impact update

Hort Innovation

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

5

EDITION 5
MAY 2023

In this edition...

Soil Wealth investment reaps benefits

Helping growers adjust their on-farm practices to improve their productivity, profitability and competitiveness was at the heart of the *Soil Wealth and Integrated Crop Protection – Phase 2* (VG16078) program.

Delivered from 2017 to February 2023, the Soil Wealth and Integrated Crop Protection program was targeted at vegetable and potato growers and led to lasting soil and crop health improvements gains, achieved by growers applying the latest information and innovations and remaining adaptive to current issues. Information was delivered using different practical and easy to use extension and communication methods.

Here, we showcase how two project demonstration sites are displaying tangible results.

Feedback has shown 75 per cent of participating growers had or were intending to change their practices to improve soil health and/or crop protection on their farm.

Continues >>

Reducing tillage and improving soil health with Mulgowie Farming Company

Mulgowie Farming Company is an Australian owned and operated vegetable grower and packer with operations in East Gippsland in Victoria, northern Queensland, Lockyer Valley in south-east Queensland and northern New South Wales. The enterprise grows conventional and organic sweetcorn, green beans and broccoli.

Mulgowie Farming Company founder, Rodney Emerick, started his team on a path to improving soil health through the adoption of controlled traffic farming. Andrew Johanson, Mulgowie's sustainable agriculture manager, saw a successful Soil Wealth Integrated Crop Protection (ICP) strip tillage demonstration in 2018, which piqued his interest. This led Andrew and his team to investigate expanding practices such as strip tillage and cover cropping to more of their growing regions.

In 2019 and 2020, Mulgowie in collaboration with Soil Wealth ICP trialled strip tillage combined with existing cover cropping practices at its Maffra farm, 220 kms east of Melbourne.

The primary goal was to use strip tillage to improve soil health characteristics such as water infiltration and water holding capacity, to increase crop health and yield, reduce costs and ultimately improve profitability.

"For me, seeing was believing," Former farm manager Michael Evans said. "Despite my original scepticism, after half an hour of trying strip tillage in different cover crop scenarios at the Maffra site, we were quite blown away by how it could convert the cover crop to an area ready for planting vegetables."

"We purchased the machine on the spot, and the trial went from a few hectares to being adopted across the 200 hectares destined for growing corn.

"After using strip tillage, the corn crop was the most even I have ever seen it in my 17 years of farming, despite the gullies through the paddock and uneven beds. We saved costs on in-crop herbicides, fuel and labour hours."

Read the full case study on Mulgowie Farming at *www.soilwealth.com.au/resources/case-studies.*

KEY BENEFITS OBSERVED FROM STRIP TILLAGE AT MULGOWIE

- Improved soil structure – more friable, less compacted, less dispersion of soil particles
- Better soil water infiltration and water holding capacity
- More soil and crop resistance to extreme weather events
- Improved crop uniformity
- A 0.5 per cent over three year Increase in soil carbon, following adoption of strip tillage
- Lower labour costs
- Reduced fuel costs
- Less weed pressure and subsequently the cost of in-crop herbicides
- Reduced nutrient use – nitrogen and phosphorus
- A 26 per cent increase in bean yields, and maintained corn yields between conventional and strip tillage

Healthy soils, healthy profit from precision ag trial at Koo Wee Rup

In 2018, a trial was developed at the Soil Wealth ICP demonstration site at a farm about 80km south-east of Melbourne, Victoria. The partnership, including Schreurs & Sons and Stuart Grigg Ag-Hort Consulting explored the application of precision agriculture (PA) in celery, leek and baby leaf production systems on Adam Schreurs' Cora Lynn Farm.

Like many intensive Australian vegetable production systems, Adam has challenges with soil management, crop health and variability, and weeds while continuing to supply customers with high quality produce year-round. This can be compounded by poor drainage and waterlogged soils, nutrition constraints and insect pest damage depending on the seasonal conditions. Adam sees on-farm research and innovation as key to addressing these challenges and continually improving management practices.

