

NZGROWER[®]

VOL 79 | NO 06 | JULY 2024

HORTICULTURE NEW ZEALAND

GOOD SOLUTIONS TAKE TIME

PAGE 28



IN THIS ISSUE

10 MAPPING PROFIT
AND LOSS

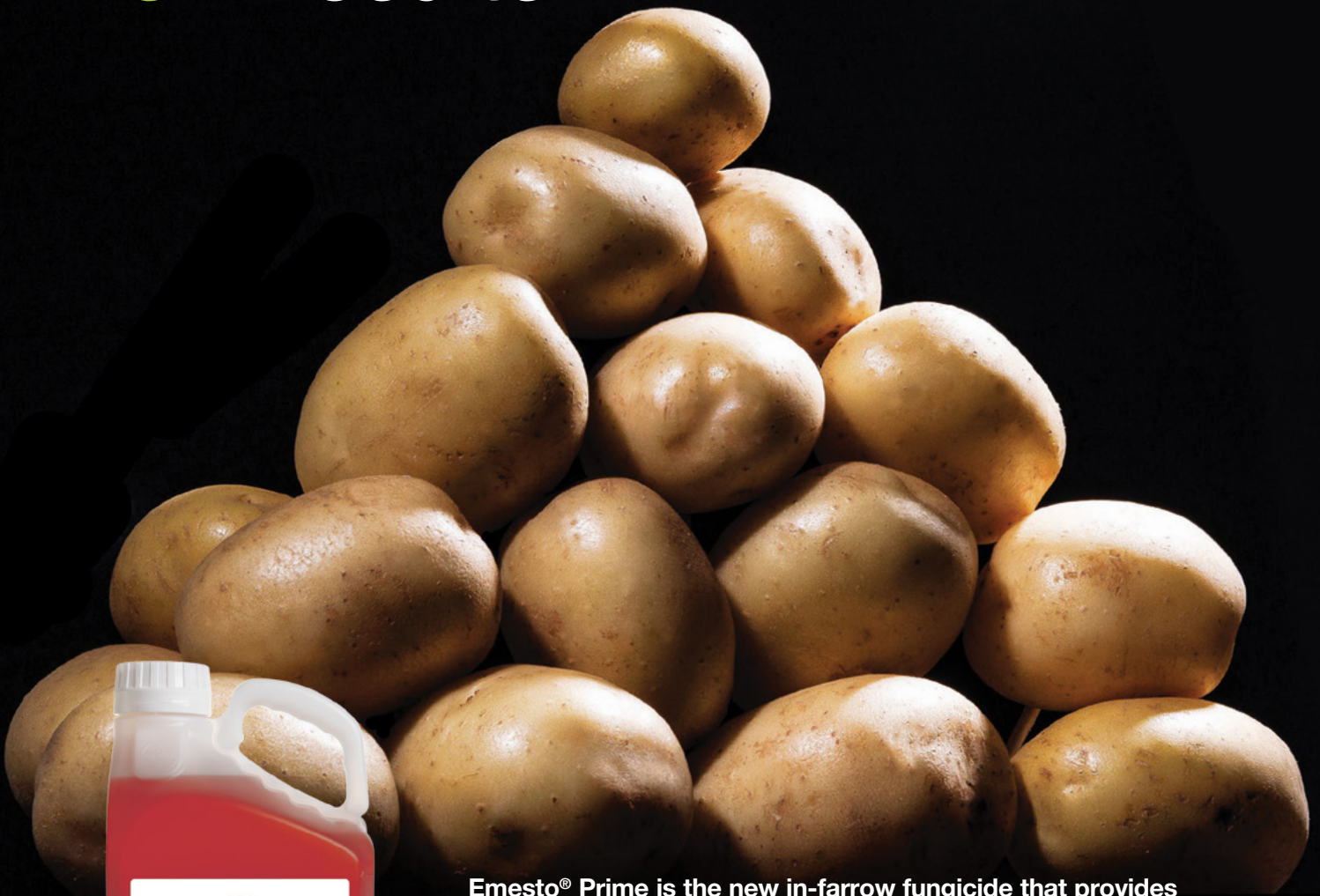
25 ONION HEALTH
BENEFITS

32 CONSUMER
PERCEPTIONS OF GE



EMESTO[®]
PRIME

New chemistry.
New mode of action.
New results!



