team visit WA

Update from Carnarvon, Gingin, Myalup and recap on the Leafy Variety Trial, WA

Dr Doris Blaesing and Dr Len Tesoriero from the Soil Wealth ICP team headed to WA in May with a full program of events and trial updates.

The week was organised by the VegNET team, Truyen Vo and Sam Grubisa, from vegetablesWA, with the first stop Carnarvon for three days. Here, Doris and Len engaged with both Vietnamese and English speaking growers on better management of soil borne diseases, soil health, crop nutrition and the importance of area wide biosecurity and farm hygiene. In addition to the evening workshops, a number of farms were visited during the day.

It was then off to the Gingin project demonstration site that is looking at a new humus-like product (Novihum), set up by Centerwest Exports. We’ll be providing updates on this trial over the coming months.

Len reported on soil borne disease trials with baby leaf spinach (VG15009), while Doris introduced the new Phase 2 Soil Wealth ICP project (VG16078).

Friday saw a visit to the University of New England cover crop trial at Ivankovich Farms (VG15070) in Myalup.

On 3rd May, Doris and Len attended the vegetablesWA Leafy Variety Trial at the Loose Leaf Lettuce Company and engaged with growers, seed company representatives, resellers and input suppliers, to collect new information and project ideas.
The Department of Primary Industries and Regional Development (DPIRD) is committing significant resources to fighting two very serious threats to WA's horticulture industries.

Following confirmation in May 2018 of citrus canker on three properties in the State’s north, linked to traced imported plants from the Northern Territory, the department is putting every effort into eradication.

Queensland fruit fly was also detected in May, in the Perth suburb of Como. The department has acted quickly to establish an eradication program in accordance with the Australian Fruit Fly Code of Practice.

Incident Controller Bill Trend said following the citrus canker detection, the department had moved to quickly introduce local movement controls on citrus plants and fruit for Kununurra, Wyndham and surrounds, and was working closely with the community and industry as part of its response efforts.

The same goes for Qfly. Mr Trend said the department was well placed to achieve eradication, with staff having experience and expertise earned from previous successful eradication programs, including one in Fremantle earlier this year.

"Industry can be assured we are taking all necessary actions. We have established a dedicated and experienced team, and are working tirelessly to contain the outbreaks and prevent any spread," he said.

“We are also working closely with industry and all other stakeholders to maximise our chances of eradication and minimise impact on markets. We take very seriously our role in protecting the livelihood of our growers.”

More information on the Qfly eradication programs and citrus canker can be found on page 74 and page 86 respectively.

This is a great example of cooperation between researchers and industry, with Chris Fyfe from the UNE leading and contributions from the cover crop project, SARDI disease diagnostics, Soil Wealth ICP, and importantly agronomist from David Gray’s (monitoring) and the host growers Peter and Anthony Ivankovich and team on farm.

The trip concluded with a visit to Swan Systems to investigate smart irrigation management technology, and Organic Farming Systems to learn about new biological products.

These discussions will continue with potential linkages to the demonstration sites in WA and other states.
The Department of Primary Industries and Regional Development (DPIRD) has initiated a Queensland fruit fly (Qfly) eradication program following the detection of 16 adult male Qfly over a period of 14 days in Como.

Mr Trend said the department hit the ground running, establishing a Quarantine Area (1.5km radius from detections) and Outbreak Zone (200m radius from detections), and visiting properties to inform residents and identify host trees for baiting.

The Quarantine Area was extended on 14 May, triggered by an additional three adult male Qfly caught in traps on the perimeter of the current Outbreak Zone. The Quarantine Area now includes all or parts of Bentley, Como, Kensington, Karawara and South Perth.

“An additional 51 Qfly traps have been placed in the Outbreak Zone, which are being checked twice a week, and the department’s existing traps within the Quarantine Area are also being checked twice weekly.

“To date we have visited more than 900 properties, with some 600 property owners successfully contacted to identify host trees and gain access for baiting.

Baiting of host trees and plants, including street trees, will be undertaken on a weekly basis until at least November. Residents will be notified when the Quarantine Area is lifted.”
Community awareness

Critical to a successful eradication program will be community awareness of the Quarantine Area rules.

“We have commenced extensive community engagement activities to ensure that no home-grown fruit and vegetables is moved out of the Quarantine Area, and that backyard fruit and vegetables is not thrown into the bin without proper treatment.

“There are strict guidelines on disposal, and we are using all communication channels possible to ensure these rules are followed.”

Mr Trend said the department was working hard to remove all pathways through which Qfly can spread to other areas. This has included identifying various stakeholder groups that pose a risk to the eradication program.

“We have identified in the area a number of fruit trees in publicly accessible areas, including community gardens, parks and verges. We are therefore targeting these areas with signage to prevent the movement of fruit and vegetables out of the Quarantine Area.

“Our attention has also turned towards Curtin University, which is in the Quarantine Area, and we are reaching out to students renting nearby to regularly dispose of fallen and ripening fruit.

“Additionally, with this being the season for citrus, greenwaste being disposed of is full of fruit, and there are a number of online traders trying to offload their lemons and lime. We are targeting these groups in an effort to stop the trading, and ensure fruit is removed from greenwaste and properly disposed of.”

Mr Trend said residents should check their backyard for any fruit fly activity — in particular larvae in unexpected fruit and vegetables.

“Qfly are most often seen on the undersides of leaves or on maturing fruit. Adult Qfly are slightly bigger than the already present Mediterranean fruit fly (Medfly), and have clear wings (Medfly wings are mottled). However Qfly can be easily mistaken for Medfly, so we are keen to receive reports of any fruit fly or larvae seen.”
Last August, Andrew Bulmer was announced as the Kondinin Group and ABC Rural 2017 Australian Farmer of the Year.

From Lindenow, Victoria, Andrew manages the family-run Bulmer Farms which is credited as one of Australia’s largest producers of fresh salads.

Andrew was chosen from an exceptional group of nominees because of his tenacity to seek out innovative approaches to farming which have had positive impacts back to the business.

“By implementing world’s best harvest and post-harvest technology, we have achieved significant efficiencies across the business,” Andrew said.

“We brought a new harvester from the United States, which has increased our efficiency at harvest, giving us a better product to run through our wash-line, plus our washing and drying process has enabled us to package a product with minimal residual moisture, which has increased shelf life and opened up export opportunities through our marketing business.

“This has seen a 400% increase in our washed salad business over the past 18 months.”

Nominations for the Kondinin Group and ABC Rural 2018 Australian Farmer of the Year Awards opens on 25 June, and will close on 31 July.

For the ninth year running, farmers around the country are asked to nominate themselves, their mates, their community members and business associates for the prestigious awards.

Andrew said winning the award has allowed him to actively promote the exciting career pathways available in horticulture and inspire a new generation of future farmers.

“I’d encourage every grower from every sector within our industry to get involved. No matter the size of your operation — it is definitely worth nominating.”

As the 2017 winner, Andrew will join the Independent Judging Panel for the 2018 Awards.

Kondinin Group General Manager of Research, Ben White, said the Awards are about recognising the outstanding work of rural Australians.

“Rural Australia can be a tough but rewarding place to live and work,” said Ben.

“We understand the challenges faced by farmers and their communities, and through the Awards, we can reveal how rural Australia really does produce the best people doing the best work.”

“The Awards give us an opportunity to showcase and acknowledge the linchpins of our industry.”

Nominations are available for the following categories:
- Australian Farmer of the Year
- Young Farmer of the Year
- Farming Legend of the Year
- Rural Community Leader of the Year, sponsored by Market Check
- Rural Consultant of the Year, sponsored by BASF

There are also the Awards for Excellence in Innovation, Technology, sponsored by New Holland, and Diversification. Winners will be announced at an exclusive event at Parliament House, Canberra, on 16 October 2018.

For more information of the Awards and to nominate, please visit farmeroftheyear.com.au
From the Pomewest Executive Manager

Harvest for 2018 is well and truly done, and I know growers that are hoping for better results in the retail market this year are reliant on the excitement of local, high quality, new season fruit being available.

On reflection, the industry has been fortunate with no eventful weather conditions affecting the crop. Other regions of the country have encountered extreme heat or storm events which have been quite devastating. Here in the West we have seen fairly decently sized apples harvested with sound colour development. That means there is quite a high volume of fruit available on the local market. Unfortunately, the returns prior to this season have not been matching the costs to produce so developing new markets is necessary to stay in front. As we get better at increasing production, as an industry we need to look further than the local market and export development is necessary.

Looking forward and positively, on the wish list I am sure this winter is some solid precipitation and chill over the next few months to nicely set up the 2019 season.

The Pomewest committee will continue to support projects this coming financial year that create opportunities for WA growers and industry.

New projects
Market access focused projects
1. Medfly Surveillance Network — Donnybrook to Bridgetown
   Ashmere Consulting will continue the high quality pest surveillance data collection for a further two years which will be a useful tool and insurance policy to gain, maintain and improve market access for the WA industry.

2. Apple disinfestation for market access
   Two projects managed by Francis DeLima including 50% support of an application for an Export Competitiveness Grant for Cold Chain disinfestation and quality management of BRAVO™ apples market access. These projects will give the apple industry a scientific basis for pursuing quarantine market access negotiations with our current pest status.

3. Systems approach for market access
   Project managed by Kim James, Pomewest are proud to be a contributor to the recently announced Horticulture Innovation-funded project between the Department of Primary Industries and Regional Development and CSIRO looking at systematic pest management and monitoring to access new export markets.
This project means that orchards in Manjimup and Pemberton are now part of a new four-year research project aiming to boost exports of Western Australian apples to valuable northern Asian markets. The WA case study is part of a broader national collaboration between industry, researchers and regulators to help Australian horticultural businesses realise export market opportunities by developing a systems approach. Systems approaches consider the combined effect of monitoring programs, good in-field management, grading in the packinghouse and other steps that are part of good agricultural practice.

The Innovative Orchardist Project
Susie Murphy White will run a new project which builds on the enthusiasm and momentum gained from the success of the recent NZ Study Tour. The outcome is to encourage positivity for the future of the WA industry. This will provide opportunities to connect with like-minded growers, by feeding conversations and changing practices. It also includes involvement in State and National conferences. The rationale being that up and coming orchardists need to be upskilled and encouraged to ensure a vibrant industry for the future.

Baseline fungicide resistance to levels of WA isolates of apple scab project
Andrew Taylor of DPIRD will manage this new project for the industry, which aims to understand the level of fungicides with the WA population of apple scab. This will provide growers with the knowledge about the efficacy of their current management programs.

Continuing projects
Adoption of New Technologies Project
Susie Murphy White continues with her technical industry development based role with Pomewest. This project aims to ensure growers see the benefit of national levied funds returned to on ground adoption activities. This includes:
- Crop estimates
- Value Add — Future Orchards
- Communications
- Integrated Pest, Disease and Weed Management Program
- Healthy Soils

As such the Future Orchards walk on 7th June at Newton’s Starkie Road Orchard with Pruning for Fruit Quality theme will be reported in the next spring edition of WA Grower.

Apple and Pear Promotion
Noelene Swain of Fresh Finesse will continue to run promotional activities focused on raising the profile and increasing demand for pome fruit to improve produce profitability. Activities will incorporate target groups and themes including, School programs, Media and PR support, events like the Royal Show and running industry based social media.

Markers, Markets and Validated Nutritional Qualities of WA bred Australian Apples
There is retention of the key research momentum that has been established over the past eight years. The underlying goal of both lines of research is to increase consumption and value of WA-bred and grown apples. The program focuses on two lines of research primarily validation of the dietary effects of WA-bred apples on cardiovascular health and developing metabolic and genetic markers to identify WA-bred apples with elite levels of quercetin, and underpin marker-assisted breeding.

Maturity Standards

Legislation has been questioned by the State Government’s Regulatory Gatekeeping Unit (RGU). It has queried what impact would be made by regulations and questioned their necessity. Rohan Prince, Director of Irrigated Agriculture at DPIRD has recommended research and reporting to be provided before the industry can continue.

Rohan reported that the main issues which would be a motivator for the legislation were health and safety concerns, issues with immature fruit — is there enough evidence to show that a problem exists and would the cost of setting standards outweigh the benefits to consumers. Rohan has indicated that DPIRD are happy to continue to support industry to be better prepared to provide more evidence to the RGU for the need of the legislation.

The committee are committed to this project and are budgeting to resource the implementation of self-regulation in the first instance. This is necessary to collect more data to verify the necessity for quality assurance for consumers which will impact increased demand and repeat buying. Further actions include:

- voluntary sign up for WA and Eastern State growers and suppliers
- looking to other industries and global case studies to support the advantage of consumer preference for good tasting fruit and relevance to sales
- engagement of policy officer to assist us with re-writing our submission for legislation
- look at point of retail — defining quality markers for both WA and imported fruit
- production of an information pack and booklet to assist growers to self-test to the proposed standards
- incorporate the Future Orchards program for sensory evaluation and consumer preferences
- look at a preliminary impact statement for growers to assess and manage the implementation of standards
- Continue testing programs for local and imported fruit for maturity and quality at retail including looking at storage and handling
- Look to HIA to leverage funding of this project as a pilot program.

Biosecurity

With the recent QFly detections in Como and Fremantle and the Marmored Stink Bug in Jandakot, biosecurity remains a high priority for all horticultural industries. The Committee is committed to protect the industry and endeavours to work with DPIRD to build on strategies to decrease incidents. Our biosecurity fund is growing with approximately $270,000 of FFS funds already collected with budgets of $60,000 forecast for collection in the new financial year. Pomewest are planning to develop further a strategy on how these funds will be expended based on a strategic risk analysis on a pest by pest and disease basis, and the impact to the future of the industry. We are also in discussion to appoint a biosecurity officer to assist us prepare for the future with the possibility of additional funding offered by DPIRD.

Industry Sponsorships in 2018

Pomewest will continue their commitment to promote regional events on behalf of the Apple and Pear industry, provided that reporting of impact and outcomes of the funding are observed.

News and events

Changes to the Horticulture Award

Pomewest will assist growers with information as it comes to hand about the implications of the proposed changes. Communications have already been distributed on this subject. APAL will continue to talk with key stakeholders and politicians about how the proposed changes will impact growers and the industry. The Fair Work Commission will make a public statement if and when these changes occur. APAL will keep industry informed and assist growers to understand these changes. APAL encourages businesses that are concerned to ask expert advice and will help facilitate these connections.

Hort Connections 2018 Brisbane

18–20 June

We are very much looking forward to this event. Wayne Ghilarducci along with Susie Murphy White and myself will be there representing the Pomewest Committee and the WA industry. We will be engaging in APAL events including the Industry speed updates and engagement with other State Industry bodies to discuss mutual priorities and develop more strategies to better working relationships. Terry Martella (WA Grower) and Susie Murphy White (Pomewest) have been nominated at the Conferences Gala Dinner for awards for Innovation and Women in Horticulture respectively. We are very proud to have these WA representatives recognised for these awards and we wish them the best of luck.

The 64th Donnybrook Easter Apple Festival Easter 31 March – 1 April.

Thanks to Susie Murphy White for organising the industry’s presence at this event. It was well supported by the local community and many visitors from the ‘big smoke’ made their way down to have some fun over the Easter weekend. See full report on page 84 of this edition.

