This issue of the WA Grower is brought to you by vegetablesWA together with:

- APC — Vegetable Producers Committee
- Potato Growers Association
- Pomewest
- WA Citrus
Following on from the successful Hort Connections 2017, this year’s event is set to become the most influential space for networking, education and business for the entire fresh produce industry.
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702-704 Murray Street, West Perth WA 6005

Published by vegetablesWA

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your industry associations
This year, West Australian Vegetable Growers Association Inc celebrates our 70th anniversary of assisting West Australian vegetable growers. As I reflect upon this milestone it occurs to me that our organisation today is very different compared to 1948 as the broader industry is different. In 1948 our industry comprised of very large numbers of small growers and the post-war migration boom which brought so many of our current grower families to West Australia had only just begun. Similarly, our Association performed its duties in 1948 via a dedicated Committee of Management; whereas today we also have staff performing the range of advocacy, extension, research, market development, quality assurance, and business improvement services for growers.

I’m pleased to say that in this anniversary year things continue grow and change at vegetablesWA with a number of new initiatives to help growers.

First amongst these is a leafy line variety trial and field day, to be held at Loose Leaf Lettuce Company on 3rd May. We are pleased to have the support of seed companies and trust growers will get a lot out of the day.

The field day will also feature a discussion with Dr Doris Blaesing about soil health and Dr Len Tesoriero about the soil borne disease trials in baby leaf. You can find more information on the field day on page 12 of this edition of the WA Grower.

vegetablesWA have commenced coordinating a national export facilitation program funded by Hort Innovation. The program is being led by Claire McClelland and to help deliver the West Australian component of the program we are extremely pleased to welcome Mr Manus Stockdale to the vegetablesWA team. Manus comes to us with experience in value chain analysis and development so will be a real asset to the industry.

The other significant development at vegetablesWA has been our recent office relocation to 702-704 Murray Street in West Perth, just around the corner from our old place on Outram Street. The necessary larger space and professional facilities have already assisted in our work. If you’re in town sometime please feel free to drop in.
Manus Stockdale has joined vegetablesWA to fulfil the role of Export Development Project Lead.

Manus will be working on a Hort Innovation funded project (VG16085: Export Facilitators) with a focus on building export skills and supply chains within the vegetable industry. This three year project will also see the development of export plans for participating vegetable growers and assist in supporting the Vegetable Industry Export Market Development Strategy. More information about this project can be found in this edition of the WA Grower on page 100.

Manus joins vegetablesWA after previously working for the WA Department of Primary Industries and Regional Development. His previous roles within DPIRD have been focused on beef exports and supply chain development. Manus has previously worked with producers, exporters and importers to assist them to capitalise on beef export market opportunities.

Manus’ previous experience has provided him a wealth of relevant skills that can be transferred to the vegetable industry.

His experience in export development, from the perspective of a different agricultural sector, will be invaluable when working within the vegetable industry.

We look forward to having Manus on the team and continuing to work with growers who are interested in further developing export opportunities.

MORE INFORMATION
Manus can be contacted on 0448 897 652 or manus.stockdale@vegetableswa.com.au

As growers will know the Hort Code of Conduct will commence on the 1st April 2018.

Many growers are being approached by wholesalers to sign a new Horticulture Produce Agreement due to the new Horticulture Code of Conduct. Growers should be very careful to understand the terms being proposed and seek independent legal advice before signing. vegetablesWA has provided the contact details of two law firms on page 98 with previous experience with the Code if required.

We have plans for 2018 which we look forward to announcing in future WA Grower editions. Growers needing assistance can always call on (08) 9486 7515.

MORE INFORMATION
John Shannon, phone 0488 111 526 or email john.shannon@vegetableswa.com.au

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WORKING FOR WA GROWERS SINCE 1948
Mid-season for the Perth growers and south of Perth, prices have been average across the board so far. So I am pleased to see growers making changes as mentioned above to suit their business and stay viable in this industry.

It’s West Australian Vegetable Growers Association Inc 70th birthday coming up and I would like to take this opportunity to thank all past Presidents, CEOs, Committee of Management and people that have been involved with vegetablesWA over this period. We have come a long way in 70 years and continue building a skilled team to work together on any issues that our fee-for-service paying growers will face. People come to mind that have had a great influence in vegetablesWA are past president and still a committee Member Maureen Dobra, and past CEO Jim Turley.

I have had the privilege to work with both of these people, who have installed stability and passion within vegetablesWA and created a great platform for vegetablesWA to grow.

A reminder the new horticulture code of conduct officially kicks in on the 1st of April 2018 so as growers this is your opportunity to put forward your requirements to your Market Agent and also be very aware and understand what you are signing up for. If you have any issues in regards to the new code of conduct contact vegetablesWA to see how we can assist you.

Hort Connections is coming up in June which will be held in Brisbane this year. I urge all growers to attend as you will gain valuable information at this conference and get to catch up with growers all around Australia, hope to see you there.

MORE INFORMATION ▶
Contact Dan Kuzmicich on 0408 910 761 or damir.kuzmicich@bigpond.com
The Potato Growers Association (PGA) has recently secured grant assistance funding which has seen growers apply to explore opportunities to expand into new markets. This is a fantastic result and the committee of management should be proud of the work they have done to achieve this result.

On the domestic market front I took a bit of time to ring and speak to three local merchants. I must thank them for being upfront and honest with their opinions as to where things are at. It’s plainly obvious that things are fairly tight and prices are reflecting at the farm gate. Waste percentages are a fair reflection as to where sales/prices are at and all merchants waste figures were 15–20%.

The quality out of Manjimup and Pemberton has been good to fair was the general consensus from Merchants is that most varieties are in good supply. Creams were proving to be the variety that was outperforming others for one merchant but is finding colours, especially reds tough.

On the export front the three merchants which spoke to me were supplying various markets overseas. The conclusion is that it is very competitive but all were working hard to increase their volumes of sales, growers in the current climate will only benefit from export. It is an additional way to reduce domestic quantities that are currently flooding the marketplace.

The PGA continues to investigate overseas markets with the hope that it can lead to some positive results.

Transition to management for Tomato potato psyllid (TPP) is still progressing and we can only watch this space as protocols are discussed and hopefully implemented in due course ... a long and arduous task it would seem. The time line looks to be heading towards the middle of the year.

Thanks again to our local merchants for allowing time to speak and I hope it is of some value to growers to see where things are at.

The PGA Committee of Management would like to send their condolences to Tony Ryan and families on the sad loss of Jan. Our thoughts are with you all during this sad time.

MORE INFORMATION

To contact Vaughan call 0417 092 505 or email marybrook438@gmail.com
Tomato potato psyllid (TPP) is still the biggest issue facing the potato industry in Western Australia. Growers are still suffering the effects of loss of market access to the East coast, especially seed growers. As such, we are anxiously awaiting the outcomes from the Transition to Management (T2M) plan. At this stage the surveillance component of the T2M has collected nearly 27,000 psyllids and tested approximately 6500 of those for Candidatus Liberibacter solanacearum (CLso) as per the plans requirements. So far there have been no positive tests. These tests have been verified by laboratories in Victoria. The Autumn surveillance will be conducted throughout March with testing completed in early April. If no CLso positives are returned, then we should have a solid position from which to lobby for market access to the Eastern States.

The management component is well under way with Gavin Foord attending our December Committee of Management meeting and informing us of headway he has made with the Enterprise Management Plans (EMP). A draft will be made available for industry comment before finalisation of the EMP in June.

The R&D component consists of greenhouse and laboratory trials of various chemicals and biological controls. This is a critical area for future management of this pest and we look forward to the results of this work.

Market access for potatoes is predominantly dependant on two things. Either CLso is NOT discovered in WA, or TPP IS discovered on the East Coast. In the meantime, we need to prepare ourselves for either outcome so that no time is lost once the situation changes.

Recently the PGA notified its members that Hort Innovation have recommended that the Biosecurity Levy be changed from $0.00/t to $0.10/t. This is to raise funds to pay for the response to the TPP incursion. Growers are reminded that the Federal Government will be paying for 80% and the remaining 20% will be split between vegetable and potato levy payers. Levy payers have the right to object to this proposed levy. The objection period will close 14th March.

The Egypt seed potato project continues after a successful visit to Cairo. A greater understanding of local conditions, issues, and opportunities has been developed which is invaluable to developing a long term, sustainable market for WA growers.

Good luck to everyone that has submitted a project proposal to the Industry Recovery Fund. We look forward to the positive impacts that the successful projects will have for our industry.

MORE INFORMATION
Contact Simon Moltoni on 0447 141 752 or email simon.moltoni@vegetableswa.com.au

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Social and digital promotion moves to the fore as Todatoes campaign continues...
Following on from the extensive launch of the Todatoes campaign across TV, social, digital and outdoor advertising channels, the promotion has now moved onto the next phase with a greater focus on digital marketing. Breadbox Marketing and PR are continuing to engage consumers through an offering of contemporary potato recipes, health information and tips for cooking.

The WA Potatoes Instagram and Facebook pages have a combined following of around 20,800 people with over 60% located in Perth. Social media reaches an estimated 18,500 people each week and is engaged with on average 7000 times per week.

Moving forward, a new project to create regular, fresh and informative blog posts is underway. These posts will be short and sharp and highly shareable to drive traffic to social media and the website for recipe's and more WA Potato content.

In parallel the Seed for Schools program is moving ahead with close to 350 registered WA schools ready to receive their seed in the next couple of months.

Summer recipes

Potatoes are not always the first choice for consumers in summer, with lighter meals and BBQ’s the popular option. As such, WA Potatoes has worked with Breadbox to develop some new recipe content to demonstrate that potatoes can be part of light and fresh meals (and are very easy to include on the BBQ menu).

To maximise the use of the content the recipes were styled to be used over the Christmas period and also through the summer. All the content can be found on the website:

1. Char grilled potato, cherry tomato & asparagus salad
2. Salad board of lemon potatoes, prawns & smoked salmon
3. Moroccan spiced BBQ potatoes

The most popular recipe has so far been the Moroccan Spiced Potatoes which has been viewed 28,642 times on social media resulting in 671 visits directly to the recipe on the website.

Seed for Schools

The popular Seed for Schools Program was relaunched last year to target parents of school children and encourage them to get their schools to join. The state-wide initiative, run by WA Potatoes, encourages kids to get their hands dirty and get back into the garden — highlighting the importance of healthy food, and supporting local farms.

The program provides schools with seed potatoes, educational resources for teachers to use in classrooms, as well as a monthly e-newsletter with gardening tips and stories of progress from participating schools.

Registrations closed on the 16th February and work is now continuing to complete the information packs and coordinate the delivery of the seed.

MORE INFORMATION

For more information about any of the WA Potatoes activities head to www.todatoes.com.au or contact the office on (08) 9481 0834.
VegetablesWA Leafy Variety Trial

Thursday May 3, 2018 from 10am-3pm

Where: Loose Leaf Lettuce Company
198 Ashby Road, Gingin

Host: Maureen Dobra, Kevan Dobra

What: Green Leaf Varieties

Head lettuce
- Iceberg
- Multileaf
- Cos
- Mini Cos
- Baby Gem Cos
- Coral

Baby leaf
- Spinach
- Rocket
- Lettuce

Participating Seed Companies: Bayer, South Pacific Seeds, Seminis, Rijk Zwaan

Field day timeline

10am-3pm
Guests tour seed plots and speak to seed reps

1pm-2pm
Lunch and drinks provided

2pm-3pm
Presentation & discussion with Dr Doris Blaesing about soil health and Dr Len Tesoriero about the soil borne disease trials in baby leaf crops

RSVP: Christina Ford
702-704 Murray Street, West Perth WA 6005
t: (08) 9486 7515
e: christina.ford@vegetableswa.com.au

vegetableswa.com.au
your production
Industry plans to help growers manage Tomato potato psyllid through the supply chain

It’s critical for Tomato potato psyllid (TPP)-affected industries to develop and implement management plans to effectively control TPP. The plans also demonstrate industry commitment to minimising the spread and impact of the TPP/Candidatus Liberibacter solanacearum (CLso) complex throughout the supply chain.
The Department of Primary Industries and Regional Development in partnership with peak industry bodies, are working together to develop industry-specific Enterprise management plans to help growers manage the TPP complex according to best practice.

What is an Enterprise management plan?
An Enterprise management plan brings together the best-available knowledge into one easily-accessible resource for growers, and includes five key components:

1. UNDERSTANDING PEST AND PATHOGEN BIOLOGY AND THEIR IDENTIFICATION
2. IDENTIFYING RISK PATHWAYS
3. APPLYING CONTROL AND MANAGEMENT OPTIONS
4. BIOSECURITY AWARENESS AND IMPLEMENTATION
5. POST-FARM GATE MANAGEMENT

The plans utilise existing good practice, biosecurity, and quality assurance and certification documents to build on current systems and avoid duplication.

Why are these plans needed?
Enterprise management plans are essential in supporting ongoing efforts to renew and maintain market access, as well as underpin certification and assurance schemes. The plans will also help growers and industry manage TPP both pre and post farm-gate.

Much of the information is available from local, interstate or international sources so its bringing this information together in a user-friendly format relevant to each industry.

Any gaps in knowledge are being flagged for further research.

What industries will have these plans?
- Vegetables
- Potatoes
- Nursery and garden
- Processing tomatoes

AUSVEG, vegetablesWA, Potato Growers Association of WA, Australian Processing Tomatoes Research Council and the Nursery and Garden Industry Association are working with the department to develop industry-specific plans for their members.

When will the plans be available?
Growers will able to access their industry plan online and at industry information sessions during May 2018.

MORE INFORMATION
For more information contact Gavin Foord, Foord Systems on 0435 018 189 or email gfoord@westnet.com.au
Calibration of each of the spray units is a task that needs to be completed at least annually to meet the requirements of the GFSI (Global Food Safety Initiative) approved food safety/quality assurance programs including Freshcare Food Safety & Quality Edition 4 (FSQ4).

Operating a spray unit that is incorrectly calibrated could have severe food safety and economic consequences.

Calibration is defined as the comparison of measurement values delivered by a device under test with those of a calibration standard of known accuracy. Application of this definition in terms of spray units (herbicide units and/or fungicide units) requires measurement of pressure, output (volume) and speed to ensure that the desired standards are being achieved in practice.

Advances in technology have seen the introduction of wheel magnets and flow meters that control output accurately.

Despite these advances in technology, it is still critical to measure each variable to ensure that it is meeting the standard with appropriate accuracy.

This means that growers should still measure the flow rate at a known pressure of each nozzle as well as the speed and distance that the tractor is travelling when under typical spray conditions.

Speed and distance

Measure and mark out a distance of 100 metres (m). Half fill the spray unit and record the time it takes in seconds (s) to travel from point A to point B.

Use the following formula to determine the ‘actual’ speed of the tractor — this actual speed should be compared to the speed being displayed on the dashboard of the tractor. If the two speed values are the same, then the tractor is in calibration in terms of speed and distance.

\[
\text{Speed (km/h)} = \frac{\text{Distance (m) \times 3.6}}{\text{Time (s)}}
\]
Pressure
Pressure should be checked using a pressure gauge located near the pump on the unit. The theoretical pressure should be the same as the actual pressure displayed on the pressure gauge. The accuracy of the pressure can be verified when capturing the output of the nozzles at a known pressure.

Output (volume)
Output should be measured at each nozzle in operation. This can be achieved by recording the volume in litres (L) that are passing through the nozzle at a known pressure, over a period of time. This can easily be completed by recording the output volume over a minute using a jug and a stopwatch (called the ‘jug test’). Total output (L/min) can then be calculated by adding the volume recorded from each nozzle (i.e. the sum of the output).

For the nozzle to be in calibration, the actual output should be the same as the theoretical output (given the pressure is the same). The theoretical output in litres per minute (L/min) can be determined by looking at a nozzle chart. Each brand has a slightly different chart, so you will need to contact your machinery dealer for the chart appropriate to your unit and nozzles.

Growers need to check the output of each nozzle because the combined output may be correct but each individual nozzle may not be outputting the correct value — this could have food safety implications and could lead to an MRL (maximum residue limit) breach.

There are flow meters available that quickly and accurately measure the output of nozzles. These flow meters allow the calibrator to quickly determine if the nozzles are in calibration and they are a great time saving tool. However, they come at a higher cost than a jug and stopwatch. Both methods are effective.

To calculate the application rate, you can use the following calculation to determine if your spray unit is meeting your theoretical rate:

\[
\text{Rate (L/ha)} = \frac{\text{Tank capacity (L)} \times \text{total output of all nozzles (L/min)}}{\text{Row spacing (m)} \times \text{speed (km/h)}}
\]

If your calculated rate is the same as your theoretical rate, then your unit is in calibration.

Actions following a calibration event
The first and most important task to complete following a calibration event is to record the data captured to meet your QA system requirements. For those growers with Freshcare FSQ4, this can be captured on the F8 Calibration Record. You will need to capture calibration data for each spray unit in use, at least annually or when repairs have been made to the unit(s).

Where the desired calibration standards are NOT met, the grower will need to conduct repairs. This could be as simple as replacing a nozzle (if the nozzle is putting out too much volume), or unblocking a filter (if the nozzle is not outputting enough volume).

After you have made changes, the calibration event should be completed again and recorded following the completion of the follow up event.

Verification of the calibration event(s) is achieved by completing an annual MRL test on your produce. This is a mandatory requirement for all of the GFSI QA systems including Freshcare FSQ4. If you are applying chemicals as per the label rates, and your unit(s) are in correct calibration, you should not expect to see an adverse detection.

Remember, if you make any repairs or changes to your spray unit setup (i.e. repair a broken part or open up extra nozzles), then you will need to conduct another calibration event to demonstrate that your unit is functioning correctly.

MORE INFORMATION
For further information or assistance with calibrating a machine, please contact Joel Dinsdale on 0417 857 675 or email joel.dinsdale@vegetableswa.com.au

DOWNLOAD A COPY OF THE FORM FROM WWW.FRESHCARE.COM.AU

F8 Calibration record form.
The Department of Primary Industries and Regional Development (DPIRD) is responding to the detection of an adult female Queensland fruit fly (Qfly) in a department surveillance trap.

DPIRD Qfly Incident Controller Bill Trend said the Qfly was found in a residential area just east of the Fremantle CBD. As of 23 February 2018 there have been no further detections, and most properties in the area surrounding the detection have been visited to locate and bait host trees, and to check traps.

Bill said the Qfly had been found in one of the 1900 permanent traps that make up DPIRD’s early warning fruit fly trapping system.

“This early warning enabled the department to respond quickly and commence an eradication program, to minimise the chances of further spread should additional flies be present in the area,” Bill said.

“Our program has included deploying additional traps, and establishing a Quarantine Area within a 1.5km radius from the detection, which covers all of Fremantle, and parts of East and North Fremantle, and White Gum Valley.

Bill acknowledged the overwhelming support and participation of local residents and businesses in the eradication program.

“Community support is critical to protecting not only Western Australia’s horticultural industries, but also backyard fruit and vegetable gardens, and to date we have been grateful for the public response.

“This has included adhering to restrictions, and giving DPIRD staff access to private properties within a 200m radius of the Qfly detection, to carry out baiting and surveillance activities. If is no-one home when visiting, staff have been leaving a contact card, so that residents can call the department and arrange a follow-up visit.”

Bill said it was important to note there had been no recent detections of Qfly in any commercial fruit or vegetable production areas in WA. Qfly is occasionally detected in Western Australia, however any outbreaks are rapidly eradicated.

“For producers and industry seeking more information, an industry-related update was recently provided to relevant fruit and vegetable industry bodies, to distribute to their members.”
Quarantine Area restrictions

A Quarantine Area Notice (QAN) was published in the West Australian on Saturday, 3 February 2018, the Fremantle/Cockburn Gazette on Tuesday, 6 February 2018, and the Fremantle/Cockburn Herald on Saturday, 10 February 2018. It applies to all of Fremantle, and parts of East Fremantle, North Fremantle and White Gum Valley.

The Quarantine Area Notice (QAN) instructs the following:

- Non-commercial and home-grown fruit must not be taken out of the Quarantine Area unless it has been cooked or processed, or approved by the DPIRD Director General.
- Ensure any ripening fruit or vegetables on host plants, or any fruit that has fallen to the ground is removed and disposed of every three days.
- The fruit can be disposed of by eating, cooking (boil or microwave), freezing or securing in a sealed heavy duty black plastic bag which is placed in direct sunlight for a period of three days. This should kill any flies or larvae before disposing of in regular bins.
- Do not place untreated fruit or vegetables into compost.
- Do not bury the fallen fruit as Qfly adults can emerge from the soil.
- Do not give your fruit and vegetables away.

Under the Biosecurity and Agriculture Management Regulations 2013, failure to comply with movement restrictions can result in fines. We are appealing to residents to do the right thing in supporting WA’s horticultural industries.

The QAN will remain in place until 18 April 2018. It may be extended if any further flies are detected. Residents in the Quarantine Area will be notified when the response program concludes.

About Qfly

Qfly is a destructive fruit pest, and considered a more serious pest than the endemic Mediterranean fruit fly (Medfly) for a number of reasons including:

- Qfly attacks a wider range of commercial and native trees, vine fruits, fruit and solanaceous fruiting vegetables such as eggplant, tomato, capsicum and chili.

Queensland fruit fly identification

Don’t confuse Qfly for Medfly, which is smaller (approximately 3–5mm long). Qfly have clear wings. Medfly wings are transparent and mottled, with distinct pale brown bands extending to the wing tips.

Adult Qfly are:

- Approximately 6–8 mm long.
- Have three body segments, wings and six legs.
- The head has two red eyes with two very short antennae (only visible under close inspection).
- The thorax (middle segment) is reddish-brown with yellow patches on the sides and back.
- The abdomen (end segment) is a solid dark brown, and the legs are a lighter shade of brown.
- The wings are clear.
- Qfly are usually seen on the undersides of leaves or on maturing fruit.


Reporting options

Residents are asked to check their fruit for any unusual fruit fly activity, such as larvae, in unexpected fruit and vegetables.

More information

If you suspect you have seen Queensland fruit fly, please take photos where ever possible and:

- Make an online report or use the MyPestGuide reporter app: mypestguide.agric.wa.gov.au
- Phone: (08) 9368 3080
- Email: padis@dpird.wa.gov.au
Signs are positive for future control options for the horticultural insect pest tomato potato psyllid (Bactericera cockerelli) as a result of research by the Department of Primary Industries and Regional Development (DPIRD).

In September 2017, the department commenced a nine month period of research to improve the understanding about tomato potato psyllid (TPP) control options and improve the capacity of growers to manage the pest.

Acting Chief Plant Biosecurity Officer Sonya Broughton said research activities undertaken to date included laboratory and glasshouse trials on the performance of insecticides and biological control agents on TPP.

“The glasshouse trials aim to determine the effectiveness of up to 14 insecticides and six biological control agents,” Dr Broughton said.

“Preliminary results from the glasshouse trials indicate that pymetrozine is not effective in controlling TPP while abamectin is very effective, which is in keeping with research results from New Zealand, where TPP has established,” she said.

“This could be due in part to the TPP biotype found in Western Australia being the same as that in New Zealand.

“Cyantraniliprole, flocinamid and spirotetramat treatments were also effective.

“At the conclusion of the insecticide trials, we will determine whether the active ingredients for TPP control are registered for use in the crops they’re required for and if not, how we can address this.”

The six species of biological control agents being used in the integrated pest management aspect of the trial are all generalist predators.

“A ladybird species (Harmonia octomaculata) performed well in the laboratory whilst the mirid bug was most effective in controlling TPP in glasshouse trials,” Dr Broughton said.

“These results indicate more research is required to determine the most suitable biological control agents for TPP in different crops and growing conditions.”

At the completion of the research and development program in May 2018, research results from the complete insecticide and biological control trials will be published online and in industry publications. Industry information sessions will also be held.

Research and development led by the department is part of a nationally-agreed TPP transition to management plan which aims to develop the science, biosecurity and business systems to support growers and industry to manage TPP.

MORE INFORMATION

The plan is funded by Australian and state governments, and industry.

Calcium cyanamide (CaCN₂) fertiliser was tested for efficacy against *Pythium sulcatum* and *P. violae* in a grower-led demonstration trial in a commercial carrot crop in Western Australia.

The wax coated fertiliser was applied according to manufacturer’s instructions at 300kg/ha and 500kg/ha fertiliser to one carrot bed each. An untreated bed adjacent to each treated bed was used as a control. All standard commercial crop management inputs were applied to treated and control beds. This included nitrogen fertilisers.

The pack out figures showed that total fresh yields in the CaCN₂ treated beds were higher than in untreated beds by 15.4% for the 300kg/ha and 18.7% for the 500kg/ha treatment. The greatest difference was in the weight of processing carrots. One reason for the higher weight of processing carrots may have been the impact of additional nitrogen from the CaCN₂ fertiliser that became available early in the season. While it reduced root length it may have had an impact on the timing of bulking and thus final root weight at harvest.

DNA testing results from root and soil samples suggested that cavity spot symptoms seen on carrots after harvest maybe mainly caused by *Pythium sulcatum*.

Both DNA tests implied that CaCN₂ fertiliser may have reduced the *Pythium sulcatum* soil inoculum, the main pathogen causing cavity spot in carrots in Australia.

Take away messages: In research trials with CaCN₂ fertiliser, soil nitrogen (N) dynamics and plant biomass production (root and shoot) should be included in assessments. If CaCN₂ fertiliser is used commercially the N mineralisation from the product must be considered in the crop’s N budget and application schedule.

Replicated trials, including proven DNA testing for *Pythium sulcatum* and *P. violae* should be conducted to confirm the efficacy of CaCN₂ fertiliser on these diseases. If efficacy is confirmed, commercial use options for carrot crops under different production conditions should be investigated.