Emesto[®] Prime is the new in-farrow fungicide that provides outstanding efficacy and resistance mitigation on black scurf in potatoes, for healthier crops and higher yields.

- Can be rotated with other fungicide groups to avoid resistance build-up
- Keeps product in and around roots where it is most effective

Insist on Emesto[®] Prime from Bayer.

We're with you in the field
cropscience.bayer.co.nz

Emesto Prime is registered pursuant to the ACVM Act 1997, No. P9916 and approved pursuant to the HSNO Act 1996, No. HSR101587. Emesto[®] is a registered trademark of the Bayer Group. © Bayer Crop Science 2024. Pack image is illustrative only.

CONTENTS

UP FRONT

- 2 President's Word: Growers vote to support Horticulture New Zealand

VEGETABLE GROWING

- 4 Fresh Direct Ohakune Carrot Carnival
- 6 McCain's emissions reduction efforts pay off
- 10 Profit & Loss maps for annual crops

PRODUCT GROUPS

- 13 Vegetables NZ
- 16 TomatoesNZ
- 17 Process Vegetables
- 18 Vegetables NZ
- 20 Potatoes
- 22 Vegetables NZ

YOUR INDUSTRY

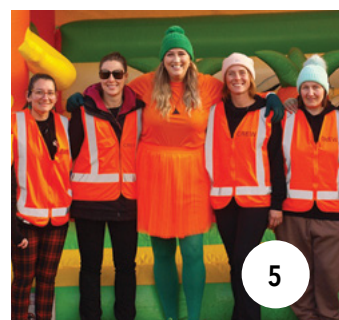
- 25 Onion health benefits - Global research and opportunities
- 28 Agritech for cropping and horticulture
- 32 Will New Zealanders buy our genetically engineered fruit and vegetables?

FLIP TO READ MORE ARTICLES ABOUT YOUR INDUSTRY

- 38 Orchard data in the palm of your hand
- 36 We love tech - but are we tech leaders?
- 33 Orchards designed for robot/human future
- 30 Growing data
- 29 What's new: New Cloud- based software solution helps businesses deliver on quality
- 26 Leveraging AI to enhance weather forecasting

FLIP TO FIND FRUIT

THIS ISSUE OF NZGROWER OFFERS YOU ANOTHER PERSPECTIVE. FLIP THE MAGAZINE TO SEE OUR SISTER PUBLICATION ABOUT FRUIT - THE ORCHARDIST.



ON THE COVER:

LandWISE's Alex Dickson with 'insectaries', movable, raised beds planted with species that host both crop pests and their predators, and available on-site to be moved into a crop to give rapid deployment. See page 28.

Photo courtesy of LandWISE



GROWERS VOTE TO SUPPORT HORTICULTURE NEW ZEALAND



Barry O'Neil : HortNZ chair

Fruit and vegetable growers across New Zealand have made their position clear on the future of Horticulture New Zealand by voting to continue their support.

Eighty-seven percent of growers who participated in the recent HortNZ levy referendum voted yes, equating to 97 percent by weighted vote value. What is particularly pleasing is the record number of growers that voted - there was a large turn-out for this referendum, well up on the last levy vote.

“

It reflects a strong and ambitious sector and a desire among growers for a unified voice.

This is a crucial decision that underpins the organisation's ability to advocate for growers and to deliver a wide array of essential programmes and services.

As the president and chair of HortNZ, I appreciate the mandate growers have given us. It reflects a strong and ambitious sector and a desire among growers for a unified voice.

This vote is also a clear signal that our over 4200-strong community of commercial fruit and vegetable growers want us to advocate on behalf of their interests, and over the next six years we will work hard to deliver tangible results for growers, their businesses, and grower communities.

Our primary focus will remain on ensuring that growers' voices are heard and providing the necessary support so growers can make informed decisions about their businesses. This certainty is essential for growers to confidently invest in their future operations.

To meet our sector's ambitious goals, we will strongly advocate for policies, resources and business friendly settings that will help our sector double the orchard gate value of production while enhancing the prosperity of our people and protecting our environment.