Sam Kerr — WA grown Ambassador for BRAVO™

The BRAVO™ branded apple has partnered with Soccer Superstar Samantha Kerr as the ambassador for 2018. More on this announcement on page 81.

Finally, we are always looking to improve our communications and services to you. This includes how we can better engage with all growing regions.

I encourage you to contact myself, staff or committee members at any time. This way, we can provide better engagement with you. We will take on board any feedback or suggestions on how we can improve your FFS benefits and look to you to assist us to choose projects relevant to build and progress the industry.

MORE INFORMATION

Contact Nardia Stacy on (08) 9368 3869 or nardia@pomewest.net.au
Westfield Matilda’s, Perth Glory and Chicago Red striker, Samantha Kerr has announced an Ambassador role for Australia’s new apple, the Bravo™ Apple.

Sam Kerr is thrilled with the partnership and said, “I love that this new apple has been grown in Australia by our rural communities. Not only do Bravo™ Apples taste amazing, the skin is full of incredible anti-oxidants that make them the perfect healthy snack choice. “I’ve been lucky to have parents who really encouraged us to eat lots of fruit and vegetables, but I know not all kids have that. I’d especially like to encourage kids dreaming of playing for Australia to start crunching on lots of fruits and vegetables, especially Bravo™ Apples!”

Jenny Mercer from Bravo™ Apples said, “we are thrilled to have Sam on board as our Ambassador. As an elite athlete Sam values nutrition and sustenance and the Bravo™ Apple provides Australian’s with just that. Partnering with a global athlete like Sam is extremely exciting and together, we look forward to engaging local Australian communities and letting them experience the unique benefits of Bravo™ Apples.”

Sam’s records and notable awards include:
- Young Australian of the Year
- Fox Sports Performer of the Year
- International Federation of Football History World Women’s Team of The Year
- ABC Sports Personality of the Year
- Asian Football Confederation Women’s Player of the Year
- Women’s Health Sportsperson of the Year
- Julie Dolan Medal Winner 2018
- W-League Golden Boot Award

BRAVO™ are an exciting and unique Western Australian bred apple that has a distinct sweetness, moderate to high crisp and crunch, and a striking burgundy colour. Grown, graded and packed in Australia, Bravo™ Apples are the result of more than two decades of research and development with an impressive tree pedigree.

More Information:
Contact Nardia Stacy, Executive Officer on (08) 9368 3869 or go to: www.bravoapples.com.au
A Future Orchards demonstration site was set up in 2017, testing the effectiveness of different pre-planting treatments when planting onto old apple ground at Trevor and Carmel Fontanini’s Orchard in Manjimup.

Old apple ground can harbour apple replant disease (ARD) which reduces new tree growth and production by around 20% per annum for the whole trees life. The demonstration site tested biofumigant plants as two different mixes of Mustard, Rocket and Ethiopian Cabbage, a product containing beneficial bacteria, the chemical fumigant chloropicrin against the standard practice treatment of metham sodium.

This demonstration site came about through the interest of the grower Joe Fontanini and the Future Orchards Community Orchard Group in biofumigation and to see if it would have any positive effects for apple tree growth after seeing their neighbouring vegetable grower’s trial the practice. There was also interest in applying beneficial bacteria to the trees to support the growth and development of the trees by improving the soil health.

But Steve Spark experienced AgFirst consultant impressed upon us how well chloropicrin could work for apples and couldn’t understand why WA apple growers were not using the product in all new plantings. As in New Zealand, applying chloropicrin before planting has been standard practice for many years. While in Manjimup it was considered too expensive to get an accredited contractor to apply the product.

It was expected that all these treatments would improve tree survival rates when planting new varieties of apples into old apple ground. But it was thought that the beneficial bacteria and biofumigation options would be better for soil health.

Biofumigants
Biofumigation is the practice of using plants from the Brassicaceae family that produce toxic chemicals to suppress soil borne pathogens and break the life cycle of pests and diseases.

The Brassica crop is mulched at early flowering stage and Glucosinulate gas is released when the plants are pulverised and macerated within hours of mulching.

The demonstration site tested two different biofumigation seed mixes:
• David Grays Green Fume which consisted of 90% Mustard and 10% Rocket planted at 20kg/ha on 22nd May 2017.
• PGG Wrightson Seeds BQ Mulch which consisted of 75% Ethiopian Cabbage and 25% Mustard planted at 10kg/ha on 22nd May 2017.

Both mustard mixes were cut, mulched and ploughed in after reaching flowering stage then left for three weeks so that the biofumigation activity could occur and the plant material could break down.

Beneficial bacteria
Serenade® Prime from Bayer was applied via a soil drench to each tree at a rate of 35mL per tree at the time of planting. Serenade® Prime contains viable spores of the highly active QST 713 strain of Bacillus subtilis. These beneficial bacteria live on the plant root surfaces and in the soil around the plant roots. The beneficial relationship between the plant roots and the bacteria can enhance plant growth and productivity. If applied at planting and during root flushes it can play a role in improved nutrient exchange, crop vigour and uniformity.
**Chloropicrin**

Rural Telone C-60 has a high chloropicrin content and is better for use in heavier, wetter, colder soils where rapid volatising will allow for quicker release of the product from the soil to prevent the need for extended plant-back periods. It targets soil-borne disease as well as helping to control Parasitic Nematodes, and suppression of weed.

An accredited contractor (A-Gas® Rural) applied the Rural Telone C-60 at a rate of 300L/ha. This needed to be applied at least three weeks prior to planting to avoid any phytotoxic effects. The trees were planted six weeks after treatment.

A block of Fiero® Fuji was planted on 12th October 2017 onto ground that in the previous years had grown Fuji apples at 5m row spacing and 3m tree spacing on MM105 rootstock. The new planting was planted at 3.5m row spacing and 0.8m tree spacing on MM106 rootstock under sprinkler irrigation. Planting was delayed until the Brassicas reached flowering to ensure that there was plenty of gas to be released into the soil profile.

All fumigant practices required at least three weeks and rainfall before planting could commence. The block received at least 100mm of rainfall from mid-September to mid-October, before planting. In each treatment five trees are being monitored for their growth rate using trunk diameter and stem elongation until the end of the Future Orchards project (2021) (see Figure 1).

The initial growth rates after the first leaf have shown the Chloropicrin treated trees to be amazing with the stem elongation six times longer and more than double the amount of leaders on each tree. The Chloropicrin treated trees had trunk diameters that were greater by more than 5mm compared with the trees treated with the other products, and only small differences between the other treatments (see Figure 2). Grower Joe Fontanini was ‘surprised by the growth results of the chloropicrin treatment. There is very noticeable shoot growth compared to the other four treatment areas. Other treatment areas are very similar at this point, it will be interesting to see next seasons growth.’

The survival rate of trees in the Chloropicrin treatment has not been as good, with eight trees having died at the time of the first monitoring. ‘Trees on MM106 rootstock planted into old ground are prone to root disease and M26 would have been a better option’ said Joe at the time of investigating the tree deaths.

While the Chloropicrin treatment has given the trees a good start by reducing the effect of possible ARD, the Biofumigation and beneficial bacteria have the potential to improve soil health by improving organic matter, soil biology, nutrient cycling and holding capacity, water infiltration and holding capacity and overall microbial activity. Time will tell if the benefits of improved soil health will enable the trees to become good producers of quality Fiero® Fuji apples.

**MORE INFORMATION**

Thank you to our suppliers of the products used in this demonstration; David Grays, PGG Wrightson Seeds, Bayer and A-Gas Rural. Thank you to Pomewest for funding the soil and nematode tests. APAL’s Future Orchards Project and Steve Spark, AgFirst NZ. Growers Trevor, Carmel, Joe and Lucy Fontanini are thanked for implementing the trial in their orchard.
The Easter weekend was again alive with festival goers tasting locally grown apples, pears and plums in the produce tent.

There was an estimated 8000 people who attended the event over the weekend. People had the chance to try some of the newer varieties of apples and pears, then purchase a box of fresh fruit to take home. The fruit sales were extremely busy over the weekend selling over 250 boxes of fruit raising $5,079. Thanks to local sponsors ERCEG Holdings and Kingwood Heights Orchard for the supply of Kanzi, Greenstar, Fuji and Gala Supreme apples, Josephine, Packham, Corella and Beurre Bosc pears and two plum varieties.

Outside the produce tent apple slinkies and apple smoothie bowls were being made for everyone to snack on while at the festival. Plus you couldn’t go home without trying an old fashioned toffee apple made by the CWA ladies, Yum!

We saw four happy children go home with Aussie Apple footballs after completing the Pomewest Colouring Competition, while waiting to get their faces painted.

The weather was just perfect, the entertainment was amazing, and the produce tent worked really well this year. Thank you Pomewest, for supporting the LiveLighter Donnybrook Apple Festival Harvest and Arts.

Our colouring competition winners.
Citrus canker confirmed in WA
On May 21st the Department of Primary Industries and Regional Development issued a Quarantine Area notice for the town sites of Kununurra and Wyndham and surrounding areas within 50 kilometres, to stop the movement of citrus fruit and plants that could harbour the disease.

This followed confirmation of the detection of citrus canker on three properties in the State’s north, linked to imported plants from the Northern Territory.

The department conducted tracing and testing of plants imported from Darwin, where citrus canker has been detected. The disease was traced to two retail businesses at Kununurra. It has also been confirmed in a citrus plant at a property at Wyndham. The infected plants on the properties have been removed and destroyed to minimise the risk of the disease spreading. There has been no detection in commercial orchards.

Early detection, reporting and not moving infected plants is vital, and will give WA the best chance of eradicating this serious disease.

The department is working with commercial growers in the area and to manage the impacts of these measures on their businesses.

More details on the Quarantine Area and a full list of host plants is available on the department website www.agric.wa.gov.au.

Citrus canker is a highly damaging and contagious disease caused by the bacteria *Xanthomonas citri* subsp. *citri*, which can affect all citrus species. Infection decreases fruit quality and yield, and leads to defoliation, twig dieback, blemished fruit and premature fruit drop. In severe cases, the disease can cause tree death.

It is declared as a prohibited organism under section 12 of the *Biosecurity and Agriculture Management Act 2007*. Any suspect detection must be reported.

**Symptoms**

The disease causes small, round blister-like formations on leaves, branches, stems, new shoots and fruit. The canker lesions can develop within seven days of infection on leaves. Fruit are susceptible up to 90 days after petal fall. Young plants and seedlings are more susceptible to Citrus canker.

**Leaves**

Bright yellow spots on the underside of the leaf occur first followed by raised brownish lesions on both sides of the leaves. These then become rough, cracked and corky. The canker may be surrounded by a water-soaked yellow or chlorotic halo.

**Fruit**

Crater-like lesions form on the surface surrounded by an oily, water-soaked margin or yellow halo, which can expand to 10mm. They may be scattered or several lesions can occur together in an irregular pattern. In young fruit an ooze of resinous substance may be observed.
Stems and branches
Lesions are light to dark brown, raised and corky, eventually becoming dry and scabby. They can vary in size from 5 to 10mm. The appearance of symptoms on stems often indicates infection for a long time.

Reducing the risk of spread
The canker lesions ooze bacteria when wet, which can infect new growth, and be dispersed over short distances through wind, rain splash and overhead irrigation. Long distance spread can occur through flooding and hurricanes, and human assisted movement of clothes, equipment and infected plant material (including budwood, rootstock seedling, budded trees).

The disease can be spread by birds, insects and humans, particularly when trees are wet. The bacteria can survive in diseased plant tissue as well as in soil. It can over-winter in angular shoots, and then become active again the following season.

For growers, some simple on-farm biosecurity measures to reduce the risk of spread include:

• Monitoring your orchard regularly and keep written and photographic records of any unusual observations. Be aware of the serious exotic pests of citrus and the symptoms they cause.

• Report anything unusual to DPIRD’s Pest and Disease Information Service.

• Use pest-free propagation material from reputable sources that are fully tested and pest-free. Keep good records that allow full traceability of propagation material.

• Manage produce carefully. Maintain good hygiene when dealing with fruit and fruit by-products and dispose of waste fruit and plant material carefully. Ensure that Quality Assurance schemes and orchard records allow full traceability of produce.

• Manage people movements. Use orchard biosecurity signs to direct all visitors to notify you of their presence, record visits and make sure visitors have clean footwear and clothing.

• Reduce risks posed by vehicles and equipment. Direct all visitors to park in a designated parking area. Ensure that all machinery and vehicles that enter and exit production areas are clean. A wash-down facility provides good protection.

Residents and tourists in Kununurra and Wyndham are also being urged to support Western Australia’s citrus industry and help stop the spread of citrus canker disease, which was detected in the region. The community plays a vital role in ensuring that no host fruit or plants are moved out of the Quarantine Area.

These movement controls are part of a national response plan to prevent spread of the disease, eradicate any infections, and protect our citrus production. Additional containment and control measures may be put in place to minimise the risk of the disease spreading.

Residents in northern WA have been reminded to check their trees for signs of citrus canker and to contact the department if they have recently purchased citrus plants from Kununurra or Darwin.

Movement restrictions apply to a range of plant material and fruit, including all citrus, kumquat, and other plants. These measures apply to commercial and home-grown fruit or plants.

Machinery and equipment which has been in contact with citrus plants also cannot be moved out of the quarantine area.

Trace forwards into Perth from Darwin continue to be investigated.

Citrus canker is not a risk to humans or animals and affected fruit remains safe to eat.

Reporting
Citrus growers are asked to check for symptoms. If you suspect symptoms, do not move any plants and contact the department’s Pest and Disease Information Service on (08) 9368 3080 or padis@dpird.wa.gov.au, or make a report using the Department’s MyPestGuide Reporter™ app.

Plants with suspect symptoms must not be moved and should be reported to the department’s Pest and Disease Information Service on (08) 9368 3080 or padis@dpird.wa.gov.au, or via the department’s MyPestGuide Reporter™ app.

MORE INFORMATION
Department website www.agric.wa.gov.au/citruscanker2018
Darryl Hardie, A/Chief Plant Biosecurity Officer (08) 9368 3799, darryl.hardie@dpird.wa.gov.au
Do you find doing your tax return gives you stress and anxiety? If the answer is yes, the Small Business Development Corporation has some useful tips to help you stay organised and ready for tax time.

It’s nearly that time of the year, as more than 218,000 Western Australian small business owners get ready for the 30 June tax deadline.

Whether you’ve set-up a new business, or have been trading for years, preparing for tax time can feel overwhelming and is undoubtedly one of the most stressful times of the year for many small business owners. This is largely due to many leaving it to the last minute instead of preparing their taxes throughout the year.

There is a solution that can help you maximise your return and eliminate stress when it comes to tax time and that is planning ahead.

**Things to do prior before 30 June**

As part of your tax planning strategy look at your expected taxable income (what your business earned minus any allowable deductions) for the current financial year and your projected taxable income for 2018–19.

To identify your income bracket and tax you’re likely to incur, refer to the Australian Taxation Office’s individual tax rates.