"The demo site provided the opportunity for us to look right into it, see what we could do, and measure some of the differences," he said.

KEY BENEFITS FROM THE PRECISION AGRICULTURE TRIAL

- Celery yield assessments showed higher average celery heart weights and more uniformity across the trial block from 2018-2020. Average leek yield increased in the trial area compared to the control from 2020-2022, with a significant increase in minimum yield.
- Soil health has improved in the trial area when looking at soil fertility indicators, nutrient status, plant nutrient availability and free-living nematodes.
- There has been a reduction in soil-borne disease risk and severity over time at the site, which has been more pronounced in the trial area compared to the control.
- Improved yield and crop uniformity contributed to an increased gross profitability of $53,000, or $5000 per hectare, largely driven by reduced costs from post-ha rvest labour efficiencies in cleaning, grading and packing produce.

Over the past five years Adam and the team have aimed to improve nutrition, irrigation and drainage management, and insect pest and beneficial monitoring as a basis for soil and crop health. To achieve this, PA technologies were used including EM38 mapping, gridded soil sampling, variable rate fertiliser spreading, remote weather stations with soil moisture probes, automatic insect pest traps with cameras, microwave weeding prototypes, as well as drones.

Adam highlighted the importance of starting small and then scaling up when seeing productivity benefits from on-farm trials in a commercial setting.

"Through gridded soil sampling and variable rate lime and fertiliser (application) we've been able to even everything up correctly," he said. After doing this for a couple of years the crop was much more uniform and yields were increasing. I did a little bit more on the

Continues >>

property, and then a little bit more. We're now using the system from the trial plots right across the board (at other farms) with very good results."

Adam will continue to refine and expand the use of PA technology across other farms to continually improve yield and crop uniformity.

"It is a really good demo of what technology can be used in the field and what we can get out of it. All of those things I will be using in the future, more and more."

Read the full case study on Schreurs & Sons at *www.soilwealth.com.au/resources/case-studies*.

What is next for Soil Wealth?

After the success of the first two phases of the Soil Wealth and Integrated Crop Protection program, Hort Innovation recently contracted a third phase with Applied Horticultural Research (AHR) and RM Consulting Group (RMCG). The Australian melon industry will also join the new phase of the program so melon growers can learn how to improve soil health, crop health, and reduce costs.

The consultation process and grower focused co-design workshop identified the following themes for the new program:

1. **Soil health,** which underpins sustainable farming systems and the production of healthy crops. Improving soil management practices will help vegetable growers gain a more productive and resilient natural resource base with a focus on soil care, increasing organic material and improving grower margins.
2. **Crop health,** driven by improved soil health and crop protection measures. Improving crop protection management practices will help vegetable growers produce healthier and more profitable crops through managing insects, diseases and weeds to maintain healthy plants.
3. **Optimising** inputs for healthy soils and crops, and profitable vegetable businesses. Increasing skills in the effective use of nutrients, water, chemicals and other resources (e.g. plastic to minimise waste) will help vegetable growers to maintain market advantage and demonstrate sustainability.
4. **Carbon and climate**, mindful that climate influences what, when and how soil and crop health can be managed, including associated input use. Increasing awareness of changes in climate, both in extremes and longer-term averages, will be important for adapting production systems. Understanding the role of carbon will help vegetable growers to remain profitable and sustainable into the future.

You can access the latest events, demo site news and resources from the Soil Wealth ICP project at *www.soilwealth.com.au*.

Stay up to date and subscribe to the project's monthly *The Bulletin* e-newsletter **here** or register your interest to join the global project Partnership Network **here**.

Bringing international insights home

Through a Hort Frontiers Leadership Fund investment, three horticulture levy payers had the opportunity to attend KPMG's Enhanced 2022 Agrifood and Internet of Farms Traction Program.

Cameron Folder, John Maher and Andrew Bulmer participated in a tour of Netherlands where they were able to see a wide range of agricultural businesses and meet leaders within the industry.

The program was designed to help drive the success of Australian's agrifood sector by providing senior executives and emerging leaders with access to best-in-class insights.