On behalf of HortNZ, I want to thank those growers who, despite their demanding jobs, participated in the referendum. This renewed mandate aligns with the feedback we received from growers during our grower meetings earlier this year.

NZGROWER

Acting Editor:

John Gaudie
Email: editor@hortnz.co.nz

Advertising Manager:

Debbie Pascoe
Ph: 027 485 8562
Email: debbie.pascoe@hortnz.co.nz

Design:

Scenario Communications
Ph: 04 385 9766
Email: joy@scenario.co.nz

Subscriptions:

Email: info@hortnz.co.nz

NZGrower is produced by Horticulture New Zealand and is free for all levy payers. The magazine is also supported by: Vegetables NZ, Process Vegetables NZ, TomatoesNZ, Potatoes NZ and Onions NZ

The individual comments and views in this magazine do not necessarily represent the view of Horticulture New Zealand.

ISSN: 2230-2700 (Print)
ISSN: 2744-5712 (Online)



This publication uses vegetable based inks and environmentally responsible paper produced from Forest Stewardship Council® (FSC®) certified, Mixed Source pulp from Responsible Sources.



Paper produced using Elemental Chlorine Free (ECF) and manufactured under the strict ISO14001 Environmental Management System.

The wrapper we use is 100% recyclable, it is LDPE 4 (Low Density Polyethylene) Soft Plastic and meets the required standards. For further information refer to: <https://www.recycling.kiwi.nz/our-story>



ON BEHALF OF HORTNZ, I WANT TO **THANK THOSE GROWERS** WHO, DESPITE THEIR DEMANDING JOBS, PARTICIPATED IN THE REFERENDUM.

OUR KEY PRIORITIES



WATER AVAILABILITY



CLIMATE CHANGE ADAPTATION AND MITIGATION



ENSURING FOOD SECURITY AND THE RIGHT TO GROW

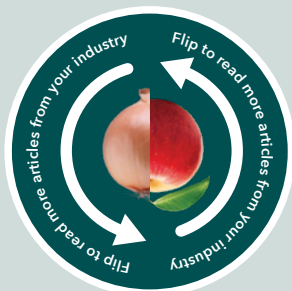
Growers have affirmed that HortNZ is on the right track and support our key priorities, which include water availability, climate change adaptation and mitigation, and ensuring food security and the right to grow.

We have also heard growers' calls for less duplication across different product groups and a stronger, united voice for the entire horticulture sector. With the certainty of continued levy support, we will continue to explore more collaborative approaches to maximise the returns on growers' investments in HortNZ.

HortNZ has applied to the Minister of Agriculture for a new Levy Order that will run for a maximum of six years from 1 April 2025; our application includes the levy rate remaining at a maximum of 15 cents per \$100 of sales.

Finally, again my thanks for your support of our organisation, and you can be assured we will work tirelessly over the next six years to deliver value to you as our members.

Kia kaha. ●



You can find HortNZ's Chief Executive's column on the opposite side of the magazine.



Horticulture New Zealand Notice of the 19th Annual General Meeting

Friday 30 August 2024, 8am at Mercury Baypark, Mt Maunganui, Tauranga.

Business

- 1 Welcome and Apologies
- 2 Voting and Proxies
- 3 Obituaries
- 4 Approve Minutes of the 18th AGM
- 5 President's and Chief Executive's Report on HortNZ's Activities
- 6 Approve Audited Financial Statements for year ended 31 March 2024
- 7 Review of Constitution
- 8 Levy Rate
- 9 Director Remuneration
- 10 Approve 2024/25 Budget
- 11 Approve Auditors for 2024/25
- 12 Notices of Motion
- 13 General Business

Call for Notices of Motion

Any Board Member, Affiliated Organisation or Active Grower Member wishing to have a matter considered at the AGM must give notice in writing to the Chief Executive of Horticulture New Zealand of the notice of motion no later than Thursday, 11 July 2024 at 10.00am. Notices should include the wording of the motion to be voted on and up to one A4 page of explanatory notes. Notices of motions will be listed on HortNZ's website www.hortnz.co.nz on 18 July 2024 and will feature in the HortNZ magazines (August issue).