More information:
You can learn more about the demonstration site here, or visit the Facebook page for live updates.

To find out more about the Soil Wealth or ICP projects visit [www.soilwealth.com.au](http://www.soilwealth.com.au), or join the ICP Community of Practice online. You can also follow us on Twitter: [ProtectingCrops](https://twitter.com/ProtectingCrops) or [SoilWealth](https://twitter.com/SoilWealth) for the latest news and updates.
VG14062: Process improvements for preserving peak freshness in broccoli (Stage 2)

Broccoli has a great image as a healthy, nutritious and flavoursome vegetable. Botanically it is an inflorescence, a rapidly developing head of tiny flower buds with a high respiration rate and few storage reserves. This makes it difficult to transport and store, with yellowing, rots and damage reducing quality — and sales — at retail.

Traditionally, broccoli has been packed in Styrofoam boxes with ice. This keeps broccoli cool and hydrated through the transport chain and looks good when the box is opened. However, this system has many disadvantages. The power and potable water needed to make ice, extra transport costs and the expense of packaging are negatives for packers. Styrofoam is non-biodegradable as well as difficult to recycle and, if the ice melts, broccoli ends up floating in a rot-inducing soup.

Keeping broccoli green and fresh without ice would therefore seem to have advantages for growers, packers and consumers alike.

Facilitators:
Project VG14062 was completed by Dr Jenny Ekman from Applied Horticultural Research.

About the project
Optimising cooling and packing processes is vital to retain broccoli freshness. Broccoli absorbs 2-5% weight during hydrocooling or hydro-vacuum cooling, which suggests that products added to the water — such as sanitisers, carbohydrates or other products — are also absorbed.

The final stage of project VG14062 Process improvements for preserving peak freshness of broccoli (Stage 2), undertaken by Applied Horticultural Research, tested the effects of adding sanitiser, a carbohydrate source, or an artificial plant cytokinin (a class of plant hormones) to water during cooling. It also tested the effects of the fumigant 'SmartFresh' on broccoli storage and shelf life.

Major findings
None of the sanitisers tested reduced postharvest development of rots in broccoli that had been infected in the field. Adding sanitisers to hydrocooling water also had no effect on rots, with infection rates remaining low even when pathogens were added to the water.

While broccoli treated with chlorine products was similar to untreated heads, some of the sanitisers tested actually
had negative effects on quality. The results suggest that adding sanitisers to hydrocooling water cannot control postharvest rots. However, they may be used to ensure food safety.

Adding carbohydrates such as sucrose and dextrose to the cooling water also failed to improve quality and, in some cases, floret rots increased.

Better results were gained using the artificial plant cytokinin 6-benzylaminopurine (BAP). Adding 50ppm BAP to hydrocooling water increased the time broccoli remained green at seven degrees Celsius from less than two weeks to three weeks. Treating broccoli immediately after harvest, rather than after a delay of several days, returned the best results. Although BAP resembles natural plant cytokinin B, it is a manufactured product. Unfortunately BAP is not currently registered for postharvest application to broccoli.

Perhaps the most exciting results were gained using a new formulation of 1-methylcyclopropene (a synthetic plant growth regulator), marketed as ‘SmartFresh’. SmartFresh is already routinely applied to fruit crops such as apples, pears and plums, and it is also registered for use on broccoli. It blocks the product from producing or responding to ethylene, and this reduces ripening, yellowing and other ageing processes.

SmartFresh is normally applied by releasing the fumigant inside a sealed room. A few hours of exposure to as little as 1ppm (0.0001%) is all that is required, with residues undetectable in the treated product.

Unlike apples, large quantities of broccoli are rarely stored, which makes batch application of SmartFresh problematic. However, a new formulation of 1-MCP called ‘In-Box’ allows sachets of the fumigant to be added directly to packed cartons. When combined with the matched RipeLock liner, results can be impressive.

**Conclusion**

Broccoli treated with SmartFresh was repeatedly found to be as good as or better than broccoli packed in Styrofoam with ice, even if the cool chain was not maintained.

The effects are retained after the broccoli is placed on retail display, as it remains protected from ethylene produced by ripening produce on the shelf.

AgroFresh is now gathering the data required to register the new InBox formulation of 1-MCP for commercial use on broccoli in Australia.

At the same time, other delivery mechanisms are still being developed. While these remain confidential, it is believed these could provide growers and packers with an even easier way to apply SmartFresh during packing of broccoli.

**The bottom line**

Keeping broccoli green and fresh without ice appears to have many advantages for growers, packers and consumers alike.

The final stage of project VG14062 tested the effects of adding sanitisers, a carbohydrate source, or an artificial plant cytokinin to water to optimise cooling and packing processes of broccoli.

It was found that none of the sanitisers tested reduced postharvest development of rots in broccoli that had been infected in the field, and adding sanitisers to hydrocooling water also had no effect.

However, adding the artificial plant cytokinin 6-benzylaminopurine (BAP) to hydrocooling water increased the time broccoli remained green at seven degrees Celsius from less than two weeks to three weeks.

The most promising results were delivered by using a synthetic plant growth regulator marketed as ‘SmartFresh’. Broccoli treated with SmartFresh was repeatedly found to be as good as or better than broccoli packed in Styrofoam with ice, and there is now data being collected to register the new InBox formulation of 1-MCP for commercial use on broccoli in Australia.

**MORE INFORMATION**

For more details about the research, please contact Dr Jenny Ekman on 0407 384 285 or at jenny.ekman@ahr.com.au.

**ACKNOWLEDGEMENTS**

This project is a strategic levy investment under the Hort Innovation Vegetable Fund.

VG14062 has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government.
New insights into how potato responds to high temperatures

BY STEVE MILROY
RESEARCH MANAGER, POTATO RESEARCH WA, MURDOCH UNIVERSITY

The global trend of increasing temperatures is a serious challenge for potato producers in many countries, including Australia.

While the general problem is widely recognised there is very little information about how it relates to potato crops in Western Australia.

Murdoch research student, Charles Obiero, has spent the last three years exploring this problem.

Charles’ work differs from most other research into the effect of high temperatures on potato because he took the realistic view that the plant is not exposed to high temperatures every day during the growth cycle; rather it experiences episodes of high temperature. This has led to a number of important new findings.

Method

To begin his research, Charles analysed the climatic records for ten potato production areas in WA to develop a picture of the high temperature conditions that a potato crop might experience. He obtained thirty years of daily temperature data for the ten locations and for each location identified a two month window during which tuber filling is likely to occur. He then analysed how many ‘hot’ days occurred during this period and how many ‘hot’ days occurred in a row.

The impact of nine days of high temperatures on the size and number of tubers a month later. Plants at 22°C were the control. Tuber growth continued to be impaired even when plants were returned to normal temperatures (22°C).
To grow on for four weeks.

30°C before returning the plants to 22°C period of high temperature at either 26 or Royal Blue at 22°C and then applied a treatments. In the glasshouse he grew areas to choose his experimental temperatures in WA potato production Charles used his analysis of the high was not recorded in Albany or Pinjarra. A run of 7 consecutive days over 30°C occurred only once every few years and the coastal area south of Perth. Manjimup had the highest number of days over 30°C. Jindong also had the strongest increasing trend in the number of days above 30°C (see Figure 1). Over the thirty years from 1985, the number of days in the January-February window that reach 30°C increased from around 10 to 25 per year.

To quantify the frequency and duration of high temperature spells, Charles analysed the temperature records for the ten years 2005-2014; again considering the two month window of tuber filling in each location. Runs of three days over 25°C during tuber filling were common in all areas. Five consecutive days above 30°C occurred at least once a year in most locations except Albany, the metropolitan area and the coastal area south of Perth. A run of 7 consecutive days over 30°C occurred only once every few years and was not recorded in Albany or Pinjarra.

Charles used his analysis of the high temperatures in WA potato production areas to choose his experimental treatments. In the glasshouse he grew Royal Blue at 22°C and then applied a period of high temperature at either 26 or 30°C before returning the plants to 22°C to grow on for four weeks.

Findings

A key finding from this research is that the negative impact of high temperature on growth continued well after the plants had been returned to 22°C. Tuber growth continued to be slower in plants that had experienced a high temperature than in those that had not. Four weeks after the end of the high temperature episode, plants that experienced the high temperatures had 30% less tuber weight per plant. Surprisingly, a similar effect on tuber growth was found whether the high temperature episode occurred shortly before tuber initiation or during early tuber development.

Research into the effect of temperature on tuber growth often emphasises the importance of starch synthase. This enzyme plays a role in converting sugars to starch and so is critical for tuber growth. Starch synthase is less active at temperatures over 25°C, so is an important part of the response of potato to high temperature. However, Charles’ findings that the impact on tuber growth continues after the end of the high temperature period and that tuber growth can be impaired if the stress is applied before initiation, indicate that other mechanisms are playing an important role in reducing tuber growth. In both of these scenarios tuber growth was slowed even though expansion was occurring at 22°C, when starch synthase activity should be unimpaired.

Part of the picture may be a change in canopy structure. While high temperatures are typically considered to promote shoot growth at the expense of tuber growth, Charles’ measurements showed that this is an over simplification. In fact, during the high temperature episode, leaf growth was reduced; it was only afterwards that compensatory growth occurred. Importantly, Charles showed that the main shoot on the plant stopped growing during high temperature and that compensatory growth appeared to be occurring by branching. This runs contrary to the established idea that the greater canopy growth caused by high temperatures is induced by gibberellins. Gibberellins cause shoots to grow longer.

The importance of the new level of understanding that Charles’ research has provided is that it can help us to explore ways to manage a crop when it undergoes an episode of high temperature.

As Charles works to write up his thesis we are now looking to the next project which will look at practical management options and how to take these findings into the field.

We wish Charles every success in his future career.

MORE INFORMATION

Charles Obiero is completing his PhD at Murdoch University as part of Potato Research WA. He holds an Australian government scholarship through Murdoch University. His supervisors are Prof Richard Bell and Dr Steve Milroy.
Soil Wealth and ICP projects (2014–17) Phase 1

Handy hints and where to find useful information from the project

This article summarises useful information developed by the Soil Wealth and Integrated Crop Protection (ICP) projects from 2014–17, and where to find it.

These resources are relevant to all major vegetable growing regions in Australia. The resources developed includes fact sheets [51], case studies [12], videos and apps [36], e-newsletters [32 editions], as well as demonstration site information. The main topics covered by these resources include crop management, pest and disease management, and soil, nutrition and compost. All the resources in this guide can be found on the project website at www.soilwealth.com.au.

Fact sheets

The fact sheets developed covered a range of issues relating to the needs of the industry, information is provided in an easy to understand format that is accessible to growers and industry service providers.
Budgets Help Protect From Financial Hardship

In 2017 inadequate cash flow was the most common reason for business failure; according to the Australian Securities & Investments Commission.

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A soil borne disease masterclass is planned for late April/early May in Carnarvon and Gingin.
Soil Borne Disease update

On January 18th Truyen and I had a morning with soil health expert Dr Doris Blaesing.

An Associate of RMCG, a facilitator for VegPRO, AUSVEG 2015 Researcher of the year and expert to the VegNET project, Doris was in Western Australia to check the progress of Applied Horticulture Research and RMCG’s Soil Wealth and Integrated Crop Protection (ICP) extension projects (VG13076/VG13078).

As Truyen and I are part of the VegNET project (VG15043) we were happy to take an opportunity to spend the morning talking about Phase 2 of the Soil Wealth project, possible workshops within WA, in addition to making farm visits to two of our Vietnamese growers.

Phase 1 (VG13076/VG13078) of the Soil Wealth and ICP project focused on supporting existing soil management material and assisting growers to effectively use this information on farm. It also featured regionally based demonstration sites with a focus on biofumigation, cover crops, biology and soil carbon, reduced tillage nutrition management and soil borne diseases. To read the findings on the carrot project Doris has been working on turn to page 21 of this edition of the WA Grower.

Phase 2 (VG16078) plans to respond to increasing economic, consumer, environmental and technological demands placed on vegetable producers. It will deliver integrated, independent research-based information to growers as a means to support business decisions surrounding soil management and plant health. With a focus on research and its extension, this new phase will see training delivery through VegPRO; extension materials such as factsheets, videos and case studies; on-line delivery through websites, social media and webinars; together with local delivery through VegNET.

The project will be guided by four major themes:

1. Proactively review developments in technology such as drones, satellite data, robots and soil/crop management equipment; and present the reviewed information in an easy-to-use, adoptable/adaptable format.

2. A production systems approach showing the increase in challenges and the sophistication of vegetable production, the need for intensive productivity and consistently high quality, along with consumer needs.

3. Innovations in soil and crop health management that may reduce waste, improve product quality and percentage of product meeting specification; along with possibly reducing input/variable costs.

4. Improving sustainability and robustness of farming systems, with an emphasis on the impacts of increased climate variability, extreme weather events and minimising the impacts of farming on the environment.
This project has been funded by Hort Innovation using the vegetable research and development levy and contributions from the Australian Government. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture.

With the aim of the project being to ‘prime’ the industry to uptake new and relevant R&D outputs developed here and overseas, adoption of current and future innovations and technological advancements. It will link in with Hort Innovation investments as well as extension and training initiatives VegNET, VegPRO and AUSVEG communications to ensure the information is dispersed throughout the industry.

Specific topic areas will include:
- Soil amendments
- Soil biology
- Cover crops and biofumigation
- Reduced tillage
- New equipment / machinery
- Emerging technology and precision agriculture
- Nutrition management
- Irrigation management
- Insect, nematode and mite management
- Weed management and crop protection
- Disease management
- Biological protection products

A previously well received Soil Borne Disease Masterclass is planned for late April/early May in Carnarvon and Gingin with further workshops and field presentations planned for around the state.

I look forward to working with this project; digging in the dirt and learning what gives our soils life.

With Doris and Dr Gordon Rogers from AHR managing the project and NSW DPI Senior Plant Pathologist; Dr Len Tesoriero leading the research component, the future health of our soils is in good hands.

MORE INFORMATION
Information taken from: www.soilwealth.com.au
Farm biosecurity is a hot topic within the vegetables/horticulture industry. With recent incursions of Tomato potato psyllid and brown marmorated stink bug, vigilance and a sound biosecurity plan are key to keeping your property and region free from pest infiltration.

Technology is establishing itself as a significant tool in assisting growers with many aspects of on-farm best practice; and this app appears to check more than one of those boxes. In addition to aiding the grower in developing a biosecurity plan; there is also a feature that allows you to email the plan to yourself, a supplier, farm auditor, quarantine auditor or visitors to your property. Being able to print the plan also means you can easily add it to your Quality Assurance records.

This app covers the six essential biosecurity concerns:

1. **Farm inputs** — To reduce the biosecurity risks to your property, monitoring plant material, water and fertiliser that enter is essential. Keep records of all farm inputs so that you can trace-back or trace-forward in the event of a pest or disease outbreak.

2. **People, vehicles and equipment** — If it can move, it can carry diseases, pests and weeds. For this reason, people, vehicles and equipment pose a high biosecurity risk and should be managed accordingly. Cleaning protocols and signage are a good place to start.

3. **Production and practices** — Implement simple biosecurity measures as part of your every day management practice to reduce the risk of spreading pests and diseases. Getting into a habit of regularly monitoring crops and applying hygienic practices on-farm help to minimise the risk of pests and disease spreading on your property, between properties and throughout your region.

4. **Feral animals and weeds** — Feral animals, wildlife and weeds are a widespread nuisance that can cause harm to your crops and business.

5. **Farm outputs** — Responsible biosecurity practices don’t just begin and end at your farm gate. Protecting your region and the industry by maintaining good on-farm hygiene and ensuring transport/delivery providers abide by the same standards, play an important role in supply chain and farm biosecurity. Sound biosecurity practices should be industry wide.

6. **Train, plan, record** — Ensuring staff are well trained, that you have the ability to trace where plant/produce has come from and you have records of purchases, sales and movements are an important part of farm biosecurity. Sound record keeping and training of staff will help to reduce the effect of an outbreak on your property or in your region, as traceability is key to a quick incursion response.

The majority of growers have a smartphone and can therefore download an app; if that app can aid in understanding and minimising biosecurity issues as well as kicking goals for your Quality Assurance… why not let your phone be the smart one?

### Step 1
Select the ‘Start your FarmBiosecurity Plan here’ text on the Welcome screen to create a property profile name.

### Step 2
Create your property profile name. Remember you can set up profiles for multiple properties or areas of your property.

### Step 3
Once you have created your property, press the ‘6 Essentials’ button to start developing your biosecurity plan.

### Step 4
Choose from the various categories within each of the 6 Essentials. When in a category, first look at the risks, then review the recommended actions, then select from the suggested actions and add them to your plan.

### Step 5
Once you have selected the actions you wish to save, go back to the home screen by tapping the house icon in the top left corner. Once you are back at the home screen, select ‘FarmBiosecurity Plan’ to view your plan.

### Step 6
When you are on the ‘FarmBiosecurity Plan’ page, you can view, delete or add to your actions list by pressing the ‘+’ symbol next to your plan or email the plan to yourself or somebody else by pressing the ‘Email my actions list’ button.

Veg Pest ID helps farmers and other agricultural professionals identify pests on the go. Whether trying to identify an unfamiliar pest, find the source of a nutritional problem or take the first steps towards control, the Veg Pest ID app will help you protect and manage your crop.

It brings together a database of pictures and information on pests, diseases and disorders specifically affecting Australian vegetables crops. It allows you to access information in the field, where it is needed, without having to trawl through a single ute guide or endless books.

The benefits include:
- Easy keyword searches
- High quality pictures
- Search either the crop or the pest
- Detailed information to identify different life stages, optimal infestation/damage conditions and initial control methods
- Can be used with no internet connection
- Automatically updates when connected to Wi-Fi

This app is Australian made, by Australian Scientists/Researchers, for Australian Growers. The first steps to identifying and fighting those little Aussie blighters really is in the palm of your hand.

TO DOWNLOAD GO TO →

Compatibility: iOS devices
Hitachi is helping to bring precision to Australian agriculture

BY DERRICK THOMPSON
HITACHI AUSTRALIA

Hitachi Australia is working with the Japanese government, other Japanese organisations, local partners and universities to demonstrate the value of using positioning satellites to deliver a highly efficient farming system that allows agricultural machines to travel autonomously while at the same time creating highly accurate farmland maps.

In the demonstrations, the positioning satellite being used is the Japanese Quasi-Zenith Satellite System, or QZSS for short.

How does it work?
GNSS signals are tracked by stations in Australia and transmitted to Japan. At the Analysis Centre, a Correction message is generated in Japan. That Correction message is then broadcast on the QZSS L6 signal. That Correction message is received and used by the autonomous tractor, UAV or other mobile device equipped with a QZSS Receiver for precise control. And by precise control we mean a best to date of +/- 2cm horizontally and +/- 6cm vertically. And this level of accuracy can be available 24 hours a day, seven days a week meaning that when coupled with a fully autonomous tractor, farm work can be carried out around the clock.

The work first started in rice fields in Southern NSW, progressed to sugar cane fields in Mackay QLD, avocado farms in Bundaberg QLD and now in February 2018 on a mixed farm — with particular focus on asparagus and bananas — in Carnarvon, WA.

With the Carnarvon demonstration, one of the objectives will be to use a UAV (drone), positioned by the QZSS, to accurately pinpoint weeds that can be geo-tagged for automatic spot spraying at a later date, thus resulting in the amount of chemicals needed to kill the weeds is substantially reduced.

By delivering such precision, a QZSS solution will generate on-farm productivity gains by allowing more efficient utilisation of resources, reduction in on-farm inputs and improved yield output per hectare.

MOR E INFORMATION

For further information please contact: Derrick Thompson, Senior Manager – Key Accounts & Business Development, Hitachi Australia Pty Ltd (02) 9888 4146 email 0428 507 164 or go to www.hitachi.com.au
your industry
Adopting soil moisture monitoring innovation to fine-tune irrigation

BY VO THE TRUYEN
VIETNAMESE FIELD EXTENSION OFFICER, VEGETABLESWA
Declining underground water resources is a serious issue to Western Australian horticulture.

Government and industry bodies have over the years explored water use and water use efficiency with several projects such as Water for Food (Carnarvon). More dollars per Drop (WA), and Assessment grower practices on irrigation, fertiliser, and pest and disease management (Perth and Carnarvon).

In line with that effort WA vegetable growers are also fine-tuning their conventional irrigation practices towards making the most use of a limited water allocation to increase their profit.

Su Tran, a Carnarvon tomato grower discusses how he has learnt and benefited from using different soil moisture monitoring devices. Su’s learning curve over the years trying to understand the soil moisture dynamic and combining different tools to assist his irrigation decisions.

1. The tensiometer (manually reading a vacuum gauge)

Su’s first attempt was in 2011 to understand the soil moisture status by using the tensiometers, which measurements can be done by manually reading a vacuum gauge (see Figure 1).

Expectation: Su Tran bought these devices in different sizes from a local supplier expecting he could “read the soil water status at different depths” which might help his irrigation decisions.

Attempt: It was easy for Su to plant the tensiometers at different soil depths in a tomato bed and read numbers on their gauges. In contrast, it was very difficult to establish the correlation between the readings and the soil water status to establish an irrigation schedule and amend.

2. Soil moisture monitoring on the web

Su Tran was then introduced to a “smart” soil moisture monitoring system, Outpost Central, early in 2017.

He commenced a year’s free trial when he participated in an irrigation, fertilizer, pest and disease management project (this project was funded by Gascoyne Development Commission, the Department of Agriculture and Food with assistance from vegetablesWA). Through this trial Su has learnt and quickly picked up the benefits of having this soil moisture monitoring device to influence his irrigation decisions. He has subsequently invested in two more sets for other plots in his tomato farm.

Expectation: Su expected to learn something useful to assist him with his irrigation decisions. Whilst he had the benefit of a year’s free trial and technical service by having a set of “smart” soil moisture monitoring on his farm.
**Attempt:** The soil monitoring hardware from Outpost Central consists of soil moisture probes connecting to a compact digital data logger.

Interestingly, the soil moisture probes are tensiometers that are similar to those that Su had tried years ago except the readings are automatically transferred to the data logger.

The data logger comprises of a powerful data recorder and modem. This device collects data from the attached tensiometers. Once activated the unit is pre-programmed to send data to the service providers’ website as often as the area demands for charting, storage and backup.

In the free one-year trial, a soil moisture specialist — Scott Brain, from Carnarvon-based agronomy service provider Field Capacity, worked with Su to install and set up the best monitoring system for his situation. Refill and stress points are set up within the range of soil moisture levels that are believed to be best for the tomatoes crop performance. Low and high alarms in the form of an SMS is sent to Su’s smart phone (see Figure 2) when the soil moisture is near to or beyond the stress point.

Learning: Su Tran revealed that this innovation adoption has helped him to gain knowledge on exactly what is happening to moisture levels below the surface. It allows for a detailed analysis of the soil moisture levels and influences his decisions in his irrigation scheduling.

Although the hardware is complex (as compared to the tensiometer that Su has tried previously) the information he obtains from it is concise and clear.

The low and high alarm as an SMS is very helpful in assisting irrigation shifts and scheduling. However, Su observed that there is lag between water application, data collection and SMS alert message. Therefore, Su does
not totally rely on these devices, using them as an additional factor to combine with his observations and experience to his final irrigation decision.

The charts with refill and stress lines creates a pictorial image on the dynamics of the soil moisture below the surface. These are needed to facilitate the learning faster. The stable reading at 60cm depth makes Su happy that he could avoid leaching losses from overfull profiles, eliminating fertiliser wastage and environmental concerns.

Maintaining close contact to the moisture specialist from the service provider is very important during the learning phase. Besides setting up the system at the beginning, the specialist helps answer questions and address issues occurring during the implementation.

**Adopting:** Su’s confidence built up over the learning phase during the one-year demonstration of this soil moisture monitoring system.

Su’s irrigation practices changed from a two-day schedule with a long shift time to a daily schedule with one shorter shift. Although water saving is not achieved, Su is confident that the water use efficiency has improved through better crop performance.

Since the completion of the initial trial phase of one year, Su has invested in two more sets for other plots on his farm given that their soil conditions are different.

**Discussion:** Although the hardware used for soil moisture monitoring is complex (compared to the tensiometer), proper training and demonstration along with consultation with the specialist made it easy for the LOTE grower to understand and use. Management of these new devices are not disruptive to Su’s routine tasks as he can access data and charts over his mobile phone at his convenience.

As it was shown in the More dollar per Drop project report the alternating of irrigation days was an existing irrigation practice. It made the crops drought stressed every second day which significantly limited yields. Su has changed to everyday watering and utilising the knowledge from this innovation has proved to be the right move. Su has benefited from better crop performance and a yield advantage.

Su has had a chance to receive a free trial and services to learn and observe the advantages of this soil moisture monitoring tool (better crop performance). This is a contributing factor to adoption.

**MORE INFORMATION**
If you are interested in understanding soil moisture contact Truyen Vo on email Truyen.vo@vegetableswa.com.au or mobile 0457 457 559.

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**Flow Rate:** 0.7, 1.1, 1.4, 1.8, 2.5 L/Hr at 1bar
**Emitter Spacing:** 10cm, 15cm, 20cm, 25cm, 30cm, 40cm, etc.
**Thickness:** 200 micron(8mil), 250 micron(10mil), etc.
Mapping variation at harvest

yield monitors on carrot harvesters

Center West is now able to map carrot yield to identify and quantify the extent of spatial variability in their carrot crops.

The yield monitor logs real time carrot data to a server and data can then be downloaded and processed into yield maps. Figure 2 highlights some of these yield maps.

