

Welcome to the **Impact Update** – Hort Innovation’s quarterly publication that gives you a snapshot of your investments in action and how they are making an impact on the ground.

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The future of snack food: good for your waist, good for waste

A new healthy vegetable snack has hit the shelves drawing on innovation from Australia’s national science agency CSIRO together with start-up Nutri V. Based on early work supported by a Hort Innovation Vegetable Fund project, the Nutri V Goodies have two serves of vegetables in every pack and are a convenient option for people to increase their intake.

The Hort Innovation project, *Creating value from edible vegetable waste* (VG15076), which ran from 2016 to early 2019, investigated potential ways to gain value from vegetables that would otherwise be lost to the supply chain. The research successfully transformed fresh broccoli and carrot into shelf-stable, safe, nutritious, functional ingredients and products, including broccoli and carrot powders.

Off the back of this research, the Nutri V snacks contain broccoli, pumpkin and cauliflower which can’t be sold and would otherwise have gone to waste, often as landfill or animal feed. They have a higher vegetable content and health star rating than many other snack foods on the market. The new product will reduce food waste, support farmers to be more sustainable and help Australians to eat their daily serve of vegetables.

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The Nutri V Goodies hit the shelves in 2022

Growers, researchers and retailers working together on providing consumers with sustainable products

MEET NUTRI V CEO RAQUEL SAID

Nutri V CEO Raquel Said says the company was born from a farming business with a passion for innovation and sustainability.

“Part of growing veggies can involve ending up with tonnes that do not meet specification or there is an oversupply and also stalks and leaves, yet it is all still perfectly nutritious,” Ms Said explained.

“We wanted to create a business to upcycle that waste into a sustainable yet delicious solution, which is what we have done with the Nutri V vegetable powders, a star ingredient in Nutri V Goodie snacks.

“We see this as vegetables reimaged, no fork required, and we think it is the future of helping Australians top up their veggie consumption while supporting farmers to reduce waste.”

MEET CSIRO DIRECTOR OF AGRICULTURE AND FOOD DR MICHAEL ROBERTSON

CSIRO’s director of agriculture and food Dr Michael Robertson says vegetable-rich food innovation such as Nutri V helps farmers add real value to their businesses, while supporting sustainability in the agrifood sector.

“With CSIRO’s unique expertise and our world-class food research facilities, we can support the creation of healthy concept products and in the case of Nutri V, developing an innovative scaled process to take it to market,” Dr Robertson said.

“This partnership with a business at the forefront of agricultural production is a terrific example of how research can work with industry for the benefit of Australia.”

MEET COLES CHIEF EXECUTIVE OF COMMERCIAL AND EXPRESS LEAH WECKERT

Coles chief executive of commercial and express Leah Weckert says the company is proud to work alongside partners

to develop innovative products that support Coles’ sustainability ambitions and make it easier for Australians to increase their vegetable consumption.

“Coles is very excited to welcome Nutri V Goodies exclusively to our shelves. Our customers now have yet another way to enjoy Australian grown vegetables that are good for them and the environment,” Ms Weckert said.

“This innovative project highlights how working with Coles’ suppliers can help us achieve our sustainability ambitions together.”

What is next for Nutri V?

Nutri V’s first processing module is located on the farm of its parent company, Fresh Select, one of Australia’s biggest brassica growers. The veggies are picked and sorted in the mornings, then washed, dried into powders, and turned into the snacks by the afternoon.

It is a system Nutri V hopes to take to other vegetable growing areas in Australia to help them tackle food waste. CSIRO and Nutri V are also working together on a suite of veggie-based innovations using other CSIRO technologies.

FAST FACTS

- Less than 10 per cent of Australian adults eat their recommended five serves of veg a day
- On average, two to three in every 10 vegetable plants planted on-farm are wasted. The amount of food that is lost, or what is left behind in the field such as leaves and stalks, has not been measured.
- According to the Australian Dietary Guidelines, the standard Australian serve of vegetables is 75 grams or around half a cup of cooked vegetables, which is equivalent to 7.5g of Nutri V vegetable powder.

Scholarship sculpts the leaders of tomorrow

The AgriFutures Horizon Scholarship is a collaboration between many of the Research and Development Corporations, that builds and empowers future industry leaders through a \$10,000 two-year bursary program.