- **Sole trader:** ato.gov.au/rates/individual-income-tax-rates
- **Company:** ato.gov.au/rates/company-tax

**Income expectations**

If you’re expecting a higher income this financial year, compared to your projections/expectations for the next financial year, speak to your accountant about:

- Preparing your 2018–19 expenses (i.e. rent and insurance) in this financial year — up to 12 months of next year’s expenses can be deducted in this tax year.
- Taking advantage of the $20,000 instant asset write-off threshold which allows you to immediately deduct assets (new or second-hand) purchased for your business that cost $20,000 or less.
- Reviewing and finalising invoicing for the current tax year, or postponing it to after 1 July.
- Topping-up your voluntary superannuation contributions.
- Reviewing your debtors and writing off any unrecoverable debts.
Keeping your tax return records up-to-date
Having accurate and current information is an important aspect to tax planning and can help you maximise your deduction and enable you and your accountant to make informed tax decisions.

• Ensure your business vehicle log books are up-to-date — you’ll need to start a new log book if your current one is more than five years old, or if your vehicle usage has changed significantly. You can also consider investing in one of the many mileage tracking digital apps available.
• Do a stocktake as at 30 June 2018, however, if your estimated closing and opening stock is less than $5,000 a stocktake will not be required.
• Keep specific records when using business purchases for private purposes or make cash payments and drawings — this ensures your business finances can be easily separated from your personal finances.
• Accounting for private use of business assets such as motor vehicles when claiming GST on expenses for example, if you’re claiming 100 per cent GST on motor vehicle expenses, but 20 per cent of the vehicle’s use was private, you’ll need to adjust your annual GST private apportionment claim to factor in the personal use.

The ATO has developed a record-keeping evaluation tool to assist you to find out what records you need to keep for your business: ato.gov.au/Calculators-and-tools/Record-keeping-evaluation/

Looking after yourself
Prioritising your health and wellbeing is just as important as tending to your business. The toll that stress and anxiety takes on you can have an impact on your ability to run your business.

Stress, anxiety and depression can manifest in different ways for different people ranging from difficulty in concentrating or making decisions, chest pain, high blood pressure, to social isolation and feelings of hopelessness.

Research shows that one-in-five Australians will experience a mental health condition during their lifetime and that maintaining good mental health is also good for the health of your business.

To lessen your chances of experiencing mental health issues, strive to maintain a healthy lifestyle including exercise, adequate sleep and healthy eating practices.

Make time for enjoyable activities away from work and set a time every day when your phone and emails are switched off.

If you’re aware of the warning signs that stress and anxiety are starting to build up and aware of the services available to support you personally, as well as your business, you can take stock of how you’re doing and effectively manage any difficult situations you’re facing.

Organisations such as Heads Up (headsup.org.au) and Beyond Blue (beyondblue.org.au) have a range of resources that you can access online, at any time.

SUPPORT FOR YOUR BUSINESS

If you’re worried about how your business is performing, or need help understanding your business financials, the SBDC has a free business advisory service ready to help you. To speak directly with an experienced adviser call 13 12 49 or visit the SBDC at Level 2, 140 William Street, Perth.

•  The Small Business Development Corporation provides free, confidential business advice and guidance to small business owners throughout Western Australia. Contact 13 12 49 or go to www.smallbusiness.wa.gov.au
•  The Australian Tax Office (ATO) recognises there may be times when your mental well-being could affect your ability to pay tax or super obligations. Information to assist small businesses during these periods is available at: www.ato.gov.au

WA Grower WINTER 2018
You may have seen this title before in the WA Grower but nevertheless this concept still underpins successful business management irrespective of whether its vegetable, car, beer or clothing production.

Over the past months we’ve been busy meeting growers to explain how benchmarking can benefit their business and assisting them to participate. While we’re currently in the process of putting together individual business benchmarking reports for each participant as well as an industry-wide report, one of the biggest challenges and learning has been the absence of business measures collected by growers.

There are a number of reasons behind this — being clear on the key factors that make your business tick, not necessarily knowing what information to record or not seeing the immediate benefits.

It’s easy to look at the end of year statement to see if you’ve made money or not but there is another level of questions to ask that will yield greater knowledge and put you back in a position to understand and control the variables that underpin profitability and success.

• Is my business making a real profit? (not a beneficial tax return)
• Are my returns better than leaving my money in the bank?

• Which vegetable line returned me the greatest profit comparatively?
• What can I focus on to make my business more efficient?
• What cost items can I focus on to reduce costs?
• What benefit should I expect if I expand the size of my operation?

In order to assist with answering these questions, we’ve developed two solutions — one short term, the other a more longer term.

1. Profit and loss based vegetable cost split table
Most profit and loss sheets generated by accountants are well itemised and show various costs e.g. labour, seeds/ seedling, fertiliser etc. They also contain all the overheads and fixed costs that running a business incurs e.g. insurance, telephones, repairs and maintenance, interest payments etc.

By proportioning a percentage of each item against the vegetable lines you grow and comparing this against the income from each vegetable line you can quickly begin to see which lines made a profit and to what scale (see Figure 1).

Including the overhead and fixed costs are very important as these are the costs that are not always obviously related to vegetable production but must be paid for by the sale of produce.

By completing this you can quickly see which vegetable lines are profitable and to what scale as well as identify which are the major costs items within that cost of production.

In this example the grower overall returned a profit of $289,649. However, looking further, it can be seen that Veg A made $383,392 profit, Veg B made $177,536 loss, Veg C just broke even and Veg D also made $82,456 profit.

Figure 2 shows that across all vegetable lines that labour is the major cost item followed by fixed costs followed by seedlings and herbicide.

From this the grower needs to question whether to continue with Veg B in the future, or look at how reduced costs to increase the profit margin. Indeed, while labour rates are fixed reducing fixed costs can begin to increase profitability across the whole business in this example.

BY BRYN EDWARDS
BENCHMARK LEAD, VEGETABLES WA

FIGURE 1 Gross profit
You can also see that by noting down the weight produced and the hectares allocated to each crop throughout the year, you can compare vegetable against vegetable to identify true profitability — Veg D returns $1.03 more profit per kg than Veg A, and yields $1,787.21 more profit per hectare as well (see Table 1).

These are some of the ratios that are compared on a wider basis against industry averages in the benchmarking scheme. Those that have participated in the benchmarking and conducted this exercise have found this a really useful and insightful process, however it should be noted that this is a retrospective look.

### TABLE 1 Profit and loss based vegetable cost split table

<table>
<thead>
<tr>
<th>Cost</th>
<th>Profit &amp; loss totals</th>
<th>Veg A</th>
<th>Veg B</th>
<th>Veg C</th>
<th>Veg D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour</td>
<td>$1,183,049</td>
<td>30%</td>
<td>35%</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Seed/seedlings</td>
<td>$399,701</td>
<td>30%</td>
<td>40%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Packing</td>
<td>$53,134</td>
<td>35%</td>
<td>35%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Crates</td>
<td>$21,766</td>
<td>40%</td>
<td>30%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Herbicide</td>
<td>$316,858</td>
<td>30%</td>
<td>40%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Pesticide</td>
<td>$43,124</td>
<td>30%</td>
<td>40%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Fertiliser</td>
<td>$188,286</td>
<td>40%</td>
<td>30%</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>Electricity</td>
<td>$133,017</td>
<td>30%</td>
<td>45%</td>
<td>20%</td>
<td>5%</td>
</tr>
<tr>
<td>Fuel</td>
<td>$10,002</td>
<td>35%</td>
<td>35%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Water</td>
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<td>30%</td>
<td>40%</td>
<td>20%</td>
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<tr>
<td>Biosecurity</td>
<td>$1,000</td>
<td>70%</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
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<td>Transport</td>
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<td>35%</td>
<td>40%</td>
<td>15%</td>
<td>10%</td>
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<tr>
<td>Other</td>
<td>$78,272</td>
<td>30%</td>
<td>45%</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>Variable costs (total/veg)</td>
<td>$2,552,409</td>
<td>$795,373</td>
<td>$947,903</td>
<td>$429,129</td>
<td>$380,004</td>
</tr>
<tr>
<td>Fixed costs</td>
<td>$672,630</td>
<td>30%</td>
<td>30%</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Fixed costs ($/veg)</td>
<td>$472,630</td>
<td>$201,789</td>
<td>$201,789</td>
<td>$100,895</td>
<td>$168,158</td>
</tr>
<tr>
<td>Total cost ($/veg)</td>
<td>$3,225,039</td>
<td>$997,162</td>
<td>$1,149,692</td>
<td>$530,023</td>
<td>$548,126</td>
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<tr>
<td>Income</td>
<td>$3,514,688</td>
<td>$1,380,554</td>
<td>$972,156</td>
<td>$531,360</td>
<td>$630,618</td>
</tr>
<tr>
<td>GM/vegetable</td>
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<td>$383,392</td>
<td>-$177,536</td>
<td>$1,337</td>
<td>$82,456</td>
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<tr>
<td>Kg of vegetable</td>
<td>503612</td>
<td>469125</td>
<td>6984</td>
<td>6130</td>
<td></td>
</tr>
<tr>
<td>GM/kg</td>
<td>$0.76</td>
<td>-0.38</td>
<td>-$0.19</td>
<td>$1.79</td>
<td></td>
</tr>
<tr>
<td>Hectares allocated</td>
<td>45</td>
<td>35</td>
<td>20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>GM/ha</td>
<td>$8,519.82</td>
<td>-$5,072.46</td>
<td>$66.84</td>
<td>$10,307.03</td>
<td></td>
</tr>
</tbody>
</table>

**FIGURE 2 Total vegetable cost by category**

2. Business management tools

Through listening and consulting with growers, we’ve developed a range of tools and support for growers. The grower will be able to gather the information as they go along so they can begin to predict costs of production proactively rather than retrospectively.

The range spans from introducing simple new tools that growers can use, to providing support to get the most out of tools they already have — selection is based on what is most appropriate to the grower and their scale of business.

The three options are:

1. **Good** — providing simple notepads for the grower to write down key information
2. **Better** — capturing key information in a simple predesigned excel spreadsheet
3. **Best** — configuration support for financial systems (e.g. MYOB or Xero) to get the most out of them in a horticulture business setting.

In addition to these, vegetablesWA is linking up with Department of Primary Industries and Regional Development to offer **free** Key to Financial Management workshops for those who want to brush up or extend their financial management skills and knowledge.

These will be held on:
- Wanneroo Vietnamese 14/06/2018
- Wanneroo English 15/06/2018
- Carnarvon English 09/08/2018
- Manjimup English September 2018
- Geraldton Vietnamese November 2018.

**MORE INFORMATION**

You’ll be seeing more messages about this in the forthcoming months however if you’re already interested and want to talk further or you want to go to a workshop please contact Bryn at bryn.edwards@vegetableswa.com.au or 0417 409 821.
ATO urging large employers to prepare for Single Touch Payroll

The Australian Taxation Office (ATO) is urging employers with 20 or more employees to act now and prepare for Single Touch Payroll (STP), the next step in work to streamline payroll reporting.

From 1 July 2018, employers will need to report their employees’ tax and super information to the ATO through payroll software that is STP ready, as part of efforts to help employees meet their reporting obligations to the ATO by using their own payroll or accounting software.

The ATO has outlined the next steps to help employers get ready for STP:

• Visit the ATO website and download the 'Get ready checklist'.
• Do a headcount of all employees on 1 April 2018 to find out if you have 20 or more.
• If you have payroll/accounting software: Talk to your provider to find out how and when your product will be ready.
• If you don’t have payroll/accounting software: Choose a product that offers STP. You can ask your tax or BAS agent for advice on choosing a product that suits your business needs.
• Update your payroll software when it’s ready.
• Start reporting to the ATO through STP.

MORE INFORMATION

If you need more information about STP, check out the factsheet at www.ato.gov.au/uploadedFiles/Content/CR/downloads/stp_factsheet.pdf prepared by the ATO. You can also find more resources on the STP section of the ATO website.

If you have any questions about STP, please contact the ATO.
The Horticulture Code of Conduct applies from 1 April 2018. If you trade in horticulture produce on or after this date, you must comply with the terms of the Code.

If you’re a vegetable grower and sell through an agent or to a merchant, the law that says you must have a written contract. It’s called the Horticulture Code of Conduct.

The Code also says that this contract must include certain things, like how price is calculated and when you get paid.

Having a written contract protects you. It details what you and the agent or merchant can and can’t do. The Code also sets out a way for the parties to try to resolve disputes.

Changes have been made to the Code, which regulates the sale of produce between growers and wholesalers.

Following these changes, all growers should have been presented with a new Terms of Trade, Horticulture Produce Agreement and associated Schedule by their wholesaler.

Growers should seek independent legal advice in negotiating the terms of these agreements.

vegetablesWA cannot provide legal advice but growers are also welcome to contact us to gain a broader understanding of the code.

MORE INFORMATION

Further information may also be found on the ACCC website www.accc.gov.au/business/industry-codes/horticulture-code-of-conduct


If vegetablesWA can assist you further please contact the office and speak to John Shannon or Claire McClelland on (08) 9486 7515.

Lancelin Farm
179.01 ha (442.35 ac)

Large horticulture operation — will be sold!
Karakin via Lancelin, Western Australia

• State-of-the-art production and processing operation
• Substantial 3.0GL water licence with high capacity bores
• Productive, easy working well drained soils
• Substantial infrastructure including modern processing and packing facilities
• Mediterranean climate conducive to high production output
• Location provides a high level of biosecurity
• Extremely rare opportunity

Inspection by appointment only with Exclusive Selling Agents:
For Sale by Offers to Purchase closing 4pm, Wednesday 20th June, 2018
(if not sold prior)
landmarkwa.harcourts.com.au/LEP4743
Glenn McTaggart 0429 611 124    Adam Shields 0429 104 760
End of the financial year is an important time for small businesses, completing bookkeeping, tax returns and planning for the new financial year. Putting the hard work in each financial year can help you get your business organised and work smarter in the year ahead.
Also consider planning for the end of year as well. You should try to write off any debtors or assets before the year ends to claim a tax deduction.

Here are some essential tasks for your end of financial (EOFY) year to-do list:

**Record keeping and compliance**
Some of your yearly tasks as a small business owner may include:
- a summary of income and expenses in a profit and loss statement
- summaries of your record of debtors and creditors
- collating records of asset purchases or expenditure on improvements to calculate depreciation expense claims and for capital gains tax purposes
- completing and lodging your income tax returns
- lodging yearly reports or returns for PAYG withholding, fringe benefits tax (FBT), Goods and Services Tax (GST), and the taxable payments reporting system
- meeting superannuation requirements.

If you are unsure about your obligations, visit the Australian Tax Office, call the ATO on 13 28 66, or talk to your tax professional.

**Find out what tax deductions you can claim**
Be sure to do your homework and know exactly what tax deductions you can claim. You may be able to claim deductions if your business:
- has set up a website
- has motor vehicle expenses
- uses diesel fuel
- operates at home
- has travel expenses
- uses machinery, tools or computers.

**Use a registered tax agent**
Check your tax agent is registered with the Tax Practitioners Board (TPB). You are taking a big risk by using an unregistered tax or Business Activity Statement (BAS) agent.

**Keep up-to-date with tax changes starting next financial year**
There may be tax changes each year that you need to be aware of. These might include changes in tax law and deductions for small business.

Your tax professional can help you understand any changes. You can also keep up to date by subscribing to the ATO’s small business newsroom.