This yield data and maps can be used to determine: which areas are underperforming, the degree of variability contributing to the underperforming areas and a potential profit/loss map.

A key element of this project is demonstrating what precision technologies are commercially available to assist in horticulture with identifying and understanding crop variability.

Yield monitoring is one such method that provides a real-time measure of variability in the field at harvest and has been received well by the growers involved with this project as a tool for their production operations and agronomy.

While yield data can provide some information on where yield is variable, additional surveys of the field will be required to determine underlying causes or areas of limitation, such as nutrient deficiency or moisture stress.

Methods to assess variability in the field prior to harvest include:

- EM38 mapping, which measures the apparent electrical conductivity in the soil, indicating differences in soil texture and salt levels. This is done when the field is under bare fallow.
- Strategic soil and plant sampling
- Crop sensing imagery for biomass can be used to assess variability in crop and over subsequent crops where carrots are part of a longer rotation.
Yield monitors were supplied and installed by Bernd Klienlagel of Advance Technology Viticulture, based in South Australia. The unit consists of a load-cell fitted to the unloading elevator on the harvester, a control and data recording WiFi capable GPS unit in the tractor cab and a wireless router for data transmission.

Yield monitor installation at Center West was part of the national project ‘Adoption of precision systems technologies in vegetable production’ (VG16009).

This unit is one of a suite of yield monitors on carrot harvesters across Australia with units also installed at sites in South Australia, and Tasmania and a pre-existing monitor in south east Queensland.

The Horticulture Innovation Australia funded project Adoption of precision systems technology in vegetable production (VG16009), led by the Queensland Department of Agriculture and Fisheries (QDAF), commenced in early 2017.

The aim of the project is to support the vegetable industry with the adoption of precision agriculture technologies. The project will develop case study farms in each state for research and extension, to showcase the potential applications of relevant precision technologies.

The project has a number of collaborators across Australia including the University of New England (UNE), Tasmanian Institute of Agriculture (TIA), Harvest Moon, Primary Industries and Regions SA, vegetablesWA and the Society of Precision Agriculture Australia (SPAA). The key areas of investigation centre on the following questions:

- Is there farm/block variability?
- Is the observed/quantified variation having an economic impact?
- Can this variability be understood and managed?
- Are current management practices/equipment suitable for addressing any variation?
- Will a precision approach elicit a yield/quality response?
- What is the return on investment?
GROWER PROFILE

Danny Trandos

Trandos Hydroponics Growers

Neerabup

5

Tomatoes, and nursery seedlings, capsicum, eggplant, cucumber and watermelon
Since 1939 the Trandos family has been farming in Perth’s northern suburb of Neerabup.

With a 79-year history in the Western Australian primary producing arena, the Trandos family can undoubtedly be considered pioneers of the horticulture industry. Carrying the torch of his ancestor, Grandfather Dimitrios, into a new age of technology is third generation farmer, Danny Trandos.

Danny is the General Manager of Trandos Hydroponics Growers (THG), one of Australia’s premier hydroponic growers and a supplier of tomatoes to Woolworths. With a state-of-the-art and technologically innovative facility that uses greenhouses to hydroponically grow produce, a nursery that supplies grafted and ungrafted tomato and watermelon seedlings nationally and THG’s on-site laboratory; Danny and his team of experts have come a long way from such modest ‘market gardener’ foundations.

In addition to their high-quality products, THG maintains the highest level of hygiene and quality assurance to ensure their facility remains contamination and disease free. In addition to top level biosecurity practices and a private on-site laboratory, THG safeguards their premises through the continuous testing of both the plants and irrigation water. Some of their biosecurity practices include certification as a pest free production site, sterilisation of all propagation materials; staff hygiene dictates wearing THG supplied company uniforms and passing through a foot bath/hand wash sterilisation zone to ensure accredited procedure is upheld. It is because of these stringent protocols that THG is as highly regarded as they are.

In the midst of 2017’s Tomato potato psyllid incursion, THG were a beacon of biosecurity protocols. All of the innovation, financial inputs and pure hard work that has been undertaken by Danny and his team over the years, allowed them to stay clean and clear of the pest while being smack bang in the middle of a quarantine zone.

TPP’s invasion of WA has impacted all areas of horticulture production, including those with above average standards. THG are accredited as a CA-14 Pest Free Production Site and have been audited by interstate auditors.

They have unanimous national acceptance of their planting material and the highest non-government/research certification for a commercial nursery in Australia and yet trade has still been affected.

When I asked Danny for his opinion on biosecurity in general, his reply was simple; “Different situations dictate the level of hygiene and biosecurity protocols/procedures needed. Do the best you can to protect your farm and region”. Not all growers need to be as highly accredited as THG, however basic farm biosecurity can go a long way in protecting our industry. Being aware of threats, using good quality propagation material, ensuring workers and visitors follow a high standard of hygiene, decontaminating farm machinery and making sure vehicles that enter your property stay within indicated ‘safe’ areas are just a few things you can do that will make a big impression on biosecurity.

As we settle into the era of TPP Transition to Management, looking forward THG supports the process and sees the benefit of state recognised CLso free status in WA.

As we have been trawling through the archives in preparation for vegetablesWA’s 70th birthday, a grower profile from 2007 with Young Vegetable Grower of the Year — Danny Trandos stood out. When I showed the article to Danny, he threw his head back and laughed as he said “Oh my God! Look at that... that was a long time ago”. The fact that this award still hangs in his office, the earnest regard with which he speaks of the night of the awards and the shine of reminiscence in his eyes; proves without a doubt that this man is passionate about horticulture, yet personally invested in a family empire that has grown from such humble beginnings.

THG will be hosting a WA Greenhouse and Hydroponic Growers’ Workshop with Protected Cropping Australia (PCA)

Monday 30th April 2018
Trandos Hydroponic Growers
1 Trandos Road, Neerabup WA 6031

Sponsorship and delegate enquiries to Saskia:
E: admin@protectedcroppingaustralia.com
P: 0414 333 996
W: www.protectedcroppingaustralia.com
A soil survey covering 38,000 hectares of land east of Myalup has been conducted to identify land suitable for expanding irrigated agriculture.

The sandy soils around Myalup are highly sought-after for irrigated horticulture because their drainage and workability means they can be cropped year round.

The survey, undertaken in the western part of the Shire of Harvey, was completed by the Department of Primary Industries and Regional Development as part of the Myalup-Wellington project.

The assessment involved:

- describing soil profiles at 140 new sites
- analysing chemical and physical properties of 80 soil samples
- updating the existing soil mapping
- characterising the major soil-landscape types as land management units (LMUs), which can be used to guide how an area of land will react and produce under certain management
- creating land capability maps for irrigated horticulture covering 20,000ha of land potentially available for development.

The assessment identified about 600ha of land within the current irrigation area with moderate to high capability for irrigated horticulture.

The most significant area for expansion is 3500ha of Spearwood; soils currently used for pine plantations, sand mining and minor horticulture. The suitable soil types in this area are yellow deep sands, and pale deep sands with yellow sandy subsoils, which have moderate to high capability for irrigated horticulture.


The report is intended to highlight the areas of land best suited for developing irrigated horticulture in order to secure future areas for WA food production, and to form a starting point for more detailed investigations regarding individual developments.

For more information contact David Rowe, Research Officer, Bunbury, on (08) 9780 6132.

The Conference and Industry Dinner will be held at the Mercure Townsville. The Conference will kick off with a ferry trip to Peppers Blue on Blue Resort at Magnetic Island for drinks and dinner on Monday evening, 17th September.

The next two days will be full of the latest technical and research information with a large trade show at the Mercure resort in Townsville. Australian and international presenters will speak on breeding, food safety, soil and pest issues. Export development will also feature.

The Field Day at Ken Duncan’s property, Sandhills Road, Ayr will have practical demonstrations and kilometres of melon variety trials. The 2016 conference in Mildura featured over 4,000 meters of melons!

This a great chance to catch up with other growers, researchers and supply chain representatives from across the melon industry. The Industry Dinner on 18th September is always popular with a buffet and drinks under the stars at the Mercure Resort.

Registrations are now open for the Conference. Get the EARLY BIRD RATE by registering soon. We have organised reduced rates for accommodation and this could be a great opportunity to bring the family to North Queensland or take a fishing trip to the beautiful Great Barrier Reef.

Go to: www.melonsaustralia.org.au/industry-news/2018-australian-melon-industry-conference-field-days
The team at vegetablesWA finished off 2017 with a Christmas stakeholder event and we would like to thank our growers who travelled from North and South to attend.

With a state so vast, having our regional committee of management members is one of the keys to our success. If you are unsure who your regional representative is, check out the ‘About Us’ page on the vegetablesWA website (www.vegetableswa.com.au).

During January we had a visit from 2015 AUSVEG Researcher of the Year; Dr Doris Blaesing. Working with both RMCG and VegPRO as the ‘Soil Borne Disease Expert’, she is a wealth of knowledge.

Being updated on Phase 2 of the Soil Wealth & Integrated Crop Protection project by someone involved was invaluably informative. In addition to Truyen and me spending time with Doris, we were able to go out on farm with two of our Vietnamese growers. Patchy, stunted growth and plants with limited vigour as well as Tomato Canker and Fusarium Wilt were on the agenda; and as these are issues many growers have to contend with, getting a one-on-one session with Doris was valuable to the grower.

During my recent trip to Albany it was great to attend the Albany Farmers Markets as well as growers farms and see the produce available and the way they grow things in the region.

Not having to heavily rely on the water licences the way the other regions do and to have a thriving farmers market each week are a couple of ways the region differs.

The next six months is starting to fill up with visits to Albany and Carnarvon, a Soil Borne Disease Masterclass and Negotiation Training already locked in. Geraldton, Manjimup and Donnybrook visits are also in the pipeline with planning for a few Chemical Handling courses happening behind the scenes.

If any of these courses interest you please register your interest with myself or Truyen to ensure we can contact you once the workshops are finalised.

A baby leaf seed trial and Soil Borne Disease presentation are in the not so distant future, as well as a number of Labour Focus Group sessions and Workplace Essentials Workshops. In between this there will be many grower visits, if you need assistance please let the team know. During June we’ll be heading off to Hort Connections in Brisbane, for three days of non-stop information, innovation and networking, we look forward to seeing growers.
### Upcoming events

<table>
<thead>
<tr>
<th>Month</th>
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<th>Event</th>
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<tbody>
<tr>
<td>March</td>
<td>12–16</td>
<td>Carnarvon Grower visit with Bryn Edwards (Benchmarking Lead) and Joel Dinsdale (Quality Assurance Coordinator)</td>
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<tr>
<td>June</td>
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<td>Negotiation Training — West Perth</td>
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<td>April</td>
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<td>Carnarvon Informal Information Session at the Bomb Shelter (English speakers)</td>
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<td>April</td>
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<td>Labour Focus Groups: University of Adelaide — Wanneroo (Vietnamese speakers with translation by Truyen Vo)</td>
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<td>April</td>
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<td>Carnarvon Informal Information Session at the Bomb Shelter (Vietnamese speakers with translation by Truyen Vo)</td>
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<td>April</td>
<td>20</td>
<td>Albany Growers Meeting with Sam Grubisa &amp; John Shannon</td>
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<td>May</td>
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<td>Carnarvon Soil Borne Disease Masterclass (Presented by Dr Doris Blaesing and Dr Len Tesoriero with translation by Truyen Vo)</td>
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<tr>
<td>May</td>
<td>21, 22–24</td>
<td>Workplace Essentials Workshop [Gingin, Wanneroo and Manjimup respectively with Translation by Truyen Vo] TBC</td>
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<tr>
<td>June</td>
<td>18–20</td>
<td>Hort Connections in Brisbane</td>
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<td>VegInnovations Market City Canning Vale</td>
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<td>TBA</td>
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<td>Chemical Training Carnarvon</td>
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**MORE INFORMATION**

If you would like further information on any of these events, have an idea for a workshop in your region or would like a farm visit, please contact your Industry Extension Officers:

**Truyen Vo**

m: 0457 457 559  
e: Truyen.vo@vegetableswa.com.au

**Sam Grubiša**

m: 0427 373 037  
e: sam.grubisa@vegetableswa.com.au

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landmarkwa.harcourts.com.au/LEP4743

Adam Shields 0429 104 760  Glenn McTaggart 0429 611 124
Following on from last years successful events, work is underway to ensure an even better Gascoyne Food Festival in 2018. Key event dates have been locked in and organisations across the region are working collaboratively to develop new concepts and exciting opportunities for industry.

The Gascoyne Food Council continues to advocate for food producers in the region to ensure there is a strong focus on commercial opportunities. This year discussions are underway to bring targeted delegations to the region, including high level caterers and chefs, and international buyers. Additionally, with more events to be added to the program over the next few years, there will be new opportunities for business matching in the region as well.

Gascoyne’s Taste of WA at Yagan Square
Buy West Eat Best are working with its members and the Metropolitan Redevelopment Authority to run a series of ‘Taste of WA’ events at the new Yagan Square development, with the Gascoyne to feature on the 24th June with WA Food Ambassador, Chef Don Hancey as MC.

Gascoyne Food Festival dates
It is with great excitement that the Gascoyne Food Council can confirm the dates for some of the amazing events at this years festival.

Please mark your diary and follow social media or subscribe to the e-news for more updates and to be notified when tickets go on sale.
Dirk Hartog Island
5–10 August
Gourmet Island Escape

Carnarvon
9 August
On Dirk’s Dinner Plate Long Table Lunch

9–10 August
Gourmet Island Escape

10 August
BBQ on the Beach

19 August
Gascoyne Growers Market

11 August
Long Table Lunch

Mount Augustus
18 September
Australia’s Biggest BBQ

MORE INFORMATION
For more information about Yagan Square go to: www.mra.wa.gov.au/projects-and-places/yagan-square
To join the e-news please email admin@gascoynefood.com.au
Learn more and follow us: gascoynefood.com.au

GascoyneFoodCouncil @gascoynefood

GascoyneFood Council
Fresh from Carnarvon
Extensive photo project underway in Carnarvon

The Gascoyne Food Council has commissioned local photographer Anton Blume of simplydesigned to capture images of its food producers and their produce over the summer. Anton is well-known in the region and has been ably supported by Artist in Residence Sue Helmot and local student Daniel Smith. Both of whom have learnt a great deal from the experience.

Despite some long days and very hot conditions, the project has so far yielded over 4500 raw images and 500 edited images to be saved in a new image library.

Lucky timing also enabled the crew to capture some incredible images and footage of the recent Gascoyne River flow thanks to Cyclone Joyce.

As the saying goes, a picture is worth a thousand words and in an increasingly visual marketplace, the images are of great value to the region. Not only to the individual businesses, but to enhance the capacity for promotion of the region as a whole. Images will be used for posters, press articles, social media, website, presentations and much more.

MORE INFORMATION

The opportunity to participate in the project was promoted through the Gascoyne Food Council’s e-news and social media. However, if you missed the chance and want to be involved, please get in touch with Doriana on admin@gascoynefood.com.au to go on the list for the next opportunity.

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www.gascoynefood.com.au
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CARNARVON Grower’s Association Recognised Biosecurity Group spray program.
Medfly eradication project continues

**Medfly** (Medfly) is a serious horticultural pest in Western Australia, attacking a range both cultivated fruits and some fruiting vegetables.

The Carnarvon Mediterranean fruit fly (Medfly) eradication project started in 2014 and is working towards the eradication of Medfly from the isolated Carnarvon horticulture area. The Carnarvon fruit and vegetable industry is currently worth $80–100 million per year (farm-gate value) to the state’s economy and this area is planned to double in the next five years.

Carnarvon is 1000km from Perth and surrounded by arid lands without fruit fly hosts, making it a perfect site for eradication of the pest.

Key benefits of eradicating Medfly include lower grower costs and improved market access both nationally and internationally.

The Carnarvon Medfly eradication project is being used as a pilot to demonstrate the level of industry and community commitment required for such projects to be successful.

It will provide a useful model for developing Fruit Fly Free Areas or areas of Low Pest Prevalence in other parts of Western Australia and Australia.

The project aims to achieve eradication through methods such as Sterile Insect Technique (SIT), baiting, improved orchard hygiene and community education initiatives.

Up to five million sterile male flies are being released per week in Carnarvon via a state-of-the-art ground-based fly release machine. The high number of sterile male flies overwhelms the wild male Medfly population, making it extremely difficult for them to mate and so causes population crashes through infertile mating. In addition, the project collaborates with the Carnarvon Grower’s Association Recognised Biosecurity Group (CGA RBG) that run a grower funded fruit fly baiting program which reduces numbers of wild flies before sterile fly release.

To monitor the success of the sterile Medfly release and baiting programs, an array of traps were set up in 2015 in both the Carnarvon horticultural and residential areas. There are 125 traps that are checked weekly during the summer months and fortnightly during cooler months. Trapping allows areas of high Medfly prevalence, or “Hotspots”, to be highlighted. If Hotspots are identified, the project team work with the surrounding growers to assist them in improving their crop protection and hygiene methods.

Overripe capsicums have always been known to be a host of medfly in Carnarvon. However, the monitoring traps have identified chillies to be an important host and the cause of a number of large infestations. In most instances Medfly is not an issue during the growing season of these crops if insecticides are sprayed. Infestations most commonly occur at the end of the season when crops may be left as people go on holiday or if the value of the produce drops. It is critical that these unwanted crops are ploughed in so they will not continue breeding Medfly over summer.

In November 2017, the Department of Primary Industries and Regional Development (DPIRD) Compliance Inspectors joined the project team to boost the eradication effort. The Compliance Inspectors visit properties in Carnarvon to verify that growers and residents are using effective measures to control Medfly. If this is not occurring, inspectors will issue a Pest Control Notice which requires adequate measures to be taken. If DPIRD is required to step in and take remedial action, it will be at the cost of the landholder.

The project team are confident everyone in the community will want to do the right thing and play their part in this eradication effort. The on the ground eradication effort
is going hand in hand with an intensive community engagement program to encourage all Carnarvon residents to take action and control Medflies on their properties. Further afield, the project team attend community events such as the Perth Caravan and Camping Show and the Perth Garden Festival to encourage anyone travelling to Carnarvon to not bring fruit that could potentially contain fruit fly larvae with them.

Project team members are now a familiar sight in Carnarvon and checking the Medfly Hotspot map displayed in the CGA has become part of many grower’s routines. This Medfly Hotspot map divides Carnarvon into eight areas and displays the average Medfly trapping results for each of these areas, thus alerting growers to any Medfly population spikes so they can take additional control action.

The project has also assisted Carnarvon town residents in managing Medfly in their backyards by running a free Medfly trap giveaway program. In addition, growers were offered a free sample of Magnet™ MEDs, a fruit fly attract and kill device that can be used on both organic and conventional properties.

This has been a success with over 600 free traps and Magnet™ MEDs given out so far and a decrease in Medfly populations within the town area.

Over 1.3 billion sterile male Medfly have been bred in the South Perth Sterile Medfly production facility and sent to Carnarvon for release since January 2017. The successful release of this large volume of sterile Medfly coupled with an increase in the size of the CGA RBG Medfly baiting program has resulted in the lowest average Medfly populations in three years of monitoring, particularly over the winter period.

The summer months are typically the toughest for fruit fly control due to an abundance of fruiting fruit fly host species, such as mangoes and grapes. In spite of this, the project has continued to maintain low numbers, with 84% of Carnarvon plantations showing lower Medfly numbers in January 2018 compared to January 2017.

The project’s next step is raising awareness within the Carnarvon community and providing advice allowing for growers and town residents to keep on top of hygiene and control methods. Ian Foxley, Executive Officer of the CGA RBG said that more Carnarvon residents need to be aware of how the requirements of the Biosecurity and Agriculture Management Act 2007 affect them.

“All landholders in Carnarvon need to control Medfly on their properties, and this can be achieved through good orchard or backyard hygiene, baiting and trapping.” Mr Foxley said.

“We need to work with landholders to ensure they comply with the Biosecurity and Agriculture Management Act 2007 and share the responsibility of protecting Western Australia’s valuable agriculture industries. Overall, more residents need to be aware that DPIRD can inspect any landholder thought to be harbouring Medfly and issue a Pest Control Notice if necessary, which requests by law that specific Medfly control measures be applied.”

Medfly is one of the world’s most damaging pests

It can devastate crops and limit access to both national and international markets. Although they are usually associated with fruit production, Medfly can impact certain fruiting vegetables such as chillies, capsicums and sometimes tomatoes.

Although tomatoes are a poor host for Medfly, if the crop comes from an area of high Medfly prevalence, they need post-harvest disinfestation to gain market access.
1.3 BILLION STERILE MALE MEDFLY HAVE BEEN BRED & RELEASED SINCE JANUARY 2017.

Department technical officer Brett Renton said total eradication of Medfly in Carnarvon is best going to be achieved in the cooler months.

"During winter, host fruits such as mangoes and grapes are not fruiting, which reduces the opportunity for Medfly to breed," Mr Renton said.

"Therefore during winter when there are limited hosts to support the Medfly lifecycle, the population can drop significantly, however if there are just a few unmanaged fruit trees, Medfly can survive and breed. One of the main hosts of Medfly during these cooler months is citrus, which provides food for the maggots and shelter for the adult flies."

Mr Renton said citrus trees were common in backyards and on plantations throughout Carnarvon, and they were often unmanaged, providing the perfect environment to support fruit fly during winter.

“A productive citrus tree can produce far more fruit than required, with unwanted ripened fruit attracting Medflies,” he said.

“As the temperatures rise during spring, the sheltering Medflies start to emerge and move to other host fruit and vegetables.

“Citrus owners in Carnarvon are advised to prune their trees to reduce yield and remove and destroy infested fruits, preventing the further development of eggs and larvae and emerging fruit flies."

The greatest chance of eradicating Medfly is during winter and so effective Medfly control activities include installing a fruit fly trap, picking unwanted fruit from the tree, and collecting and disposing of fallen fruit from the ground by placing it in a bag and leaving it in the sun for a few days. These activities must be employed during this time.

The Carnarvon Medfly eradication project is part of the Department of Primary Industries and Regional Development (DPIRD) Boosting Biosecurity Project made possible by Royalties for Regions with additional funding from the Carnarvon Growers Association and Hort Innovation. Hort Innovation funding is from research and development levies and contributions from the Australian Government. Hort Innovation is the grower-owned, not for profit research and Development Corporation for Australian horticulture. The project will run to December 2018.

MORE INFORMATION
Contact Brett Renton, DPIRD, (0484 601 694 or brett.renton@dpird.wa.gov.au) or Ian Foxley (0418 353 171 or rgb@cgaa.org.au) for more information.

The landscape is changing.
Are you ready?

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.

40 years ago David left school to grow potatoes on the family farm. The following is a snapshot of the business that he and his wife Monica have since built.

Diversification has worked well for them and with the new skills the next generation are bringing into the business the future looks bright!

When did you become a farmer?
David feels like he was born into it! David and his siblings all grew up working on the farm, and it felt natural for him to continue this life.

What is your first memory of being on the farm?
Like most farm kids, David recalls earning pocket money by picking rocks and sticks to clear the land from a very young age. In David’s early childhood the Radomiljac’s kept a herd of dairy cows, so David has fond memories of milking Friesians and Guernseys with his mother.
How long has your family been in the region?

David’s parents, grandparents and great-grandparents the Phillips, Stirling and Radomiljac families have been involved in the production of crops from tobacco, potatoes, through fruit and vegetables into wine grapes today in the Manjimup/Pemberton area since the 1920s. David began working for the family as a farmer full time at 15 years of age.

David and Monica took over the land that is now Pemberley of Pemberton in 1995.

What types of agriculture do you have on the farm (apart from potatoes)?

Pemberley have undertaken intensive horticulture and mixed agriculture over the decades producing peas, beans, pumpkins, cauliflower, broccoli, dairy, beef cattle, marron, grapes and in the future truffles.

Currently, Pemberley produces wine grapes, potatoes, beef cattle, marron, truffles and are registered breeders for chocolate Labrador puppies. Pemberley grow nine varieties of grapes which are then made into ten different wines sold under the Pemberley brand, as well as supplying grapes to other WA wineries.

Do you see potatoes as part of your crop mix going forward?

Potatoes have proven to be a stable part of Pemberley’s farm enterprise. Potatoes fit in to the primary production schedule very well, they allow us to diversify our farming portfolio to create a stable yearly income. Although the business acknowledges the difficulties and uncertainties in the market fluctuations, the plan is to continue growing potatoes while they still have the skills, know-how and infrastructure.

WITH THE NEW SKILLS THE NEXT GENERATION ARE BRINGING INTO THE BUSINESS THE FUTURE LOOKS BRIGHT!
How do you evaluate the importance of keeping diversity of crops and animals?

Pemberley value diversity between industries, crops and animals very highly as it allows us to keep our workforce and property occupied all year-round. They find that the cattle, potatoes, wine grapes and truffles allow an even stream of income and help them to make better use of the land. Diversifying products protects them from the vagaries of the markets.

Who is working on your farm?

Pemberley employ two full-time staff, some part-time and many casuals seasonally.

Recently our eldest son Jordan returned to work in the business. Jordan moved to University in Perth and Melbourne to expand his understandings of viticulture by undertaking a Viticulture Degree and now enjoys applying his specialist knowledge to the farm. Ali, Tyler and Harley have all followed to further study, each moving to Perth to complete tertiary studies, but all come back to the farm during the holidays to pitch in.

Across the year, the business employs around 150 seasonal workers to maintain the vines and harvest the grapes.

Do you run your farm today in a different way than you did five years ago?