Hort Innovation sponsors two students in their final two years of an agricultural-related undergraduate degree or STEM degree with relevant majors which align to agriculture. This program is part of the Hort Frontiers Leadership Fund, that aims to build a competitive, innovative, resilient and profitable horticulture industry by investing in ongoing leadership development.

In 2022, Amy Clementson was a recipient of the AgriFutures Horizon scholarship and is more than halfway through the program. Amy grew up on a family-owned vineyard in Mudgee in Central West New South Wales and is currently studying a Bachelor of Agriculture and Bachelor of Business, majoring in Accounting at the University of New England. Amy hopes to pursue a career in financial and business management within the agricultural industry, to positively influence investment that facilitates a balance of long-term sustainability and efficiency.

In an interview with Hort Innovation, Amy spoke about her experience participating in the project to date.

Why did you apply for the AgriFutures Horizon Scholarship?

There are few scholarships like the AgriFutures Horizon Scholarship. My university peers told me about the program, saying its value exceeded the scholarship money you receive, and I was immediately intrigued.



AgriFutures Horizon Scholarship recipient: Amy Clementson

It provides you with the opportunity to gain work experience, attend conferences, develop as a leader, and meet like-minded individuals who you will work alongside as you progress in your industry. For me it was a no brainer to apply.

How have your experiences through the scholarship shaped your leadership qualities?

Horizon scholars meet once a year to participate in activities that develop our leadership skills. This includes narrowing in on our personal experiences and qualities which define the type of leader we aspire to be.

We also have the chance to workshop ideas; in 2021 the themes were 'big data' and 'workforce' in agriculture. We led and facilitated sessions with high school students and executives to brainstorm ideas and then refined these ideas in a report.

What were the highlights of your trip to Asia with Avocados Australia?

I spent a few months as an export development intern for Avocados Australia where I was doing research to help develop new market access plans for Australian avocados. I was then given the opportunity to help project manage a study tour throughout Southeast Asia.

During the tour, we attended Asia Fruit Logistica in Bangkok. We listened to speaker sessions on the future of Asia's market, networked and learned from successful international brands and peak industry bodies. We also visited Malaysia and Singapore, where we went on market tours and had the chance to meet with importers. This gave me an insight into the export supply chain and the issues the industry is facing in this space.

The trip gave me the opportunity to connect with Australian growers and exporters, gain a greater understanding

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of their businesses and our key avocado growing regions around the country. It also helped me to understand the issues the avocado industry faces.

What was a key learning from the trip?

Over the past 12 months we have seen an oversupply of avocados in our domestic market, coupled with limited market access. The trip highlighted the importance of growing our existing export markets in Malaysia and Singapore. A key learning for me was developing my understanding about the expectations surrounding quality, sizing and the need to educate consumers in this market.

How do you see yourself progressing your career after the completion of the scholarship?

Looking towards next year, I am still uncertain exactly where I will end up, but the trip and scholarship have reinforced my passion for the horticulture industry, and I am excited about the different ways I will be able to progress my career.



AGRIFUTURES HORIZON SCHOLARSHIP PROFESSIONAL DEVELOPMENT OPPORTUNITIES

- Partnerships with industry leaders
- Professional development workshops
- Annual industry work placements aligned with the Scholar's areas of interest and their sponsor's industry
- Opportunities to network and gain knowledge at a range of industry events
- Exposure to employment opportunities during and after undergraduate study.

Facilitating capacity building across the macadamia industry

From 2016 to 2021, the Hort Innovation Macadamia Fund project, *Australian macadamia industry innovation and adoption program* (MC15004), worked to enhance innovation and technology adoption and facilitate capacity building across the macadamia industry.

Delivered by the Australian Macadamia Society, the project supported the activities of a dedicated Industry Development Manager (IDM) who delivered MacGroup workshops, regular grower and consultant meetings and field days, as well as communication materials such as videos and articles in industry publications.



MEET MACADAMIA GROWER ELLE REVELL FROM THE NORTHERN RIVERS, NSW

Why did you get involved in the program?

"We have only been here for three and a half years, so being a relatively new person in the industry it is good to see what other people are doing and hear about the research. Otherwise, it is only our small team on the farm. We run some trials ourselves on farm, but we are limited by time and the ability to measure yield. Yield monitoring technology on farm in macadamias is still developing so we get our yield data from the processors by sending nuts in separate

batches. With storage and logistics, at our scale, it is not efficient to run too many trials at once.