FRESH DIRECT OHAKUNE CARROT CARNIVAL

NZGrower staff Photos courtesy of Fresh Direct Ohakune Carrot Carnival

“The Fresh Direct Ohakune Carrot Carnival was an overwhelming success,” says coordinator Emma Young. Held at the beginning of June, the carnival attracted 8000 people.

“I am very proud to put on this event year after year to shine a light on our hard-working farmers and commercial growers.”



This year the town celebrated 40 years since ANZ Bank gifted Ohakune its iconic Giant Carrot following an advert they ran.



In the highly contested and anticipated Growers Games, local commercial growers compete against local businesses in games that mimic their work day. The T&G team (right) were winners of Best Local Category 2024 and overall winner for 2024. The Highline Produce team (left) were winners of Best Growers Category 2024. Photos by Alexandra Tresta.



The frosting on the cake was a special surprise from Pure Tūroa (Mt Ruapehu) who dropped off a truckload of fresh snow in the street for all to enjoy. "This was a total hit!" Emma says. Photo by Alex Roke



"Lastly I need to thank the people who made this event possible. Firstly my fellow volunteer crew (left to right: Stu, Dee, Jayde, Rachael, Emma, Hannah, Terri, Becks, Jess) and secondly the sponsors. This event is 100 percent volunteer run and funded by donations and sponsorship." Photo by Jess Moody. ●



PLANT FOR SUCCESS

Launch

Bicolour sweetcorn: Uniform 20cm cob with good tipfill. 80-85 days to maturity. Excellent presentation with good flag and husk cover. A nice easy snap makes Launch the perfect fresh market variety. NZ produced seed. Great disease package. New season seed in good supply. HR: Ps, Rp1-d,g,f,j, IR: Et, MDMV

SugarCrunch

Round, dark green almost black rind watermelon averaging 3.5-5.5kg. When ripe the brix is 12-14° making this a very sweet melon. Crisp deep red flesh adds to SugarCrunch's appeal. Excellent eating quality with minimal seed numbers. Nearly as good as a seedless!

Aurous

Early season sutured medium rosey oval melon with ESL (extended shelf life). Strong vine with easy fruit set. Fruit are a good size around 1.8kg with a small cavity. Excellent flavour and flesh quality. Px, Fom:0,1,2. Also available: Inca & Mayan Gold



Call us today about our range
0800 Lefroy (533 769)
www.lefroyvalley.co.nz



MCCAIN'S EMISSIONS REDUCTION EFFORTS PAY OFF



McCain has decreased the Timaru site's carbon emissions by 93 percent

With support from the Energy Efficiency & Conservation Authority (EECA), McCain Foods has undertaken extensive steps and developed projects to increase energy efficiency and switch to more renewable forms of energy to generate heat used in processing at its Timaru site.

McCain has successfully decreased the Timaru site's carbon emissions by 93 percent (equivalent to approximately 39,000 tonnes of process heat carbon emissions) per year. The remaining seven percent is from electricity, which has the potential to be 100 percent renewable in the future.

McCain has benefitted from significant energy cost reductions, reduced product waste, water savings (of almost 50 percent), improved air and stormwater quality and reduced ash.

By taking action early, McCain is staying ahead of climate mitigation regulation, and building its brand as a leader in sustainable food production.

"We've taken the lessons that we've learned from this pathway and we're rolling it out globally, to six other sites," says Lenard Smythe, engineering project manager, McCain Foods.

Undertaking these projects has also put McCain in a position to make substantiated sustainability claims in its advertising, particularly after winning a New Zealand Sustainability Award in 2022 for this work.

"It's important to decarbonise because our staff and our customers want to know that the food is coming from the most sustainable operations possible," Lenard continues.

The McCain Timaru site produces fries from raw potatoes, which requires several steps. Process heating and cooling is required, including for pre-heating, blanching, drying, frying and freezing the potatoes.

The Timaru site is McCain's largest New Zealand site, and prior to its sustainability journey represented 95 percent of McCain New Zealand's emissions.

Through these carbon cutting initiatives, McCain is also playing its part to help New Zealand transition to a low-emissions future and setting an example for other manufacturing businesses to follow. Approximately 9.7 percent of New Zealand's greenhouse gas emissions come from process heat applications.

