# Impact Update

Hort Innovation

Welcome to **Impact Update** – a snapshot of your Hort Innovation investments in action and how they are creating lasting change.

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# 'Singhing' the praises of our dedicated researchers

One of Australian horticulture's most critical assets is the community of researchers and scientists whose careers are dedicated to supporting growers and advancing industry.

They are very much the silent achievers who don't seek plaudits and accolades for their work that is pivotal in ensuring production and secure supply of premium quality produce.

Among those modest, unsung champions of the horticultural research sector is Dr Sukhvinder Pal Singh.

Known affectionately throughout industry as SP, the senior research scientist and adjunct associate professor leads the Horticultural Food Safety Research Program at the New South Wales Department of Primary Industries, which is focused on developing and translating new technologies and solutions to improve food safety and traceability.

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Photo credit: Johnathon Davey, Melons Australia.

As a leading fresh produce safety expert, SP promotes scientific evidence-based best practice adoption through strong engagement and trusted partnerships with growers and other supply chain participants.

SP has clearly defined his career-life purpose: "protecting lives and livelihoods of consumers and growers respectively".

"No other research discipline could offer a better value proposition than food safety," he stated. "I'm incredibly fortunate to work with our progressive growers who have a strong appetite for new knowledge and practices that are sensible, cost effective and practical.

"Adoption and change on the ground drive my passion for research."

That passion is evident to all who are involved in and exposed to the beneficial outcomes of the numerous SP-led research and development projects of national importance, including food safety programs for individual industries.

Two of the more recent Hort Innovation levy-funded programs led by SP have been especially impactful in terms of the outcomes for growers and consumers.

The 'Safe Melons' partnership between Hort Innovation and NSW DPI, supported by Melons Australia, has involved all participants in the supply chain, including growers, packers, retailers, regulators and other agencies.

According to SP, growers have very much been at the heart of this initiative, adopting best management practices and relying on science and data-based food safety risk management.

Consequently, the program has achieved "zero food safety incidents and product recalls" for the sixth consecutive year.

> "No other research discipline could offer a better value proposition than food safety."
>
> **Dr Sukhvinder Pal Singh**

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Through SP's leadership and commitment to the cause, the program has been an outstanding success – built on grower engagement and trusted relationships among all program partners who shared a common objective.

The most recent iteration of the *Melon food safety and support program* (VM20005) has just concluded, delivering direct benefits to 156 melon growers in Western Australia, Queensland, NSW, South Australia and the Northern Territory through food safety surveillance and monitoring initiatives.

As a result of the program, the melon industry has identified five transformational practices, among others, that led to achievement of the zero food safety incident target, and these are now considered essential housekeeping food safety rules.

The Safe Melons program has been represented at numerous conferences and national forums, with Melon Australia's levy-funded industry roadshow continuing to be a key communication channel for on-site grower engagement and workshops where food safety has been a major agenda item.

Another recently concluded SP Singh-led program, *Managing microbial food safety risks in the Australian citrus industry* (CT20005), also achieved remarkable success in engaging more than 50 citrus packers throughout Australia, representing a network of more than 750 growers.

This investment delivered insights into the prevalence, distribution and pathways of microbial contamination. The identified gaps in industry practices will serve as opportunities to further safeguard the food safety record of the citrus industry.

Aimed at mitigating microbial food safety risks associated with the production, post-harvest handling and supply of citrus to consumers in domestic and export markets, the program developed a best practice guide to assist industry in addressing microbial risks.

Several technical presentations and articles were also delivered through various channels of communication and engagement, such as on-site technical visits, workshops, forums, field days, meetings and conferences. SP says the on-site visits were the most effective method to enhance the skills and knowledge of growers, packers and the key staff involved in quality assurance.

SP's work has been incredibly well received by industry – take for instance the feedback from Costa Group Sunraysia divisional manager (citrus) Tania Chapman, as reported in the North West Farmer.

Tania says the "valuable research" conducted by SP was embraced by her company as it was consistent with the safe-quality focus at the business.