**Be wary of tax refund scams**
There are a number of scams that target small business around tax time. Common tax time scams include:
- tax refund scams where the scammer will claim you have overpaid your taxes and are eligible for a refund. However, in order for you to receive this refund, they will claim that you need to pay a fee for administration or transfer costs.
- tax owed scams where the scammer will claim that you’ve underpaid your tax and will need to repay the amount you owe immediately. In order to make this payment, they request your credit or debit card details, or ask you to send money through a money transfer.

Read more about scams targeting business and how you can protect your business.

**Review your finances**
Sit down with your accountant or bookkeeper and review your finances.

Look at whether you met your targets and what you can do differently next financial year. Create a cash flow forecast to manage any potential shortfalls and ensure you can still pay your staff and suppliers.

**Review and update your business and marketing plans**
Take time to set yourself up for the year ahead. Regularly reviewing and updating your plans will help you to:
- adapt to any new changes in your environment
- make the most of new opportunities as they come your way
- prioritise and maximise your effort (work smarter, not harder!).

**Review your insurances**
Check that your business has the right insurances in place. If your circumstances change, you may need to update your level of cover.

Read the product disclosure statements (PDS) for your insurance policies carefully — don’t assume you’re covered. Look up certain terms such as floods as the definition may vary among insurers.

Consider getting an insurance broker. A broker will work with your business to ensure it gets the best deal from an insurance company.

**MORE INFORMATION**
If you are looking for a broker contact Gavin Statham, Centrewest Insurance Brokers, on (08) 9349 7900 or www.centrewest.com.au
As it rolls around to the end of the financial year it can be a time to reflect and ensure you have all of the relevant work practices in place for your business. Here’s five main questions to ask yourself in an effort to proactively manage Fair Work issues before they turn into major problems for your business.

1. Does your business have current and up-to-date employment agreements in place?

Where an employee has switched between full-time, part-time or casual employment whilst employed with your business, and/or if the employee has changed roles or their remuneration has increased/decreased over time, their employment agreement will also need to be updated.

It can be a major headache for your business if a dispute arises and you seek to rely on an employment agreement from years ago that contains outdated employment terms, an old remuneration package, and a position description relating to a former position held by the employee.

2. Do you have compliant written workplace policies and procedures in place?

Your workplace policies and procedures spell out the rules for your workplace, and employees need to be aware of these rules. Your workplace policies and procedures should at least cover the following:

- probationary periods for new employees
- leave requests
- hours of work
- attendance and punctuality
- use of company property
- confidentiality
- work health and safety

If your workplace policies and procedures do not exist, or are outdated, you may face extreme difficulties in controlling employee conduct, behaviour and performance.

3. How many long-term casuals does your business employ?

New Modern Award casual conversions provisions are due to be implemented soon, following the Casual and Part-Time Test Case of 2017. Will your casual employees have the right to convert to permanent employment? More importantly, has your business complied with its new award obligations to notify casual employees of their right to convert to permanent employment?

4. Are your regular contractors engaged as genuine contractors, or could they be deemed employees?

Engaging sole trader contractors on a regular basis may result in that person being deemed to be your employee, which then raises superannuation and leave issues, in addition to the ‘unfair dismissal’ problems that may arise if the employment/engagement is terminated.

5. Do you follow the proper procedure when terminating a person’s employment, including redundancy?

Termination of employment carries the most significant short term risk — where the proper procedure is not followed, the employee who has been dismissed may claim compensation against your business of up to $70,000 (or six months’ pay).

vegetablesWA along with Growcom and the Fair Farms Initiative recently held workshops in Bunbury, Manjimup, Gingin and Perth FREE for growers and producers to attend so they can keep abreast of the requirements and any changes which might be occurring.

MORE INFORMATION

If you missed this workshop and would like to register your interest please contact Rebecca Blackman, Rebecca.blackman@vegetableswa.com.au
Your market
Six months after the nation’s most ambitious horticulture trade drive yet was launched, Taste Australia has been rolled out in 10 countries across Asia and the Middle East, attracting significant interest from importers, retailers and Aussie growers.

Developed by Hort Innovation with industry and after off-shore stakeholders reviewed the brand, Taste Australia encompasses trade show attendance, in-store promotions and seminars for buyers, media and influencers to spread the message about Australia’s quality produce. Taste Australia is also supported by more than $40M of research and development projects currently in the pipeline to help diversify and strengthen trade.
Hort Innovation chief executive John Lloyd said only six months in, Taste Australia is already getting traction.

“Taste Australia is big and ambitious, and the traction we have seen over the past six months far exceeds our expectations for the launch of this new, dynamic horticulture in-market position,” he said.

“We have been working flat-out with industry, Austrade and other partners to deliver unprecedented attendance at trade show events, in-market promotional activities, and record levels of research and development — and the results speak for themselves.”

Over the past six months, a cohort of more than 300 industry representatives and growers have attended trade shows in Dubai, Beijing and Tokyo as part of Taste Australia activities.

As a result, Aussie produce has gained exposure to almost 200,000 key buyers, importers and decision makers from retail, food service and wholesale industries from across Asia and the Middle East.

AUSVEG national manager of export development, Michael Coote, said he had already seen positive outcomes from the consolidated horticulture brand.

“Successful participation in recent international trade events further strengthens the vegetable industry’s support for the unified horticultural brand. As a result of the unified brand, a number of vegetable growers have made enquiries about using the brand themselves, demonstrating the commercial value that growers see in Taste Australia,” he said.

Over the past six months, Taste Australia marketing campaigns were also executed in 10 countries across Asia and the Middle East through more than 800 separate in-store promotions, reaching more than 100,000 consumers. While sales figures are still being compiled, early feedback from retailers is positive.

Tesco Thailand lead produce sourcing manager Alisa Wongstianchai said: “In relation to Taste Australia, we have had extremely positive feedback from all parties including customers. These promotions have not only increased consumer awareness of Australian produce but have also drawn more people to our stores.”

Another successful initiative occurred recently after Australian cherries regained access to Vietnam this season, Vietnamese celebrity chefs helped launch Australian cherries in Hanoi and Ho Chi Minh City under the Taste Australia banner. More than 220 people attended the events, including importers, distributors, wholesalers, retailers, hoteliers and local media.

Cherry Growers Australia president Tom Eastlake, who presented at the launch events, said the result was “phenomenal”. “The venue was absolutely filled to capacity. I couldn’t get out of the event, the engagement from the attendees was so high,” he said. “I believe, comparative to impact, the small investment made by industry in Taste Australia will achieve a great return. I believe this has been money well spent.”

As part of broader initiatives, five chefs from Japan and Macau visited Australia over the past six months to continue building the positive perception of Australian horticulture and food. This has generated keen interest in importing more Australian vegetables into Japan and opportunities in food service into Macau.

The collaborative Taste Australia work with the meat, dairy and wine industries continues to develop with plans for additional events in China through the year supporting the Australian food message.

“Australian horticulture has so much to offer countries overseas, and we are really just at the tip of the iceberg with Taste Australia, with so much more to come,” Mr Lloyd said.

MORE INFORMATION
Express interest or get more information via www.trade@horticulture.com.au

Get involved:
Hort Innovation is keen to hear from growers who are interested in attending the following trade shows:

September 5–7
Asia Fruit Logistica (AFL) in Hong Kong
Held in the gateway to Asia, this premier event attracted 13,000 top decision-makers from 76 countries last year.

October 1–3
World of Perishables in Dubai
The only international expo for fresh fruit and vegetables in the Middle East and North Africa (MENA) and attracts around 8000 key decision makers from the fresh sector.

November 16–18
Fruit and Vegetable Fair in Beijing
Attendance is more strategic with opportunities to engage with Chinese officials and government and support continued market access into China.
Country of Origin Labelling laws

Are you ready?

From 1 July 2018, Australian businesses will have to fully comply with the new Country of Origin Labelling laws. However, food products that are packaged and labelled on or before 30 June 2018 can still be sold without the new labels after that date.

Do you have a country of origin label on your food? Do you have ‘Made in Australia’ or something similar on your packaging? Or is your food product imported?

You need to be aware that as of 1 July 2016, new laws were introduced requiring a lot more information to be included on food packaging. There is a two-year transition period before the laws become mandatory.

Why are they changing?

For as long as most of us can remember, the country of origin laws in Australia relating to food labelling were controversial. Until now, the laws have been complicated for consumers and food manufacturers alike.

Consumers have been demanding more information with an increasing desire to have clearer and more accurate information on our food.

The new laws in relation to food labelling are set to address this problem with food labels now being required to provide more detail in relation to the quantity of local and imported ingredients.

How are things going to change?

Now, under the new labelling system, businesses that are wanting to use a ‘Grown in’, ‘Product of’ or ‘Made in’ Australia claim will need to display a kangaroo with a triangle so that consumers can identify the foods’ origin at a glance and a bar chart representing the percentage of the ingredients that are from Australia.

Therefore, although businesses will still be able to use the ‘Made in’ claims if the bulk of production occurs in Australia, consumers will be able to know whether or not (or how much of) the ingredients are in fact from Australia.

There will also be labels for ‘Packed in Australia’ which will feature just a bar chart indicating the percentage of Australian ingredients and ‘Product of’ for foods products, made, grown or packed outside Australia.

If the products have just been ‘Packed in’ Australia then the labels should feature the bar chart representing the quantity of Australian ingredients, but not feature the kangaroo symbol.

More information

This article is of a general nature and not meant to replace tailored legal advice.
A report has found if Australians ate just 10% more vegetables per day, all levels of government could reap $100 million per year combined in health savings.

Commissioned by Horticulture Innovation Australia (Hort Innovation) and delivered by Deloitte Access Economics, the report also revealed that more than 90% of Australians fail to eat the recommended intake of vegetables per day.

Currently, the average Australian is eating just 2.3 serves of vegetables per day, far short of the recommended five serves or 375 grams. Hort Innovation Chief Executive John Lloyd said the research indicates the nation could benefit significantly if the current intake of 174 grams was boosted to just 190 grams.

“If Australians ate just a handful more of broccoli or two extra carrots per week they would reduce their risk of some cancers and cardiovascular disease,” he said.

“In economic terms, based on detailed modelling, all levels of government would also stand to benefit through an estimated $100 million in health expenditure savings per year combined.

“On top of this, a 10% increase in national vegetable consumption would further support vegetable growers nationally with an estimated $23 million per year in additional profit.”

The report also showed:
- Men eat fewer vegetables than women, with 3.8% of males consuming adequate vegetables compared to 10.2% of females.
- Internationally, Australia was ranked 63rd in the world by apparent consumption of vegetables per capita.
- Tasmanians are Australia’s highest vegetable consumers but still only 12% of the local population are consuming the recommended daily intake.
- Vegetable consumption generally increases with age, peaking among 75-84-year-olds.
- ‘Fruiting vegetables’ such as corn and pumpkin are the top vegetables consumed by Australians (excluding potatoes).

Horticulture Innovation Australia delivers more than $100 million in research, development and marketing activities across the horticulture industry each year with funding from the Australian Government, grower levies and other sources.
Apple research project to crunch pest data in push for export markets

MOST apples produced in WA are consumed locally and industry is keen to develop Asian markets including China and Japan.
Orchards in Manjimup and Pemberton are part of a new four-year research project aiming to boost exports of Western Australian apples to valuable northern Asian markets.

The Horticulture Innovation-funded project between the Department of Primary Industries and Regional Development, CSIRO and industry body Pomewest is looking at systematic pest management and monitoring to access new export markets.

Department senior researcher Kim James said most apples produced in WA were consumed locally and industry was keen to develop Asian markets including China and Japan.

“The WA apple industry offers counter seasonal supply, close proximity to Asian and Middle East markets, clean and safe produce, backed by a robust regulatory framework,” Mr James said.

“However, the export of fresh fruit to some countries is limited by quarantine restrictions.

“This project will evaluate a ‘systems approach’, which involves a number of measures to provide the level of protection from a specific pest or disease that an importing country requires.”

The WA case study is part of a broader national collaboration between industry, researchers and regulators to help Australian horticultural businesses realise export market opportunities by developing a systems approach.

Mr James said the South-West project would involve surveillance for pests such as fruit fly and moths, and assess a range of measures which could satisfy trading partners of an acceptable level of protection.

“Systems approaches consider the combined effect of monitoring programs, good in-field management, grading in the packinghouse and other steps that are part of good agricultural practice,” he said.

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The project will involve a surveillance network of about 180 traps across 19 orchards and 14 town sites in Manjimup and Pemberton to monitor for pests including Mediterranean fruit fly, light brown apple moth and Western fruit moth.

“With the right verification processes, we could demonstrate that fruit export is acceptable to these markets without substantially increasing the cost of production.”

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Mr James said surveillance was important not only in finding pests, but also demonstrating absence of pests.

“The project will collect data from two or more measures with a systems approach, which will be analysed and modelled by CSIRO to produce supporting evidence for market access applications,” he said.

Pome fruit are a significant fruit crop in WA, grown mainly in the South West region and Perth Hills and surrounds, with farm gate production worth about $45 million each year. A small percentage of production is exported.

Pomewest Chair Harvey Giblett said the Western Australian pome fruit industry supported the project to identify new market opportunities for apples from the state.

“The pome industry is recognising and investing in these type of projects,” Mr Giblett said.

“Export is a necessary focus and the opportunity to open markets is the key to ensure healthy and sustainable futures for our orchardists.”

MORE INFORMATION ►
For more information contact Kim James, senior researcher (08) 9368 3403.
Hort Innovation has today released the Horticulture Statistics Handbook — offering the most comprehensive data available on all sectors of the Australian horticulture industry in one easy-to-read guide.

Featuring more than 470 pages of information drawn from a number of supply chain sources, including international trade statistics and industry peak bodies.

The Handbook includes data on more than 70 horticultural products including fruit, nuts, vegetables, nursery, turf and cut flowers.

Hort Innovation chief executive John Lloyd said areas of focus include profiling fresh market supply values and volumes by product, including import and export dynamics, while also identifying key production regions and seasonality.

“For your convenience, the handbook is available for download in four different categories, vegetables, fruit, nuts and other horticulture.”

“Now in its third edition, the Horticulture Statistics Handbook provides important data for industry, researchers and decision makers, supports policy formation and contributes to further research to benefit the industry,” Mr Lloyd said.

“The production volumes of some tree crops — most notably apples, avocados and macadamias — has continued to expand as plantings mature to full production levels, and further growth is predicted in these areas.”

Mr Lloyd said the domestic food market conditions remain competitive as new entrants enter into the retail space and expand their store networks, and eating out appears to be on the rise.
“Australian household expenditure on people eating food out of home also increased to 34.8% of total food expenditure and was reflected in stronger demand from food service buyers,” he said.

“Total fresh horticulture exports also shifted to a value of $2.01 billion in 2016–17. This was 5% lower than the previous year, primarily driven by a marked reduction in almond export prices and disruptions to production conditions being disrupted by climate events in Queensland and biosecurity in Western Australia.”