As a business we’re really lucky that in recent years, our children have developed an interest in returning to the farm to help to run the business. It has really become a family affair, with each of our sons working during their university holidays, and with our eldest, Jordan, moving back to the farm full time. The next generation are full of innovative ideas that are changing the way we’re looking forward — pitching new technologies that we can implement or ways to diversify our portfolio of crops. We’ve found that the new generation, being digital natives, are much more technologically-literate and able to enhance our innovation. Examples include our newly installed automated irrigation towers, assistive farming computer programs and data compiling and analysis to assess production and pricing trends.

Pemberley harvested the 2018 ware crop in the coolest part of the day at dawn. The 2.30am starts resulting in some interesting early-morning conversations that if recorded could have solved the entire world’s problem from the spud harvester.

Our second son, Tyler, with Bachelor degrees in Engineering and Commerce from UWA, took charge of the books and has helped to move our accounting system to a more modern online-based program. These technologies help to smooth the way we run the farm, and allow us time to be more proactive rather than reactive. These technologies usually have high implementation costs and take many hours to iron out the kinks, but we can see the value of these long term.

Tyler’s Honours project in Preventive Maintenance has application in the way machinery is operated these days. Another long-term goal is the reduction of carbon-costs at Pemberley so that we can operate in a more sustainable manner. We hope to install more solar panels, energy storage, improve our recycling systems and focus on the general reduction of use of fossil-fuels. We’re excited by the focus on sustainability in technology development and are eagerly watching for suitable technology that is appropriate to implement into our practices.

As you look back on the years, what has been your biggest obstacle?

Climate and economy always make all farming a challenge. Staffing can also be problematic; the fluctuating numbers of workers required seasonally and the sometimes long hours day and night during harvest can put pressure on full time staff as well.

Who has been your greatest influence on you and your business?

1. The changing and evolving market — as a business we need to consider the market first and foremost. We need to produce the quality and variety that the market desires.

2. Family tradition — We’re here because of the hard work my parents put into the farm initially, and we hope that the next generation will continue this into the future.

3. Support from Industry Experts — The information and education available from Agronomists and industry bodies allows us to improve what we do and feel confident to supply quality product to the market.

What do you see on the horizon for the Potato Industry?

We hope that the potato industry will still be strong, we’re excited to be a part of the great network of new generation producers here in Western Australia.

We need to improve and promote the consumer’s understanding of the farming process and what it takes to get produce from paddock to plate, which will hopefully result in more money per kilo to the farmer.

The public will hopefully support niche growers in niche markets and we look forward to the development of secondary production in a specialised way that can support the growers of potatoes in WA.

Whilst every season throws up its own difficulties and challenges it also continues to provide opportunities to develop better ways to improve the quality of produce via the input of researchers, agronomist and industry support.

What is farming apart from hard work with a lot of hope and some good luck?

JORDAN on the farm.
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DEPARTMENT PRIMARY INDUSTRIES & REGIONAL DEVELOPMENT

- VARIETY trial in Egypt conducted amongst a commercial crop.

SIMON Molton discussing production practices with members of the Egyptian potato industry.
Can seed potatoes from Western Australia benefit Egyptian potato growers and can WA seed growers make money in this trade?

To answer these questions Mr Simon Moltoni, EO WA Potatoes, three seed potato growers and exporters; Mr Aaron Chapman of WA Elite Seed, Mr Patrick Fox of Fox Farming, Mr Kon Peos of Southern Packers plus Mr Andrew Taylor of DPIRD and Mr Aziz Saba from the WA Trade Office in Dubai visited Egypt last December.

Meetings with government officials and industry players provided information about the supply chain and regulations affecting this market. Field visits enabled us to gain perspective into some of the production practices and constraints facing Egyptian potato growers.

What we learnt
- The Egyptian potato market is big; in 2014 they produced 4.6 million tonnes of potatoes. Australia produced 1.3 million tonnes in the same period.
- January and February and harvested in May. The smalls from this harvest are kept in cool store for planting in September for a second crop harvested in April. Ware potatoes from this second crop are exported back to the European Union. Other large export markets include Russia. January planted crops yield 27t/ha but yield drops to just a third in the second planting in September. Yield constraints will include viruses, sunlight hours, bacterial wilt and irrigation inefficiency.
- Bacterial wilt has created market access problems for the Egyptian industry. European import bans have been placed on Egyptian potatoes from time to time due to detections of bacterial wilt in shipments and production areas. Extensive surveillance and testing regimes have now been implemented to assure export markets that Egyptian potatoes are free from bacterial wilt. Production has also moved to virgin soil outside the traditional growing regions.

Opportunities for WA seed
The September planting is the largest crop in Egypt and is particularly popular for the home made French fry market. This planting window fits ideally with WA seed supply by allowing growers to harvest, cure and ship seed that is of optimum physiological age when it arrives in Egypt.

WA is free from bacterial wilt and a number of other pest and diseases of concern for Egyptian potato growers and officials. WA’s freedom from bacterial wilt assures the Egyptian potato industry they will not introduce bacterial wilt into their virgin production areas when using WA seed potatoes.

Challenges for WA seed
WA is a higher cost producer of seed potatoes compared with Europe, so Egyptian buyers need to be attracted by other benefits of WA seed such as its pest and disease freedom, ideal physiological age for the September planting plus learning from WA’s expertise in growing potatoes in warm sandy areas.

Only 132 registered varieties are allowed to be propagated in Egypt and most are not grown in WA. For registration, a variety must be field trialled in Egypt for at least two cropping seasons. Therefore market development won’t occur rapidly.

Future directions
We feel the Egyptian market is worth pursuing. A delegation of Egyptian potato industry representatives will visit WA in 2018 to observe how WA production systems operate.

To obtain Egyptian market access discussions have to occur at the federal level through the Department of Agriculture and Water Resources (DAWR).

We need to demonstrate the performance of WA seed in a September planting in Egypt.

Acknowledgements
The travel is a component of an Industry Grant for International Competitiveness with support from the Potato Growers Association. DPIRD provided in-kind support for Andrew Taylor’s time.

MORE INFORMATION
Contact Simon Moltoni WA Potatoes on (08) 9481 0834 or simon@wapotatoes.com.au
Water work underway to support Peel food zone

"Managed aquifer recharge is a strategic option that could provide climate-independent long-term, high volume water storage for future needs.

Water Minister Dave Kelly
A 420km² airborne electromagnetic survey has been flown over the proposed Peel Food Zone to provide new and detailed information on potential water resources for the Transform Peel project.

Transform Peel is a development program centred in Nambeelup in the Murray Shire and delivered by the Peel Development Commission. It comprises three integrated, strategic elements: a 42,000ha Peel Food Zone, a 1,000ha Peel Business Park and the Peel Integrated Water Initiative.

The Peel Integrated Water Initiative is tasked with developing integrated water management across the food zone including reducing nutrient flows from across the program area by 50% to protect the Peel and Harvey estuary.

Water will also be required for the Business Park and agri-innovation precinct, which will focus on the attraction of food manufacturing and processing industries, logistics enterprises and supporting commercial and light industrial activities.

The airborne survey took three days and involved a helicopter suspending a large coil about 30 metres above the ground, with the coil sending an electromagnetic pulse into the ground and recording the return signal.

This provides information about the geological properties of the groundwater system, groundwater salinity and the location of the saltwater-freshwater interface.

The data is then used to help assess the quality of the groundwater, and help model the potential impacts of future groundwater abstraction on existing users and water dependent ecosystems.

“Airborne electromagnetic surveys are increasingly used to conduct geophysical surveys as large areas can be covered in days as opposed to weeks or months using ground-based techniques,” Water Minister Dave Kelly said.

“This work will contribute valuable information on groundwater quality and availability in the region, and improve our understanding of how the groundwater system works.

“The models developed through this survey are an important part of ensuring sustainable management of water, both for the environment and for the economic growth created by the Peel Food Zone.”

Regional Development and Agriculture and Food Minister Alannah MacTiernan said reliable, detailed water information will help to bring investment in intensive agricultural projects to the Peel region and help us to drive sustainable, long-term jobs in agriculture.

“The Peel Food Zone presents real economic opportunities for the region and this survey is an important step towards ensuring the fundamentals are in place to support growth and job creation,” she said.
Airborne survey data will be analysed and combined with other data from the study area, to form a virtual model of the groundwater system. A full set of results from the study is expected in November 2018.

This investigation follows the commencement in September 2017 of a study to determine if recharging aquifers with stormwater could help secure long-term water supplies for intensive agriculture the Peel Food Zone and adjacent Peel Business Park.

The managed aquifer recharge study is expected to be completed by March 2018, after which the Department of Water and Environmental Regulation will have an indication of the approximate amount of water that can be stored in the aquifer, how long it can be stored for and the level of treatment the water will be required to go through before being injected into the aquifer.

“To grow sustainable agriculture jobs and opportunities in the Peel region, we need to be innovative in finding water management options to respond to the impacts of climate change,” Minister Kelly said.

MORE INFORMATION
For more information please visit the website www.dwer.wa.gov.au.

Is this a good look for your industry?

Burn or bury those old attitudes on recycling... not your chemical waste!

You can’t ignore it any more, most QA programs require responsible waste management. On our websites you can locate your nearest drumMUSTER collection site with an interactive map. You can also find out the status of the next ChemClear collection in each state. It’s quick and simple. Contact your WA consultant, Graeme Passmore: 0429 933 307

1800 008 707 | www.drummuster.org.au
1800 008 182 | www.chemclear.org.au
Western Australian Horticulture Update 2018

Crown Convention Centre
Thursday August 16
Friday August 17

For any queries, please contact kirrily.palmer@dpird.wa.gov.au

Full program coming soon at www.agric.wa.gov.au/hortupdate2018
### POTENTIAL IMPACT OF THIS PLAN

Based on an estimated investment of $4.96 million over the next five years

$34.6 Million

### OUTCOMES STRATEGIES

<table>
<thead>
<tr>
<th>OUTCOMES</th>
<th>STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry profitability is improved by increasing the value of product sold on the domestic market</td>
<td>Collaborate with retailers to better understand the opportunities to build category value.</td>
</tr>
<tr>
<td></td>
<td>Build capability in servicing regional and niche market channel opportunities.</td>
</tr>
<tr>
<td></td>
<td>Develop new fresh potato product concepts.</td>
</tr>
<tr>
<td></td>
<td>Support development of higher value products.</td>
</tr>
<tr>
<td></td>
<td>Support R&amp;D around improving waste-stream use.</td>
</tr>
<tr>
<td>Export markets have grown resulting in increased average returns to growers</td>
<td>Develop a five-year export market development strategy covering fresh, processing and seed potatoes.</td>
</tr>
<tr>
<td></td>
<td>Provide the necessary R&amp;D support for priority market access and market improvement business cases.</td>
</tr>
<tr>
<td></td>
<td>Support exporter capability building and knowledge of prime prospect markets.</td>
</tr>
<tr>
<td></td>
<td>Establish improved intelligence for export markets.</td>
</tr>
<tr>
<td>Average yields have improved resulting in reduced cost of production</td>
<td>Run subject-specific professional development workshops for consulting agronomists (jointly with processing program).</td>
</tr>
<tr>
<td></td>
<td>Leverage the potato extension program into establishing regional grower development groups.</td>
</tr>
<tr>
<td></td>
<td>Integrate precision ag, integrated pest management (IPM) and soil health as core elements of the potato extension program.</td>
</tr>
<tr>
<td></td>
<td>Establish an appropriate prioritised regional extension program to address pest and disease challenges/threats.</td>
</tr>
<tr>
<td></td>
<td>Support industry-wide efforts to improve the performance of certified seed across the supply chain.</td>
</tr>
<tr>
<td>Increased innovation and agility in potato businesses has resulted in a sustainable industry that can adapt to highly dynamic markets</td>
<td>Improve industry engagement with a revised communication program.</td>
</tr>
<tr>
<td></td>
<td>Introduce an annual scholarship to support overseas study tours for young growers.</td>
</tr>
<tr>
<td></td>
<td>Introduce Next Gen leadership development program, including internships and scholarships for growers, farm managers, scientists and advisors (in collaboration with processing SIP).</td>
</tr>
<tr>
<td></td>
<td>Develop an IT self-assessment benchmarking tool.</td>
</tr>
<tr>
<td></td>
<td>Develop an online knowledge database for growers that translates the latest research into practical information.</td>
</tr>
</tbody>
</table>
Major opportunities
- Development of new consumer products
- Leveraging “brand Australia” product integrity in export markets
- Technology advances
- Targeted application of agronomy skills to suit the three potato markets – fresh, seed and processed
- Development of new (non-food) uses to achieve a greater return for waste and by-products
- Increased adoption of R&D, in particular precision agriculture
- Internationally recognised standard of seed.

Major challenges
- Negative health perceptions and declining consumption
- Poor industry understanding of consumer needs
- Market access restrictions in northern Asian markets
- Lack of industry cohesion
- High cost of production and supply chain costs
- Low adoption of available R&D on-farm
- Inconsistent seed quality across growing regions
- Inconsistent agronomic advice and lack of extension specialists
- Increasing imports (frozen)
- Biosecurity risk and disease incursions
- Pressure on water availability.

Potato industry size and production distribution

- 2014/15
  - VIC: 21%
  - WA: 5%
  - QLD: 4%
  - SA: 38%
  - TAS: 24%

- 2015/16 Approximately 880 growers

Potato supply chain and value 2014/15

- Production: 1,332,769 tonnes
- Value: $660.3 million
- Processing: 848,126 tonnes; 64%
- Fresh supply: 461,622 tonnes; 35%
- Fresh export: 23,021 tonnes; <2%
## STRATEGIC INVESTMENT PLAN
### 2017-2021

### AT A GLANCE

<table>
<thead>
<tr>
<th>OUTCOMES</th>
<th>STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export markets grown through increased understanding of opportunities available, improved market access, improved export capabilities, improved reputation and competitive advantage</td>
<td>Facilitate a united representation of the vegetable industry to international markets</td>
</tr>
<tr>
<td></td>
<td>Better understand the export opportunities available to the vegetable industry</td>
</tr>
<tr>
<td></td>
<td>Improve market access in priority markets for vegetables</td>
</tr>
<tr>
<td></td>
<td>Improve the export capability of Australian vegetable growers</td>
</tr>
<tr>
<td></td>
<td>Improve and capitalise on the opportunities available for inbound and outbound trade linkages</td>
</tr>
<tr>
<td></td>
<td>Improve and capitalise on the use of e-commerce to export produce to existing priority markets</td>
</tr>
<tr>
<td></td>
<td>Capitalise on Australia’s geographic advantage to Asia and realise the export potential available in regional areas</td>
</tr>
</tbody>
</table>

### OUTCOMES STRATEGIES

#### Increased demand and value of the domestic vegetable industry through improved grower knowledge of the market, product differentiation, increased food service revenue, improved food safety and increased consumer knowledge

- Increase knowledge to better understand consumer trends and segments
- Identify value-adding opportunities such as pre-cut and improved packaging to achieve price premiums
- Improve stakeholder education for vegetables such as the identification and extension of the health benefits associated with vegetables
- Increase the market share for vegetables in food service such as the identification of potential product offerings specific to the sector
- Support product differentiation that align with Australian consumer needs
- Improve food safety standards and traceability

### POTENTIAL IMPACT OF THIS PLAN

Based on an estimated investment of $90.68 million over the next five years, the potential impact is estimated at $471.87 million.
## Vegetable Strategic Investment Plan 2017-2022

### At a Glance

<table>
<thead>
<tr>
<th>OUTCOMES</th>
<th>STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased farm productivity and decreased production costs through better utilisation of resources, adaptation to climate, reduced impact of pests and diseases and better utilisation of advanced technologies on the farm</td>
<td>Reduce on-farm food waste including alternative uses such as value-added foods and beverages, biofuels and nutraceuticals amongst others</td>
</tr>
<tr>
<td></td>
<td>Reduce major production costs through initiatives such as precision agriculture</td>
</tr>
<tr>
<td></td>
<td>Adapt and improve current protected cropping and intensive production technologies to the Australian environment</td>
</tr>
<tr>
<td></td>
<td>Protect the vegetable industry from both endemic and exotic pests and diseases that significantly impact the industry</td>
</tr>
<tr>
<td></td>
<td>Introduce new cultivars that have favourable production related traits such as resistance to pests and diseases, severe weather conditions and varieties that allow for automation</td>
</tr>
<tr>
<td></td>
<td>Enhance the sustainability of the industry and to help growers prepare and mitigate against the cost of climate change</td>
</tr>
<tr>
<td></td>
<td>Improve the use and management of soil and water – critical inputs to commercial vegetable production</td>
</tr>
<tr>
<td></td>
<td>Increase use of advanced technologies to improve farm productivity and/or reduce input costs for growers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OUTCOMES</th>
<th>STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved capability of levy payers to adopt improved practices and new innovation through improved communication and extension programs, grower innovation support, professional development and workforce building programs, and through improved farm management and information systems</td>
<td>Improve supply chain integration and efficiencies</td>
</tr>
<tr>
<td></td>
<td>Improve the product quality along the supply chain with the aim to increase returns for growers</td>
</tr>
<tr>
<td></td>
<td>Support collaboration between growers and stakeholders along the supply chain to improve its efficiency</td>
</tr>
<tr>
<td></td>
<td>Improve the communication and extension of research outputs to address a geographically and culturally diverse vegetable industry</td>
</tr>
<tr>
<td></td>
<td>Support innovation that advance and grow the vegetable industry</td>
</tr>
<tr>
<td></td>
<td>Improve grower skills in all areas associated with commercial vegetable production</td>
</tr>
<tr>
<td></td>
<td>Improve farm management practices and systems to assist growers in efficient and effective decision making</td>
</tr>
<tr>
<td></td>
<td>Build skills in the vegetable industry workforce and attract new people to the industry</td>
</tr>
</tbody>
</table>
Vegetable
STRATEGIC INVESTMENT PLAN
2017-2022
AT A GLANCE

Major opportunities
- Seasonal opportunities for export markets (southern hemisphere location)
- Close proximity to large and growing Asian markets
- Reputation for quality processes and standards
- Export of premium quality fresh vegetables into new markets
- Production capacity across diverse regions
- Increasing consumer aspirations for healthy eating
- Increasing investment in new and innovative technologies
- Adoption of consumer insights and use in business decision making
- Better exploitation of the significant investment in R&D.

Major challenges
- Environmental, pest and disease factors
- Wide climatic variability and biosecurity risks
- Competition from imports, particularly from low-cost countries
- Economic factors and increased global competition
- High production costs
- Lower farmgate margins
- Insufficient and rising cost of labour
- Slowing of productivity growth
- Impediments to exports such as trade barriers
- Limited uptake of industry knowledge and transfer of innovation
- Adoption of best-practice management models.

Industry size and production distribution

2014/15
Approx. 1,676 VG levy paying businesses

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>13%</td>
</tr>
<tr>
<td>VIC</td>
<td>23%</td>
</tr>
<tr>
<td>WA</td>
<td>13%</td>
</tr>
<tr>
<td>QLD</td>
<td>22%</td>
</tr>
<tr>
<td>SA</td>
<td>13%</td>
</tr>
<tr>
<td>TAS</td>
<td>15%</td>
</tr>
</tbody>
</table>

Vegetable* supply chain and value 2015/16

Production
3,567,262 tonnes
$3,804 million

<table>
<thead>
<tr>
<th>Sector</th>
<th>Volume</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing</td>
<td>1,284,263</td>
<td>36%</td>
</tr>
<tr>
<td>Fresh supply</td>
<td>2,073,501</td>
<td>58%</td>
</tr>
<tr>
<td>Fresh export</td>
<td>209,498</td>
<td>6%</td>
</tr>
</tbody>
</table>

* All vegetables including non-vegetable levy paying vegetables

Source: Australian Horticulture Statistics Handbook 2015/16

APC–Pomewest FFS Income 2017–18

<table>
<thead>
<tr>
<th>Project</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Account Budget</td>
<td>450,000</td>
</tr>
<tr>
<td>Biosecurity Account Budget</td>
<td>60,000</td>
</tr>
</tbody>
</table>

APC–Pomewest major projects 2017–18

<table>
<thead>
<tr>
<th>Project</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercialisation for WA (FW Co-operative Ltd)</td>
<td>120,000</td>
</tr>
<tr>
<td>Note less 50% salary reimbursed for professional services of Nardia Stacy as executive officer as in 16–17 financial year.</td>
<td></td>
</tr>
<tr>
<td>New Technology Project (Susie Murphy White)</td>
<td>52,000</td>
</tr>
<tr>
<td>Study Tour to NZ</td>
<td>31,000</td>
</tr>
<tr>
<td>Flavonoid Project</td>
<td>40,000</td>
</tr>
<tr>
<td>Market Access Project</td>
<td>50,000</td>
</tr>
<tr>
<td>Annual Meetings &amp; Communications</td>
<td>14,500</td>
</tr>
<tr>
<td>Medfly Surveillance Trapping Network (Ashmere Consulting)</td>
<td>60,000</td>
</tr>
<tr>
<td>Coding Moth (DPIRD)</td>
<td>35,000</td>
</tr>
<tr>
<td>Maturity Standards Legislation and Compliance</td>
<td>45,000</td>
</tr>
<tr>
<td>Industry Sponsorships and Association Memberships</td>
<td>12,500</td>
</tr>
<tr>
<td>Promotion &amp; Publicity Local Project (Fresh Finesse)</td>
<td>24,000</td>
</tr>
<tr>
<td>Administration</td>
<td>148,060</td>
</tr>
<tr>
<td>APC Administration Charge</td>
<td>45,000</td>
</tr>
</tbody>
</table>

APC fee for service charge

POME FRUIT effective from 1 January 2015

<table>
<thead>
<tr>
<th>Type of fruit</th>
<th>$/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh fruit — apples, pears, Nashi, other</td>
<td>0.015</td>
</tr>
<tr>
<td>Processing fruit</td>
<td>0.005</td>
</tr>
<tr>
<td>Biosecurity FFS for fresh fruit</td>
<td>0.002</td>
</tr>
<tr>
<td>Biosecurity FFS for processing fruit</td>
<td>0.001</td>
</tr>
</tbody>
</table>

I thank the 35 growers who supported the recent Pome Grower Summit in Bunbury last month. Planning an appropriate date for this type of event is always a little difficult. With factors such as harvest and timing of presenting current activities to be considered we don’t always find an ideal window in the calendar. However, I believe there will be other opportunities to repeat a similar event later in the year to update and open discussion on industry matters. Bunbury will remain the likely location to ensure the best way to encourage attendance, collaboration and networking. The February Summit was a great success and all the feedback suggested this format was a good way to get the industry together.

Staff Update

We have the pleasure of welcoming Natalie Gallagher to Pomewest. Natalie is extensively skilled in client liaison, communications and office administration. Natalie was introduced to the industry at the recent Pome Growers Summit and offers the industry a fresh perspective and enthusiasm to the industry especially being able to tap into her unbiased eye of the consumer. Natalie’s role will be to assist my role as manager and assist with the daily running of business.

Season Update from Susie Murphy White

The pome fruit season is off to a good start with some really nicely coloured, good sized Galas just waiting to be picked. At the time of writing this most growers are waiting another week so the maturity is just right and our consumers get the best eating experience of new season WA grown apples. Most trees are looking very clean with the fruit sizing up above average. Some varieties have suffered from sunburn this year even though we’ve had a very mild summer, they just haven’t had to toughen up during a heat wave yet.

Crop estimates have been collected for the fourth year from a select grower panel in WA. The 2018 pome fruit estimates indicate that the apple crop has set light after a low chill winter and wet spring, but thinning strategies have been effective. This will mean WA will see some really good sized fruit, the number of apples may be a bit less but tonnages should be just under last year. The fruit size data from the group of growers monitoring fruit size shows that growth rates of Pink Lady, Fuji, Granny Smith and Gala’s are all well above average this year and all varieties will be of good size.

Industry Updates

Maturity Standards

With new season fruit to the market this month, Pomewest continues to negotiate with the Department of Primary Industries & Regional Development (DPIRD) to legislate our proposed Maturity Standards under Biosecurity and Agriculture Management Act 2007 (BAM Act). This is an ongoing industry led endeavour, to improve quality experiences for WA apple eaters.
Buy West Eat Best
As discussed at the recent Summit, Pomewest has re-instated its membership with By West Eat Best. We are looking into a collaboration to improve ‘Grown in WA’ opportunities to increase demand. There may be opportunities for WA horticulture industries to come together to increase consumption of fresh fruit and vegetables including school programs and cross-promotional activities.

Q Fly Detection — Fremantle January 2018
Pomewest are continuing to work with the Department of Primary Industries and Regional Development on the latest outbreak which was reported to industry in late January. It is important to keep your email contacts current with us as this is the way we can communicate biosecurity incidents and other major events to you quickly and accurately. We are sending you weekly updates on the situation but on the whole seems (at the moment) to be less invasive as the Alfred Cove incident in 2016.

So far the fly has only been detected in a residential area and there have been no detections in any commercial fruit or vegetable production areas.

WA’s area freedom has been suspended for susceptible hosts within a 15km radius of the outbreak area. To prevent the spread host fruit cannot be exported from within the suspension area, which includes the Canning Vale Markets, without treatment or other approved protocol. WA’s area freedom from Q fly, which underpins market access for a range of produce, does remain in place for the remainder of the State.

Upcoming events
2018 New Season — means new social media opportunities
The new season provides opportunities for great stories, videos and photos to share on our social media Facebook and Instagram pages. To assist us with relevant and regional news please send in any material to assist you promote your business and the apple and pear industry as a whole. This is the easiest and cost effective way to bring awareness of the excitement to the category which benefits everyone.

The 66th Donnybrook Easter Apple Festival 31 March – 1 April 2018
Pomewest are sponsoring an apple promotion at the upcoming festival over the Easter Break. Pomewest will be looking to promote apples and draw focus back to the original concept of the show — Apples by supporting the region and the importance of the grower. There are a few ideas kicking around on the best activity to raise awareness all will be reported in the next edition of the WA Grower.