SP visited three of Costa's citrus pack houses during the 2022 harvest/packing season as part of the 'Managing microbial food safety risks in the Australian citrus industry' program.

"The company was keen to be involved in a project which might identify any potential issues or gaps in our own stringent systems, given our core values and business focus around sustainability, development and growth," Tania said.

She said it was valuable for the company and for SP to have him working alongside key staff at the three sites, interacting and observing post-harvest practices and procedures to gain a full understanding of the processes and equipment involved. Fruit samples were collected from each location and sent for microbial testing as part of SP's project.

Tania said Costa was delighted to collaborate with "a renowned researcher such as SP Singh".

"To have him coming into our sheds and observing how we do our work, and to be able to offer us suggestions on how we could potentially refine our processes to ensure our fruit has the best opportunity is something our business welcomes.

"No business should be blind to the fact that things change every day, and to not open ourselves to experts in a field potentially blocks you off from making changes for better outcomes for both the business and the customer.

"Costa is proud to be part of the greater Australian citrus industry and to see brand Australia grow alongside our own brand.

"So the work which we have helped SP Singh facilitate around microbial risk – and which is now available to the wider industry – means every citrus grower and packer has access to the knowledge and the processes which can be implemented to protect those brands both domestically and internationally."

# Securing the future of the macadamia industry through strategic pest and disease management

Investing in pest and disease management is paramount in ensuring the sustainability and productivity of the macadamia industry. Like other sectors, the industry faces persistent challenges, including reduced yields and compromised nut quality. Therefore, proactive management strategies are essential and research and development to address these threats is a top priority for Hort Innovation.

## A case study in disease management

The improved productivity and profitability of Australian macadamia growers was front of mind during the delivery of the recently-completed project *Macadamia integrated disease management* (MC16018). In collaboration with the University of Queensland this project built on earlier efforts to improve training and communication initiatives, as well as diagnostic capabilities for a range of priority diseases for the industry, including husk spot, Phomopsis husk rot, flower bright complex, Phytophthora root rot, and branch dieback.

Steve McLean, a grower and consultant based in the Northern Rivers, NSW, with more than 30 years of experience in the macadamia industry, played a key role in this project. Steve contributed as the chair of the project steering committee and a member of Hort Innovation's Strategic Investment Advisory Panel (SIAP) and participated directly in field trials with other growers.

Reflecting on the significance of the project, Steve emphasised the crucial role of continuous research in managing macadamia diseases. "Disease can have a huge impact on macadamia production. If there is a major outbreak, you can lose 20-30 per cent of the crop, possibly more," he explained. "This research helps us stay ahead of the curve by providing practical solutions and steadily improving management practices."

The project uncovered new information about the biology a nd ecology of endemic and emerging diseases in macadamia. It found that macadamia diseases are complex and result from multiple pathogens.

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For example, the project identified 12 known plant pathogenic species and 14 new pathogens, which were proven to cause diseases in macadamia for the first time. This research also led to significant improvements in diagnostic capabilities, allowing for better identification and management of these diseases. The impact of the environment on disease severity contributed to decreased productivity.

One of the project's most significant outcomes for growers was the registration of new fungicides for controlling flower blight and husk spot. "Getting these fungicides registered was a big win for the industry," Steve noted. "It gives growers another tool in the fight against these diseases and it helps reduce the risk of resistance developing in the long term."

Beyond introducing new chemical options, the project also led to advancements in cultural practices. For instance, the research identified that stick tights – unharvested nuts that remain attached to the tree – are a major source of husk spot infection.

By shaking the trees to remove these stick tights, growers can significantly reduce the risk of husk spot in the following season. This simple practice has been adopted across the industry, leading to better disease control and reduced management costs.

"The identification of stick tights as a major infection source for husk spot was a game-changer," Steve remarked. "It is another example of how this research does not just sit in a lab; it is directly applied in the orchard to improve outcomes."