The Handbook, which captured data up until June 30, 2017 also revealed:

- Nationally, almonds were Australia’s most valuable horticultural export product ($461M) followed by table grapes ($372M), macadamias ($291M), oranges ($223M), and carrots ($90M) see Figure 1.
- Victoria was the nation’s leading fresh exporter accounting for 47% of the total value of horticultural exports, valued at almost $950M.
- The largest export markets for fresh Australian horticultural products by value were Asia (68%), followed by Europe (13%) and the Middle East (9%).

MORE INFORMATION

The handbook is available now on the Hort Innovation website horticulture.com.au.
New Australian program aims to simplify the export process

Australian Trusted Trader is facilitating trade and improving access to global markets for Australian businesses.
In a bid to save time and make the process of exporting to market easier, the Australian Border Force has introduced Australian Trusted Trader. This program is already benefiting small horticulture businesses by helping them gain international recognition as well as access to dedicated resources.

Australian Trusted Trader is building momentum and boosting its suite of benefits for producers trading around the world.

As Australia’s customs service, the Australian Border Force is committed to facilitating trade and improving access to global markets for Australian businesses.

Trusted Trader, run by the Australian Border Force, works by accrediting businesses that can demonstrate compliant trade practices and a secure supply chain. Once accredited, Trusted Traders gain access to a range of exclusive benefits, developed with industry and designed to help save money and time. These include:

- A dedicated Australian Border Force account manager.
- Your exports to market faster.
- Use of the Australian Trusted Trader logo, helping your business be internationally recognised as trusted by the Australian Government.
- Increased access to international trade markets, through Mutual Recognition Agreements.

Last year a landmark arrangement was signed with China, Australia’s largest trading partner, providing faster and more efficient access for Trusted Traders into the market.

The Australia-China Mutual Recognition Arrangement is expected to bring a benefit of $440 million to Australia’s economy over 10 years. These arrangements are also shared with New Zealand, Hong Kong, Republic of Korea and Canada, while a plan to progress a Mutual Recognition Arrangement worth $540 million to Australia’s economy with the United States of America was signed earlier this year.

These international arrangements give businesses unprecedented access to trade facilitation benefits and are reducing costs for businesses, while ensuring the integrity of our border. They are also reducing the regulatory burden on Australian business and improving access to the market for exporters.

There is also a streamlined process when applying for sponsorship accreditation under the Temporary Skill Shortage visa (subclass 482). With these and other benefits available, Trusted Traders are seeing more tangible cost and time savings. As the Trusted Trader community grows, businesses are seeking out service providers they know are trusted in the international trade community.

A boost for Australian organics

Australia produces some of the highest quality organic food in the world, and one of the businesses leading the way is Kialla Pure Foods. The Australian Certified Organic grain processor began in Toowoomba, Queensland in 1998, and is now exporting to nine countries.

Kialla Pure Foods prides itself on its quality assurance, which until recently had been focused on food safety and manufacturing processes.

“We run many quality assurance programs across our business, but there was a gap in the import-export protocol side of the business,” Kialla Pure Foods Managing Director Quentin Kennedy said.

When the Australian Border Force approached Mr Kennedy, he knew Trusted Trader could benefit the business.

“We saw that it was a good fit among our other quality assurance program and would complete our whole-of-supply chain program,” he said.

“I’d recommend Australian Trusted Trader to other small exporters as it closes the final gap in the whole supply chain.”

Trusted Trader works by accrediting businesses that have compliant trade practices and a secure supply chain — once a business has become accredited, it is able to access a range of tangible financial and time-saving benefits as well as simplified customs processes.

One of the key benefits for businesses that sign on to become Trusted Traders is that they have direct access into the Australian Border Force through a dedicated account manager. This benefit is only available to those who have joined the program.

“The Australian Border Force has been very supportive throughout the whole process and has been able to give us guidance where we’ve needed it,” Mr Kennedy said.

More information

For more information about Australian Trusted Trader, please visit abf.gov.au/trustedtrader.
The Hort Innovation Export Facilitators project is well underway, with WA project lead Manus Stockdale visiting a number of growers and industry stakeholders having commenced this role at vegetablesWA in February this year.

As part of this project, vegetablesWA in conjunction with AUSVEG hosted the first WA export training workshop of 2018. Held at the vegetablesWA office on 9 & 10 May, this two-day workshop focused on a number of key areas required for successful export.

This training, facilitated by the Export Council of Australia provides a comprehensive overview of export requirements including:

- Export planning
- Resourcing
- Export pricing
- Marketing
- Export financing
- Export documentation

The Export Council has been delivering this horticulture specific training on behalf of the vegetable industry nationally for several years with the program being updated continuously to remain current to vegetable growers looking to export.

In addition to facilitating export training, the Export Council of Australia also manage the Western Australian Industry & Export Awards on behalf of the WA Department of Jobs, Tourism, Science and Innovation.

There are 18 categories of awards, with many grower exporters being eligible in categories such as Agribusiness, Emerging Exporter and Regional Exporter. Growers who have been exporting are encouraged to apply for these awards to not only recognise their efforts but to benefit from the exposure and marketing opportunities these awards provide. Applications and eligibility details are available at www.exportaward.com.au/wa.

At this stage, the next scheduled workshop will be held in conjunction with vegetablesWA’s Industry Summit on 26 October 2018, however, keep an eye out for future workshop dates being advertised soon.

The export training workshops are only one part of the capability building resources offered by the Export Facilitators project. As part of this project a number of resources are being developed to assist growers in assessing and improving their export understanding. In the second half of this year, the project will also call for growers interested and ready to export to work with vegetablesWA to develop a complete export plan for their business.

BY CLAIRE MCCLELLAND
MARKET DEVELOPMENT MANAGER, VEGETABLESWA

Project update:
Export Facilitators

MORE INFORMATION
The Export Facilitators project lead Manus Stockdale is available to assist growers in preparing an application for the export awards as well as providing advice to growers interested in commencing their own exports.

Manus can be contacted at: manus.stockdale@vegetableswa.com.au
Kết thúc giai đoạn chuyển tiếp chiến lược quản lý Rầy cà chua khoai tây (TPP)

VÕ THẾ TRUYỀN
CHUYÊN VIÊN KHUYẾN NÔNG TIẾNG VIỆT, HIỆP HỘI RAU CẢI TÂY ÚC

Giai đoạn tiếp theo trong chiến lược quản lý rầy cà chua khoai tây (TPP) vừa kết thúc sau khi hoàn thành kế hoạch chuyển tiếp của chiến lược quản lý.

Giai đoạn chuyển tiếp là phần tiếp nối trong chiến lược quản lý sau khi cơ sở nhất trí cấp quốc gia rằng không thể loại trừ hoàn toàn rầy TPP và các nỗ lực nên đặt trọng tâm vào công tác xây dựng các biện pháp giúp chính phủ và ngành nông nghiệp quản lý một cách hiệu quả loại côn trùng gây hại này.

Kế hoạch quản lý hiệu quả rầy TPP do Bộ Nông nghiệp và Phát triển nông thôn Tây Úc đại diện ngành trồng trọt và chính phủ cấp tỉnh ban hành năm 2017 và mùa thu 2018 trong tiểu bang Tây Úc.

• Tiện hành các nghiên cứu để tăng cường hiểu biết về rầy TPP, đặc tính sinh học và các giải pháp phòng trừ.
• Quản lý rầy TPP thông qua việc xây dựng các kế hoạch quản lý cấp doanh nghiệp đến cấp quốc gia.
• Thương mại và tiếp cận thị trường.

Kết quả đạt được trong giai đoạn chuyển tiếp đang được sử dụng để cung cấp thông tin cho các chiến lược nghiên cứu và phòng trừ trong tương lai — các chiến lược này sẽ do AUSVEG tiếp tục thực hiện thông qua vai trò trên chính sách của điều phối viên quốc gia chương trình TPP và việc xây dựng một kế hoạch quốc gia quản lý TPP.

Giai đoạn chuyển tiếp vừa qua được tài trợ bởi Chính phủ tiểu bang, chính phủ liên bang và bộ ngành trong nước.

Giai đoạn chuyển tiếp đã đặt nền tảng cho công tác nghiên cứu TPP

Chương trình nghiên cứu và phát triển về vấn đề TPP vừa qua là thành tố chính của kế hoạch chuyển tiếp.

Quyền giám đốc ngành Rau quả của Bộ Nông nghiệp Rohan Prince đã phát biểu rằng nghiên cứu và phát triển là nhân tố quyết định sự tiếp tục những nỗ lực của ngành giai đoạn tiếp theo và giúp cãi chiến lược này gia tăng hiệu lực của nông gia trong việc phòng từ loài gây hại này.

“Phát triển kiến thức khoa học về rầy TPP nghĩa là chúng ta có khả năng đánh giá được các giải pháp nào hiệu quả nhất (phòng trừ TPP) trong điều kiện canh tác của nước Úc”

Bộ Nông nghiệp và Phát triển nông thôn Tây Úc đã quản lý chương trình nghiên cứu này bajo gom các công tác:

• Khảo sát độc lực của các loại nông dược thông thường và các loại hóa phẩm sinh học đã được đăng ký lưu hành phòng trừ các loài gây hại khác trên rầy TPP.
• Khảo sát tiềm năng của các tác nhân phòng trừ sinh học (BCAs) hiện đang lưu hành.
• Đánh giá hiệu lực của các loại nông dược được sử dụng với các tác nhân phòng trừ sinh học (BCAs).
• Đánh giá hiệu quả phòng trừ rầy TPP của Ethyl formate và độc lực của chất này trên các loại cây bị xâm nhập bởi dưa lê đối với thị trường xuyên bang và thị trường quốc tế.
• Lược khảo tài liệu để tìm ra các chiến lược quản lý có tính thực hành đáng được áp dụng trên thực tế đối với rầy TPP và xác định lỗ hổng kiến thức về nghiên cứu và phát triển vận động này của Úc.
Tóm tắt kết quả nghiên cứu và phát triển

1. Nông dược — Các khảo sát trong phòng thí nghiệm
   - Một danh sách 15 dược chất có triển vọng bao gồm Abamectin (Vertimec®), Cyantraniliprole (Benevia®), Spirotetramat (Movento®), Flonicamid (Mainman®), Spinetoram (Success®), Sulfoxaflor (Transform™), Methidathion (Suprathion), Methomyl (Methomyl 225), Chlorpyrifos (Chlorpyrifos 500EC), DC-164 (experimental chemical of Bayer Crop Science), Imidaclorpid (Confidor® 200SC), Eco-Oil®, AGRI-50NF, Paraffinic oil (SACOA BioPest), Azadirachtin (Azamax) đã được đánh giá trong phòng thí nghiệm về độc lực đối với các giai đoạn sinh trưởng (trứng, ấu trùng, thành trùng) của rầy TPP trên ớt capsicum, cà chua và khoai tây.
   - Các loại nông dược trên đã được đăng ký trên nước Úc để phòng trừ các loaифi công trùng chích hút trên ớt capsicum, cà chua, khoai tây, nhưng không được đăng ký trên rầy TPP. Các số liệu thử nghiệm ngoài đồng buộc phải có để hỗ trợ đăng ký cho Cơ quan quản lý nông dược và thuốc thú y.
   - 14 loại nông dược đã được thử nghiệm trên ớt capsicum, cà chua, khoai tây, nhưng số loại nông dược khác nhau, nhưng không được đăng ký trên rầy TPP. Các số liệu thử nghiệm ngoài đồng buộc phải có để hỗ trợ đăng ký cho Cơ quan quản lý nông dược và thuốc thú y.
   - 14 loại nông dược đã được thử nghiệm phun trên lá và 1 loại đã được thử nghiệm bằng cách tiêm vào đất.
   - Abamectin, spinetoram, methidathion, methomyl, chlorpyrifos, cyantraniliprole, DC-164 (experimental chemical) and sulfoxaflor đã cũng tạo rắc đoạn và tiêu diệt 100% rầy TPP ở tất cả các giai đoạn sinh trưởng.
   - Spirotetramat là loại nông dược có tác động chậm hơn so với các dẫn xuất của thời kỳ, nhưng không tiêu diệt được ấu trùng rầy TPP.

2. Thử nghiệm các tác nhân sinh học (BCA) trong phòng thí nghiệm
   - 9 loại BCA đã được thử nghiệm trong đó có 8 loại bọ rùa, bọ nhóm anthocorid, bọ nhóm mirid và bọ cánh thẳng lacewing.
   - Tất cả các dẫn xuất có nguồn gốc thực vật (azadirachtin, eco-oil, agri-50 and paraffinic oil) có độc lực thấp nhất đối với ấu trùng giai đoạn cuối (tuổi 3 và tuổi 5) của rầy TPP.

3. Tác động của các loại nông dược đến các loại tác nhân sinh học dùng để phòng trừ rầy TPP trên ớt capsicum, cà chua và khoai tây.
   - Các loại nông dược abamectin, cyantraniliprole and spirotetramat được áp dụng trên ớt capsicum, cà chua và khoai tây 3 lần mỗi lần cách nhau 21 ngày có tác dụng không chế mặt số rầy TPP một cách hiệu quả.
   - 3 lần phun xịt bọ nhóm mirid là Nesidiocoris tenuis trên cà chua trong thử nghiệm trong nhà kính có tác dụng không chế mặt số rầy TPP.

4. Tẩy trùng sau thu hoạch — Các thí nghiệm trong phòng
   - Bộ Nông nghiệp đã xác định được một số lợi ích tiềm năng trong việc kết hợp tẩy trùng sau thu hoạch cho cả ruồi đục trái Queensland và rầy TPP cho cà chua, ớt capsicum và cà tím.
   - Ethyl formate khống chế được cả trứng, ấu trùng, và thành trùng TPP. Trứng là thứ khó diệt nhất, chúng cần phải bị tiêu trùng ở nồng độ cao từ 0,5 đến 2% Ethyl formate.
   - Ethyl formate không làm hư hại sản phẩm được xử lý như ớt, cà rốt, cà ci-a-rị, cà tim hoặc ớt capsicum ở nồng độ tối đa 2%.
Rohan nói rằng “Khi chúng ta đã đạt được một số kết quả khá quan trọng trong các khảo cứu ở điều kiện vận động, trong phòng thí nghiệm, trong nhà kính, vẫn cần có các nghiên cứu trong điều kiện động lượng đã khẳng định lại.”

“Chúng tôi đang tổng hợp các kết quả từ chương trình nghiên cứu và phát triển để cung cấp cho nông gia và cho ngành trồng trò trong thời gian tới đây”

“Giai đoạn chuyển tiếp đã cung cấp một sự nâng cấp trong nghiên cứu và phát triển về rầy TPP trên nước Úc và sẽ tiếp tục phát triển khi chương trình nghiên cứu và phát triển cấp quốc gia tiếp tục cùng với vai trò của chuyên viên điều phối TPP quốc gia”.

Cập nhật tình hình tầm soát rầy TPP tại Tây Úc
Bộ Nông nghiệp đã kết thúc đợt tầm soát rầy TPP muộn và không phát hiện có sự kết hợp nào giữa cây bị nhiễm rầy TPP với vi khuẩn CLso.

Quyền Giám đốc ngành rau quả của Bộ Nông nghiệp Rohan Prince nói rằng việc này đánh dấu kết thúc đợt tìm kiếm thứ ba tại Tây Úc kể từ khi TPP được phát hiện lần đầu tiên.