Hort Connections 2018 Brisbane June 18–20
This is an opportunity at a National level for you to improve your knowledge on marketing trends, production and industry updates as well as bringing together the largest number of growers, supply chain members, government stakeholders and industry service providers in the Australian horticulture industry.

In 2018 APAL are back, involved and supporting the event with Monday 18th June being the day allocated to activities and presentations for Apple and Pear delegates. This will include a program on speed updating with growing techniques, along with presenting new varieties, marketing strategies and an opportunity to bring a national focus to our industry.

Pomewest encourages your attendance at this event. Please contact me if you are interested in attending as we may be offering sponsorship for growers to attend. More details will be provided shortly through our email contact communications.

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 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

WA Pome Industry Summit
A WA Pome Industry Summit, sponsored by Pomewest, took place on 7 February in Bunbury at the Mercure Bunbury Sanctuary Golf Resort, Bunbury between 3.00–6.30pm. The program included three presentations on the recent NZ study trip, Market Access Project and Promotions Update. There was also the opportunity to discuss future project aspirations and goals. More details in the following article in this WA Grower edition and copies of the presentations are available on our website http://pomewest.net.au.

and in turn create increased demand. At this stage progression is slow, however, we will undertake to report our progress as soon as possible.

In the meantime, quality testing has commenced for Royal Gala with the appointment of Total Quality Assurance Systems checking fruit across wholesale and retail markets. So far the majority of producers are adhering to the standards with a minority of growers and marketers still selling immature fruit to take advantage of early market pricing opportunities. We ask again that you resist the temptation to follow this practise as it is to the detriment to offering consumers quality fruit at all times and unfair to growers doing the right thing and waiting for maturities before picking. We will endeavour to send individual businesses reports of the testing results as they are collated during the season.

Hort Connections 2018 Brisbane June
The 64th Donnybrook Easter Apple Festival 31 March – 1 April 2018
Pomewest are sponsoring an apple promotion at the upcoming festival over the Easter Break. Pomewest will be looking to promote apples and draw focus back to the original concept of the show — Apples by supporting the region and the importance of the grower. There are a few ideas kicking around on the best activity to raise awareness all will be reported in the next edition of the WA Grower.

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This is an opportunity at a National level for you to improve your knowledge on marketing trends, production and industry updates as well as bringing together the largest number of growers, supply chain members, government stakeholders and industry service providers in the Australian horticulture industry.

In 2018 APAL are back, involved and supporting the event with Monday 18th June being the day allocated to activities and presentations for Apple and Pear delegates. This will include a program on speed updating with growing techniques, along with presenting new varieties, marketing strategies and an opportunity to bring a national focus to our industry.

Pomewest encourages your attendance at this event. Please contact me if you are interested in attending as we may be offering sponsorship for growers to attend. More details will be provided shortly through our email contact communications.

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 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
Liana Walsh’s family of five have enjoyed a genuinely amazing holiday to the Southern Forests region in Western Australia after winning BRAVO™’s Bite Your BRAVO™ photo competition in 2017.

Run on social media, the competition was created to help promote the Australian grown and bred apple during its second commercial season. The prize was a trip for two to stay at the stunning Foragers Field Kitchen and Cooking School in the heart of Western Australia’s apple country, and the birthplace of BRAVO™, to which the couple gladly decided to bring along their boys, aged 5, 8 and 10, to enjoy.

The Walsh family tour Lyster Orchard to see how the next season of BRAVO™ apples are progressing.
BRAVO™ apple history

In 1992, John Cripps, crossed two apple varieties — Cripps Red and Royal Gala — which bore a number of seedlings. Over the next twenty years, the Department of Agriculture and Food, as part of the Australian National Apple Breeding Program, developed and further tested these apple trees and their fruit. It was quite apparent through this time that the program had something like no other apple, in the fruit of ANABP 01 variety from which we get the BRAVO™ branded apple.

Interest in the new variety and its distinctive fruit peaked interest from local Western Australian growers, as well as growers from the eastern states. ANABP 01 was released to commercial orchards in Australia in 2014 through a commercialisation arrangement with Fruit West Co-operative Limited.

In 2016, BRAVO™ branded apples debuted on premium retailers’ shelves in Western Australia and New South Wales.

BRAVO™ apples have a distinct sweetness, are crisp and crunchy, and have a striking dark burgundy colour like no other apple in the Australian market. BRAVO™ has been embraced by growers, retailers and consumers alike, as an exciting new choice for apple lovers.

The Southern Forests region is one of the most abundant and striking places to visit in Western Australia. A fact that the region is now focused on promoting heavily through its Genuinely Extraordinary Southern Forests Food & Farm Experience tours (more details below) and is located just 300km from Perth.

MORE INFORMATION

For further information Genuinely Extraordinary Southern Forests Food & Farm Experience tours contact:

Bevan Eatts, SFFC Executive Chairman
t: 0419 811 823
e: bevan@southernforestsfood.com

For further information on BRAVO™ contact:

Nardia Stacy, Executive Officer
t: (08) 9368 3869
e: nardia@fruitwest.org.au

A highlight of the visit was a tour of the Lyster Orchard to see how the next season of BRAVO™ apples were progressing, and to compare farming notes. The Lyster family includes three generations of orchardists with a combined 60 plus years in the apple and pear industry, who are passionate about producing premium products.

Ann Lyster, grower and Director of Fruit West Co-operative Ltd, was on hand to show the family around the orchard.

“It was a pleasure to host the Walsh family and talk about the amazing journey of the BRAVO™ apple over the past 20 years from its discovery to commercialisation,” Ann commented. “Not only have the family been impressed with the bountiful produce from the Southern Forests, but also its amazing natural beauty,” said Ann.

For the Walsh family, it was the first aeroplane trip for the children and an eye-opening experience.

“We felt so welcomed into the Southern Forests region by Ann, Sophie and all of the locals, with the orchard tour an absolute highlight of our trip. My children had so much fun picking the small apples off the trees. We visited every attraction in the area and get lots of inspiration to get home into the vegie garden after seeing farmers crops. Our stay at Foragers was beautiful, and overall for us it was by far our best holiday,” said Liana.

BRAVO™ will start returning to markets in its third commercial season in around May 2018. The apple will be sold Australia-wide and is also continuing trials into international markets as production increases.

Apple tasting notes (by Chef Sophie Zalokar)

Colour and appearance

• A medium to large, full and rounded sized apple with a distinctively rich, deep burgundy coloured skin and golden lenticels or sparkle-like flecks over the skin surface
• Creamy, parchment white flesh colour, which beautifully contrasts to the skin. When cut, the flesh is slow to oxidize
• The apple flesh has a firm crisp texture loaded with juice, holding its shape well when cooked
• Great crispy crunch and feel in the mouth when eaten as table fruit

Aroma and flavours

• Sweet with a fresh aroma similar to the earthy smell of rain on dry earth
• Hints of woody, Christmas spice and red wine flavours
• Very pleasant, well balanced sugar to acid flavour
What’s over the ditch that’s so interesting to a bunch of young orchardists from WA?

In late January nine young orchardists participated in Study Tour of New Zealand pome fruit orchards. The group visited seven orchards, a pack house and the Plant & Food Research Centre in the Hawkes Bay region on the North Island. They then flew down to the Nelson Region in the South Island to visit one nursery and 10 orchards. It was very busy week learning about a buoyant industry that exports more than 90% of their apples and pears.

The tour started with a visit to Plant and Food Research (PFR) in Hawkes Bay learning about the Prevar breeding program. The apples and pears bred through Prevar are available to all Australian growers. So it was good to see their breeding facilities hear about their goals of breeding high flavoured apples, red fleshed apples and pears, fruit with durable resistance traits and the interspecific pears (crosses of European and Asian pears).

We then walked through to the Future Orchards Production Systems (FOPS) trial site located at PFR. Here we meet Ben Van Hooijdonk and Stuart Tustin the plant physiologists who had developed the FOPS planting system. The trial is a 2D planar system aimed at controlling vigour and using light more efficiently and driven by the high cost of land in Hawkes Bay ($100,000/ha).

The narrow row spacings were at 2m for the Piqa™Boo™ pears, Jazz™ apples and 1.5m for Gala apples. All planted with twin stems at 1.35m apart and the vertical fruiting branches trained to be at 30cm apart, so 10-12 uprights per stem.

This trial was in its 4th leaf and was expected to yield very well this season; Gala 85t/ha, Jazz™ 160t/ha and Piqa™Boo™ pears 35t/ha.

A very impressive trial to see and then what was more impressive were the NZ growers who were already implementing and adapting the FOPS principles into their commercial orchard plantings. The trials on growers properties had received no funding assistance from outside the orchard business it was just growers having go in their own orchard.
While in the South Island around Nelson growers had focused their efforts on growing 2D systems allowing them to be robot ready. In some cases they were already using platforms to thin, prune and pick.

The New Zealand industry was very focused on exporting to all over the world and not relying on any one market, with their main markets at present Asia, Europe, UK and Americas.

Most growers grew many varieties and had a few club varieties on their orchard. On the tour we saw a lot of Envy™, Jazz™, Gala and Braeburn blocks of which are all exported.

The group of young WA orchardists were really inspired by the tour after seeing so many different orchards outside of their own regions. They learnt so much they were keen to come home and try some of the new ideas on their orchard. They showed this enthusiasm by sharing their knowledge gained on the tour at the recent Pomewest Summit panel discussion.

**MORE INFORMATION**

This project was supported by the Agricultural Produce Commission and Pome sub-committee with growers funding their travel costs.

Special thanks goes to the AgFirst Consultants Ross Wilson, Steve Spark and Nic Finger for sharing their knowledge and hosting our group in New Zealand.

> NEW planting of Envy™ apples on Sunpeach Orchard Hawkes Bay, trees planted at 1.5m apart and row spacing of 3m.

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Special thanks goes to the AgFirst Consultants Ross Wilson, Steve Spark and Nic Finger for sharing their knowledge and hosting our group in New Zealand.
Deputy Chair of the Pomewest Committee Mark Scott welcomed with a special mention of approximately 35 growers and representatives of stakeholder organisations, the Department of Primary Industries and Regional Development (DPIRD) Hort Innovation, Apple and Pear Australia (APAL) and the Agricultural Produce Commission (APC).

Mark Scott then introduced the members of the Pomewest Committee and staff and welcomed new staff member Natalie Gallagher to the Pome industry. He acknowledged the difficulties of timing the event with the imminent harvest commitments. However, he thought looking around the room that the turnout was very pleasing.

He then addressed the purpose of the Summit and explained how it had evolved — an outcome of last year’s regional roadshow dinners.

He believed that the benefit of this forum was essentially to get growers together to learn, share ideas and to basically catch up.

It was also an opportunity to provide updates on our current projects and services and invite the members to assess Pomewest’s performance and how to look to other ways and ideas to improve services provided under the provision of funding of the Agricultural Produce Commission (APC) Fee for Service (FFS) payments.

Mark also acknowledged that the summit objectives and outcomes will assist the committee to establish future directions and recommendations for the process of recommending future projects.

Mark advised that the current activities and funding decisions by the Committee supported on behalf of the industry by the Committee are based to fit within the parameters of the 2015–20 Pomewest Strategic Plan objectives being:
Objective 1
Increase the profitability and sustainability of the WA Pome Industry
Securing production base, improve efficiency and innovation and develop and maintain market opportunities.

Projects for 2017–18
• New technologies — including Future Orchards, crop size, estimating etc.
• Study Tours to NZ
• Biosecurity — trapping for Codling Moth and providing preparedness for future incidents and incursions
• Market access — National Systems Approach project

Objective 2
To increase the quality and consumption of WA pome fruit
Including product development, enhancement and maturity standards.

Projects for 2017–18
• Commercialising new varieties
• Health benefit trials and outcomes
• Maturity standard monitoring
• Promotions — including social media

Objective 3
To provide industry leadership, unity and purpose

Projects for 2017–18
• Industry sponsorships
• Communications
• Industry engagement

Mark then invited the speakers to present the following projects.

Study Tour of NZ
Susie Murphy White Project Manager for Pomewest gave an account of the itinerary, technical grower visits, varietal developments and outcomes of the recent tour.

A panel session followed with four younger growers delegates giving their account of the trip and their interpretations of the lessons learnt:
• drawing from the successes of the New Zealand co-ordinated approach to export
• constant trialling to look to better production/growing techniques
• quality control
• coordination of supply and single desk marketing
The result from the tour for the WA industry gave other growers sense of the possibility of industry rejuvenation and provision for forward thinking and planning. The tour participants used words demonstrating their passion and excitement for the future. This must have been encouraging to the more experienced producers in the audience, sensing the enthusiasm and thought processes the trip evoked with the next generation.

As an outcome of the tour Pomewest is looking focusing on more projects for targeting progressive growers with activities that enhance the understanding of cooperation, and methodology for prospective success. More on the NZ Study trip on page 76.

**Market Access Project**

Kim James, Project Manager of the DPIRD gave the participants a snapshot of the National systems approach project which had just been established (this project was featured in *WA Grower*, Vol. 52 No 4).

The national project is valued at $6.5m and thanks to the funding from Pomewest, DPIRD and the WA project budget value will be $978,000.

Kim explained that the four year DPIRD project is designed to develop market access options for apples produced in the Manjimup and Pemberton area and will include evaluation of measures within a systems approach to improve market access options.

The advantage for WA industry is that Kim’s work has collected over two years of data of low pest prevalence in the certain areas which will assist this project and advantage WA growers. The outcomes of this means that export opportunities for apples including BRAVO™ can be increased which builds the prospects for the future of the WA industry.

**Promotions Project**

The ‘go to person’ in the Fresh Food Industry — Noelene Swain of Fresh Finesse is the Pomewest Promotions coordinator. Noelene presented her year’s work which happens cooperatively but independently of any national promotion campaigns to focus on local fruit. Activities extend the strategies initiated via the Aussie Apples marketing initiatives (These projects were reported in the previous edition of *WA Grower*, Vol. 52 No 4). Noelene spoke on her school program and Pomewest’s involvement since 2012 which linked to Fruit and Veg week in many Perth schools. She reported that in 2017 involved over 3500 students in 25 schools with active engagement by teachers and schools integrated apples and pears in variety of curriculum programs. High Schools were included including participation in health Expos, apples promoted as snack food to teenagers and assisted in a positive attitude to apples.

Noelene touched on the Pomewest major event the Royal Show and its outcomes, media coverage, social media and special events. Participants were encouraged to ask questions at the end of the session which included a query about Buy West Eat Best and how we could maximise the use of the message.

**Forward Thinking Discussion**

I then facilitated further discussion from the promotions project and fielded conversations on various subjects covered below. Conversations were all based around positivity and looking to steps to be taken under the guidance of the Pomewest strategic plan to improve the industry and ensure continued value of services. Guests Paul Good, Director of APAL, Rohan Prince, DPIRD, and Mark Spees, Relationship Manager Hort Innovation, also contributed to the following questions which were discussed optimistically and robustly.

- How to export markets by growers working together to achieve maximum benefits?
- HARPS — is it a necessity for everyone?
- Profitability — with labour costs, reduction of production costs how can we be sustainable?
- Levies and the National Marketing program — where is the value to WA growers?

Participants were asked to fill in a questionnaire about the afternoon, the feedback was very positive. Essentially Summit was a success and provided a sturdy structure to build on for future events.

The last section of the session saw participants adjourn for some nibbles and drinks outside which opened for an opportunity to network and continue the discussions from the program.

**MORE INFORMATION**

Contact Nardia Stacy on (08) 9368 3869 or nardia@pomewest.net.au
‘Collaboration’ is the current buzz word from all levels of government stemming from the White Paper on Agricultural Competitiveness. As a result, funding for professional support is available for businesses to progress their collaboration or to investigate their options.

To take a closer look at what collaboration actually looks like on the ground, some real life examples from four WA horticulture industries were investigated to answer the questions:

• Why would you collaborate?
• What are some of the challenges?
• What could it look like?
• Where can you get more information?

Why would you collaborate?
Improving profitability is usually a major driver for collaboration, as was revealed from the industry examples.

“After several years of solid growth in the local Western Australian citrus market, more recently it has become very competitive for growers,” said Brett Heather from Western Citrus Alliance.

Nicole Giblett from Newton Orchards of Manjimup agreed, “The commodity sector is at a massive turning point. Returns are being squeezed with a drop-in consumption due to the booming berry and avocado sectors, a lack of seasonality and provenance along with rising input costs”. She went on to say, “It comes down to economies of scale, as you can’t just sell produce as oranges or apples anymore; it needs to be packed and marketed and supported by the work associated with networking and building relationships in the market, and that’s where collaboration works well and allows growers to focus on growing”.

Nicole added, “Every single part of the supply chain needs to be costed, including a grower’s own wage, to determine the economics of producing a bin of fruit.
Retailers also want to deal directly with pack houses and they only want a limited number of suppliers in the state, so it really is at a tipping point for a lot of sectors to get collaborative.”

For bananas, the initial driver for collaboration was the local industry struggling to compete with Queensland bananas, based on fruit size and quality, and they weren’t able to service the major retailers.

“Our market was shrinking, prices were down and growers weren’t making any money from bananas, so it was a last-ditch attempt to save the industry in Carnarvon: if we hadn’t changed what we were doing, we wouldn’t have an industry today,” said Dorian Mangili from the Sweeter Banana Co-operative.

“Marketing collectively is the key and you can’t do that if you are not collaborating,” she added.

The next generation and new entrants into the industry can also be drivers for collaboration.

In the avocado industry this was highlighted by Jennie Franceschi from Advanced Packing and Marketing Services, “As we build capacity in our younger members they become more adaptable and understand how beneficial it is to be working communicatively and collaboratively”.

Benefits
From across the industry examples, the common benefit to growers from collaboration was that they gain access to chain retailers with better prices, more sustainable returns and improved communication through feedback and knowledge of their product.

From a citrus perspective, a study from 2002 found that, “More orderly and combined marketing of citrus into the local market is the improvement that would generate highest potential financial gains”.

Brett Heather added to this saying, “Farmers have more to gain by working together and aiming for new export markets rather than competing with each other.”
“Export markets want long lines of safe quality product at a competitive global price that will hold up on the shelf in the destination market. One area to take cost out of the supply chain comes from better alignment between supply chain partners of grower, packer and market.”

“The key benefit of collaboration for the avocado sector is stability within the market and consistent pricing throughout the year,” said Jennie Franceschi.

“Information collated through the national Infocado system along with their own in-house reporting system Fruitbank, makes it easier to create stability and consistent product pricing throughout the year,” she said. “Export market also provides another means of creating stability in the domestic market, where we can move excess fruit off to other countries without devaluing the local market. Previously when there was a backlog, the small fruit pulled back the price of the big fruit and it started a downward spiral, but we haven’t seen that for four years,” Jennie added.

In the case of the banana industry, Doriana said, "Another key to the setup (a co-operative) is an Account Manager, who fully represents the co-operative and manages its best interests through direct relationships with retailers. Previously growers had relied on market agents who act as an intermediary but market both Queensland and Carnarvon bananas so there was a lack transparency”. Another benefit from collaboration is it can take the stress off by access to experts on marketing, the certification process, financials and agronomy.

This can allow growers to concentrate on growing. “Working together and improving class one yield with expert agronomic advice helps drive improved farm margins,” said Brett.

“Good prices are paid by good customers who want good quality product, this is where the focus is on farm these days underpinned by cutting edge agronomic advice,” he continued.

Building on the quality message, “The consistency of the product was very important in the market and a centralised packing shed provided a means to achieve uniform quality, grading and branding. We don’t sell any fruit under our brand if it is not from our shed as we can’t guarantee the quality,” said Doriana.

By avoiding a large number of small and medium sized growers competing with very similar product, there is now one brand promoting the freshest and best produce, which creates a critical mass and scale as well as a unified brand that can be accepted and embraced by consumers.

Brett added, "Understanding key financial drivers on farm is paramount, the economic environment we are in is forcing farmers to be astute business managers. Developing business models and sensitivity analysis with cost/yield models are areas where collaboration can help growers who might not have access to such information on their own”.

“Lastly, being part of a group also means you never stop learning as different people bring their experience and knowledge to the table. Support for growers to help address financial and health issues which are an inescapable fact in agriculture where there is a lot of pressure and if you are a lone ranger that can be further exacerbated. Belonging to a group is a valuable exercise and provides growers with a connection,” said Nicole.

Doriana commented, “A co-operative structure is advantageous in purchasing consumables and achieving economies of scale such as freight. It also enables grower members to share the costs of co-operative facilities and resources and reduces their individual investment costs, which would not be a viable proposition for an individual grower”. Brett added, "Cost also comes out through collaboration and scale, such as combining volumes to get scale through pack sheds at a lower unit cost. Discounts in purchasing consumables and equipment can also be achieved across a larger group with greater purchasing power.”

What are some of the challenges?

Each of the industry examples identified challenges in collaborating, including mindset and it takes time. Comments included:

“Along the way we have discovered that not everyone is suited to being a member of a co-operative as they don’t share the vision. You will never have everyone involved in collaboration which is fine and while it is a difficult process, your best chance at success is to work with people who are committed to the process.”

“Some people struggle to think big and look at it competitively, worrying more about others than their own businesses. There is always some negativity but you can’t worry about dragging them along as unfortunately some people won’t change — choose to be positive and optimistic and just do it.”

“What holds people back from collaboration is the misguided notion that someone else will benefit from their hard work. At the end of the day producers need to remember nobody ever wins in market failure.”

“It is a long process and takes a high level of communication and openness to discuss...
areas that have traditionally remained the domain of a single part of the supply chain."

“The level of intimate collaboration is a departure for many farmers and supply chain partners who are used to working autonomously, in many cases this is where the journey of collaboration falls down. Positive outcomes will only come from working with a coalition of the willing which is underpinned by a shared vision and transparency across the supply chain.”

“Group conversations about financials and improving practices can take people out of their comfort zone and be challenging. However if these conversations are looked at in a positive way they can help people avoid being an ostrich.”

“It took 20 years to get to where we wanted to be. We had to change the market’s view of our product, we had to access new markets and retailers where the majority of the volume goes, and we also had to change to integrate the supply chain.”

What does it take?
Common threads that were part of successful collaborative efforts across industries were a shared frame of mind and a win-win scenario.

“It doesn’t matter what industry it is, you have to be open minded to collaboration and develop relationships that are beneficial to both, as it helps business,” said Nicole, “Be willing to take on the challenge and look at new ways of growing your fruit.”

Jennie added, “Choose to be positive and optimistic and just do it. You need to build your own capacity as not only will it strengthen the industry as a whole but allow you to develop relationships and create networks that could lead to further opportunities and knowledge. It is also important to collaborate at an industry level and act in a professional business manner.”

“Be respectful of the overall marketing plan,” said Nicole. Doriania agreed, saying, “Sometimes you have to take risks in marketing produce, but if everyone understands the big picture then they are prepared to back you to take that risk and they don’t point the finger if it doesn’t work.”

Lastly, trust and transparency are very important in a co-operative; it is about having a transparent relationship with the grower members who need complete trust and financial transparency so they can understand what is going on, otherwise it will fall apart.”

What could it look like?
Collaboration takes place in various formats. Informal farming groups can collaborate successfully, but soon require legal and financial clarity. Then, they need a formal structure. Some entities are more collaborative than others and each type has different values. A sustainable structure is an important choice for collaborators.

In the industry examples that were investigated the format of collaboration were different:

- **Citrus** — Growers have been shareholders of a company, such as the Southwest Fruit Company or Western Citrus Alliance. The companies have provided packing and/or marketing services. Historically informal arrangements between growers and through the industry association have include branding to indicate quality and to consolidate supply under one label, efficient purchasing of packaging and driving change in the market place.

- **Avocados** — The company, Advance Packing Marketing, exports, packs & markets avocados for growers.

- **Apples** — The company, Newton Orchards of Manjimup, stores, packs and markets apples with an informal arrangement with growers.

- **Bananas** — The Sweeter Banana Co-operative is owned and operated by 20 Carnarvon grower members and consists of a cool room, central packing house, a marketing distribution network and a Perth based Account Manager who maintains commercial relationships.

Regardless of the format, the collaboration from all industry examples focuses on building on a strong collaborative supply chain.

Where can you get more information?

Other tools are also available on their website, farmingtogether.com.au.

MORE INFORMATION ➤
This article was adapted by Bronwyn Walsh, Citrus Industry Development Manager, from a report by consulting firm AgKnowledge who investigated three case studies using funding from Farming Together. Thank you to the businesses for sharing their experience in collaboration.
your business
Benchmarking is a simple and effective way to take stock of your business and identify where you can make some quick wins to improve how much money you make — it also gives you a clear idea of how you’re performing compared to the industry average.

What actually is benchmarking?
Put simply, benchmarking is comparing your business operations and production against industry averages. From this you can quickly identify where you can make changes and what needs to be maintained so you can improve the output for all your effort.

What can benchmarking do for me?
Would I like;
- To receive a free snapshot of how my business is performing across all areas
- To know some simple savings tips that will increase my profit margin exponentially
- To know where my costs are blowing out
- To know how I am operating in comparison to other growers similar to me
- Feedback on how I am running my business from experts who are across a broad range of horticultural businesses in WA
- To have the collective knowledge of best practices throughout WA benefitting my operations and providing me with better profits for my business
- To be part of a thriving horticultural industry in WA that is comparable to world leading horticulture practices
- To be part of the WA horticultural industry movement that wants to make significant change to adopting successful Industry best practices

If these are the sort of things you would like then benchmarking is for you.