Communication and adoption were also critical components of the project's success. "The whole industry has benefited from the program," Steve said.

"It is not just about doing good research, but also making sure that the findings are getting out to the people who need them – growers, consultants, everyone involved in the industry. This has been a key factor in the success of the project."

Steve also emphasised how the program complemented other research projects, such as pest management and industry benchmarking, tracking the impact of practice change due to the projects. By understanding the interactions between pests and diseases, the industry has made more informed decisions, leading to steady improvements in orchard productivity and disease management practices.

> "The identification of stick tights as a major infection source for husk spot was a game-changer,"
>
> **Steve McLean, Northern Rivers macadamia grower and consultant**

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## Looking forward: New investments in pest and disease management

New projects *An integrated systems based approach for pest management in Australian macadamia* (MC21000), and *An integrated disease management approach for the Australian macadamia industry* (MC21001), are designed to build upon the foundation laid by previous initiatives, leveraging the latest advancements and insights to further fortify the industry's defence against pests and diseases.

Project MC21000 is establishing a decision-support system to facilitate timely and effective pest management decisions for Australian macadamia growers and other industry stakeholders. Building off previous work that established a knowledge database of key pests, biocontrol agents and pest management priorities in macadamia orchards, this project is developing a comprehensive, integrated management package. The package will incorporate ecological and environmental dimensions and fit into the regional/local macadamia orchards ecosystem. The system will enable growers to make informed choices based on the latest research and best practices; by building on previous research and developing new pest monitoring protocols, this initiative aims to improve the overall resilience and productivity of the macadamia industry.

One of the most exciting aspects of MC21000 is its focus on biological control. The project is conducting regional and field studies to identify natural enemies of key macadamia pests. By understanding the seasonal abundance and diversity of these natural enemies, the project aims to improve the sustainability of pest management practices in the industry.

Project MC21001 focuses on deepening the understanding of macadamia diseases, including disease ecology and the broader environmental factors that influence disease pressure. This project is generating new knowledge and innovative tools to predict, monitor and control diseases in macadamia orchards.

By training future researchers and providing direct support to growers, this project aims to equip industry with tools to underpin future prosperity. Through scientific studies, innovative tools and national research and extension activities, this project aims to deliver significant long-term benefits, including increased harvest yields, reduced costs and minimised environmental impacts. By disseminating integrated disease management information, the project ensures growers have the best possible resources at their disposal.

As the macadamia industry continues to grow and evolve, pest and disease management challenges will remain a central concern. Through strategic investments in research and development, Hort Innovation is equipping the macadamia industry to meet these challenges head-on.

# Benchmarking drives success for interstate expansion

From a small family market garden at Virginia, north of Adelaide, the Ly family's business has grown to become a major player in the Australian fruit and vegetable industry.

4 Ways Fresh Produce, started by Vietnamese-born brothers Duy and Tam Ly in 2001, began as a means of selling their produce through the South Australian Produce Market at Pooraka.

Initially, they sold through other merchants, but since 2001 have had their own stall at the market and operate as wholesaler, packing and selling their own fruit and vegetables as well as that produced by hundreds of growers across the country.

4 Ways Fresh Produce, which specialises in cucumbers, eggplant, zucchini, capsicums and tomatoes, also sells directly to major retailers including Coles, Woolworths, Aldi, Foodland, IGA and Costco.

Even though the business has mostly focused on wholesaling, it has expanded its growing facilities into Western Australia, and in 2022 became involved in a $15 million joint venture at Geraldton with Indigenous Business Australia (IBA) and Yamatji Southern Regional Corporation.

The plan is for the new company, Yamatji Fresh Produce, to develop 300 greenhouses for growing cucumbers on land adjacent to 300 greenhouses already operated by 4 Ways Fresh Produce.

4 Ways Fresh Produce general manager Kingsley Songer, who has overseen the project, said expansion into WA had been "very advantageous" for the business, which now operates a stall at the Perth Market.

"It's an ideal climate for growing cucumbers in particular, which is what we were buying there during our winter," he said.