Here, we talk to Andrew Bulmer from Bulmer Farms about what he gained from attending the tour.

What was a highlight of the tour?

The opportunity to network and form professional relationships with some of the great thinkers and leaders from the Australian food, fibre and agribusiness landscape was by far the greatest highlight of the tour for me. The tour afforded fantastic opportunities to see how new and novel ideas are being explored and commercialised.

This ignited spirited conversations and debates on the tour bus between our cohort after we witnessed what could, will and is already being applied back home in Australia.

The tour was jam-packed with early starts, numerous presentations, site visits and late nights. Dining and celebrating the produce and producers we met each day was a key feature of the program, as it was a great way to network, unpack and discuss the day's learnings.

The opportunity to visit progressive countries like the Netherlands, who are the world's most efficient producers of food per square metre, and Denmark who proactively embraced world's best sustainability models 50 years ago, was fantastic to experience in person. It was inspiring to see how these countries have become so great at what they have proactively chosen to embrace. It was a brilliant and thought-provoking experience to gain access to progressive businesses, universities, and exceptional people, to see how they operate on the other side of the world.

Continues >>

What was a key learning from the tour, and do you hope to implement this learning on your farm?

For every business that we went to visit, they would proudly present on where they are making a difference regarding the UN Sustainable Development Goals, and how it applies to their individual businesses.

Sustainability is already high on the agenda for Australians, we have moved on from talking about the environment, to sustainability, to a circular economy. The framework is already there, and I think for horticulture, and other businesses, it is something we could easily adopt. You can see how seriously the countries in Europe take it. Rather than us reinventing the wheel and coming up with our model, one of the key learnings would be to adopt something that is there and works. That way, people can easily identify and show how they are making a difference.

We also did a field trip visit to Wageningen University which is recognised as one of the world's leading agriculture universities. It was good to see how this university is situated in agriculture heartland. The key learning from that visit was that the university had invited prevalent agriculture businesses to bring their R&D facilities onto campus. This would allow the university students to understand the unique issues the food companies were facing, where it was relevant to their curriculum. The students learned about real agriculture issues during their degree, which gave them a direct career pathway into agriculture.

In Australia, we are subjected to the tyranny of distance, but the way the university invited businesses to bring complex issues to campus and incorporate it into the student's curriculum fostered relationships and developed clear future career pathways.

The way they do business over there is through the quadruple helix model. They take an issue, and they will try to work through that with government, the educations system (universities and schools), the public and private enterprise to find a solution that meets the needs of all those stakeholders. I think that is a strong principle, to meet the needs of all those different group to solve issues.

What was something you learned about a circular economy that interested you and how has it changed your perception of farming?

I think that circular economy is the next iteration of sustainability, the next developed model. It has taken sustainability and expanded on it by putting value on everything within the lifecycle of a product or a process. It is about closing the loop on waste by finding ways to take what we would have referred to as "waste streams" in the past and make them valuable and return them back into the lifecycle loop of that product or process.

For example, one of our lines is broccoli and now we pack it into Styrofoam boxes. The Styrofoam is a petroleum-based product, once it reaches the consumer at the end destination it currently goes into landfill, and it is bad for the environment. We know that is the end of the lifecycle for that product. When looking a circular economy, we need to look at ways where we can take that piece of packaging and we can make a Styrofoam replacement out of mushroom compost, or an organic material. When it gets to the end consumer it will break down quickly in landfill, or it could be planted in the consumer's backyard as organic manner, hypothetically. It would be good for the consumer's soil.

We are trying to control waste streams to find more value out of what we have with our current processes and what we use to put into processes to make things work.

Did the tour change your vision about the future of farming?

I think a lot of farmers are already obliged to have sustainable business models in place, or you fall behind and do not meet consumers' expectations. In another context, in water, lots of agriculture produces in dairy or cotton and certain parts of horticulture, that has evolved to irrigation pipes and people are a lot more conscious of catching it on their roofs for later use. The next iteration is to capture our wastewater, remove the bad particles, UV treat it to meet standards and use it again.