Sự phát hiện rầy TPP đã tác động lớn tới thương mại xuất khẩu của một số loại cây trồng và sản phẩm hoa màu mà kỹ thuật của cây rầy (và các sản phẩm phi xe) trên thị trường thế giới.

Ông Rohan phát biểu rằng một lần nữa việc phát hiện và tập trung vào các vùng ảnh hưởng của dịch hại này là một bước tiến quan trọng về sức hấp dẫn của họ hàng

“Thông thường thất bại cụm tất cả mọi người đã tham gia chương trình tìm kiếm và phát hiện rầy TPP cho đến nay chưa phát hiện rầy ở nơi nào ngoài giới hạn Tây Úc”.

Kế hoạch quản lý cấp độ doanh nghiệp

Nâng cao chất lượng các kế hoạch quản lý cấp độ doanh nghiệp của ngành trồng trọt

Ngành trồng trọt trong phạm vi hành động rầy TPP nên có nguồn lực sẵn sàng để quản lý loài gây hại này một cách hiệu quả và chứng tỏ cam kết hạn chế tối đa sự lây lan của nó trong nước như nguy cơ lây lan tràn vào các khu vực khác. Các kế hoạch này sẽ được phổ biến thông qua các cơ quan ngành trồng trọt.

Báo cáo và nhận diện sâu bệnh hại hoa màu

Quí vị có thể email hình ảnh của vi khuẩn CLso hay không

Biến đổi của rầy TPP có thể được nhận biết thông qua ứng dụng MyPestGuide Reporter có trên Google Play hoặc App Store

Quí vị có thể gọi trực tiếp để nhận thông tin về rầy TPP

Quí vị có thể vào trang thông tin internet agric.wa.gov.au/tpp để cập nhật thông tin về rầy TPP tại Tây Úc.

Thế mạnh thông tin

Hày vào trang thông tin internet agric.wa.gov.au/tpp có thông tin về cách nhận diện, thể hiện và các biện pháp phòng trừ rầy TPP.