"Summer is hot but from the end of March right through until the end of November, we can grow very good quality cucumbers, which is exactly what's happened over the eight crops that we've grown there."

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Mr Songer said the joint venture was an opportunity for the business to increase production as well as providing jobs close to Geraldton for local First Nations people.

Production in the first 100 new greenhouses began in July, with continental, Lebanese and green cucumbers. The extra space also will allow for crops of tomatoes and eggplants this year, with capsicums and some other crops likely to be added in coming years.

Mr Songer said access to benchmarking data had been key to successfully obtaining funds for the joint venture through IBA, and other projects.

When WA-based farm business consultants Planfarm began offering its benchmarking and consulting services to horticulture businesses in partnership with vegetablesWA seven years ago, 4 Ways Fresh Produce was among the first vegetable growers in the state to sign up.

Mr Songer said benchmarking was essential for fully understanding things such as return on investment, costs as a percentage of turnover, yield per hectare and the viability of particular crop types, as well as comparing a business's performance against others.

Without access to that data, growers were effectively asking investors and lenders to trust in their "gut feel".

As an example, when 4 Ways Fresh Produce first considered establishing its own greenhouses at Geraldton a decade ago, it only had information about what had and had not worked in South Australia and what it was able to glean from established WA growers on which to base the decision.

"But in this venture with the IBA and Yamatji, one of the first things I sent them was the benchmarking study that we'd done on our Geraldton property for the last five years, because that showed an independent view of how we were performing against the industry," Mr Songer said.

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"It's a very powerful tool, because they get some assurance that these people actually know what they're doing. If you don't have a study like that, if you don't have that information, people have got to take you on your word."

**Kinglsey Songer,**
**4 Ways Fresh general manager**

Mr Songer said the benchmarking reports had shown the Geraldton operation paid for itself in a little over three years and was in the top 25 per cent of WA vegetable producers in the data set.

Yield per hectare, return per hectare and cost per hectare were better than average.

"When you get down to those levels and you see how you look against the industry, that's when you really can figure out what an extraordinary project we've actually finished up with over there," he said.

"That to me was the real benefit we got out of doing a benchmarking study, and had we not done it, to this day we wouldn't have been any the wiser, whether we were any better or any worse than anybody else."

Last year Planfarm was awarded a contract to extend its benchmarking to vegetable and onion growers with experienced project partners RMCG across Australia as part of a five-year initiative fully funded through Hort Innovation.

Called Level Up Hort, the program provides specialised business reviews, with a business consultant from Planfarm or RMCG, valued at up to $10,000 per year.

Participants receive two reports – a full business analysis and a benchmarking report, both private and confidential, comparing their figures against others. Each year the participant data is de-identified, aggregated and reported on a per hectare basis or as ratios for a national report which completely anonymises growers.

The first national report released by Planfarm director of horticulture and agronomy Paul Omodei at Hort Connections in June represented 3,162 hectares of vegetables and onions across six states.

Its major finding was that the most profitable 25 per cent of businesses recorded greater profit per hectare – also known as earnings before interest and tax – even though they spent more money per hectare of production in 2023 or 2022-2023.

The top 25 per cent generated profit of $22,567/ha compared to $2,906/ha for the average, and a loss of $16,827 for the least profitable 25 per cent.

Mr Songer said the one-on-one sessions were a valuable tool for getting a different perspective and identifying those parts of the business that were underperforming, regardless of whether it was making an overall profit.

"Normally, it won't be the whole business in the bottom 25 per cent," he said.

"There may be certain parts of the business that are out of kilter. People can question why they're growing tomatoes for example if the yields per hectare, costs per hectare or return per hectare are below the benchmark."

While Mr Songer retired in July, future plans for 4 Ways Fresh Produce include adding to its three Virginia farms with more greenhouses on land nearby, as well as developing a new 48ha block leased at Carnarvon, in north west Western Australia, for production of Asian vegetables, melons and pumpkins.