What will I get out of it?
When you agree to participate, you will receive:
- A farm visit to gather all information and complete the benchmarking form — there’s no filling forms out for you!
- Your own confidential individual benchmarking comparison report, including a snapshot of your business sustainability
- A further farm visit to talk through and explain the findings of the report so you can action the findings straightaway
- Support and all questions answered throughout the process

What parts of my business does benchmarking cover?
- On-farm operations information
- Overall financial performance
- Input and output costs
- Production and revenue
- Basic on-farm practices

What information will you need?
The majority of the information required to participate is drawn from reports and documents you will already have in your possession. This will include accountants report, production reports, water reports and utility bills.

Confidentiality
It’s only natural when first considering participation in benchmarking to be concerned about where your information is going and what will happen to it.

All information submitted is kept strictly confidential and comparisons are made against anonymous averages and trends. This way key individual insights can be revealed while retaining the confidentiality of all participants.
Frequently asked questions

1. **Do I have to pay for this?**
   No, this is a free service to all vegetable growers. It is funded by Department of Primary Industries & Regional Development (DPIRD) and Hort Innovation.

2. **Who’s going to see my data and what happens to my data?**
   Only the person who collects the information and the Planfarm data analyst who verifies it will ever actually see the information provided. Data will be collected by either the vegetablesWA benchmarking lead or representatives from the company Planfarm, who will be responsible for the analysis. All information shared will be held securely and completely confidential.

3. **Who are Planfarm?**
   vegetablesWA have partnered and will work closely with WA based Planfarm. Planfarm bring 40 years of experience in leading the highly recognised broadacre benchmarking in WA; which continues to provide key business performance data for over 550 broadacre farmers across the grains industry of WA. In addition to all the analysis, Planfarm representatives will also carry out a number of farm visits. In the 40 years of broadacre benchmarking there has never been any breaches of confidentiality.

4. **Will I be giving my trade secrets away?**
   Certainly not. The information gathered focuses on how your business performs not what you actually do to achieve that performance. Together with the strict processes around confidentiality, none of your practises will ever be shared.

5. **Will I be able to see the results of my competitor and can they see mine?**
   No, all results and findings in the individual benchmarking report presented against industry averages and anonymous indicators. This way you will never know who the other participants are or they you.

6. **Which crop types does it cover?**
   All vegetables are covered.

7. **How long will it take?**
   We’ll come to your farm to collect the information to reduce time taken away from growing. If all the documents are available it will take the person who visits 2–3 hours to load it followed by 1–2 hours of your time clarifying and verifying what has been captured.

8. **Who needs to be involved?**
   We suggest that you either have yourself or farm manager available as well as your bookkeeper, especially if you don’t have the documents available.

9. **Do I need to provide all the data you ask for?**
   Provide as much data as you’re comfortable with, however please note you’ll only get a full analysis and get the most benefits out of benchmarking if you provide a full picture of your business.

10. **Will I see a comparison within my region as well as against the state?**
    Yes, but we will need over 12 growers to participate in your region, so everyone’s anonymity is maintained. If less than 12 growers participate we won’t carry out the regional comparison however you will still be benchmarked against the total industry.

11. **What happens to all the information?**
    All information is securely stored in a database on the Planfarm server. Any records you may share will be deleted once the information is entered into the database. Once the data gathering has been completed for the year, there will be analysis performed across the whole dataset to look for industry trends. Again, no individual grower will be identified within or by this.

12. **What will I do with my results?**
    The person who collected your information with also come back to your farm to give you your individual benchmarking report which belongs to you and you only. That person will explain the findings and also talk through how you actually use them and make changes to benefit your farm.

13. **What’s the downside?**
    We’re struggling to see one.

How do I get involved?
Simply contact Bryn Edwards, Benchmarking Lead, on (08) 9486 7515 or bryn.edwards@vegetableswa.com.au
You’ll then be asked to read and sign a Data Agreement Form, also signed by us, which forms a binding, formal agreement of what exactly will and won’t happen with your information — providing you with clarity and confidence from the beginning.
After this, we’ll schedule the farm visits and provide you with a list of documents to collect together beforehand.

One final important point
Benchmarking, and the information gathered, has the potential to become one of the most valuable assets to support Western Australian growers as they navigate their business forward; it will be a competitive advantage against other states and possibly countries.
However, this lies on you the grower getting involved and contributing information.
We believe in its benefits for your business and invite you to come on board and join us.

Contact: Bryn Edwards, Benchmarking Lead, vegetablesWA
702-704 Murray Street, West Perth WA 6005
t: (08) 9486 7515
e: bryn.edwards@vegetableswa.com.au

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
Odeum Farms has launched a new business, hoping to get more sales out of its crop by opening up new clientele. Its sister company, Allied Farms Australia started in December at Canning Vale Markets and is designed to have a stronger focus on the independent wholesalers in Western Australia and around Australia, by creating a new market for produce that previously was not able to be sold.

“Approximately 20–30% of our crops will never make it to Odeum Farms’ direct customers so this is a massive game changer for us on the war on waste,” National Category and Farms Manager Jason Marais said.

“Allied Farms will be supplying premium fruit and vegetables to an array of wholesale buyers, but another objective of this business is to have the ability to move composite grades of our crops, for example second grade produce which would usually have become waste or heavily reduced in the past.”

Allied Farms Australia core product lines will be gourmet tomatoes, cherry and grape tomatoes, watermelon, sweet potatoes, beans, cucumbers, capsicums, Brussels sprouts, snow peas, sugar snaps and strawberries along with some other seasonal produce lines throughout the year.

“The aim is to broaden our customer base in selling ‘our entire crop’ and not just the premium fruit which the chain stores and export customers want,” Mr Marais said.

“The idea behind Allied Farms Australia is also to strengthen our current relationships with other farming businesses around Australia, giving them better options.”

Mr Marais said Odeum Farms business structure was designed to meet the needs of the major chain stores within Australia; Coles, Woolworths and Aldi.

While he admits not knowing exactly what impact this will have to Odeum Farm’s group of companies, he is confident there is a market for all grades of produce.

“There has always been great demand, previously as Odeum Farms we were not geared up to effectively service this sort of clientele, so we are expecting good results,” he said.

“There are many variables and costs in a new business to consider and this will be reviewed frequently over the coming months. The principle ideas and structures behind opening Allied Farms make perfect sense for Odeum Farms so we do expect this to have a profound effect on the business, providing better outcomes for both Odeum and our partner farms.”

**More Information**

Contact Jason Marais, Odeum Farms, on (08) 9256 8100, email admin@odeum.com.au or go to www.odeum.com.au
WA crates

The professional packaging service
for WA’s finest fresh fruit and vegetables

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email: service@wacrates.com.au
Most of us have at some stage come across cheap knock-off copies of expensive brands — Louis Vuitton handbags, Ralph Polo shirts, Rolex watches, Nike shoes — whatever. Maybe you have even succumbed to temptation — after all, no-one is really being harmed, are they?

Counterfeiting by low cost producers in third world markets has been a challenge to many major corporations and fashion houses for decades. However, fashion goods are not the only targets for brand cheats. Over recent years, food fraud has become all too commonplace.

Food fraud takes several forms. Australia enjoys positive perceptions in rapidly growing Asian markets as a clean and green producer of wholesome, natural and trustworthy food products.

The upside of this means there are opportunities in export markets for Australian farmers and food producers to take advantage of strong demand for our products and, in many cases, to achieve a significant price premium. The downside is that unscrupulous traders want to cash in on these opportunities by muscling in with copies of many of our well-known brands.

Some time ago, a wine labelled “Benfold” in the familiar style of the well-known Penfold’s brand became popular in Asian markets. At a quick glance, it was easy to miss the difference. A Chinese online retailer set up a website from Sydney, passing off Chilean cherries in fake-printed Chinese boxes to Shanghai customers as a well-known brand of Tasmanian-grown cherries. Victorian farmer, David Blackmore, produces small quantities of Wagyu beef that take pride of place on the menu of high-end eateries across the globe. Quite by accident, he discovered a Chinese company had been offered daily deliveries of more product in a week than his farm produced in a month.

While it is disappointing to see this sort of exploitation, counterfeiting is not unexpected in some markets.

So much so, that an Australian counterfeit specialist warned recently “for any Australian company that wants to sell in China, the message is simple. You will be copied. Your trademark will be copied. Your intellectual property will be copied. Just accept it as fact.”
For any Australian company that wants to sell in China, the message is simple. You will be copied. Your trademark will be copied. Your intellectual property will be copied. Just accept it as fact.

We’re all familiar with another form of food fraud — and that’s passing off one product as something more up-market. For years, Nile perch has been passed off as Australian barramundi; generic green leaves have been marketed as oregano; and prawns from Thailand and Vietnam have been sold as local product. This can also include deliberate fake country of origin information — for example, labelling snow peas from Nigeria as locally grown.

The issue has been of such concern in the seafood industry that national naming standards have been introduced. Clear labelling and increased traceability of seafood provides consumers with the information needed to choose fish with confidence and avoid those that are potentially contaminated, overfished, or caught using destructive techniques.

These examples are bad enough. However, the growing incidence of menu fraud is even worse, because it is a cynical exploitation of farmers by those who should know better.

Menu fraud happens when restaurants and chefs take advantage of the increasing consumer interest in food provenance to trade off the reputations of well-known producers with recognised brands.

Examples of this could include passing off commodity grade beef as our own premium King Island product, or falsely labelling imported saffron or truffles as Tassie grown.

This is wrong on so many counts.

Customers are paying premium prices for what is an inferior or commodity product; restaurants and food manufacturers are enjoying falsely inflated margins; and farmers producing boutique high-quality, high-cost food are being ripped off.

Their good name is being traded on with no financial return, and their reputation is being sullied by having their name linked to what is most likely to be inferior produce.

Calling out the cheats is not just about protecting reputations and profits, though. As importantly, its about the maintaining brand integrity, and food health and safety. The ramifications if someone got sick or died from a counterfeit product would be huge. No doubt those affected would sue; and regulators would come down on the legitimate producer like a ton of bricks. Even if they could prove the offending products were fakes, the bad publicity could destroy them.

Imitation may well be said to be the sincerest form of flattery. However, when it comes to our fabulous Aussie food products, it is simply theft. We need to take every possible measure to ensure that our brands, and our producers, are strongly protected from opportunists trying to cash in on their hard work and investment.

MORE INFORMATION
Contact Claire McClelland, Market Development Manager vegetablesWA at claire.mcclelland@vegetableswa.com.au
HARPS changes

How they affect your business?

It is a bolt on Quality Assurance (QA) system that runs concurrently with your GFSI base scheme (Freshcare Food Safety & Quality Edition 4, Safe Quality Food (SQF) Edition 8, Global G.A.P. or British Retail Consortium (BRC)). This system adds the extra retailer QA/food safety requirements to your approved base scheme to ensure that you are producing a high quality and safe final product fit for sale/consumption.

Previously, those businesses that required HARPS were direct suppliers only (i.e. those businesses with a supermarket vendor number). However, a revision of the system completed by the HARPS committee has found that any business that acts as a co-packer (i.e. packing a shelf-ready product) may have to adopt the HARPS system requirements into their QA program.

The HARPS committee has recently issued a decision matrix to assist growers to make an appropriate judgement as to whether their business requires HARPS to accompany their base scheme. To coincide with this, HARPS have allowed extra adaption time for those suppliers that are classed as Tier 2 or Tier 3 and exempting growers that produce less than 10 pallets per annum (this excludes supply of retail branded pre-packs).

HARPS will also be providing additional support in the form of awareness sessions that are to be conducted at the capital city central markets and online in the form of webinars — see http://harpsonline.com.au for details.

Is HARPS required for my business?

HARPS is a retailer-led scheme designed to assist with compliance to food safety, legal and trade legislation for suppliers to the major grocery retailers in Australia.

**Tier 1**

Your business has a Vendor or Supplier Number for one of the HARPS Participating Retailers*.

**Action Required**

If you have not yet achieved HARPS approval go to www.harpsonline.com.au to register your interest in achieving HARPS approval.

Contact your respective retailer customer(s) for further information.

**Out of Scope**

Your business processes fresh produce. (e.g. value-adding such as bagged salads, fresh cuts, sliced mushrooms/carrots, shelled nuts etc.)

Virtual brokers that do not qualify as a Tier 1, 2 or 3 supplier.

**Tier 2**

Your business packs or re-packs: Loose product with PLU/DataBar stickers applied as specified by a HARPS Participating Retailer*; or Retail-branded pre-packs; or Retail Returnable Plastic Crates (RPC’s); or Proprietary-branded pre-packs; or Loose product in final retail packaging, packed to a retail specification destined for a HARPS Participating Retailer**; or Your business is part of an Approved Supplier Program for your Tier 1 customer, who supplies to a HARPS Participating Retailer*; or Your business provides Ancillary Services*

**Action Required**

Your business may require HARPS approval (this includes certification to an Approved Base Scheme** and the HARPS requirements) by 1st January 2019.


**Tier 3**

Your business supplies bulk produce (not in final retail packaging) for further packing to a Tier 1 or Tier 2 supplier.

You are a low volume producer supplying a total of 10 pallets or less per calendar year, per site. This is a collective total across all HARPS Participating Retailers*.

(NB: Suppliers of retail-branded pre-packs are excluded from this rule as they qualify as a Tier 1 or Tier 2 supplier).

Virtual brokers that do not qualify as a Tier 1, 2 or 3 supplier.

Virtual brokers that do not qualify as a Tier 1, 2 or 3 supplier.

**Action Required**

Your business may be required to be certified to an Approved Base Scheme** by 1st January 2019.

* HARPS Participating Retailers: ALDI, Coles, Costco, Metcash (IGA), Woolworths

** Approved Base Schemes: BRC, Freshcare, GLOBALG.A.P., SQF

* Ancillary Services: Supporting or additional services including ripening, brokerage activities, storage and cooling (where product handling and traceability are the responsibility of the Ancillary Service supplier).
The Perth awareness sessions will be held in Bunbury on 26th March at 2pm and Canning Vale markets on 27th March at 8am. For further details contact HARPS Online, call them on 1300 852 219 or email on harps@harpsonline.com.au

What should I do?

Firstly, you will need to use the decision matrix to determine where your business fits in term of the matrix (Tier1-3 or Out of Scope). If you determine that your business is categorised into either Tier 1 or 2, then you may need to attain HARPS and therefore you must register with HARPS on their website [http://harpsonline.com.au](http://harpsonline.com.au).

For those in Tier 1, you will need to implement HARPS as soon as possible.

For those in Tier 2, you may have to implement HARPs so you will need to contact your customer(s) to ascertain if you need to adopt the HARPS program. If any of your customers require you to adopt HARPS, you will have until 1 January 2019 to achieve certification.

If your business is classified as Tier 3, then you will not need to implement HARPS unless you are packing product into retail branded packaging. Out of Scope classified businesses do not need to adopt HARPS unless your business activities change.

It is recommended that all businesses review the HARPS decision matrix when changes occur within the business.

Things to remember when adopting HARPS

Firstly you will need to register with HARPS online. Secondly, you will need to notify your certification body (CB) to inform them that you require an additional HARPS audit, that is completed by a HARPS approved CB and auditor.

HARPS was designed to be audited concurrently with your base scheme, meaning that if you are a Tier 2 business, you can go to audit with your base scheme + HARPS when your next scheme audit is due (provided your recertification date is prior to 1 January 2019).

If you are a Tier 1 business, you will need to complete a separate HARPS audit as soon as possible, then align it to your base scheme audit when you’re next due for recertification against that base scheme.

All businesses that are classified as Tier 1–3 may need to adopt HARPS before 1 January 2019. If you are still uncertain as to whether your business requires HARPS, you should contact the HARPS Hotline on 1300 852 219. The HARPS hotline will also answer questions regarding all things HARPS. Alternatively you can check out the FAQ’s on the HARPS website [http://harpsonline.com.au/faq/](http://harpsonline.com.au/faq/).

MORE INFORMATION

Finally, for those vegetable growers that require assistance to implement and adopt HARPS, they can contact vegetablesWA’s Quality Assurance Coordinator Joel Dinsdale via email joel.dinsdale@vegetableswa.com.au or on his mobile 0417 857 675.

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The importance of understanding your business financials

Do your eyes glaze over at the thought of reading a profit and loss statement? If the answer is yes, why not let the Small Business Development Corporation show you how easy it is to understand your business financials.

Financial literacy is a key skill for small business owners and being able to monitor the financial health of your business without relying solely on your accountant, will save you time and money.

Financial statements tell a lot about the performance of your business, and can help answer some burning questions:

- How much profit am I making?
- Are my expenses excessive?
- Why are my profits going down when my sales are going up?
- Am I getting a fair return on my investment?

By recognising what the financials are telling you, you’ll be able to identify problems and put plans in place to correct them.

Essentially, you’re in business to make money so here’s an easy formula to help you check that you are making a profit.

Sales - Cost of goods sold = Gross profit - Expenses = Net profit

Keep a close eye on these performance indicators and compare them weekly, monthly or quarterly. With the help of a basic accounting program, you can put the results in table format, and then it’s easy to convert them to a line graph to see at a glance how well you’re doing.

Calculating these figures and analysing them regularly will keep you well informed and able to make managerial decisions such as pricing your products and services correctly.

If possible, use a computer program that’s compatible with that used by your accountant to help keep your accounting costs down.

Starting and running a business can be expensive

- Find the safest, most economical way to borrow money and have a practical plan to pay it back.
- Be realistic and honest in your loan application and get help from an accountant or business adviser to ensure your financial decisions are sound.
- Shop around for the best deals and compare your options.
- If you’re getting money from family or friends, make it clear from the start whether it’s intended as a loan, a gift or in return for an ownership share in the business.
- Put your agreement in writing and have it witnessed by an independent third party.

Finance is about more than just money

Financial management is the foundation of your business and understanding your financial situation will help you:

- manage your cashflow
- plan future growth
- meet your legal obligations
- maximise your profits, and
- better understand the strengths and weaknesses of your business
- accurately value your business
Borrowing money to grow your business

At various stages in your business development, you may consider borrowing funds to expand, or introduce new products.

Access to business finance has improved since the global financial crisis, and interest rates are still low however, many small businesses still struggle to access funds at reasonable rates.

An essential part of being a business owner is knowing how to set up and manage your business financials so you can borrow and repay development funding.

The two main types of finance are debt finance and equity funding. According to the Reserve Bank of Australia, business loans are currently 40% debt and trade credit (overdrafts and credit cards), and 60% equity (personal property/ shareholders/crowdfunding).

- **Debt finance** is money borrowed from external lenders such as banks or other lending institutions. This money must be paid back within a fixed time period and repayments usually commence shortly after the loan is approved. The money is also often secured against property or assets owned by the business or the business owner.

- **Equity funding** comes from other sources of finance such as personal savings, or from stakeholders in exchange for partial ownership of the business. While this finance is less of a burden on the business because it’s not required to be paid back in the short term, investors will usually expect a degree of ownership or control in the business and they may also want a say in running it.

- **Crowdfunding** is a relatively new method of raising finance and is often used to start a new business, or for research and development of a new product within an existing business. Crowdfunding involves bringing members of the public together to invest in exchange for goods, services or equity. Investors can provide large or small sums of money.

  - In September 2017, new laws were introduced to cover Crowdfunded Equity Funding (CSEF), a financial option for businesses with annual turnover and gross assets of up to $25 million. CSEF works in a way similar to listing a business on the stock exchange, but with lower costs and less administration.

Some preparation is required before entering into a CSEF arrangement but successful businesses can raise up to $5 million a year. Individuals seeking to invest can contribute up to $10,000 per company, per year.

Although there are some similarities between CSEF and simple crowdfunding, there are also significant differences. Both systems operate through a third party platform and are based on funding provided by members of the public however, a primary difference between the two options includes the expected return on investment.

Crowdfunding investors may be happy to receive a report on the progress of the business, a sample of the product or just the joy of helping a business get off the ground. CSEF investors become shareholders in the business and would be expecting a financial return on their investment. Basically, they’re buying into the business.

The Small Business Development Corporation provides free, confidential business advice and guidance to small business owners throughout WA.

Book today for our two-hour workshop ‘Understanding Business Financials’.

**More Information**

Contact 13 12 49 or www.smallbusiness.wa.gov.au

For more information on Crowd Sourced Equity Funding (CSEF) contact the Federal Department of Innovation at www.innovation.gov.au/page/access-crowd-sourced-equity-funding
Building financial confidence for growers in WA horticulture

Supported by the State and Federal government, the RFCSWA works with a wide range of primary producers, including fruit and vegetable growers, across WA and aims to improve their business and financial skills and clarify their business plans for the future.

Successful businesses need to attract capital to build productivity, whether it be new machinery, land purchase or utilising new technology. All these things cost money and so the challenge for growers is to have sufficient confidence in their future plans to take the plunge to invest. However, perhaps more importantly, banks and financiers need to have confidence in the industry and its individual clients.

This isn’t always as easy as it sounds.

Banks and other lenders have at times found WA’s horticulture industry difficult to get their heads around, particularly if they lack understanding and insight into many aspects of horticulture from capital requirements to production timing and income.

This can make the horticultural industry in WA very daunting for a lender, as in many ways it lacks transparency. If we compare horticulture in WA to broad acre farming in WA, the differences are extreme when it comes to a bank evaluating the credit worthiness of a grower.

For example, when it comes to broad acre farming, financial institutions can refer to a wide range of industry information and benchmarks regarding capital requirements and returns on investment.

The banks analysts who calculate the risk factor in lending money to a wheat farmer can refer to industry standards for wheat yields and pricing mechanisms, they can refer to specific information by local government area and they can access the fantastic information supplied by industry groups such as Cooperative Bulk Handling (CBH) and the Grains Research and Development Corporation (GRDC).

All of this gives them a broad view of the industry health and production which can then be narrowed down into a specific farming area and then down to an individual farm.

Even farm consultants and banks themselves produce and collate a huge data base on broadacre farming such as the Planfarm Bankwest Benchmarks which are annually sourced from over 550 farms. This gives lenders a strong position to base their decisions on and enables the bank to have confidence in its clients’ credit worthiness and future growth plans. In turn, as a bank’s confidence increases in an industry it can reduce the costs of lending.

However when it comes to horticulture, the industry can be a bit of mystery to lending institutions.
This is where the RFCSWA comes in.

Evaluating the financial position and health of a business is an important process and one that the RFCSWA is doing more and more of.

We can assist people to consolidate their financial position so that they are in a stronger position to negotiate a better arrangement with their financial lender.

In some cases, this means helping a grower put a plan together to give their bank the confidence to increase their overdraft facility or to arrange new terms on their capital loan position in order to expand. Our aim is to turn complex issues in to simple language to ensure clients completely understand their position and their options to move forward.

Each situation is different and sometimes all a grower wants is a bit of insight and an hour session so they can move on themselves. Other times it might be a long-term program that works with you to restructure or fine-tune your business.

We work off the idea that these are the grower’s decisions — we’re certainly not there to tell you what to do or how to do it, but to offer information and options so that you can provide your own solutions.

As an independent, government-backed organisation we do not charge eligible clients for our services.

More Information

It just takes a phone call to our office on 1800 612 004 to speak to us and to arrange one of our counsellors to visit you on your property to have a confidential talk about your situation and what you hope to achieve.
Changes have been made to the Horticulture Code of Conduct, which regulates the sale of produce between growers and wholesalers.

Following these changes, to be implemented by 1st April 2018, some growers have now 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. Growers without an existing legal provider should do their own due-diligence:

Yung T. Nguyen, Managing Director
Yung Nguyen & Co, Lawyers
P: (08) 6114 3112
M: 0418 444 505

Further information may also be found on the ACCC website.

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


The new Code 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.

More information

Example Horticulture Produce Agreement – Agent

<table>
<thead>
<tr>
<th>Terms and conditions</th>
<th>Amount due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agreement</td>
<td></td>
</tr>
<tr>
<td>2. Term</td>
<td></td>
</tr>
<tr>
<td>3. Agent’s reporting obligations</td>
<td></td>
</tr>
<tr>
<td>4. Grower’s obligations</td>
<td></td>
</tr>
</tbody>
</table>

Example Horticulture Produce Agreement – Merchant

<table>
<thead>
<tr>
<th>Terms and conditions</th>
<th>Amount due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agreement</td>
<td></td>
</tr>
<tr>
<td>2. Term</td>
<td></td>
</tr>
<tr>
<td>3. Merchant’s reporting obligations</td>
<td></td>
</tr>
<tr>
<td>4. Merchant’s obligations</td>
<td></td>
</tr>
</tbody>
</table>

Christmas of Conduct

To make it as straightforward as possible for you the ACCC has produced sample Horticulture Produce Agreements, depending on whether they sell their produce to an agent or a merchant (as defined in the Code):


The full range of ACCC information is at:
Horticulture code guidance materials

GROWERS should seek independent legal advice in negotiating terms of agreements.

There is a 12-month transition period for parties with existing written agreements. After this transition period ends, all agreements need to comply with the current Code. This includes agreements entered into before 15 December 2006, which were not covered by the earlier code.

To make it as straightforward as possible for you the ACCC has produced sample Horticulture Produce Agreements, depending on whether they sell their produce to an agent or a merchant (as defined in the Code):


The full range of ACCC information is at:
Horticulture code guidance materials
VegetablesWA, in partnership with Growcom and the Tasmanian Fruit and Vegetable Export Facilitation Group have just commenced a three-year Hort Innovation funded project designed to help upskill Australian vegetable growers to become export ready.

The purpose of the project is to increase Australian vegetable exports by supporting growers to capitalise on commercial business opportunities. The ‘on the ground’ export facilitators in WA, QLD and TAS will form a facilitator network across Australia. This network will promote collaboration within the industry and provide linkages across the supply chain that will assist in achieving the overarching objective of the Vegetable Industry Export Market Development Strategy of growing the value of vegetable exports by 40% by 2020.