"Being involved with the program means that we do not have to try and run every trial ourselves. We can see the results of the wider industry trials and research and adapt this to our farm as well as sharing the results of our own work. The networking is also one of the great strengths, I can get in touch with the IDM with an issue and they will put me in touch with someone to talk to."

What was your involvement in the program?

"I think I have nearly been to everything they have put on. I go to the MacGroups

and workshops, and the online resources are also useful. We are grafting this week, so we are searching the database for that to keep up to date on research. We have also been to a few canopy management field days, and the nursery standards workshop which was good. The pollination podcast was really useful too."

What changes have you made because of your involvement? What are the results?

Canopy management

"The canopy management field days have helped us develop a plan for the next five years as we were a bit undecided. We have decided to put

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more money into it as we have the reassurance that we will get the money back. So, we are going to start taking out about 20 per cent of the canopy from the older trees, and we now have the confidence to go about that. Through the program we had access to the researchers, demonstration sites and farmers who have done the trials with the backing data so we could see that replicated and have the confidence. For us it is early days to know the change at a business level because macadamias are so slow growing and slow to react. They only produce nuts on two- to three-year-old wood, so it takes a while to see the results of something like canopy management. But the innovation program gives us the confidence that we are moving in the right direction as we hear from other growers and researchers who have done the work and crunched the numbers.”

Pollination and pest management

“We made changes based on the pollination podcast. It talked about how macadamias do not usually self-pollinate, so now we are making sure we are putting different varieties in as we develop our blocks and supporting native bees with cover crops and shrubs

including inter-row plating of shrubs down the centre of our wider rows. We have also seen some good results from this with regards to pest management. With a trial strip of six hectares we only applied one weevil spray in the 2021-22 season, but it got the same yield as the conventional pest control with four to five pest sprays. That is only one year so we might have been lucky, so we will run it again this year which will likely be a higher pest year due to the weather.”

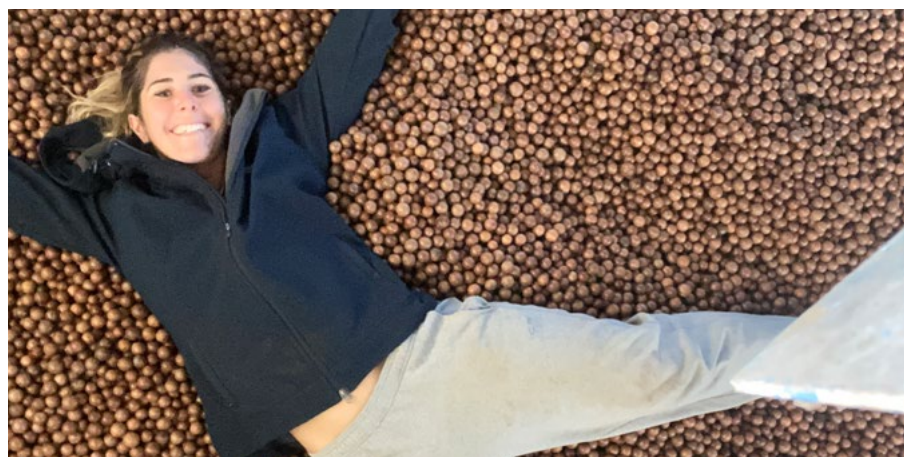
Nursery management

“The nursery workshop was really good. It went over all aspects of growing macadamias in a nursery, so that got

us going with best practice for setting it up, and how to meet market standards. Having a two-day event gave us exposure to all the different practices.”

Chemicals

“At the last MacGroup led a big chat about the new chemistry we have available, so we have changed some of the chemicals we use. They had the researchers and the chemical company and also growers there, so it seemed a bit more objective, and a good forum for discussion about usage and regulations. You need to be careful when they put out new chemistry, so it is great to have the support.”



Tackling pests and diseases using an integrated approach

From 2017 to 2020, the Hort Innovation Apple and Pear Fund project *An integrated pest, disease and weed management program for the Australian apple and pear industry (AP16007)* helped apple and pear growers develop and maintain pest-resilient farming system using integrated pest and disease management (IPDM).