EECA has supported McCain on its decarbonisation journey since 2016. The company was an early mover – and its work with EECA has taken a number of forms.



McCain's Timaru site produces fries from raw potatoes

Energy Transition Accelerator

McCain's clean and clever energy journey started with an Energy Assessment and an Energy Transition Pathway to map the plan to achieve their emissions reduction goals. Three new technologies were implemented as part of its overall plan.

“
McCain is playing its part to help New Zealand transition to a low-emissions future

EECA's Energy Transition Accelerator (ETA) programme is designed to help New Zealand's largest businesses make technically and economically viable decisions and investments to support an energy transition pathway.

McCain's first step was to commission an ETA assessment report, prepared by the University of Waikato. The ETA provided a high-level assessment of the business' process heat demand, and preliminarily identified demand and supply-side options to reduce energy-related emissions over the long-term.

This fed into McCain's Energy Transition Pathway, which detailed opportunities for cleaner technologies and their associated high-level estimates of capital costs and timeframes for implementation.

Pulsed electric field technology

Pulsed electric field (PEF) processing is an efficient non-thermal food processing technique using short, high voltage pulses to treat the produce while preserving its fresh characteristics. The commissioning of the technology at McCain's Timaru site has replaced the need for pre-cooking potatoes in vats of hot water with heat generated by burning coal.

GRIMME

GET READY FOR HARVESTING



NEW GRIMME GF 400

- ▶ 4 row rotary tiller
- ▶ Full width tilling for potatoes or vegetables



GRIMME GL410 PLANTER

- ▶ 4 row lighter weight planter
- ▶ Suitable for lighter lower hp tractors from 80hp



NEW GRIMME EVO AIRSEP 290

- ▶ VarioDrive, hydraulic drive for all webs
- ▶ High capacity in all conditions

vegetablecentre.com

LANDPOWER
 Vegetable Centre

Roger Nehoff 027 438 5661
Nigel Prattley 027 403 6518



McCain staff member monitors the pulsed electric field controls



Wood chip in the storage facility moves onto the conveyer belt to be transported to the boiler

Mechanical vapour recompression

Mechanical vapour recompression (MVR) systems recover and reuse energy normally lost through evaporation. Because of the ability to use and upgrade wasted energy, MVR can significantly increase the efficiency of industrial heating and evaporation processes. They achieve this by recompressing vapour for reuse as a heat source for the same process from which the heat was recovered.

McCain installed an MVR system for the fryer heat recovery system, to improve energy efficiency by lowering steam demand and therefore reducing biomass use. This was the first project of its kind in New Zealand and has been hugely successful.

The MVR system has not only helped McCain reduce energy demand, and subsequent cost and emissions, but has also resulted in other benefits and process improvements for the site.

Biomass woodchip boiler

Biomass boilers are a well-known technology in New Zealand used to generate process heat. They look and operate like coal-fired boilers, but are fed by biomass such as hog fuel, woodchips, sawdust or wood pellets.

McCain converted its coal boiler into a 14 MW biomass woodchip boiler to eliminate coal consumption and the associated carbon emissions.

The conversion of the boiler completely removed the need for coal on-site and has improved local air quality.

Wood has a much lower ash content than coal, and the ash that is produced is less toxic. The reduced ash volumes have eased ash handling, and stormwater quality has improved with reduced ash contamination. The remaining ash will be used for wider sustainable practices such as composting.

Energy graduate support

EECA's energy graduate support enables the country's largest energy users to employ a newly trained engineer or science graduate to ensure their business commits the time and resources needed to analyse how energy is being used and the best ways to make savings.

“
By taking action early, McCain is staying ahead of climate mitigation regulation, and building its brand as a leader in sustainable food production

Avinash Sampath was appointed as the energy graduate at McCain's Timaru site. Over the two-year programme, he saved 1,151 tonnes of carbon emissions, and 3.66 GWh of energy - well above the target of 2 GWh. These savings are based on an energy-efficiency-first model. By reducing the site's energy consumption, Avinash showed that there are potentially significant savings to be made through process optimisation.