With key export markets in Asia and the Middle East driving demand for fresh produce, there is more opportunity than ever for Australian vegetable growers to become involved with export. Australia has a number of competitive advantages in the international marketplace including geographical proximity to key markets, counter-seasonality and the perception of Australia as a premium quality producer.

There is no such thing as a ‘one size fits all’ model for export. The support offered through this project will be tailored to individual businesses at different stages of export readiness.

The reality is, many new exporters may be smaller businesses, with limited product range and seasonality so the state based facilitator and the national network aims to connect growers and resources to create collaborative partnerships to increase the likelihood of export success.

The Export Facilitators project will focus on supporting Australian vegetable growers to meet commercial export opportunities by taking opportunities and insights from a range of sources and working to support vegetable growers and other industry stakeholders. This project will also support the delivery of the national Vegetable Industry Export Market Development Strategy and support the national Vegetable Export Development Program (VG16061) project facilitated by the Export Development team at AUSVEG.
The Export Facilitators project will provide resources and extension support to help vegetable growers begin to successfully export. In addition to this support, the project will also provide funding to assist export ready vegetable growers in preparing export plans for their businesses. Export has the potential to play an important role in improving business profitability by providing an alternative channel to domestic supermarkets, thereby increasing negotiating power and spreading risk.

MORE INFORMATION

Western Australian vegetable growers who are interested in further exploring export opportunities are encouraged to contact Claire McClelland or Manus Stockdale at vegetablesWA via claire.mcclelland@vegetableswa.com.au or manus.stockdale@vegetableswa.com.au.

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KEEPING AUSTRALIA MANUFACTURING
Vegetable growers have traditionally relied on limited access to data when trying to understand the performance of their produce and the best vegetable lines to focus on in the future.

With the creation of the Harvest to Home dashboard, deep and valuable insights are now available to put the shopper at the centre of focus, and help growers plan ahead and develop informed long-term strategies to grow their businesses. The tool will guide the development of new products that are targeted toward customers’ specific needs, assist growers to be better informed about market opportunities, and provide data to enable industry conversations across the supply chain.

Available in one simple and mobile-friendly dashboard, Harvest to Home is an analytics tool funded by Hort Innovation. It’s public, free and simple to use, leveraging the investment of levy funds for vegetable, sweetpotato and onion growers, giving the largest number of insights on marketing performance and shopper behaviour ever, and set to become the go-to tool for Australian growers.

Did you know that 44% of households bought broccoli (including baby broccoli and Broccolini®) in September 2016, 3% more than the same period in 2017? One of the key features of the dashboard is the two year longitudinal data that shows historical trends for up to two years (see Figure 1), providing a close look at each vegetable, the percentage of buying households and the amount they spend on average.

Did you know that senior couples are buying more sweetpotato than any other group? They’re buying it 7.6 times a year, and buying close to 10 kilos of it annually. Sounds like a good reason to engage and better understand that shopper group! Harvest to Home has incredibly detailed information on demographics, and you can look at these groups based on lifestage, annual income, primary shopper age and household size, to really get to know your buyer and be able to provide the best products to them.

In addition to hundreds of data points available on the dashboard, case studies looking at hot topics with deep dive analysis and insights on specific vegetables will be continually uploaded to the site.

All the information can be downloaded for you to keep and refer to at a later time. It can also be viewed on mobile devices and tablets, as well as desktop computers.

1 Nielsen Homescan 52 weeks to Dec. 2, 2017.
Having access to these consumer behaviour insights will help you to better adapt to market trends and keep up-to-date with the needs and expectations of the modern Australian shopper. Harvest to Home will change the way growers strategise by exploring consumer preferences in a modern, current and easy to use online platform. This initiative, MT17017, is funded by Hort Innovation using the vegetable, onion and sweetpotato levies and contributions from the Australian Government.

MORE INFORMATION
For additional information, visit www.harvesttohome.net.au
The average Australian vegetable farm is making more money and earning higher prices for its produce, but cash costs are continuing to rise across the board, with the vegetable industry’s peak body warning many smaller growers are struggling to stay competitive in an increasingly consolidated industry.

As found by a recent survey conducted by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), the average farm cash income of Australian vegetable growing operations is estimated to have increased to around $254,100 as a result of increased vegetable production and higher prices.

The survey also indicated that in the same time total cash costs continued to rise, with average cash costs rising by 29% to an average of over $1 million per farm due to rises in all cost categories captured in the report.

According to AUSVEG, the vegetable industry’s peak industry body, the rise in the industry’s value and the overall increases in average farm incomes are positive signs for the future profitability of the industry, but the steep increase in costs poses a significant risk to many businesses, particularly smaller-sized farms.

“The rising value of the industry and the increasing trend for Australian vegetable exports shows that our industry has a bright future as a supplier of high quality fresh vegetables to consumers in Australia and around the world,” said AUSVEG CEO James Whiteside.

“Large-scale farms have been mostly responsible for the increase in average farm income, as they can benefit from increased efficiencies and economies of scale.”

**FIGURE 1** Top 10 Australian agricultural industries, by gross value of production, 2015–16

Source: ABARES
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

FIGURE 2  Gross value of Australian vegetable production, by commodity, 2015–16
Source: ABARES

“This has resulted in increased re-investment into these businesses, including in technological and operational improvements so that they can continue to innovate and develop their businesses to supply vegetables for local and international consumers.”

“The increased production and demand for a wide variety of vegetables, particularly Asian vegetable varieties that were considered niche products not too long ago, shows growers are responding to Australians’ increasing appetite for a larger variety of fresh and value-added vegetables, which can demand a higher value at a retail level.”

The number vegetable growing farms has fallen 37% from 2006–07 to 2015–16, driven by primarily by declines to smaller growers, and the proportion of vegetable growers who recorded a negative farm business profit remained at a similar level to the 10 year average, with nearly 60% of vegetable growers recording a negative farm business profit in 2015–16.

“The costs of doing business, particularly for hired labour, seed, freight and fertiliser, have increased significantly over the last 12 months, so while larger businesses are able to increase production and cover these increases, smaller growers often struggle to be competitive, which is driving increased consolidation,” said Mr Whiteside.

MORE INFORMATION
Contact Shaun Lindhe, AUSVEG National Manager Communications, on (03) 9882 0277 or email shaun.lindhe@ausveg.com.au

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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WA Grower AUTUMN 2018 105
Scientists in Queensland are developing purple sweetcorn varieties with the horticulture industry to help growers respond to increasingly health-conscious consumers.

Being delivered by the University of Queensland, and jointly funded by the grower-owned research and development company, Hort Innovation, the new varieties are being developed through natural breeding programs.

Head researcher Tim O’Hare said his team were focussed on developing sweetcorn with high levels of specific phytonutrients for human health.

“Not only is purple corn fun, the actual pigments in the varieties we are developing are phytonutrients and they have different health benefits to that of a traditional yellow corn,” he said.

“The anthocyanins have been shown to be linked to cardio-vascular health and by that we mean lowering blood pressure or reducing atherosclerosis, reducing the chance of having a heart attack.”

While the researchers find the taste of the purple corn almost identical to that of traditional varieties, they are in the process of asking the experts. Consumer and professional ‘taste testing’ panels are assessing the flavour, smell and texture of the varieties, to help the scientists confirm that any alteration does not harm the flavour and quality of the products, and how these new types compare to traditional sweetcorn.

Hort Innovation chief executive John Lloyd said Australia is fortunate to have plenty of access to home-grown, healthy produce.

“This work is being delivered as part of the five-year Naturally Nutritious program. The aim of Naturally Nutritious, is to provide initial research into the development of innovative, appealing products that are nutrient-dense, can be differentiated in the marketplace, and are visually attractive and flavoursome.

The new corn varieties are being investigated as part of the $10M Naturally Nutritious project, using Hort Innovation’s Health, Nutrition and Food Safety Fund.

This Fund aims to help equip Australian horticulture for the future ahead by facilitating collaborative cross-industry investments focused on longer-term, complex and traditionally underinvested areas of research.

MORE INFORMATION ▶
The Queensland Alliance for Agriculture and Food Innovation, University of Queensland, is supported by the QLD Government.

For more information head to the website https://horticulture.com.au/co-investment-project/hn15001/?mc_cid=35df537a4c&mc_eid=8314dc3719
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KHI NÀO MỘT PHẾ LIỆU TRỞ THÀNH MỘT CHẤT PHẾ THẢI?

Một Sản Phẩm Hóa Học Trở Thành Một Chất Phế Thải, Thừa Thải Vì Chứng:
- Đã Phục Vụ Mục Đích Yêu Cầu Và Nay Không Còn Như Câu Sử Dụng;
- Còn Du Học Thừa Thải;
- Quá Hạn Sử Dụng;
- Được Rút Ra Khởi Đánh Sách Sản Phẩm Được Phê Phẩm Sử Dụng;
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Công tác so sánh với chuẩn cho doanh nghiệp và ngành sản xuất rau cải

So sánh với chuẩn là cách làm đơn giản và hiệu quả để ra soát lại toàn bộ các khâu trong doanh nghiệp và xác định đâu là các vấn đề gì có thể nhanh chóng khắc phục nhằm tăng lợi nhuận. Công tác này cũng đưa ra các ý tưởng cho thấy doanh nghiệp của quý vị hoạt động hiệu quả thế nào so với mức độ trung bình của toàn ngành.

So sánh với chuẩn là gì?

Nói theo cách đơn giản công tác so sánh với chuẩn là so sánh các hoạt động sản xuất kinh doanh của doanh nghiệp quý vị với các giá trị trung bình của ngành. Từ kết quả so sánh này quý vị có thể nhận ra các hạn chế và lình vực nào cần duy trì để cải thiện hiệu quả đầu ra cho toàn bộ công sức của quý vị.

So sánh với chuẩn làm được gì cho tôi?

Tôi muốn:

- Nhận được báo cáo tổng quát (miễn phí) xem tất cả các lĩnh vực trong doanh nghiệp của quý vị hoạt động như thế nào.
- Biết được một số cách thức tiếp cận để gia tăng tỷ suất lợi nhuận.
- Biết được những lứa nào có chi phí đang vượt trội.
- Biết được mình làm hay dở thế nào so với các nông gia cùng ngành.
- Có được phản hồi từ các chuyên gia trong các lĩnh vực khác nhau tại Tây Úc nhận xét xem quý vị đang làm thế nào.

Nếu đó là những điều quý vị muốn thì công tác so sánh với chuẩn sẽ mang chúng đến cho quý vị.

Tổ chức lợi gì khi tham gia?

Một khi quý vị đồng ý tham gia dự án, thứ mà quý vị sẽ nhận được gồm có:

- Chúng tôi sẽ đến tận nơi của quý vị để thu thập thông tin và hoàn tất hồ sơ tham gia dự án. Quý vị không phải điền giấy tờ gì cả.
- Bản báo cáo so sánh với chuẩn (không được công khai cho bất kỳ ai khác) riêng cho doanh nghiệp của quý vị — bao gồm cả hiện trạng về khả năng bền vững của doanh nghiệp.
- Một chuyến viếng thăm để thảo luận chi tiết và giải thích các vấn đề được phát hiện trong báo cáo dự thảo để quý vị có thể tiến hành sửa đổi ngay.
- Hỗ trợ và giải đáp các thắc mắc quan trọng theo yêu cầu của quý vị.

Công tác so sánh với chuẩn sẽ bao gồm các vấn đề nào của doanh nghiệp?

- Thông tin hoạt động sản xuất
- Hiệu quả tài chính
- Chi phí đầu vào và đầu ra
- Sản xuất và thu nhập
- Các biện pháp sản xuất bền vững

Thông tin gián cấp phải xảy ra?

Da số thông tin cần thiết cho công việc so sánh với chuẩn khi tham gia đều có sẵn trong hồ sơ của quý vị. Chúng bao gồm số sách kế toán, báo cáo sản xuất kinh doanh, báo cáo tiêu thụ, các hóa đơn thanh toán.

Tỉnh bảo mật

Dường như khi ai xem xét tham gia dự án thì điều quan tâm nhất là thông tin họ cung cấp sẽ về đâu, sử dụng vào mục gì và sau đó được quản lý như thế nào.

Tất cả thông tin quý vị cung cấp sẽ được tuyệt đối bảo mật và các so sánh chuẩn được thực hiện so với các giá trị trung bình hay các chỉ số làm ăn khác cũng được ẩn danh. Các làm này cho phép nhìn thấy từng doanh nghiệp trong khi tính bảo mật cho tất cả những người tham gia đều được bảo đảm.
Các câu hỏi đáp thương giá

1. Tôi có phải trả tiền cho việc này không?
   Không, đây là dịch vụ miễn phí cho tất cả nông gia rau cái. Chương trình này do Bộ Nông nghiệp và Phát triển nông thôn (Department of Primary Industries & Regional Development - DPIRD) và Tổ chức cái tiến ngành rau hoa quả (Hort Innovation Australia – HIA) tài trợ.

2. Những ai sẽ xem thông tin/ chuyên gì sẽ xay ra với thông tin của tôi?
   Chỉ có người trực tiếp thu thập thông tin và người phân tích thông tin, nhưng người được cấp chứng nhận, nhìn thấy thông tin của quý vị có cùng cấp. Thông tin sẽ do trưởng dự án của Hiệp hội Rau cái Tây Úc hoặc đại diện đến từ công ty Planfarm trực tiếp thu thập và chịu trách nhiệm phân tích. Việc chia sẻ thông tin giữa người thu thập và phân tích được tổ chức rất cần trọng và tuyệt đối bảo mật.

3. Planfarm là ai?

4. Lợi ích có lợi bất làm ăn không?
   Hoàn toàn không. Thông tin thu thập để tìm hiểu mức độ hiệu quả của doanh nghiệp ra sao chừng không phải bằng cách nào vì quý vị đạt được mỗi độ hiệu quả đó. Cùng với công tác báo một mặt để cập như trên, đảm bảo công thông tin riêng của quý vị sẽ không bao giờ rơi ra ngoài.

5. Liều tôi có được xem báo cáo kết quả của đạo thủ cạnh tranh và liệu người đó có xem được của tôi không?
   Không. Tất cả phân tích so sánh hiệu quả của mỗi cá nhân đều do sự chuẩn chỉnh của toàn ngành và các chỉ số được giải tẩn khác. Như vậy quý vị sẽ hoàn toàn không biết ai khám tham gia chương trình này và những người khác cũng vậy.

6. Chương trình này bao gồm những loại cấy trong nào?
   Tất cả các loại hoa màu

7. Mất bao nhiêu thời gian?
   Chúng tôi sẽ đến tận nơi làm việc với quý vị để quý vị không phải bô công ăn việc làm. Nếu quý vị chuẩn bị sẵn các tài liệu thông tin cần thiết, chỉ cần 2-3 tiếng để chúng tôi cho thông tin vào máy tính công với 1-2 tiếng để quý vị xem lại có hài lòng với các thông tin đã cung cấp hay không.

8. Người nào trong doanh nghiệp nên làm việc này?
   Nhà sản xuất hoặc quản lý một trang trại, thư ký, hoặc chính chủ farm nếu quý vị không giữ số sách ghi chép.

9. Tôi có cần phải đưa tất cả thông tin khi làm việc này?
   Chúng tôi đề nghị chỉ là quản lý trang trại, thư ký, hoặc chính chủ farm nếu quý vị không giữ số sách ghi chép.

10. Liều tôi có được bảo cáo so sánh hiệu quả làm ăn của tôi với khu vực địa phương và với cả tiểu bang không?
    Được. Tuy nhiên chúng tôi cần có 12 người trong tiểu bang tham gia để có đủ số liệu phân tích so sánh trong vùng. Tất nhiên khi đó để biết ai là 12 người này. Nếu dưới 12 người thì chúng tôi không tiến hành phân tích so sánh trong cùng một địa phương nhưng quý vị vẫn được so sánh với chuẩn của toàn ngành.

11. Cuối cùng thì thông tin đóng đắn cung cấp được lưu giữ thế nào?
    Tất cả thông tin bệnh đau đều được lưu một cách an toàn trong hệ thống dữ liệu của Planfarm. Tất cả thông tin hỗ đat với quý vị sẽ bị xóa sau khi đặt dưới an toàn lưu giữ.

   Một khi công tác thu thập thông tin của một năm kết thúc thì công tác phân tích toàn bộ số liệu sẽ được thực hiện để nhận thấy các khuyễn hướng phát triển của ngành. Không có tên nền dân nào trong dữ liệu phân tích và kết quả sau khi phân tích.

12. Chúng tôi làm gì với kết quả phân tích cho mình?
   Người thu thập thông tin trước đây sẽ quay lại gập quý vị để tra bo báo cáo kết quả phân tích của chính quý vị. Người này sẽ giải thích cho quý vị các kết quả trong báo cáo và thảo luận với quý vị cách thức quý vị sử dụng kết quả này để thay đổi cách làm và tăng lợi nhuận.

13. Có hại gì cho tôi không?
   Chúng tôi có tìm cùng không thủy quý vị thiet hài gì khi tham gia!

Làm cách nào tham gia chương trình?

Đơn giản là quý vị chỉ liên hệ: Bryn Edwards, Benchmarking Lead, vegetablesWA cho quí vị.

Để tìm hiểu mức độ hiệu quả của doanh nghiệp ra sao chừng không phải bằng cách nào vì quý vị đạt được mỗi độ hiệu quả đó. Cùng với công tác báo một mặt để cập như trên, đảm bảo công thông tin riêng của quý vị sẽ không bao giờ rơi ra ngoài.

Lưu ý: Quý vị cần cung cấp các tài liệu thông tin cho quí vị.

Để tìm hiểu mức độ hiệu quả của doanh nghiệp ra sao chừng không phải bằng cách nào vì quý vị đạt được mỗi độ hiệu quả đó. Cùng với công tác báo một mặt để cập như trên, đảm bảo công thông tin riêng của quý vị sẽ không bao giờ rơi ra ngoài.

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Để tìm hiểu mức độ hiệu quả của doanh nghiệp ra sao chừng không phải bằng cách nào vì quý vị đạt được mỗi độ hiệu quả đó. Cùng với công tác báo một mặt để cập như trên, đảm bảo công thông tin riêng của quý vị sẽ không bao giờ rơi ra ngoài.
Suy giảm mực nước ngầm là vấn đề nghiêm trọng ở Tây Úc.

Những dự án như Nước cho lương thực thực phẩm (Carnarvon), Thêm lợi tức cho mỗi giọt nước tưới (Tây Úc), Khảo sát biện pháp bón phân tưới nước và quản lý sâu bệnh hại của nông dân (Perth và Carnarvon) đã được thực hiện để tìm kiếm thêm nguồn nước cũng như tăng cường hiệu quả sử dụng nước.

Cùng đồng hành với những cố gắng đó nông dân trồng rau cải Tâu Úc cũng tinh chỉnh các biện pháp tưới truyền thống để khắc phục thiệt hại hiệu quả sử dụng nước nhằm gia tăng lợi nhuận.

Bài viết này chia sẻ kinh nghiệm của một nông dân trồng cà Carnarvon – anh Trần Quốc Sự - về quá trình học hỏi tích lũy kinh nghiệm khi thử nghiệm các tiến bộ kỹ thuật để theo dõi độ ẩm đất. Quá trình tìm hiểu sự biến động độ ẩm đất trong mùa vụ canh tác và kết hợp chúng vào cách tính toán biện pháp tưới của anh đáng để trao đổi thảo luận.

1. Thử nghiệm áp dụng ống đo độ ẩm đất (trương lực kế — tensiometer)

Thử nghiệm đầu tiên của anh Sự để tìm hiểu độ ẩm đất là sử dụng trương lực kế (tensiometer) vào khoảng 2011. Loại ống đo anh thử nghiệm hiện thị số đo có giá trị âm trên đồng hồ.

Ký vọng khi thử nghiệm: Anh Sự mua các trương lực kế có độ dài khác nhau tại địa phương để theo dõi độ ẩm đất ở các độ sâu khác nhau trong đất với sự nghiên cứu các dụng cụ này có thể hỗ trợ việc tính toán biện pháp tưới.

Thử nghiệm: Việc lắp đặt các ống đo trương lực kế trong đất và đọc số hiện thị trên đồng hồ ban đầu có vẻ dễ dàng. Nhưng ngược lại, hiểu rõ ý nghĩa của các cơn số và hiểu được cách tuân theo quá trình chuyển nước trong đất để thiết lập công thức tưới thì không dễ chút nào.
Bài học: Khi mua các dụng cụ thì các thông tin về cách sử dụng và bảo trì cũng được nhân viên của hàng cung cấp. Nhân viên kỹ thuật tại địa phương dôi khi tư vấn hỗ trợ thêm. Tuy nhiên do không sử dụng tiếng Anh nên anh Sự khó hiểu hết trọn vẹn các thông tin hướng dẫn và anh cũng nghĩ rằng việc thử nghiệm thực tế hàng ngày có thể giúp anh hiểu thêm từ từ cho tới khi thành thạo.

Trên thực tế anh Sự cần thấy khoảnh khắc hiểu rõ các yếu tố thông số trên đồng hồ, chúng có tương quan như thế nào với tình trạng nước trong các tầng đất khác nhau, tai sao độ khí động học hiện thị giá trị số không suốt một thời gian. Thực tế cho thấy thật khó khăn khi tìm lý do tai sao khi các thông số đọc được trên đồng hồ không phản ánh đúng tình trạng độ ẩm đất ở và sự sinh trưởng của cây trồng mà anh quan sát. Anh Sự không thấy có logic rõ ràng khi áp dụng đúng cứu đồ ẩm đất đất này. Hơn nữa việc thêm vào và thực tiếp đọc thông số hàng ngày cũng tương đối mất thời gian và ảnh hưởng công việc.

Ứng dụng: Sau một thời gian thử nghiệm anh Sự dần bỏ thiết bị đo độ ẩm đất đất này.

Công ty cung cấp dịch vụ cùng thiết kế các dạng đồ thị sao cho các thông tin phức tạp được trình bày một cách ngắn gọn nhưng đầy đủ và dễ hiểu. Khả năng theo dõi số liệu qua điện thoại di động tạo điều kiện để đăng cung cho người dùng. Quan trọng hơn nữa là các thông tin cảnh báo khi có vấn đề và báo cáo định kỳ có được gửi về bằng tin nhắn điện thoại và bằng thư điện tử từ rất tiện lợi.

Bài học: Anh Sự cho biết rằng ứng dụng này đã giúp anh có thêm kiến thức và kinh nghiệm để phân tích chi tiết thời điểm xảy ra với âm độ trong đất, đặt rõ con số vào thiết bị để biết được mức độ và số giờ tự động.

Mặc dù thiết bị này phức tạp hơn so với ống đo ẩm độ đất anh Sự đã thử nghiệm trước đây nhưng kết quả được trình bày một cách ngắn gọn, đầy đủ và dễ hiểu.

Cần báo cẩn thận về các khu vực có tỷ lệ ẩm độ đất cao và mọi người cần phải biết để phòng tránh sự cố. Mỗi năm anh Sự cung cấp cho chính phủ kế hoạch và báo cáo nhiều dự án lớn và nhỏ để hỗ trợ việc thay đổi ẩm độ đất.

Đây là báo cáo dưới dạng đồ thị

Giới thiệu:

• Mặc dù hệ thống theo dõi ẩm độ đất này phức tạp hơn so với ống đo ẩm độ đất nhưng nếu được tập huấn hướng dẫn thích hợp cùng với sự hỗ trợ từ vấn đề thử nghiệm của chuyên gia thì việc ứng dụng tiến bộ kỹ thuật này cũng không quá khó khăn để cả với những nông dân không phải là nông dân chuyên nghiệp.

• Có thêm hệ thống này cũng không quá ảnh hưởng đến công việc thường ngày vì các thông số có thể được xem trên điện thoại di động.

• Nên nhớ rằng báo cáo kết quả của dự án Tăng thêm lợi tức trên từng giọt nước tưới đã đề cập vấn đề này và do đó không cần thiết để tiếp tục ứng dụng.

• Duy trì trao đổi thường xuyên với chuyên gia về ẩm độ đất là rất quan trọng trong quá trình học hỏi. Ngoài trợ giúp lập đặt và thiết kế bồn đặt, chuyên gia còn giúp tiếp tục giải đáp thắc mắc và hỗ trợ kiến thức kỹ thuật khi người ứng dụng gặp vấn đề khó khăn.

Ứng dụng: Sau một năm thử nghiệm hệ thống theo dõi âm độ đất qua mạng thông tin trực tuyến anh Sự trở nên tự tin hơn. Bên cạnh việc cung cấp dữ liệu hướng dẫn, chuyên gia cũng góp phần tham gia vào cải thiện độ ẩm đất và hỗ trợ người trồng tưới hiệu quả.

THÔM THÔNG TIN

Võ Thế Truyền tại Hiệp hội rau cải Tây Úc số 0457 457 559, truyen.vo@vegetableswa.com.au

ADOPTING SOIL MOISTURE MONITORING INNOVATION -- VIETNAMESE TRANSLATION (CONT.)
Nghiên cứu chỉ ra triển vọng không chế rầy cà chua khoai tây TPP cho nông gia

Kết quả của các nghiên cứu do Bộ Nông nghiệp và phát triển nông thôn (DPIRD) tiến hành đang cho ra các tín hiệu khả quan có nhiều phương án đối phó trong tương lai để phòng trừ rầy cà chua khoai tây TPP (Bactericera cockerelli) cho ngành rau củ quả.

Vào tháng 9/2017 Bộ đã khởi động một chương trình nghiên cứu kéo dài 9 tháng để tăng cường sự hiểu biết về các phương án khống chế rầy TPP cũng như tăng cường khả năng của nông gia trong việc quản lý loại gây hại này.