Delivered by Agriculture Victoria, the program provided clear knowledge on the tools and systems required to implement IPDM, which involves effective combination of chemical, cultural and biological methods to control pests, diseases, and other undesirables in a 'whole of system' approach.



MEET APPLE AND PEAR GROWER JOHN EVANS FROM TASMANIA

John Evans' apple and pear orchard near Geeveston, Tasmania, was a program case study, in which John worked closely with the project team to identify potential changes to his pest management strategy and develop an IPDM action plan to follow. John documented his progress and has shared his learning journey below.

Why did John decide to participate in the program?

Prior to participating in the program as a case study orchard, John thought pests and diseases in his orchard were under control, despite some edge issues with codling moth where he used a minimal spray program. John's goal was to capitalise on the existing low pest and

disease pressure and attempt to further reduce pesticide use while maintaining effective control and confidence in the approach being taken.

What IPDM practices did John implement?

Some of the key changes that John implemented as part of the program were:

- Experimenting with line trapping for codling moth as a result of the workshop delivered through AP16007. John established codling moth traps along the border with his neighbour and in a transect parallel to the border traps but through the middle of the orchard.
- Protecting populations of earwigs and *Aphelinus mali* parasitoid wasp by modifying the rate and timing of sprays that might impact these important predators.

What worked well for John in implementing the changes?

The experiment with line trapping on the boundary was successful in disrupting the codling moth entering the orchard. "The involvement with project team allowed me to understand the dynamics of the pest, so I was able to manage my risk effectively," John said. "We had the choice of putting on a lot of chemicals, but that would have created other problems. So, we were able to manage the risk, avoid the excessive cost while also minimise the yield/quality losses."

The project helped John to form a better understanding of IPDM and a more strategic approach for his pest and disease management. "We were working towards IPDM even though we did not know we were going that way," John said. "We were very much on the journey, but the research gave us better

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understanding of the things we had been doing without actually knowing it.”

John recognised that IPDM is often seen as risky, so the technical support provided through the project solidified growers confidence. “The project really gave us the confidence to take the extra step without thinking that it is a huge gamble,” John said. “You are not actually having to change too much; it was just understanding it better and making some finer adjustments. Many of IPDM pieces were already there, we just needed the help to bring them together in a way that worked well.”

John also sees the broader benefits of improved industry and research capacity. “There is more than just the benefit of the IPDM - you also get the explanatory benefit of the researchers, and the lifelong networking from having these people on your farm,” John said. “There used to be 120 apple growers in my region and now there are two. This helped me maintain a network with researchers and growers which is of huge value beyond the direct research.”

John can clearly see the value in implementing IPDM. “Yield may not rise, but packout will,” he said. “We went from 60 per cent packout and now we are able to do 84-89 per cent first grade on strip pick, and we are up to 94-96 per cent first grade in some instances. As an industry we need to put more money in the pocket of growers, and this program has definitely helped with that.”

What challenges did John experience?

There were no issues, but John did recognise the difficulty that could be faced by growers as they make changes. “As we move forward, people who have not adapted to the new environment will be either forced to change or will leave the industry,” John said. “It can be daunting if you’re the one pushing the envelope, so you have to just wade in. It also takes a little while for your farm to adapt and have a bio infrastructure that can cope. You can’t just stop cold turkey. So that is why I have put my hand up for these sorts of

projects as it helps you to see more of what is coming and make that transition based on best advice.”

What were John’s key takeaways?

John recommends installing enough weather stations to provide localised data that can be fed into a prediction model for codling moth, light brown apple moth and scab. He also recognised that when using chemicals, equipment influenced efficacy. “If you don’t have chemical application equipment with computerised variable rate controllers and you are trying to go on calibration, then you are just guessing.”

What are John’s next plans?

John still has plans to try to further reduce pesticides by improving timing and landscape management to help manage pest populations, such as potentially removing a *Macrocarpa* tree that could be supporting dimple bug over winter.

Understanding how consumers buy and use fresh produce



In 2022, Hort Innovation conducted a multi-industry project to identify and prioritise opportunities for the horticulture sector to engage consumers and build demand across the domestic market for fruits, nuts and vegetables.