“Having a staff member dedicated to addressing our energy use has been invaluable. It has given us real insight into where we can make savings, and the same data helps us build the business case for capital investments and measure success,” says Barto Greeff, Timaru plant manager, McCain Foods New Zealand. ●

This article is abridged from a full case study available at www.eeca.govt.nz/insights/case-studies-and-articles/mccain-shares-its-emissions-reduction-journey. Published with permission of EECA and McCain Foods.



of delivering
reliable results.

We've been winning the trust of our clients since 1984, delivering reliable results on time, and enabling them to make better business decisions as a consequence.

Talk to us about your testing needs.



0508 HILL LABS 44 555 22



hill-labs.co.nz



PROFIT & LOSS MAPS FOR ANNUAL CROPS

Allister Holmes : Lincoln Agritech precision agriculture agronomist



Figure 1: One of the two Grimme potato harvesters fitted with Greentronics yield monitors, harvesting one of the trial sites

Yield monitors attached to grain, forage and root crop harvesters have been widely used since the 1990s, and with careful set-up and calibration these have been found to give yields accurate to within approximately five percent (Rawlins et al., 1995). These data can be visualised as yield maps, which are powerful tools to show areas of higher or lower yield in a paddock, allowing farmers to understand the productivity of these areas.

Geospatial yield data can also be converted into gross margin (GM) data and maps, which provide information on the profitability of areas of higher or lower yield. GM is calculated for each yield data point recorded by the harvester as income from the yield at that point minus variable costs.

When multi-year data for a paddock is available, it can be combined to generate multi-year profit and loss (P&L) maps. Multi-year maps can identify areas within a paddock that are consistently profitable or loss-generating, so farmers can make management decisions that maximise the returns from each area.

This article details the use of P&L maps in potato crops, but the process can be used with all grain, forage and root crops harvested with a yield monitor. In New Zealand, there is more area producing potatoes (8400 hectares) than any other vegetable crop (Fresh Facts, 2023).

For this project we fitted yield monitors to two potato harvesters to measure geospatial yield variation. We then used this information to create P&L maps to help inform future crop management decisions to maximise profitability and improve input efficiency.

Project methodology

The work was conducted over three years from 2017 to 2019 and included nine potato crops. All trials were undertaken on commercial crops in the Waikato and South Canterbury and were grown according to farmer best practice. Data was combined using Ag Leader® SMS Advanced v19.50 software to generate multi-year paddock P&L maps.

Results and discussion

Here I give our findings and analysis from a South Canterbury 20.8-hectare paddock growing the cultivar 'Innovator' for crisp production, and describe what practical decisions can be made to improve future financial performance based on the data already obtained by growers. The geospatial yield data collected from the crop were used to generate a P&L map of the paddock (Figure 2). Distinct areas that had higher or lower profitability are evident in the P&L map.

A 6.2-hectare zone outside the area covered by the centre pivot, representing 30 percent of the paddock, was estimated to produce a financial loss for the grower of \$3,391 per hectare (Table 1). This zone of lower profitability clearly aligned with the area that the irrigator could not reach.

Removing the non-irrigated zone from the paddock almost doubled the gross margin of the potato crop from \$3,857 to \$6,935 per hectare, and increased the total paddock profitability by over \$21,000, an increase of 26.2 percent. The grower can increase their GM significantly by reducing the crop area to only the area irrigated by the centre pivot irrigator. This value is in line with the findings of van Evert et al., 2017, who found that the use of precision agriculture in

A **6.2-HECTARE ZONE** OUTSIDE THE AREA COVERED BY THE CENTRE PIVOT, REPRESENTING **30 PERCENT** OF THE Paddock, WAS ESTIMATED TO PRODUCE A FINANCIAL LOSS FOR THE GROWER OF **\$3,391 PER HECTARE**

potatoes increased GM by 21 percent. As a by-product of this, the grower is removing a large, low-yielding area from crop production that has been receiving full fertiliser applications.

Removing the poorly performing zone from production also improves overall nitrogen use, as zones with reduced yield are likely to have more residual nitrogen in the soil at risk of being lost by leaching. Outside the centre pivot, losses were higher, so removing this zone from production reduces nitrogen loss from the crop by 20 kg per hectare.