Quyền trưởng ban An ninh sinh học Sonya Broughton cho biết nghiên cứu cho đến nay bao gồm các thí nghiệm trong phòng và trong nhà kính về hiệu lực của một số thuốc diệt côn trùng và một số tác nhân phòng trừ sinh học với rầy TPP.

Tiến sĩ Broughton nói thêm rằng “các nghiên cứu đã chứng minh pymetrozyne không có hiệu quả không chế rầy TPP khi abamectin thì có kết quả rất tốt. Kết quả này cũng tương đồng với kết quảOPYN trong các xét nghiệm được thực hiện tại New Zealand, nơi rầy TPP đã thiết lập quần thể lâu dài”. Và điều này phân năm cũng có thể là do rầy TPP tìm thấy ở Tây Úc có cùng kiểu sinh học với rầy TPP New Zealand.

Tiến sĩ Broughton cũng nói thêm rằng “các nghiên cứu trong nhà kính đã kiểm tra được 14 loại thuốc diệt côn trùng và 6 loại tác nhân phòng trừ sinh học với rầy TPP. Sâu loài tổng hợp được sử dụng trong các nghiệm tỷ lệ được đặt lặp kỳ (lưu hành trên thị trường) đối với đối tượng gây hại này trên hoa màu hay chua, nếu chưa thì bấm cách nào chúng tôi có thể tiến hành xem xét vấn đề này”.


Chương trình nghiên cứu và phát triển do Bộ Nông nghiệp chủ trì này là một bước tiến quan trọng bằng cách chuẩn hóa quản lý rầy TPP (thay vì mục tiêu ban đầu là tiêu diệt rầy hoàn toàn). Kế hoạch này nhằm phát triển các hệ thống nghiên cứu khoa học, an ninh sinh học và hoạt động kinh doanh hỗ trợ cho nông gia và cho toàn ngành trong việc quản lý rầy TPP.

Kế hoạch này do chính phủ liên bang, chính phủ tiểu bang và ngành (nông nghiệp) tài trợ.

Thông tin chi tiết về các biểu hiện triệu chứng rầy TPP, các phương án phòng trừ có trên trang thông tin internet của Bộ.

THỂ THÔNG TIN

Xin liên hệ: Jodie Thomson/Dionne Tindale, chuyên viên thông tin báo chí, (08) 9368 3937.
<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, chilli, 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 and 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 and sweet peppers</td>
<td>Western flower thrips</td>
<td>31-Oct-20</td>
</tr>
<tr>
<td>PER14210</td>
<td>Acramite Mtidice</td>
<td>Lettuce</td>
<td>Two-spotted (red spider) mite</td>
<td>30-Sep-18</td>
</tr>
<tr>
<td>PER82341</td>
<td>Acramite Mtidice (bifenazate)</td>
<td>Cucumber, peppers (sweet and chilli), zucchini, eggplant, sin qua, bitter melon, tomato and snake bean</td>
<td>Two-spotted mite</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER14425</td>
<td>Acramite Mtidice (bifenazate)</td>
<td>Rubus and rubus hybrids</td>
<td>Two-spotted mite and 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 and 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 and 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 and 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 and 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>
</tbody>
</table>
Current Minor Use Permits can also be searched by specific crop or pest types at [https://portal.apvma.gov.au/permits](https://portal.apvma.gov.au/permits)

<table>
<thead>
<tr>
<th>Permit No.</th>
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</tr>
</thead>
<tbody>
<tr>
<td>PER10988</td>
<td>Bladex 900 WG (cyanazine)</td>
<td>Snow peas and sugar snap peas</td>
<td>Broadleaf weeds</td>
<td>31-Mar-20</td>
</tr>
<tr>
<td>PER14602</td>
<td>Boscalid, Iprodione and Chlorthalonil</td>
<td>Onion (bulb and seed)</td>
<td>Botrytis neck-rot</td>
<td>30-Sep-18</td>
</tr>
<tr>
<td>PER14840</td>
<td>Bupiriminate</td>
<td>Cucurbits and peppers</td>
<td>Powdery mildew</td>
<td>30-Sep-19</td>
</tr>
<tr>
<td>PER14036</td>
<td>Bupiriminate</td>
<td>Eggplant</td>
<td>Powdery mildew</td>
<td>28-Feb-23</td>
</tr>
<tr>
<td>PER14326</td>
<td>Captan</td>
<td>Leafy lettuce, cucumber, capsicum and chilli</td>
<td>Grey mould</td>
<td>30-Nov-21</td>
</tr>
<tr>
<td>PER13725</td>
<td>Chess</td>
<td>Tomatoes (protected)</td>
<td>Greenhouse whitefly, silverleaf whitefly, Green peach aphid</td>
<td>31-May-18</td>
</tr>
<tr>
<td>PER11768</td>
<td>Chlorpyrifos</td>
<td>Pumpkin</td>
<td>African black beetle</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER14583</td>
<td>Chlorpyrifos</td>
<td>Various vegetable crops</td>
<td>Various insect pests</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER82459</td>
<td>Cloethidim</td>
<td>Brassica vegetables</td>
<td>Various grass weeds</td>
<td>30-Sep-21</td>
</tr>
<tr>
<td>PER12351</td>
<td>Confidor Guard Soil</td>
<td>Leafy lettuce, okra</td>
<td>Silverleaf whitefly</td>
<td>30-Jun-20</td>
</tr>
<tr>
<td>PER14626</td>
<td>Copper as trisbac copper sulphate</td>
<td>Garlic</td>
<td>Downy mildew</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER14842</td>
<td>Copper Oxylchloride, Cuprous Oxide or Cupric Hydroxide</td>
<td>Spring onions and shallots</td>
<td>Downy mildew</td>
<td>30-Sep-19</td>
</tr>
<tr>
<td>PER84805</td>
<td>cyantraniliprole</td>
<td>Fruiting vegetables, root and tuber vegetables</td>
<td>Tomato potato psyllid</td>
<td>31-Dec-22</td>
</tr>
<tr>
<td>PER14351</td>
<td>DC-Tron Plus</td>
<td>Lettuce</td>
<td>Various bugs</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER82551</td>
<td>Diazinon</td>
<td>Leeks and cauliflower</td>
<td>Onion fly and onion seedling maggot</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER82745</td>
<td>Difenconazole</td>
<td>Silverbeet, spinach, chicory, endive</td>
<td>Fungal diseases</td>
<td>31-Aug-20</td>
</tr>
<tr>
<td>PER82136</td>
<td>Difenconazole</td>
<td>Brassica vegetables</td>
<td>Ring spot</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER14035</td>
<td>Dimethoate</td>
<td>Peas</td>
<td>Broadleaf weeds</td>
<td>31-Mar-23</td>
</tr>
<tr>
<td>PER12506</td>
<td>Dimethoate</td>
<td>Eggplant</td>
<td>Queensland fruit fly and Mediterranean fruit fly</td>
<td>31-Oct-18</td>
</tr>
<tr>
<td>PER13170</td>
<td>Dimethoate</td>
<td>Melons including watermelons (post-harvest)</td>
<td>Various fruit fly species</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER14473</td>
<td>Dimethomorph and Mancozeb</td>
<td>Leeks, spring onions and shallots</td>
<td>Downy mildew, purple blotch and botrytis rot</td>
<td>30-Jun-18</td>
</tr>
<tr>
<td>PER14958</td>
<td>Dimethomorph and Mancozeb (Acrobat Fungicide)</td>
<td>Brassica leafy vegetables, leafy lettuce and other leafy vegetables</td>
<td>Downy mildew and other diseases</td>
<td>31-Dec-22</td>
</tr>
<tr>
<td>PER81702</td>
<td>Dominex Duo EC Insecticide</td>
<td>Cucumbers</td>
<td>Loopers</td>
<td>31-Mar-21</td>
</tr>
<tr>
<td>PER13154</td>
<td>Dual Gold Herbicide</td>
<td>Brassica leafy vegetables</td>
<td>Various broadleaf and grass weeds</td>
<td>31-Mar-22</td>
</tr>
<tr>
<td>PER13695</td>
<td>Ecocarb Fungicide</td>
<td>Various vegetables</td>
<td>Powdery mildew</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER14077</td>
<td>Eco-Oil (Botanical Oil)</td>
<td>Greenhouse and hydroponic capsicum, cucumber and lettuce</td>
<td>Silverleaf whitefly</td>
<td>30-Sep-23</td>
</tr>
<tr>
<td>PER14907</td>
<td>Emamectin</td>
<td>Brassica leafy vegetables</td>
<td>Various pests</td>
<td>30-Nov-19</td>
</tr>
<tr>
<td>PER81914</td>
<td>Emamectin</td>
<td>Celery and eggplant</td>
<td>Heliothis, light brown apple moth and cluster caterpillar</td>
<td>31-Oct-19</td>
</tr>
<tr>
<td>PER84808</td>
<td>Ethofumesate (Tramat)</td>
<td>Onions</td>
<td>Broadleaf and grass weeds</td>
<td>28-Feb-23</td>
</tr>
<tr>
<td>PER82904</td>
<td>Fenhexamid</td>
<td>Snow peas and sugar snap peas</td>
<td>Grey mould and chocolate spot</td>
<td>30-Jun-22</td>
</tr>
<tr>
<td>PER83203</td>
<td>Fipronil (REGENT 200 SC)</td>
<td>Celery and field lettuce</td>
<td>Western flower thrips, onion thrips</td>
<td>13-Mar-22</td>
</tr>
<tr>
<td>PER14050</td>
<td>Flint 500 WG Fungicide</td>
<td>Cucumbers and capsicums (protected)</td>
<td>Powdery mildew</td>
<td>30-Jun-23</td>
</tr>
<tr>
<td>PER14484</td>
<td>Fluazifop</td>
<td>Eggplant, shallots, spring onions, leeks, garlic, parsnips and sweet potato</td>
<td>Grass weeds</td>
<td>31-Mar-18</td>
</tr>
<tr>
<td>PER82556</td>
<td>Fluazifop</td>
<td>Various vegetables</td>
<td>Grass weeds</td>
<td>31-Jan-23</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>
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</tr>
<tr>
<td>PER84740</td>
<td>Fluazifop-P as butyl</td>
<td>Various root crops</td>
<td>Grass weeds including couch and Guinea grass</td>
<td>30-Apr-19</td>
</tr>
<tr>
<td>PER82461</td>
<td>Folicur 430 SC Fungicide</td>
<td>Beetroot, chicory, endive, radish, silverbeet</td>
<td>Scletotinia rot</td>
<td>31-Aug-20</td>
</tr>
<tr>
<td>PER13305</td>
<td>Glyphosate (shielded sprayer)</td>
<td>Carrots</td>
<td>Certain broadleaf and grass weeds</td>
<td>30-Jun-20</td>
</tr>
<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>Hexythiazox (Calibre 100 EC miticide)</td>
<td>Cucurbit 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 and 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>PER10918</td>
<td>Imidacloprid</td>
<td>Carrot, leafy lettuce, silverbeet and spinach</td>
<td>Greenhouse whitefly and aphids</td>
<td>31-May-18</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>Celery, cucumber, peppers and 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, lightbrown 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 and 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 and eggplant</td>
<td>Grey mould</td>
<td>31-Jul-20</td>
</tr>
<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 and silverbeet</td>
<td>Sclerotinia, black rot and grey Mould</td>
<td>28-Feb-23</td>
</tr>
<tr>
<td>PER11949</td>
<td>Lambda-Cyhalothrin</td>
<td>Beetroot and radish</td>
<td>Various insects</td>
<td>31-Mar-20</td>
</tr>
<tr>
<td>PER14471</td>
<td>Lambda-cyhalothrin</td>
<td>Shallots and spring onions</td>
<td>Various pests</td>
<td>31-Mar-19</td>
</tr>
<tr>
<td>PER14033</td>
<td>Lambda-cyhalothrin</td>
<td>Snow peas and sugar snap peas</td>
<td>Pasture webworm, cutworm, Rutherglen bug and thrips</td>
<td>31-May-18</td>
</tr>
<tr>
<td>PER11991</td>
<td>Legend Fungicide (quinoxyfen)</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 and 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 and 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 and 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 and purple blotch</td>
<td>31-Mar-23</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>
</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>
</tr>
<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>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>PER84531</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>PER14650</td>
<td>Paramite (etoxazole)</td>
<td>Melons</td>
<td>Two-spotted mite</td>
<td>31-May-18</td>
</tr>
<tr>
<td>PER82460</td>
<td>Paraamite 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>Brussel sprouts</td>
<td>Weeds</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER14127</td>
<td>Pendimethalin</td>
<td>Brassica leafy vegetables and rocket</td>
<td>Weeds</td>
<td>31-Aug-18</td>
</tr>
<tr>
<td>PER14886</td>
<td>Pendimethalin</td>
<td>Garlic</td>
<td>Grass and 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 and 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 and 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 and 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>
</tr>
<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 and rocket</td>
<td>Aphids</td>
<td>30-Jun-19</td>
</tr>
<tr>
<td>PER82359</td>
<td>Pirimor (pirimicarb)</td>
<td>Peppers — chilli</td>
<td>Aphids</td>
<td>31-Mar-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>
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</tr>
<tr>
<td>PER10875</td>
<td>Pirimor 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>
</tr>
<tr>
<td>PER13114</td>
<td>Prometryn</td>
<td>Celeriac</td>
<td>Grass weeds listed on label</td>
<td>31-Mar-22</td>
</tr>
<tr>
<td>PER12048</td>
<td>Prometryn</td>
<td>Parsnip and carrot</td>
<td>Weeds</td>
<td>30-Sep-20</td>
</tr>
<tr>
<td>PER14385</td>
<td>Prometryn</td>
<td>Specified root and tuber vegetables</td>
<td>Grass and broadleaf weeds</td>
<td>31-Mar-19</td>
</tr>
<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 and brassica leafy veg</td>
<td>Annual grasses and broadleaf weeds</td>
<td>30-Nov-25</td>
</tr>
<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>
</tr>
<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 and 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 and European red mite</td>
<td>30-Sep-20</td>
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<tr>
<td>PER86442</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>
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<tr>
<td>PER80210</td>
<td>Pyrimethanil</td>
<td>Protected tomatoes</td>
<td>Botrytis</td>
<td>30-Jun-20</td>
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<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>PER14695</td>
<td>Ridomil Gold 25G (metalaxyl-M)</td>
<td>Parsnips</td>
<td>Pythium spp. and Phytophthora spp.</td>
<td>30-Jun-19</td>
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<tr>
<td>PER13673</td>
<td>Ridomil Gold MZ WG</td>
<td>Celery, silverbeet and spinach</td>
<td>Late blight, septoria leaf blight and downy mildew</td>
<td>30-Sep-21</td>
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<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>
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<tr>
<td>PER14431</td>
<td>Rizolex Liquid</td>
<td>Lettuce</td>
<td>Bottom rot</td>
<td>30-Jun-22</td>
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<tr>
<td>PER14353</td>
<td>Rovral Aquaflo Fungicide (iprodione)</td>
<td>Peppers and celeriac</td>
<td>Sclerotinia rot</td>
<td>31-Mar-22</td>
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<tr>
<td>PER7909</td>
<td>Scala 400 SC Fungicide</td>
<td>Cucumber</td>
<td>Botrytis rot</td>
<td>30-Sep-22</td>
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<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>
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<tr>
<td>PER13323</td>
<td>Score Foliar Fungicide (difenconazole)</td>
<td>Celeriac</td>
<td>Cercospora leaf spot and septoria leaf blight</td>
<td>31-Oct-20</td>
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<tr>
<td>PER82811</td>
<td>S-Metolachlor</td>
<td>Beetroot</td>
<td>Blackberry nightshade</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>
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<tr>
<td>PER84757</td>
<td>spinetoram</td>
<td>Fruiting vegetables other than cucurbits and root and tuber vegetables</td>
<td>Tomato potato psyllid</td>
<td>30-Nov-20</td>
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<tr>
<td>PER11764</td>
<td>Spiroxamine</td>
<td>Snow peas and sugar snap peas</td>
<td>Powdery mildew</td>
<td>30-Jun-18</td>
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<tr>
<td>PER14186</td>
<td>Success Neo (spinetoram)</td>
<td>Eggplant</td>
<td>Melon thrips</td>
<td>30-Sep-18</td>
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<tr>
<td>PER13322</td>
<td>Success Neo (spinetoram)</td>
<td>Specified leafy vegetables</td>
<td>Potato moth</td>
<td>31-May-22</td>
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<tr>
<td>PER13088</td>
<td>Success Neo Insecticide (spinetoram)</td>
<td>Specified root vegetables, specified alliums and celeriac</td>
<td>Various insect pests</td>
<td>31-Mar-22</td>
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<tr>
<td>PER84743</td>
<td>Sulfoxaflor</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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<td>Permit No.</td>
<td>Product</td>
<td>Crop</td>
<td>Reason for use</td>
<td>Expiry date</td>
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<td>PER80100</td>
<td>Sumitomo Samurai Systematic Insecticide</td>
<td>Fruiting vegetables, excluding cucurbits</td>
<td>Mediterranean fruit fly and 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>
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<tr>
<td>PER13721</td>
<td>Switch</td>
<td>Tomatoes (protected)</td>
<td>Grey mould (botrytis)</td>
<td>31-May-21</td>
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<tr>
<td>PER81136</td>
<td>Switch Fungicide</td>
<td>Lettuce</td>
<td>Anthracnose</td>
<td>30-Sep-18</td>
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<tr>
<td>PER84878</td>
<td>Switch Fungicide</td>
<td>Protected and field grown capsicum</td>
<td>Botrytis and sclerotinia</td>
<td>30-Nov-22</td>
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<tr>
<td>PER82374</td>
<td>Talstar</td>
<td>Various crops</td>
<td>Brown marmorated stink bug and yellow-spotted stink bugs</td>
<td>28-Feb-23</td>
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<tr>
<td>PER82063</td>
<td>TEBUCONAZOLE</td>
<td>Garlic</td>
<td>Orange rust</td>
<td>31-Mar-21</td>
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<tr>
<td>PER12447</td>
<td>Teldor 500 SC Fungicide</td>
<td>Peppers (capsicum and chilli), cucumber and lettuce</td>
<td>Botrytis rot</td>
<td>31-May-21</td>
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<tr>
<td>PER12047</td>
<td>Thiabendazole</td>
<td>Sweet potato</td>
<td>Field rots caused by scurf and root rot</td>
<td>30-Sep-21</td>
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<tr>
<td>PER80216</td>
<td>Torque Insecticide [fenbutatin oxide]</td>
<td>Tomatoes (protected)</td>
<td>Two-spotted mite</td>
<td>31-Mar-19</td>
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<tr>
<td>PER14703</td>
<td>Tramat 500 SC Selective Herbicide (ethofumesate)</td>
<td>Spinach (Spinacia oleracea only) and silverbeet</td>
<td>Various weeds</td>
<td>31-Jul-19</td>
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<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>
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<tr>
<td>PER14906</td>
<td>Triadimenol</td>
<td>Leek, chives, shallot, spring and Chinese onions</td>
<td>White rot (Sclerotium)</td>
<td>31-Oct-19</td>
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<tr>
<td>PER11935</td>
<td>Triadimenol</td>
<td>Parsnips, radish, swede and turnip</td>
<td>Powdery mildew</td>
<td>30-Jun-22</td>
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<tr>
<td>PER80717</td>
<td>Trichlorfon</td>
<td>Eggplant, Thai eggplant, pepino and cape gooseberry</td>
<td>Fruit fly</td>
<td>31-Oct-20</td>
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<tr>
<td>PER14891</td>
<td>Trifloxystrobin</td>
<td>Beetroot</td>
<td>Alternaria leaf spot</td>
<td>30-Sep-19</td>
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<tr>
<td>PER14494</td>
<td>Trifloxystrobin</td>
<td>Celery, silverbeet, spinach, chicory and endive</td>
<td>DM, cercospora and septoria</td>
<td>31-Aug-22</td>
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<tr>
<td>PER13726</td>
<td>Trifloxystrobin</td>
<td>Tomatoes (protected)</td>
<td>Powdery mildew</td>
<td>31-May-21</td>
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<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>
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<tr>
<td>PER13696</td>
<td>Trifluralin</td>
<td>Parsnips</td>
<td>Wintergrass</td>
<td>31-Mar-23</td>
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<td>PER14337</td>
<td>Trifluralin</td>
<td>Swedes and turnips</td>
<td>Weeds</td>
<td>30-Jun-20</td>
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<tr>
<td>PER84555</td>
<td>Vapormate (Ethyl Formate)</td>
<td>Fresh fruit and vegetables</td>
<td>Tomato potato psyllid</td>
<td>30-Jun-19</td>
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<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>
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<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-18</td>
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<tr>
<td>PER81271</td>
<td>Various Actives</td>
<td>Leeks</td>
<td>Specified grass and broadleaf weeds</td>
<td>31-Oct-21</td>
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<tr>
<td>PER13778</td>
<td>Various herbicides, insecticides and fungicides</td>
<td>Carrot, onion and brassica seed crops</td>
<td></td>
<td>31-Mar-18</td>
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<tr>
<td>PER14694</td>
<td>VectoBac WG Biological Larvicide</td>
<td>Protected cropping — capsicum, cucumber, eggplant, herbs and lettuce</td>
<td></td>
<td>30-Jun-19</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 and silverbeet</td>
<td>Anthracnose (Colletotrichum spp.)</td>
<td>30-Sep-19</td>
</tr>
</tbody>
</table>
March

**HARPS Awareness Session**
**WHEN** 26 March & 27 March 2018  
**WHERE** Perth & Bunbury  
HARPS has released a decision matrix to ensure all growers understand their business requirements with HARPS; these workshops will go through this matrix.

There will be the opportunity to ask questions about HARPS.

Contact HARPS  
t: 1300 852 219

**PCA Growers Workshop**  
**WHEN** 30 April 2018  
**WHERE** Neerabup, Perth  
WA Greenhouse and Hydroponic growers workshop at Trandos Hydroponics.

Contact Charlie Blogna  
admin@protectedcroppingaustralia.com

April

**Negotiation Training**  
**WHEN** 4th & 5th April 2018  
**WHERE** West Perth  
A FREE 2-day workshop on negotiation skills for the vegetable industry, with priority given to vegetable R&D levy payers.

Contact Sam Grubisa, vegetablesWA  
sam.grubisa@vegetableswa.com.au  
t: (08) 9486 7515

June

**Hort Connections**  
**WHEN** 18–20th 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

October

**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

---

### 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</td>
<td>agrimaster.com.au</td>
<td></td>
<td></td>
<td>1800 110 000</td>
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<tr>
<td>Bentonite WA</td>
<td>bentonitewa.com.au</td>
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<td></td>
<td>0418 140 929</td>
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<tr>
<td>Department of Primary Industries</td>
<td>p65</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Dobmac Ag Machinery</td>
<td>dobmac.com.au</td>
<td>36-38 Industrial Drive, Ulverstone, TAS 7315</td>
<td>Mark Dobson</td>
<td>[03] 6425 5533</td>
</tr>
<tr>
<td>drumMUSTER</td>
<td>drummuster.org.au</td>
<td></td>
<td></td>
<td>1800 008 707</td>
</tr>
<tr>
<td>edp australia Pty Ltd</td>
<td>edp.com.au</td>
<td>31-37 OBrien Street, Mooroorna VIC 3269</td>
<td>Mick Schirmer</td>
<td>0437 252 122</td>
</tr>
<tr>
<td>Hort Connections</td>
<td>hortconnections.com.au</td>
<td></td>
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<tr>
<td>Horticulture Innovation Australia</td>
<td>p1BC</td>
<td>Level 8, 1 Chifley Square, Sydney NSW 2000</td>
<td></td>
<td>[02] 8295 2300</td>
</tr>
<tr>
<td>Jaeger Australia</td>
<td>jaegaraustralia.com.au</td>
<td></td>
<td>Alister Luckin</td>
<td>0400 441 444</td>
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<tr>
<td>Landmark Harcourts</td>
<td>landmarkwa.harcourts.com.au</td>
<td></td>
<td>Adam Shields</td>
<td>0429 104 760</td>
</tr>
<tr>
<td>Madec</td>
<td>harvesttrail.gov.au</td>
<td></td>
<td></td>
<td>1800 062 332</td>
</tr>
<tr>
<td>Neutrog Australia Pty Ltd</td>
<td>neutrog.com.au</td>
<td>288 Mine Road, Kanmantoo, SA 5252</td>
<td></td>
<td>[08] 8538 3500</td>
</tr>
<tr>
<td>Paliz Agriculture</td>
<td>paliz.com.au</td>
<td>21/110 Inspiration Drive Wangara, WA 6065</td>
<td>Hossein Darvish</td>
<td>[08] 9303 9638</td>
</tr>
<tr>
<td>PowerPak</td>
<td>powerpak.com.au</td>
<td></td>
<td></td>
<td>1800 982 920</td>
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<tr>
<td>R &amp; E Engineering</td>
<td>reeng.com.au</td>
<td></td>
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<td>[08] 6261 7171</td>
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<tr>
<td>Rivulis</td>
<td>Rivulis.com.au</td>
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<td>1800 558 009</td>
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<td>Rural Bank</td>
<td>ruralbank.com.au</td>
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<td>Smith &amp; Georg</td>
<td>smithandgeorg.com.au</td>
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<td>1800 991 985</td>
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<tr>
<td>Southern Forest Food Council</td>
<td>southernforestsfood.com</td>
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<td>[08] 9772 4180</td>
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<tr>
<td>Total Eden</td>
<td>totaleden.com.au</td>
<td></td>
<td>Jon</td>
<td>0417 911 158</td>
</tr>
<tr>
<td>WA Crates</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>
Let’s talk about your industry

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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