You can apply the theory to a lot of things and how you use materials and engage in processes to eliminate waste. It just needs to be financially viable to stack up, which will take a bit more time. But consumer demand will drive businesses to do more of this in the future, such as single use plastic. Consumers want to see businesses become better corporate citizens and protect the environment for everyone.

Regarding the Australian farming position, we are climate adaptive and adoptive of whatever world class technology is out there. With R&D, because it is so expensive, we often need to adopt the models of others. I think we have a greater ability to get on the front foot and write our own rules about sustainability and be proactive in that. Australian farmers are world class, and we should be proud about what we produce and how we go about it.

‘Taste the Sunshine’ with Australian Mangoes

Aussies across the country have been inspired to ‘Taste the Sunshine’ through this season’s Australian Mango marketing campaign.

The task for the Australian Mangoes marketing campaign was to encourage behaviour change, as measured through an increase in the number of Australian households purchasing mangoes this season versus prior year.

The consumer insight underpinning the campaign is that Australians want small indulgences and personal pleasures, however fruit rarely comes to mind. That is until summer rolls around, with all it’s unique, iconic and sensory experiences. The campaign positions mangoes as one of the joys of summer that can be enjoyed as a regular everyday treat.

The campaign used different ways to communicate the message, such as outdoor panels near supermarkets, online videos, social media and advertisements on Coles and Woolworths online shopping websites.

Consumer research found that ‘messiness’ and ‘ease of preparation’ are the current top barriers to purchase. This presented an opportunity to educate and inspire Aussies through the ‘hedgehog’ approach, which is simple, easy and creates minimal mess.

The hedgehog preparation technique was featured across campaign activities with the ‘slice, dice, devour’ message to demonstrate how to cut the cheeks and dice a mango, for ease of enjoyment.

A positive shift was seen when comparing the percentage of Australian households purchasing mangoes from this season to last season.

- Over the past 52 weeks: 56.7 per cent to 59.4 per cent (an increase of 2.7 per cent)
- Over the past four weeks: 14.6 per cent to 19 per cent (an increase of 4.4 per cent)

***Source:** *NielsenIQ data to 26.02.23*

WHAT DID THE CAMPAIGN INVOLVE?

- **Retail media:** Digital display banners on Coles and Woolworths online shopping websites, as well as digital displays and posters positioned prominently in major retail stores. Panels were also located outside supermarkets to inspire shoppers and provide a timely reminder prior to entering the store.
- **Social media and online videos:** Delivered cost effective mass reach, using a mix of images and videos communicating different messages relevant to the timing of the season. For example, for the start of the season the message was ‘The wait is over, mangoes are back, taste the sunshine’.
- **Public Relations:** To demonstrate how delicious and juicy the new season crop was, a range of assets and a media release were pitched to various media outlets, accompanied by:
  - Seasonal mango data.
  - Videos and imagery educating Aussies on how to hedgehog a mango, in a visually exciting format that shows the sensory-loaded, delicious eating experience of a mango.
  - Interviews and imagery with Northern Territory mango growers Bec and Luke McMullin.
  - Interviews with Brett Kelly, Australian Mango Industry Association CEO.
  - Interviews and photos with the top bidder of the first tray of mangoes sold at the Brisbane produce market.

Continues >>

Measuring the campaign's impact

The Hort Innovation Marketing Team uses research company Cubery to conduct a pre-launch analysis of how effective marketing activities are before they go out to market.

For the Taste the Sunshine campaign, the performance results exceeded the norm for advertisements tested in Australia.