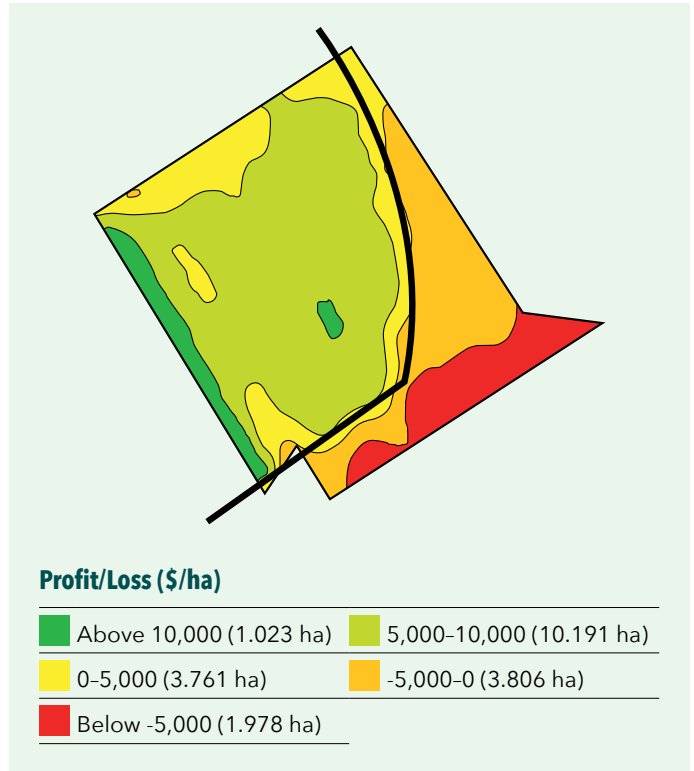


Figure 2: Profit & loss map showing the gross margins (\$/ha) associated with South Canterbury Site 2. The range of the centre pivot irrigator is shown in black

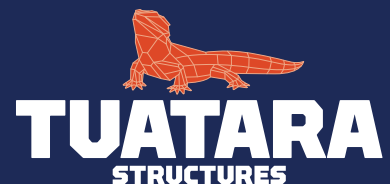


**Agrispace.
Commercial.
Industrial.**

tuatarastructures.com

Talk to us today about how we can outperform for you by designing and building a structure that outlasts.

0800 600 750





| | Whole Paddock | Within Centre Pivot | Outside Centre Pivot |
|----------------------|---------------|---------------------|----------------------|
| Area (ha) | 20.8 | 14.6 | 6.2 |
| Yield (t/ha) | 62.5 | 73.5 | 36.6 |
| Gross margin (\$/ha) | \$3,857 | \$6,935 | -\$3,391 |
| Paddock gross margin | \$80,226 | \$101,251 | -\$21,025 |

Table 1: Table outlining the crop area, yield, gross margin, and nitrogen loss within and outside the area covered by the centre-pivot irrigator for a potato cv. Innovator crop at South Canterbury Site 2 harvested in 2019

The poorly performing part of the paddock could be removed from production and used to grow a crop less dependent on irrigation, such as a dryland cereal, or ryegrass for hay crop.

Similar effects were seen in other paddocks with centre pivot irrigators, and in paddocks with areas of different soil textures.

Conclusions

The P&L maps generated for the paddock in this report show the value of collecting yield data and using that to quantify and map the profitability across a paddock. The maps revealed non-profitable zones, allowing the farmer to make site-specific management decisions to maximise returns from the paddock. Site-specific crop management strategies include varying seeding rate, fertiliser programmes or even growing the crop in different areas of the paddock.

Given the increasing importance to farmers of ensuring they minimise nutrient loss from paddocks, site-specific management practices are a valuable tool for sustainably managing inputs to meet environmental best practice. For example, matching nitrogen fertiliser application to the different crop nutrient requirements across the paddock reduces the risk of associated nitrogen loss through leaching or volatilisation.

The cost of generating the yield data needed for this sort of analysis is generally included in the cost of harvesting the crop. The real cost associated with producing these maps is the analysis involved with cleaning the data, normalising the yields, creating gross margin results, and exploring options to manage the variability.