Delivered by Kantar Insights, the research will help growers and the wider horticulture sector in their decision-making on 'where to play' and 'how to win' when seeking to engage Australian consumers. The findings will be used by the Hort Innovation Marketing Team to inform levy-funded marketing programs.

Head to the Hort Innovation website at hortinn.com/demand-spaces to download information on your industry, with 31 industry-specific reports available that take a deep dive into each commodity.

SIX NEEDS DRIVE ALL CONSUMPTION CHOICES

The research found that six key needs drive all consumption choices:



Taste (all about taste, enjoyment and refreshment)



Indulgence (all about comfort, relaxation and self-care)



Healthy and nutritious (all about nourishment)



Quick and easy (all about convenience, simplicity and ease)

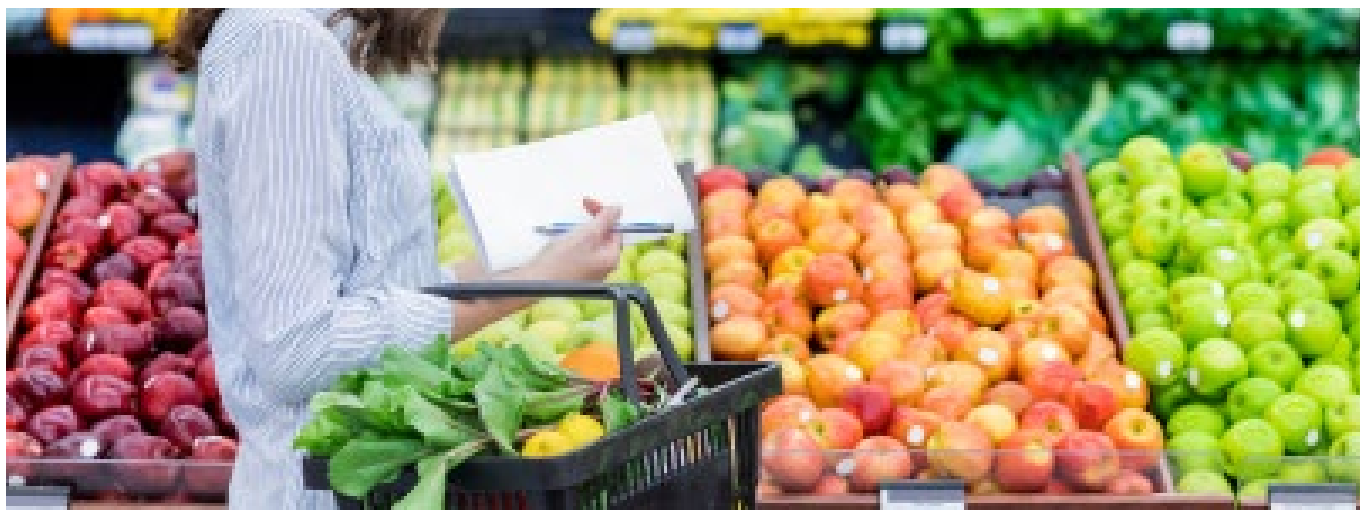


Physical and mental energy (all about reinvigoration and energy)



Connection (all about bonding, celebrating and creating memories)

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KEY FINDINGS

Meal occasion is an important factor in consumer choice

After the six needs, the next most predictive factor that determines a consumer's choice for fresh produce is the meal occasion. Are they buying for breakfast, lunch, dinner, dessert or a snack?

Shift from Australian-grown to locally grown

Supporting Aussie farmers has long been a driver of purchasing, with our produce being seen to be of better quality and nutrition than imports, as well as from better growing conditions. The research found a shift is occurring from proudly purchasing Australian produce, to proudly purchasing produce according to region. Supporting local farmers is becoming a factor of increasing importance.

Childhood imprints of food are meaningful

Childhood experiences of food were found to have a significant impact on their future repertoire and engagement with fresh produce. What people were exposed to when they were young, in particular what fresh produce was used and how, largely sets people up for how they use it as they age.

People tend to plan their shops

The research found that people tend to plan their shops based on the type

of meals they expect to have, with a healthy dose of flexibility for special deals and seasonality. While people may not know exactly what they are going to purchase, they broadly know the types of produce they need or intend to buy. Most people are habitual in both their consumption and shopping choices, and therefore have a set list based on the type of meals they are going to have over the week.