To enquire or enrol in the Level Up Hort program, contact project manager **Steff Carstairs** on **0428 712 852**, email ***steff@planfarm.com.au*** or go to the website ***leveluphort.com.au*** for more information and FAQs on who to contact in your region.

# PotatoLink driving innovation and knowledge in the potato industry

The $1 billion Australian potato industry, which produces about 1.4 million tonnes per year, is a crucial component of Australia's agricultural sector, playing a significant role in the nation's economy and food security.

Like many horticultural industries, the potato industry faces a number of challenges related to economic and environmental sustainability. In response to these challenges, PotatoLink, an extension and communication project funded by Hort Innovation through the potato R&D levy, has been dedicated to advancing industry knowledge and promoting sustainable practices for the past four years. The project, led by Applied Horticultural Research (AHR), aims to enhance the economic, social, and environmental sustainability of the potato industry by connecting growers and agronomists with critical information and innovative practices.

PotatoLink's mission is to address key issues within the potato industry by disseminating crucial knowledge and fostering collaboration among stakeholders. The project has developed a tailored extension and communication model designed to effectively convey information through various channels, including in-person workshops, webinars, podcasts, magazines and fact sheets. This comprehensive approach ensures that vital information reaches the industry efficiently and effectively.

Dr Gordon Rogers, project leader from AHR, emphasises the project's core objective.

"Our goal has always been to connect the right knowledge to the right people in the right way."

In close collaboration with industry, PotatoLink aims to address critical issues like soil and crop health, and demonstrate practical solutions such as the use of cover crops.

Engaging with stakeholders is a cornerstone of PotatoLink's strategy. Working with growers, agronomists and scientific experts, the project provides practical solutions and demonstrates successful practices.

Continuous feedback from participants is actively sought and used to refine the project's themes and focus areas, ensuring that PotatoLink remains responsive to evolving industry needs.

With the support of a network of local and international scientific experts, and growers willing to open their farms for demonstrations, the project has successfully reached thousands of end-users.

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## Implementation and impact

The impact of PotatoLink's approach is evident through its various activities and outcomes. The project has conducted workshops across Australia's main potato-growing regions, with more than 1,500 attendees. Notably, 94 per cent of participants reported an increase in knowledge, and 77 per cent indicated an intention to change their practices based on the information they received.

In addition to workshops, PotatoLink utilises a range of communication channels to disseminate knowledge. This includes webinars, podcasts, magazines and fact sheets, which collectively enhance the accessibility of information on soil health, crop management and efficient input use. The project's collaborative efforts with growers and experts have facilitated on-farm demonstrations and practical applications of new practices, reaching thousands of end-users and benefiting the entire potato industry.

At the 2024 World Potato Congress (WPC) in Adelaide, PotatoLink showcased its achievements to an international audience.

AHR's Sophia Thach's poster presentation illustrated the impact of the project.

"Our poster demonstrates how the model functions, highlights our achievements and shows how effective extension and communication can enable the entire industry to collaborate and achieve shared outcomes," Sophia said.

PotatoLink has proven to be a crucial initiative in driving innovation and improving knowledge within the potato industry. Through its comprehensive extension model, stakeholder engagement and iterative feedback process, the project has made substantial contributions to advancing sustainable practices and enhancing industry knowledge. The success demonstrated at the WPC underscores the project's impact and its role in fostering a more informed and collaborative potato industry.

"Our goal has always been to connect the right knowledge to the right people in the right way."

**Dr Gordon Rogers, Applied Horticultural Research project leader**

PotatoLink is led by **Applied Horticultural Research (AHR)** with funding from Hort Innovation through the potato R&D levy, supporting Australian potato growers and agronomists in adopting improved practices and staying updated on industry developments.

For more information, visit ***potatolink.com.au.***

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Communications Manager
Hort Innovation
Level 7, 141 Walker Street
North Sydney NSW 2060
Australia

Email: **communications@horticulture.com.au**
Phone: 02 8295 2300