Bài viết chuyên đề này là một sáng kiến trong kế hoạch chuyển tiếp quản lý rầy TPP cấp quốc gia.
<table>
<thead>
<tr>
<th>Permit no.</th>
<th>Product</th>
<th>Crop</th>
<th>Reason for use</th>
<th>Expiry date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER11747</td>
<td>2,2-Dichloropropionic Acid</td>
<td>Carrot crops (for seed)</td>
<td>Promotion of bolting and grass weed control</td>
<td>30-Nov-19</td>
</tr>
<tr>
<td>PER14722</td>
<td>Abamectin</td>
<td>Capsicum, cucumber, eggplant, zucchini, tomato, sweet corn, chili, paprika, potato, snow pea and sugar snap pea crops</td>
<td>Tomato red spider mite</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER14696</td>
<td>Abamectin</td>
<td>Head lettuce</td>
<td>Two-spotted mite</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER12846</td>
<td>Abamectin</td>
<td>Lettuce (hydroponic), snow peas &amp; sugar snap peas</td>
<td>Two-spotted mite</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER13300</td>
<td>Abamectin</td>
<td>Rhubarb</td>
<td>Broad mite</td>
<td>31-Dec-21</td>
</tr>
<tr>
<td>PER14536</td>
<td>Abamectin</td>
<td>Sweet corn, chillies, paprika, spring onions and shallots</td>
<td>Two-spotted mite</td>
<td>31-Dec-23</td>
</tr>
<tr>
<td>PER13716</td>
<td>Abrade Abrasive Barrier Insecticide</td>
<td>Tomatoes (protected)</td>
<td>Various insect pests</td>
<td>31-Jan-20</td>
</tr>
<tr>
<td>PER12378</td>
<td>Acephate</td>
<td>Tomatoes &amp; sweet peppers</td>
<td>Western flower thrips</td>
<td>31-Oct-20</td>
</tr>
<tr>
<td>PER14210</td>
<td>Acramite Miticide</td>
<td>Lettuce</td>
<td>Two-spotted (red spider) mite</td>
<td>30-Sep-18</td>
</tr>
<tr>
<td>PER82341</td>
<td>Acramite Miticide (bifenazate)</td>
<td>Cucumber, peppers (sweet &amp; chilli), zucchini, eggplant, sin qua, bitter melon, tomato &amp; snake bean</td>
<td>Two-spotted mite</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER14425</td>
<td>Acramite Miticide (bifenazate)</td>
<td>Rubus and rubus hybrids</td>
<td>Two-spotted mite &amp; European red spider mite</td>
<td>30-Sep-18</td>
</tr>
<tr>
<td>PER13795</td>
<td>Agro Propazine 500</td>
<td>Carrot crops</td>
<td>Nightshade, fat hen &amp; wireweed</td>
<td>31-Mar-18</td>
</tr>
<tr>
<td>PER14457</td>
<td>Alpha-cypermethrin</td>
<td>Chicory, leeks, spring onions, shallots</td>
<td>Red-legged earth mite, Onion thrips</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER80138</td>
<td>Alpha-cypermethrin</td>
<td>Cucurbits</td>
<td>Cucumber fruit fly</td>
<td>31-Mar-20</td>
</tr>
<tr>
<td>PER80099</td>
<td>Alpha-Cypermethrin</td>
<td>Fruiting vegetables, except cucurbits</td>
<td>Mediterranean fruit fly and Queensland fruit fly</td>
<td>31-Mar-20</td>
</tr>
<tr>
<td>PER13301</td>
<td>Alpha-cypermethrin</td>
<td>Lettuce</td>
<td>Red-legged earth mite &amp; vegetable weevil</td>
<td>31-May-20</td>
</tr>
<tr>
<td>PER80282</td>
<td>Alpha-cypermethrin</td>
<td>Onions</td>
<td>Onion thrips</td>
<td>30-Nov-20</td>
</tr>
<tr>
<td>PER13441</td>
<td>Ambush Emulsifiable Concentrate Insecticide</td>
<td>Rhubarb</td>
<td>Green peach aphid, green looper, light brown apple moth and budworms</td>
<td>31-Mar-27</td>
</tr>
<tr>
<td>PER13717</td>
<td>Amistar Top (azoxystrobin + difenoconazole)</td>
<td>Tomatoes (protected)</td>
<td>Powdery mildew</td>
<td>31-May-21</td>
</tr>
<tr>
<td>PER84155</td>
<td>Applaud Insecticide</td>
<td>Tomatoes</td>
<td>Greenhouse whitefly</td>
<td>6-Jul-18</td>
</tr>
<tr>
<td>PER13723</td>
<td>Avatar</td>
<td>Tomatoes (protected)</td>
<td>Heliothis (corn earworm), looper, cluster caterpillar, leafhoppers, green mirid</td>
<td>31-May-18</td>
</tr>
<tr>
<td>PER82992</td>
<td>Avatar (indoxacarb)</td>
<td>Asparagus</td>
<td>Garden weevil</td>
<td>31-May-22</td>
</tr>
<tr>
<td>PER14816</td>
<td>Azoxystrobin</td>
<td>Carrot</td>
<td>Powdery mildew, Sclerotinia rot (white mould), black rot</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER14430</td>
<td>Azoxystrobin (Amistar 250 SC)</td>
<td>Lettuce</td>
<td>Bottom rot</td>
<td>30-Jun-22</td>
</tr>
<tr>
<td>PER10845</td>
<td>Barmac Zineb Fungicide</td>
<td>Brassica leafy vegetables</td>
<td>Cercospora leaf spot &amp; downy mildew</td>
<td>31-May-20</td>
</tr>
<tr>
<td>PER14773</td>
<td>Basagran (bentazone-sodium)</td>
<td>Onions</td>
<td>Broadleaf weeds</td>
<td>31-Jan-23</td>
</tr>
<tr>
<td>PER10976</td>
<td>Bentazone</td>
<td>Snow peas and sugar snap peas</td>
<td>Broadleaf weeds</td>
<td>31-Mar-20</td>
</tr>
<tr>
<td>PER80558</td>
<td>Bifenazate</td>
<td>Snow peas &amp; sugar snap peas</td>
<td>Various mites</td>
<td>31-Aug-20</td>
</tr>
<tr>
<td>PER81196</td>
<td>Bifenthrin</td>
<td>Cucumber, brassica vegetables, lettuce, beans, peppers, eggplant and peas</td>
<td>Specified whitefly and mite species</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER10988</td>
<td>Blade 900 WG (cyanazine)</td>
<td>Snow peas and sugar snap peas</td>
<td>Broadleaf weeds</td>
<td>31-Mar-20</td>
</tr>
</tbody>
</table>
**Permit no.** | **Product** | **Crop** | **Reason for use** | **Expiry date**
---|---|---|---|---
PER14602 | Boscalid, Iprodione & Chlorothalonil | Onion (bulb & seed) | Botrytis neck-rot | 30-Sep-18
PER16840 | Bupirimate | Cucurbits & peppers | Powdery mildew | 30-Sep-19
PER14036 | Bupirimate | Eggplant | Powdery mildew | 28-Feb-23
PER14326 | Captan | Leafy lettuce, cucumber, capsicum & chilli | Grey mould | 30-Nov-21
PER13725 | Chess | Tomatoes (protected) | Greenhouse whitefly, silverleaf whitefly, green peach aphid | 31-May-18
PER11768 | Chlorpyrifos | Pumpkin | African black beetle | 31-Mar-21
PER14583 | Chlorpyrifos | Various vegetable crops | Various insect pests | 31-Mar-19
PER82459 | Cloethidium | Brassica vegetables | Various grass weeds | 30-Sep-21
PER12351 | Condir Guard Soil | Leafy lettuce, okra | Silverleaf whitefly | 30-Jun-20
PER14626 | Copper as tribasic copper sulphate | Garlic | Downy mildew | 30-Jun-19
PER14842 | Copper Oxychloride, Cuprous Oxide or Cupric Hydroxide | Spring onions and shallots | Downy mildew | 30-Sep-19
PER84805 | cyantraniliprole | Fruiting vegetables, root and tuber vegetables | Tomato potato psyllid | 31-Dec-22
PER14351 | DC-Tron Plus | Lettuce | Various bugs | 31-Mar-21
PER82551 | Diazinon | Leeks & cauliflower | Onion fly & onion seedling maggot | 31-Mar-21
PER82745 | Difenconazole | Silverbeet, spinach, chicory, endive | Fungal diseases | 31-Aug-20
PER82136 | Difenconazole | Brassica vegetables | Ring spot | 30-Sep-20
PER14035 | Diflufenican | Peas | Broadleaf weeds | 31-Mar-23
PER12506 | Dimethoate | Eggplant | Queensland fruit fly & Mediterranean fruit fly | 31-Oct-18
PER13170 | Dimethoate | Melons including watermelons (post-harvest) | Various fruit fly species | 30-Sep-20
PER14958 | Dimethomorph & Mancozeb (Acrobat Fungicide) | Brassica leafy vegetables, leafy lettuce & other leafy vegetables | Downy mildew & other diseases | 31-Dec-22
PER81702 | Dominek Duo EC Insecticide | Cucumbers | Looppers | 31-Mar-21
PER13154 | Dual Gold Herbicide | Brassica leafy vegetables | Various broadleaf and grass weeds | 31-Mar-22
PER13695 | Ecocarb Fungicide | Various vegetables | Powdery mildew | 30-Sep-20
PER14077 | Eco-Oil (Botanical Oil) | Various vegetables | Silverleaf whitefly | 30-Sep-23
PER14907 | Emamectin | Brassica leafy vegetables | Various pests | 30-Nov-19
PER881914 | Emamectin | Celery & eggplant | Heliothis, light brown apple moth & cluster caterpillar | 31-Oct-19
PER84808 | Ethofumesate (Tramat) | Onions | Broadleaf and grass weeds | 28-Feb-23
PER82904 | Fenhexamid | Snow peas & sugar snap peas | Grey mould and chocolate spot | 30-Jun-22
PER83203 | Fipronil (REGENT 200 SC) | Celery & field lettuce | Western flower thrips, onion thrips | 13-Mar-22
PER14050 | Flint 500 WG Fungicide | Cucumbers and capsicums (protected) | Powdery mildew | 30-Jun-23
PER82556 | Fluazifop | Various vegetables | Grass weeds | 31-Jan-23
PER84740 | Fluazifop-P as butyl | Various root crops | Grass weeds including couch and Guinea grass | 30-Apr-19
PER82461 | Folicon 430 SC Fungicide | Beetroot, chicory, endive, radish, silverbeet | Scelotolinia rot | 31-Aug-20
PER13305 | Glyphosate (shielded sprayer) | Carrots | Certain broadleaf and grass weeds | 30-Jun-20
<table>
<thead>
<tr>
<th>Permit no.</th>
<th>Product</th>
<th>Crop</th>
<th>Reason for use</th>
<th>Expiry date</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER11438</td>
<td>Glyphosate (shielded sprayer)</td>
<td>Specified vegetables</td>
<td>Grass and broadleaf weeds</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER14765</td>
<td>Hexthiazox [Calibre 100 EC miticide]</td>
<td>Cucurb vegetables, fruiting vegetables, potatoes, snow and sugar snap peas</td>
<td>Tomato spider mite, two-spotted mite, broad mite, tomato russet mite</td>
<td>31-Mar-18</td>
</tr>
<tr>
<td>PER81260</td>
<td>Imidacloprid</td>
<td>Beetroot</td>
<td>Aphids &amp; thrips</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER14584</td>
<td>Imidacloprid</td>
<td>Brassica leafy vegetables</td>
<td>Aphids, whitefly and thrips</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER14212</td>
<td>Imidacloprid</td>
<td>Rhubarb</td>
<td>Aphids</td>
<td>31-Dec-22</td>
</tr>
<tr>
<td>PER10938</td>
<td>Imidacloprid</td>
<td>Snow peas and sugar snap peas</td>
<td>Greenhouse whitefly</td>
<td>31-Jul-18</td>
</tr>
<tr>
<td>PER12489</td>
<td>Imidacloprid</td>
<td>Celer, cucumber, peppers &amp; cape gooseberry</td>
<td>Aphids</td>
<td>31-May-20</td>
</tr>
<tr>
<td>PER14843</td>
<td>Indoxacarb (Avatar Insecticide)</td>
<td>Celery</td>
<td>Heliothis, lightweight apple moth, lucerne leaf roller and vegetable weevil</td>
<td>30-Sep-19</td>
</tr>
<tr>
<td>PER14142</td>
<td>Ioxynil</td>
<td>Spring onions, shallots &amp; Welsh onions</td>
<td>Broad leaf and grass weeds</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER14628</td>
<td>Ioxynil</td>
<td>Garlic</td>
<td>Broad leaf and grass weeds</td>
<td>31-Jul-20</td>
</tr>
<tr>
<td>PER14051</td>
<td>Iprodione</td>
<td>Broccoli seed treatment</td>
<td>Rhizoctinia</td>
<td>31-Mar-23</td>
</tr>
<tr>
<td>PER80910</td>
<td>Iprodione</td>
<td>Brussels sprouts &amp; eggplant</td>
<td>Grey mould</td>
<td>31-Jul-20</td>
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<tr>
<td>PER83277</td>
<td>Iprodione</td>
<td>Garlic</td>
<td>Botrytis</td>
<td>31-Jul-21</td>
</tr>
<tr>
<td>PER84955</td>
<td>Iprodione</td>
<td>Green beans, carrots, spinach &amp; silverbeet</td>
<td>Sclerotinia, black rot &amp; grey mould</td>
<td>28-Feb-23</td>
</tr>
<tr>
<td>PER11949</td>
<td>Lambda-Cyhalothrin</td>
<td>Beetroot &amp; radish</td>
<td>Various insects</td>
<td>31-Mar-20</td>
</tr>
<tr>
<td>PER14471</td>
<td>Lambda-cyhalothrin</td>
<td>Shallots &amp; spring onions</td>
<td>Various pests</td>
<td>31-Mar-19</td>
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<tr>
<td>PER11991</td>
<td>Legend Fungicide [quinopxyfen]</td>
<td>Silverbeet</td>
<td>Powdery mildew</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER13496</td>
<td>Linuron</td>
<td>Celery</td>
<td>Range of weeds</td>
<td>30-Apr-22</td>
</tr>
<tr>
<td>PER13367</td>
<td>Linuron</td>
<td>Leeks &amp; celeriac</td>
<td>Grass and broadleaf weeds</td>
<td>30-Apr-21</td>
</tr>
<tr>
<td>PER12357</td>
<td>Linuron</td>
<td>Parsnips</td>
<td>Grass and broadleaf weeds</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER81713</td>
<td>Mainman 500WG Insecticide</td>
<td>Tomatoes</td>
<td>Silverleaf whitefly</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER13031</td>
<td>Maldison</td>
<td>Capsicums and cucumbers</td>
<td>Fruit fly</td>
<td>30-Nov-18</td>
</tr>
<tr>
<td>PER13653</td>
<td>Maldison</td>
<td>Leeks, spring onions and shallots</td>
<td>Onion thrips</td>
<td>28-Feb-23</td>
</tr>
<tr>
<td>PER13790</td>
<td>Mancozeb</td>
<td>Date palm, industrial hemp, culinary herbs &amp; tea tree</td>
<td>Specific fungal diseases</td>
<td>30-Jun-18</td>
</tr>
<tr>
<td>PER14046</td>
<td>Mancozeb</td>
<td>Cucumbers</td>
<td>Grey mould</td>
<td>31-Mar-23</td>
</tr>
<tr>
<td>PER80538</td>
<td>Mancozeb</td>
<td>Parsley, chicory and brassica leafy vegetables [Brassica spp.]</td>
<td>Anthracnose and septoria</td>
<td>31-Mar-25</td>
</tr>
<tr>
<td>PER14470</td>
<td>Mancozeb &amp; Dimethomorph</td>
<td>Snow peas</td>
<td>Downy mildew</td>
<td>30-Apr-22</td>
</tr>
<tr>
<td>PER14045</td>
<td>Mancozeb + Metalaxyl</td>
<td>Brassica leafy vegetables, broccoli, Brussels sprouts, cauliflower, chicory, endive, radicchio, rocket, carrots and parsnip</td>
<td>Various fungal diseases</td>
<td>31-Mar-22</td>
</tr>
<tr>
<td>PER14008</td>
<td>Mancozeb + Metalaxyl</td>
<td>Garlic</td>
<td>Downy mildew &amp; purple blotch</td>
<td>31-Mar-23</td>
</tr>
<tr>
<td>PER83765</td>
<td>Maxim XL</td>
<td>Spinach and silverbeet</td>
<td>Damping Off</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER13152</td>
<td>MCPA 250 Selective Herbicide</td>
<td>Rhubarb</td>
<td>Broadleaf weeds</td>
<td>31-Dec-21</td>
</tr>
<tr>
<td>PER14318</td>
<td>Metalaxyl-M</td>
<td>Lettuce</td>
<td>Damping off</td>
<td>30-Sep-22</td>
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<tr>
<td>PER82055</td>
<td>Methabenzthiazuron (Tribunil Herbicide)</td>
<td>Garlic</td>
<td>Annual grasses and broadleaf weeds</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER14742</td>
<td>Methabenzthiazuron (Tribunil Herbicide)</td>
<td>Leeks, spring onions and shallots</td>
<td>Various broadleaf and grass weeds</td>
<td>30-Jun-21</td>
</tr>
<tr>
<td>PER14047</td>
<td>Methidathion</td>
<td>Peppers and eggplant</td>
<td>Rutherglen bug</td>
<td>30-Jun-18</td>
</tr>
<tr>
<td>PER14890</td>
<td>Methomyl (Lannate-L)</td>
<td>Spring onions and shallots</td>
<td>Western flower thrips</td>
<td>31-Oct-19</td>
</tr>
<tr>
<td>Permit no.</td>
<td>Product</td>
<td>Crop</td>
<td>Reason for use</td>
<td>Expiry date</td>
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<tr>
<td>PER80954</td>
<td>Methoxyfenozide</td>
<td>Snow peas and sugar peas</td>
<td>Native budworm, tomato grub and cluster caterpillar</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER86531</td>
<td>Methoxyfenozide</td>
<td>Sweet corn</td>
<td>Lepidopteran pests</td>
<td>31-Oct-20</td>
</tr>
<tr>
<td>PER13626</td>
<td>Metolachlor</td>
<td>Spinach, silverbeet, spring onions, shallots, green beans and navy beans</td>
<td>Various broadleaf and grass weeds</td>
<td>30-Jun-22</td>
</tr>
<tr>
<td>PER84245</td>
<td>Movento 240 SC</td>
<td>Potato, sweet potato, tomato, capsicum, chilli, peppers, eggplant</td>
<td>Tomato potato psyllid</td>
<td>28-Feb-20</td>
</tr>
<tr>
<td>PER11127</td>
<td>Nufarm Filan Fungicide</td>
<td>Peppers celery</td>
<td>Sclerotinia rot</td>
<td>30-Jun-18</td>
</tr>
<tr>
<td>PER82460</td>
<td>Paramite selective miticide</td>
<td>Cucurbits, Asian cucurbits</td>
<td>Two-spotted mite and red spider mite</td>
<td>31-Jul-22</td>
</tr>
<tr>
<td>PER14432</td>
<td>Pendimethalin</td>
<td>Brussels sprouts</td>
<td>Weeds</td>
<td>30-Jun-19</td>
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<tr>
<td>PER14127</td>
<td>Pendimethalin</td>
<td>Brassica leafy vegetables &amp; rocket</td>
<td>Weeds</td>
<td>31-Aug-18</td>
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<tr>
<td>PER14886</td>
<td>Pendimethalin</td>
<td>Garlic</td>
<td>Grass &amp; broadleaf weeds</td>
<td>30-Sep-19</td>
</tr>
<tr>
<td>PER14858</td>
<td>Pendimethalin</td>
<td>Parsnip</td>
<td>Grasses and broadleaf weeds</td>
<td>31-Mar-20</td>
</tr>
<tr>
<td>PER14048</td>
<td>Pendimethalin</td>
<td>Spring onions, shallots &amp; radish</td>
<td>Various broadleaf and grass weeds</td>
<td>31-Mar-23</td>
</tr>
<tr>
<td>PER14049</td>
<td>Permethrin (Ambush )</td>
<td>Celery</td>
<td>Helicoverpa and looper</td>
<td>31-Mar-23</td>
</tr>
<tr>
<td>PER81241</td>
<td>Phenmedipham (Betanal)</td>
<td>Lettuce, chicory, endive, radicchio &amp; spinach</td>
<td>Broadleaf weeds</td>
<td>31-May-20</td>
</tr>
<tr>
<td>PER8930</td>
<td>Phorate</td>
<td>Eggplant, peppers, shallots and spring onions</td>
<td>Aphids, jassids, mites, thrips and onion maggot</td>
<td>31-Jul-19</td>
</tr>
<tr>
<td>PER13902</td>
<td>Phorate</td>
<td>Sweet potatoes</td>
<td>Aphids, Thrips, Jassids and Organophosphate susceptible two-spotted mite and wireworm</td>
<td>31-Mar-23</td>
</tr>
<tr>
<td>PER14493</td>
<td>Phos acid</td>
<td>Rhubarb</td>
<td>Downy mildew</td>
<td>31-Jan-19</td>
</tr>
<tr>
<td>PER13698</td>
<td>Phosphorous</td>
<td>Lettuce (leaf+hydro), parsley, coriander, fennel and bulb (Allium) vegetables</td>
<td>Downy mildew</td>
<td>30-Sep-22</td>
</tr>
<tr>
<td>PER81006</td>
<td>Phosphorous (phosphonic) acid</td>
<td>Native shrub, heath, woodland and forest vegetation</td>
<td>Phytophthora dieback</td>
<td>31-Oct-18</td>
</tr>
<tr>
<td>PER11951</td>
<td>Phosphorous acid</td>
<td>Brussels sprouts, broccoli, cauliflower, spinach, silverbeet, endive, radicchio, chicory &amp; processing peas</td>
<td>Downy mildew</td>
<td>31-Mar-20</td>
</tr>
<tr>
<td>PER81408</td>
<td>Phosphorous acid</td>
<td>Capsicum</td>
<td>Phytophthora soil fungus</td>
<td>30-Sep-20</td>
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<tr>
<td>PER13351</td>
<td>Pirimicarb</td>
<td>Eggplant</td>
<td>Aphids</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER85307</td>
<td>Pirimicarb</td>
<td>Faba bean, broad bean and vetches</td>
<td>Bean aphid</td>
<td>31-Oct-19</td>
</tr>
<tr>
<td>PER14864</td>
<td>Pirimicarb</td>
<td>Sweet potato, brassica leafy vegetables, chicory radicchio &amp; rocket</td>
<td>Aphids</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER82359</td>
<td>Pirimicarb (pirimicarb)</td>
<td>Peppers — Chilli</td>
<td>Aphids</td>
<td>31-Mar-21</td>
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<tr>
<td>PER10875</td>
<td>Pirimor (pirimicarb) WG Aphicide (pirimicarb)</td>
<td>Celeriac</td>
<td>Aphids</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER14071</td>
<td>Pirimicarb</td>
<td>Sweet corn, spring onion, celery</td>
<td>Aphids</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER13724</td>
<td>Previcur</td>
<td>Tomatoes (protected)</td>
<td>Root rot</td>
<td>31-May-21</td>
</tr>
<tr>
<td>PER13720</td>
<td>Pristine</td>
<td>Tomatoes (protected)</td>
<td>Powdery mildew</td>
<td>31-May-21</td>
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<tr>
<td>PER13114</td>
<td>Prometryn</td>
<td>Celeriac</td>
<td>Grass weeds listed on label</td>
<td>31-Mar-22</td>
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<tr>
<td>PER12048</td>
<td>Prometryn</td>
<td>Parsnip &amp; carrot</td>
<td>Weeds</td>
<td>30-Sep-20</td>
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<tr>
<td>PER14385</td>
<td>Prometryn</td>
<td>Specified root &amp; tuber vegetables</td>
<td>Grass and broadleaf weeds</td>
<td>31-Mar-19</td>
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<tr>
<td>PER11441</td>
<td>Propachlor</td>
<td>Radish, swede, turnip</td>
<td>Grass and broadleaf weeds</td>
<td>31-Dec-19</td>
</tr>
<tr>
<td>PER12008</td>
<td>Propachlor</td>
<td>Spinach, silverbeet, spring onions, shallots, rocket &amp; brassica leafy veg</td>
<td>Annual grasses and broadleaf weeds</td>
<td>30-Nov-25</td>
</tr>
<tr>
<td>Permit no.</td>
<td>Product</td>
<td>Crop</td>
<td>Reason for use</td>
<td>Expiry date</td>
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<tr>
<td>PER13444</td>
<td>Propiconazole</td>
<td>Radishes</td>
<td>Cercospora</td>
<td>31-May-22</td>
</tr>
<tr>
<td>PER13116</td>
<td>Propiconazole</td>
<td>Sweet corn</td>
<td>Northern corn leaf blight</td>
<td>31-Mar-21</td>
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<tr>
<td>PER14479</td>
<td>Propiconazole</td>
<td>Various vegetable crops</td>
<td>Various pests</td>
<td>30-Nov-19</td>
</tr>
<tr>
<td>PER10677</td>
<td>Propyzamide</td>
<td>Chicory &amp; endive</td>
<td>Grass and broadleaf weeds</td>
<td>30-Apr-23</td>
</tr>
<tr>
<td>PER14892</td>
<td>Pymetrozine (Chess Insecticide)</td>
<td>Snow peas and sugar snap peas</td>
<td>Aphid pests</td>
<td>31-May-22</td>
</tr>
<tr>
<td>PER80891</td>
<td>Pyranica Miticide</td>
<td>Cucumbers</td>
<td>Two-spotted mite &amp; European red mite</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER84442</td>
<td>Pyrethrins</td>
<td>Vegetables</td>
<td>Tomato potato psyllid</td>
<td>31-May-19</td>
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<tr>
<td>PER14505</td>
<td>Pyrimethanil</td>
<td>Snow peas and sugar snap peas</td>
<td>Grey mould (botrytis)</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER80210</td>
<td>Pyrimethanil</td>
<td>Protected tomatoes</td>
<td>Botrytis</td>
<td>30-Jun-20</td>
</tr>
<tr>
<td>PER14701</td>
<td>Pyriproxyfen</td>
<td>Beans</td>
<td>Silverleaf whitefly</td>
<td>30-Jun-20</td>
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<tr>
<td>PER85003</td>
<td>Ranman 400 SC Fungicide</td>
<td>Spinach and silverbeet</td>
<td>Pythium damping off</td>
<td>28-Feb-23</td>
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<tr>
<td>PER13673</td>
<td>Ridomil Gold MZ WG</td>
<td>Celery, silverbeet &amp; spinach</td>
<td>Late blight, septoria leaf blight &amp; downy mildew</td>
<td>30-Sep-21</td>
</tr>
<tr>
<td>PER82456</td>
<td>Ridomil Gold MZ WG</td>
<td>Field grown capsicum, chillies, paprika</td>
<td>Downy mildew</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER14431</td>
<td>Rizolex Liquid</td>
<td>Lettuce</td>
<td>Bottom rot</td>
<td>30-Jun-22</td>
</tr>
<tr>
<td>PER14353</td>
<td>Rovral Aquaflo Fungicide (prodione)</td>
<td>Peppers &amp; celeriac</td>
<td>Sclerotinia rot</td>
<td>31-Mar-22</td>
</tr>
<tr>
<td>PER7909</td>
<td>Scala 400 SC Fungicide</td>
<td>Cucumber</td>
<td>Botrytis</td>
<td>30-Sep-22</td>
</tr>
<tr>
<td>PER12565</td>
<td>Scala Fungicide</td>
<td>Capsicum and lettuce (protected crops only)</td>
<td>Botrytis rots</td>
<td>30-Sep-22</td>
</tr>
<tr>
<td>PER13323</td>
<td>Score Foliar Fungicide (difenoconazole)</td>
<td>Celeriac</td>
<td>Cercospora leaf spot &amp; septoria leaf blight</td>
<td>31-Oct-20</td>
</tr>
<tr>
<td>PER82811</td>
<td>S-Metolachlor</td>
<td>Beetroot</td>
<td>Blackberry nightshade</td>
<td>1-Feb-20</td>
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<tr>
<td>PER12384</td>
<td>S-metolachlor (Dual Gold Herbicide)</td>
<td>Rhubarb</td>
<td>Various weeds</td>
<td>31-Aug-20</td>
</tr>
<tr>
<td>PER84757</td>
<td>spinetoram</td>
<td>Fruiting vegetables other than cucurbits &amp; root and tuber vegetables</td>
<td>Tomato potato psyllid</td>
<td>30-Nov-20</td>
</tr>
<tr>
<td>PER11764</td>
<td>Spiroxamine</td>
<td>Snow peas &amp; sugar snap peas</td>
<td>Powdery mildew</td>
<td>30-Jun-18</td>
</tr>
<tr>
<td>PER14186</td>
<td>Success Neo (spinetoram)</td>
<td>Eggplant</td>
<td>Melon thrips</td>
<td>30-Sep-18</td>
</tr>
<tr>
<td>PER13322</td>
<td>Success Neo (spinetoram)</td>
<td>Specified leafy vegetables</td>
<td>Tomato moth</td>
<td>31-May-22</td>
</tr>
<tr>
<td>PER13088</td>
<td>Success Neo Insecticide (spinetoram)</td>
<td>Specified root vegetables, specified alliums &amp; celeriac</td>
<td>Various insect pests</td>
<td>31-Mar-22</td>
</tr>
<tr>
<td>PER84743</td>
<td>Sulfloxaflor</td>
<td>Fruiting vegetables</td>
<td>Tomato potato psyllid</td>
<td>31-Oct-22</td>
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<tr>
<td>PER11440</td>
<td>Sumiclex 500 (procymidone)</td>
<td>Peppers</td>
<td>Sclerotinia rot</td>
<td>31-Jan-20</td>
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<tr>
<td>PER80100</td>
<td>Sumitomo Samurai Systematic Insecticide</td>
<td>Fruiting vegetables, excluding cucurbits</td>
<td>Mediterranean fruit fly &amp; Queensland fruit fly</td>
<td>30-Sep-18</td>
</tr>
<tr>
<td>PER80101</td>
<td>Sumitomo Samurai Systematic Insecticide</td>
<td>Fruiting vegetables, cucurbits</td>
<td>Cucumber fruit fly</td>
<td>30-Sep-18</td>
</tr>
<tr>
<td>PER13721</td>
<td>Switch</td>
<td>Tomatoes (protected)</td>
<td>Grey mould (Botrytis)</td>
<td>31-May-21</td>
</tr>
<tr>
<td>PER81136</td>
<td>Switch Fungicide</td>
<td>Lettuce</td>
<td>Anthracnose</td>
<td>30-Sep-18</td>
</tr>
<tr>
<td>PER84878</td>
<td>Switch Fungicide</td>
<td>Protected and field grown capsicum</td>
<td>Botrytis &amp; sclerotinia</td>
<td>30-Nov-22</td>
</tr>
<tr>
<td>PER82374</td>
<td>Talstar</td>
<td>Various crops</td>
<td>Brown marmorated stink bug &amp; yellow-spotted stink bugs</td>
<td>28-Feb-23</td>
</tr>
<tr>
<td>PER82063</td>
<td>TEBUCONAZOLE</td>
<td>Garlic</td>
<td>Orange rust</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER12447</td>
<td>Teldor 500 SC Fungicide</td>
<td>Peppers (capsicum &amp; chilli), cucumber and lettuce</td>
<td>Botrytis rot</td>
<td>31-May-21</td>
</tr>
<tr>
<td>Permit no.</td>
<td>Product</td>
<td>Crop</td>
<td>Reason for use</td>
<td>Expiry date</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------</td>
<td>-----------------------------------------</td>
<td>---------------------------------------</td>
<td>-------------</td>
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<tr>
<td>PER12047</td>
<td>Thiabendazole</td>
<td>Sweet potato</td>
<td>Field rots caused by scurf &amp; root rot</td>
<td>30-Sep-21</td>
</tr>
<tr>
<td>PER80216</td>
<td>Torque Insecticide [fenbutatin oxide]</td>
<td>Tomatoes (protected)</td>
<td>Two-spotted mite</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER14703</td>
<td>Tramatan 500 SC Selective Herbicide [ethofumesate]</td>
<td>Spinach ([Spinacia oleracea] only) &amp; silverbeet</td>
<td>Various weeds</td>
<td>31-Jul-19</td>
</tr>
<tr>
<td>PER85011</td>
<td>Transform Insecticide</td>
<td>Nursery stock (non-food)</td>
<td>Aphid, mealybugs, mirids, scale, greenhouse whitefly</td>
<td>28-Feb-23</td>
</tr>
<tr>
<td>PER14906</td>
<td>Triadimenol</td>
<td>Leek, chives, shallot, spring and onions</td>
<td>White rot [sclerotium]</td>
<td>31-Oct-19</td>
</tr>
<tr>
<td>PER11935</td>
<td>Triadimenol</td>
<td>Parsnips, radish, swede &amp; turnip</td>
<td>Powdery mildew</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER80717</td>
<td>Trichlorfon</td>
<td>Eggplant, Thai eggplant, pepino &amp; cape gooseberry</td>
<td>Fruit fly</td>
<td>31-Oct-20</td>
</tr>
<tr>
<td>PER14891</td>
<td>Trifloxystrobin</td>
<td>Beetroots</td>
<td>Alternaria leaf spot</td>
<td>30-Sep-19</td>
</tr>
<tr>
<td>PER14494</td>
<td>Trifloxystrobin</td>
<td>Celery, silverbeet, spinach, chicory and endive</td>
<td>DM, cercospora &amp; septoria</td>
<td>31-Aug-22</td>
</tr>
<tr>
<td>PER13726</td>
<td>Trifloxystrobin</td>
<td>Tomatoes (protected)</td>
<td>Powdery mildew</td>
<td>31-May-21</td>
</tr>
<tr>
<td>PER12823</td>
<td>Trifluralin</td>
<td>Chillies, paprika and eggplant</td>
<td>Various broad leaf and grass weeds</td>
<td>30-Jun-21</td>
</tr>
<tr>
<td>PER13696</td>
<td>Trifluralin</td>
<td>Parsnips</td>
<td>Wintergrass</td>
<td>31-Mar-23</td>
</tr>
<tr>
<td>PER14337</td>
<td>Trifluralin</td>
<td>Swedes and turnips</td>
<td>Weeds</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER86555</td>
<td>Vapormate (Ethyl Formate)</td>
<td>Fresh fruit &amp; vegetables</td>
<td>Tomato potato psyllid</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER84426</td>
<td>Various</td>
<td>Green beans, carrots, spinach and silverbeet</td>
<td>Sclerotinia, botrytis rot and black rot</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER84249</td>
<td>Various</td>
<td>Potato</td>
<td>Tomato potato psyllid</td>
<td>31-Jul-20</td>
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<tr>
<td>PER84063</td>
<td>Various</td>
<td>Vegetables</td>
<td>Tomato potato psyllid</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER81721</td>
<td>Various Actives</td>
<td>Leeks</td>
<td>Specified grass and broadleaf weeds</td>
<td>31-Oct-21</td>
</tr>
<tr>
<td>PER13778</td>
<td>Various herbicides, insecticides &amp; fungicides</td>
<td>Carrot, onion &amp; brassica seed crops</td>
<td>31-Mar-18</td>
<td></td>
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<tr>
<td>PER14694</td>
<td>VectoBac WG Biological Larvicide</td>
<td>Protected cropping — capsicum, cucumber, eggplant, herbs &amp; lettuce</td>
<td>30-Jun-19</td>
<td></td>
</tr>
<tr>
<td>PER84734</td>
<td>Verdict (haloxyfop)</td>
<td>Onions</td>
<td>Storksbill</td>
<td>31-Dec-21</td>
</tr>
<tr>
<td>PER14841</td>
<td>Walabi Fungicide</td>
<td>Chicory, endive, radicchio, silverbeet and spinach</td>
<td>Botrytis and alternaria</td>
<td>30-Sep-19</td>
</tr>
<tr>
<td>PER14839</td>
<td>Zineb</td>
<td>Eggplant, spinach &amp; silverbeet</td>
<td>Anthracnose ([Colletotrichum spp.])</td>
<td>30-Sep-19</td>
</tr>
</tbody>
</table>
Upcoming important events!