Consumers group food based on use

The research found that consumers group fruit, nuts, and vegetables based on how they'll eat the food and what need they are trying to meet (rather than how the horticulture sector would group the food based on production).

For vegetables, four groups were identified:

- Roastables and root vegetables (sweetpotato, potato, pumpkin, onion, eggplant). There is true love for this group, as they provide a warm and wonderful texture that adds heartiness to a dish. For some, these veggies make a meal a 'real' meal and are most often linked with evening meal occasions.
- Leafy vegetables. These leafy greens are light and healthy and the consumer feels they cannot eat too much of them. They provide freshness while also providing great nutritional value and make people feel full of vitality and invigorated.

- Powerhouse vegetables (broccoli, cauliflower, Brussels sprouts). These vegetables are the true heroes – nutritionally dense and full of fibre. They are linked with gut health, good digestion, robustness and strength.
- Flavour enhancers (cucumber, tomato, capsicums). These vegetables are all about elevating the flavour of dishes and are often seen as staples in the fridge. They add freshness, interest, flavour and texture to a dish, and in particular they make a salad complete.

For fruits, six groups were identified:

- Mainstay (apples, banana, oranges). These fruits are the simple staples that provide consumers with reassurance that they are getting their nutritional intake, and appeal to adults and children.
- Daily favourites (berries and grapes). These fruits provide bursts of flavours and offer the consumer a moment of joy.
- Summer treats (stonefruit and cherries). These fruits are limited in season and are viewed as a special treat that uplift your mood.
- Tropical refreshment (pineapple, passionfruit, melons). Simple tropical fruits that feel refreshing.
- Exotic fruits (custard apple, lychee, persimmon). Occasional and obscure, consumers tend to be unsure about how these would taste and how to use them.
- Flavour makers (lemon and lime). Zesty and refreshing, these fruits provide a flavour enhancement but are not often used on their own.

Promoting Aussie citrus in the Philippines

In December 2022, Hort Innovation's Grown in Good Nature campaign increased awareness and encouraged the purchase of Australian navel oranges in the Philippines. By showcasing the health benefits and quality of Australian navel oranges, educating the local population on how Australian citrus can be consumed and demonstrating value for money, the campaign drove sales of Australian navel oranges and increased orders with retailers and importers.



The program cemented the presence of Australian oranges in the Filipino market while educating local shoppers about their health benefits and delicious taste. This was achieved through a range of activities starting with the season launch event in August that gathered industry media and trade partners, followed by a comprehensive retail program across 148 stores, a media amplification plan and engagement with influencers.

Nine retail partners participated in the program in 2022, via a number of activities including:

1. Roundtable event with the presence of Citrus Australia general manager market development David Daniels,
2. In-store display and display competition at The Marketplace, Shopwise and Landmark
3. Retail promotions
4. Sampling and/or push selling activities
5. Online promotions on retailers' websites
6. Public relations (PR) and influencer engagement.



The steady and consistent support to the Philippines market has been noticed and appreciated by local trade partners to boost the sales and educate consumers about Australian navel oranges.

Key highlights of the campaign included:

- **Launch Event:** 20 attendees at the Bondi & Bourke in Manila, Presence of Austrade and State Governments, A\$48,744 worth of reach, A\$8800 of public relations value
- **Retail program:** Nine retail partners, 49 participating stores, 360 sessions of sampling distribution, 180 sessions push selling, more than 245,500 units sold
- **Media and PR:** Engagement with 60 media and bloggers via gift boxes, collaboration with three influencers, A\$37,000 of PR value, A\$59,576 media reach.

TESTIMONIALS

"Because of the campaign, we got convinced to source suppliers for Australian oranges. We think the retail activities lined up will also help us boost sales."

Metro Supermarkets

"The campaign's messaging suits perfectly well with our branding, 'the supermarket of choice for fresh and healthy food!'"

Robinsons Group

"It surprised me to know that not all oranges in the store are from the same country. Now I know I should look for Australian ones they are sweet and refreshing."

Customer

"Our sales greatly benefited from the campaign which then encouraged us to order for more stocks."

Retailer



The Australian Horticulture Statistics Handbook is the leading resource for the nation's horticulture statistics and market information. The latest edition will be launched on February 28, 2023. Visit www.horticulture.com.au for more information.

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