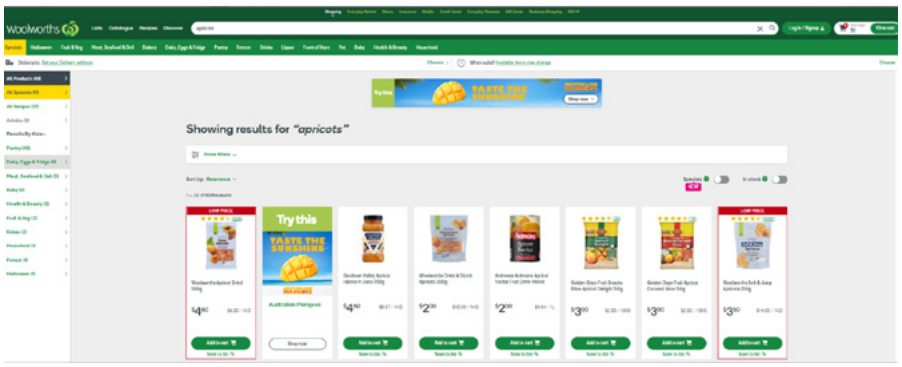
Through focus group testing, the campaign performed above industry averages across all key measures to 'captivate' (stand out and grab attention), 'connect' (ability to recall the product/brand) and 'compel' (motivate behavioural change through positive influence of thoughts, feelings and behaviours).

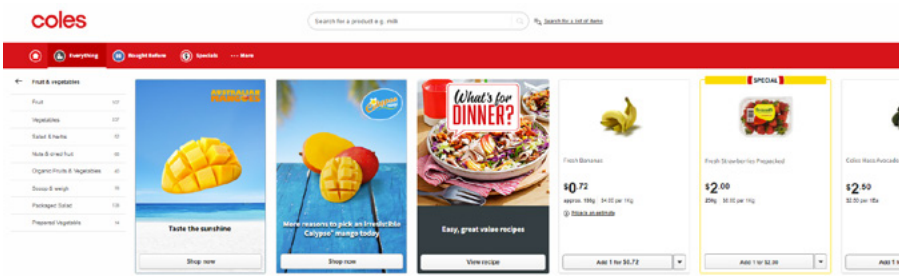
Not only was the advertisement enjoyed by consumers, each of the mango key messages tested were clearly communicated, credible and relevant exceeding all norms for 'in season now', 'delicious', 'great for summer' and 'a treat to be enjoyed regularly'.

Post-campaign, all the key performance indicators (KPIs) for reach, frequency and opportunities to see the mango key messages were met or exceeded. The campaign delivered the following reach:

- Outdoor panels: 4.1 million reach
- Social media: 3.5 million reach
- Online video: 3.7 million reach
- Retail online: 900,000 opportunities to see the content
- Public relations: 57.9 million+ opportunities to see the mango key messages via 169 pieces of coverage.

To further understand impact, brand tracking research was conducted during the campaign period. Results show that the advertisement provides a persuasive reminder and emotive connection, with more than 59 per cent of consumers more likely to buy mangoes after exposure to the advertising.





How to attract and retain the agricultural workforce

Hort Innovation is part of the AgriFutures Australia's Community Perceptions and Worker Experiences Program, which aims to deliver insight into community perceptions on working in agriculture, fisheries and forestry industries, and explore worker experiences and the impact they have on workforce attraction and retention. The AgriFutures Australia Project is funded by the Australian Government Department of Agriculture, Fisheries and Forestry and is a component of the Australian Government's AgATTRACT initiative.

The Community Perceptions and Worker Experiences Program captured detailed and accurate insights from past, current and prospective rural industries workers, as well as members of the community, through quantitative and qualitative research.

A key component of the program has been gaining a comprehensive and accurate understanding of modern agriculture and its workforce, through in-depth research activities and analysis. The program's quantitative research has established a baseline for workforce perceptions that inform drivers of workforce attraction and retention opportunities in the sector. The qualitative research component of the study has developed a knowledge base around the experiences of prospective, existing and past workers in rural industries.

Key insights from the research

Attraction

Attraction to working in a rural industry is informed by job characteristics and the extent to which rural industries meet social expectations (e.g. managing environmental issues effectively). In addition, most of the key drivers of attraction are mediated by trust in rural industries to act responsibly.

In addition to the main drivers, there is a strong perception among community members that working in a rural industry requires moving to a rural area, with a lack of infrastructure cited as a key reason for this reluctance to move away from cities.