**June 2018**

**Hort Connections**
**WHEN** 18–20 June 2018  
**WHERE** Brisbane Convention and Exhibition Centre  
AUSVEG and PMA Australia-New Zealand Limited (PMA A-NZ) have again united to deliver the joint industry conference and Trade Show, Hort Connections 2018. Catering to buyers and sellers from every segment of the fresh produce and floral supply chain including seed companies, growers, packers, processors, shippers, importers and exporters, wholesalers and retailers, foodservice, associated suppliers to the industry, and many more.

✉️ info@hortconnections.com.au  
t: (03) 9882 0277

**Aug–Sep 2018**

**Gascoyne Food Festival**
**WHEN** 5 August – 8 September 2018  
**WHERE** Gascoyne Region

Enjoy the best of Gascoyne produce prepared by world class chefs in some of the most stunning locations in Australia.

Event program includes something for everyone to enjoy. More details to come, if you are interested, head to the website for information.


**October 2018**

**Export Readiness Workshop**
**WHEN** 25 October 2018  
**WHERE** Crown Perth

Further information will be available closer to the date.

✉️ Contact Claire McClelland  
claire.mcclelland@vegetableswa.com.au  
t: (08) 9486 7515

**Grower Tour & Industry Summit**
**WHEN** 25–26 October 2018  
**WHERE** Crown Perth

Further information will be available closer to the date.

✉️ Contact Rebecca Blackman  
rebecca.blackman@vegetableswa.com.au  
t: (08) 9486 7515

**July 2019**

**Protecting Cropping Australia’s 15th biennial conference, trade show & farm tours**

**WHEN** 7–10 July 2019  
**WHERE** Star Casino, Gold Coast Queensland  
Connecting growers to valuable information and relevant technology. If you are interested in the Naming Rights for the event, please contact;

✉️ Saskia  
PAC Company Secretary  
admin@protectedcroppingaustralia.com  
t: 0414 333 996

Jonathan Eccles 2019 Conference Chair  
jonathan@eccles.com.au  
t: 0407 242 757

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**WA Grower advertiser contacts**

<table>
<thead>
<tr>
<th>Name</th>
<th>Website/Email</th>
<th>Address</th>
<th>Contact name</th>
<th>Contact no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agrimaster (p41)</td>
<td><a href="http://www.agrimaster.com.au">www.agrimaster.com.au</a></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bayer CropScience Pty Ltd (p45)</td>
<td>nunhems.com.au</td>
<td></td>
<td>Andrew Ertler</td>
<td>1800 804 479</td>
</tr>
<tr>
<td>Bentonite WA (p71)</td>
<td><a href="http://www.bentoniteawa.com.au">www.bentoniteawa.com.au</a></td>
<td></td>
<td></td>
<td>0418 140 929</td>
</tr>
<tr>
<td>Department of Primary Industries (p47)</td>
<td><a href="http://www.agric.wa.gov.au/horticulture">www.agric.wa.gov.au/horticulture</a></td>
<td>3 Baron-Hay Court, South Perth WA 6151</td>
<td>Kirrily Palmer</td>
<td></td>
</tr>
<tr>
<td>Dobmac Ag Machinery (p08C)</td>
<td><a href="http://www.dobmac.com.au">www.dobmac.com.au</a></td>
<td>34-38 Industrial Drive, Ulverstone, TAS 7315</td>
<td>Mark Dobson</td>
<td>(03) 6425 5533</td>
</tr>
<tr>
<td>edp australia pty ltd (p61)</td>
<td><a href="http://www.edp.com.au">www.edp.com.au</a></td>
<td>31-37 OBrien St, Moorooduc, VIC 3269</td>
<td>Mick Schirmer</td>
<td>0437 252 122</td>
</tr>
<tr>
<td>Horticulture Innovation Australia (p1BC)</td>
<td><a href="http://www.horticulture.com.au">www.horticulture.com.au</a></td>
<td>Level 8, 1 Chifley Square, Sydney NSW 2000</td>
<td></td>
<td>(02) 8295 2300</td>
</tr>
<tr>
<td>Landmark Harcourts (p75)</td>
<td>landmarkwa.harcourts.com.au/LEP4743</td>
<td></td>
<td>Adam Shields</td>
<td>0429 104 760</td>
</tr>
<tr>
<td>Madec (p30)</td>
<td><a href="http://www.harvesttrail.gov.au">www.harvesttrail.gov.au</a></td>
<td></td>
<td></td>
<td>1800 062 332</td>
</tr>
<tr>
<td>Micobros (p43)</td>
<td><a href="http://www.micobros.com.au">www.micobros.com.au</a></td>
<td>2048 Wanneroo Road, Nerrabup</td>
<td>Johny Mirco</td>
<td>(08) 9407 4522</td>
</tr>
<tr>
<td>Paliz Agriculture (p59)</td>
<td><a href="http://www.paliz.com.au">www.paliz.com.au</a></td>
<td>21/110 Inspiration Drive, Wangara WA 6065</td>
<td>Hossein Darvish</td>
<td>(08) 9303 9438</td>
</tr>
<tr>
<td>R &amp; E Engineering (p25)</td>
<td><a href="http://www.reeng.com.au">www.reeng.com.au</a></td>
<td></td>
<td>(08) 6261 7171</td>
<td></td>
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<td>Rivulis (p511)</td>
<td><a href="http://www.Rivulis.com.au">www.Rivulis.com.au</a></td>
<td></td>
<td></td>
<td>1800 548 009</td>
</tr>
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<td>Rural Bank (p27)</td>
<td><a href="http://www.ruralbank.com.au">www.ruralbank.com.au</a></td>
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<tr>
<td>Signet (pIFC)</td>
<td>signet.net.au</td>
<td></td>
<td>Fiona</td>
<td>0411 427 220</td>
</tr>
<tr>
<td>Smith&amp; Georg (p53)</td>
<td><a href="http://www.smithandgeorg.com.au">www.smithandgeorg.com.au</a></td>
<td></td>
<td></td>
<td>1800 991 985</td>
</tr>
<tr>
<td>Veginnovations (p47)</td>
<td><a href="https://vegproveginnovationswa.eventbrite.com.au">https://vegproveginnovationswa.eventbrite.com.au</a></td>
<td></td>
<td></td>
<td>(08) 9486 7515</td>
</tr>
<tr>
<td>WA Crates (p65)</td>
<td><a href="mailto:service@wacrates.com.au">service@wacrates.com.au</a></td>
<td>Crate Yard, Market City</td>
<td></td>
<td>(08) 9456 4092</td>
</tr>
</tbody>
</table>

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120 WA Grower WINTER 2018
Meet a vegetable industry Relationship Manager and see how he can support you.

Sam is keen to chat with you. He is your link to the latest R&D developments and how these can help your business grow. It’s easy to request a phone call – just go to the ‘Contact Me’ form at horticulture.com.au/contact-me. Alternatively, call 02 8295 2300 or email membership@horticulture.com.au and let us know you would like Sam to call you.
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