The main positive drivers of attraction are:

1. Connection to land and heritage.
2. Trust in rural industries to act responsibly.
3. Procedural fairness.
4. Distributional fairness.
5. Good working conditions.
6. Effective environmental management.

Negative drivers of attraction are:

1. Physical demands of jobs.
2. Negative work culture.

Retention

Current workers are committed to remaining in a rural industry, with more than 50 per cent of workers surveyed intending to stay for 10 years or longer in their current industry.

There is high overall satisfaction among current workers, which includes their current role and their attitudes towards most aspects of rural life, rural industry jobs and careers, and industry performance on issues such as environmental management, which are more positive than those of general community members.

Areas for focus to improve retention and worker experience include improving work culture (e.g. race and gender bias, bullying), which varied significantly by industry, procedural fairness in the way worker issues are managed, and helping workers to understand more clearly the career options and pathways available to them. There are mixed feelings about new technologies and what they mean to the future of the workforce.

The main drivers of retention are:

1. Procedural fairness.
2. Connection to land and heritage.
3. Meaningful careers.
4. Importance of rural industries to Australia.
5. Meeting work expectations.

Case studies

Case studies were developed to complement and 'bring to life' the results of the quantitative research. Inspiring individuals shared their experience in the rural industries workforce to educate and encourage others to consider a career in agriculture, fisheries and forestry.

Continues >>

MEET GEORGIA BEATTIE, CEO AT BULLA PARK, AUSTRALIA'S LARGEST ORGANIC MUSHROOM FARM

After growing up in metropolitan Melbourne, Georgia Beattie embarked on a career in technology. Working in rural industries had not entered her mind until she was diagnosed with an autoimmune disease, which led her to research different foods and how they were produced.

A steep learning curve and a greater understanding and appreciation of where our food comes from became a passion for Georgia.

Having studied entrepreneurship, she applied her knowledge, organisational experience and technological skills to lead Australia's largest organic mushroom farm, Bulla Park, at Diggers Rest on the north-west outskirts of Melbourne.

As CEO of Bulla Park, Georgia runs the company in a similar way to how she would run a technology business. About two-thirds of her 80 staff have IT degrees.

With its short crop cycle of 32 days, mushroom production allows Georgia and her team to apply an agile methodology, where something can be applied, measured and learned relatively quickly.

"We play around with our own in-house robotics, and the idea is we are able to start to automate in order to create efficiencies and be more competitive at the farm," Georgia said.

"Whether it's picking, packing, counting or moving things around, where we can put a robot in there to support our staff, the better."

The business leverages automation, robotics and genetic manipulations within multiple grow-houses to enhance its produce, boost production efficiency and address or find gaps in the product market.

Georgia attributes the success of Bulla Park's worker attraction and retention to its core values – applying sustainable practices, a desire to continuously improve and a commitment to a better world.

"We usually attract younger people based on our values of wanting to do a better thing for the environment. And the way we are going to do that in agriculture is through efficiencies and data-led changes."

As well as heading up Bulla Park, Georgia is a director of the Australian Mushroom Growers Association, sits on the National Farmers' Federation Sustainability Committee and is a member of the Hort Innovation Mushroom Strategic Investment Advisory Panel.

She said her experience proves you do not need a background in agriculture to carve out a successful, exciting and rewarding career in the industry.

Georgia particularly encourages those with technology experience to seriously consider the sector. Her firm belief is that the future of agriculture will increasingly be driven by data.

"The industry welcomes new people. It is not about handing things down from generation to generation and it being a family thing," she said.

"You are the driver of your career and the impact you want to make on the world. So get out there."

This content was sourced from AgriFutures Australia.

2021/22 Hort Stats Handbook available now

The Australian Horticulture Statistics Handbook is the leading resource for the nation's horticulture statistics and market information. Visit *www.horticulture.com.au* for more information.

Connect with your research and development corporation.
Visit **www.horticulture.com.au** for more about Hort Innovation
and our work on your behalf, including details of all our investments.

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

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