Recommendations for crop growers

To be of any value to crop growers, there need to be some practical operational steps they can implement to generate value from the precision agriculture tools outlined in this report.

Use multi-year gross margin maps for your paddocks. This involves several steps:

- Use a yield monitor on your harvester to measure geospatial yield variation across crops.
- Use this data to calculate geospatial GM.
- Identify areas that consistently return low (or negative) GM and decide what to do in these areas.
- It is essential to remedy any underlying site issues where possible before undertaking other management decisions, including:
 - Reducing surface water ponding by drainage
 - Deep ripping zones of compaction
 - Managing soil pH variation (acidity/alkalinity) by variable rate lime application
 - Managing irrigation to ensure adequate water supply to crops
 - Reducing inputs – nitrogen, seed, irrigation
 - Growing a different crop.

Some of these processes will be new to many farmers, however there are technical companies able to help growers manage and interpret harvest yield data to undertake these steps.

References

Fresh Facts. 2023. United Fresh. <https://unitedfresh.co.nz/assets/site/images/images/Fresh-Facts-%E2%80%93-December-2023.pdf>

Rawlins, S.L.; Campbell, G.S.; Campbell, R.H. & Hess, J.R. 1995. Yield mapping of potatoes. In: Robert PC et al (eds) *Proceeding second international conference site-specific management agriculture system*. Madison, Wisconsin, pp 59-69.

van Evert, F.; Gaitán-Cremaschi, D.; Fountas, S. & Kempenaar, C. 2017. Can Precision Agriculture Increase the Profitability and Sustainability of the Production of Potatoes and Olives? *Sustainability* 2017, 9, 1863; doi:10.3390/su9101863.

Acknowledgments

This work was undertaken as part of the Ministry for Primary Industries Sustainable Farming Fund Project No. 407932 'Transforming Variability to Profitability'. Potatoes NZ for their co-funding of the project.

The potato growers for allowing us to fit harvest yield monitors to their harvesters and supplying us with data from their crops. ●



EVERYTHING IS BIG IN AUSTRALIA

Andrew Bristol : Vegetables NZ communications manager



Hort Connections 2024 attracted 4000 delegates including 1100 growers

Everything is big in Australia. That was hammered home to me when I attended Hort Connections 2024 along with 4000 other delegates, including 1100 growers; and visited local growers, including the largest celery grower in the Southern Hemisphere, who grows more than 1000 acres of celery and leeks.

At the conference, it was clear that things are different in Australia due to its size. While many of the challenges are the same - climate change, falling consumption, waste, and the relationship with the big supermarkets - the solutions seem to be more tangible because the industry is bigger.

Take waste. The key statistic here is that 22 percent of fresh produce is 'wasted' at the farm. Numerous speakers, attendees and a sponsor of the gala dinner - for 1400 people

- were involved in the industry that has developed in Australia to reduce waste and find uses for it.

The food at the gala dinner was superb. Each dish was prepared using powder "made from excess Aussie veggies". The powder was incorporated into the bread, butter, as a rub on the chicken, and as an ingredient in the sauces. I could not taste the powder and indeed, the powders are being marketed as "the easy way to boost your veggie intake. Made using only excess Aussie veggies, they also help reduce food waste". In other words, they don't seem to be there to add flavour.

I know of at least one major vegetable grower in New Zealand that is diversifying into powders. However, I contend that to make a real impact on reducing on-farm waste in New Zealand and make a buck from it, you would need to collect the waste on a nationwide basis in order to centralise the production. But in New Zealand, the cost of collection would be prohibitive.



94% OF AUSTRALIANS DO NOT EAT THE RECOMMENDED SERVING OF VEGETABLES (186g OF FRESH VEGETABLES A DAY)

Lastly on the subject of food waste, I met a person who runs a start-up being supported by Woolies (as they call it in Australia). The aim of this start-up is to find a use for food waste by finding a market for it while it is still fresh, or finding a processor who will take it on. This 'matching' is achieved through a website, where both sellers and buyers state their requirements. It's kind of like Trade Me for food waste.

Falling consumption

Falling consumption was another frequently discussed subject. Ninety-four percent of Australians do not eat the recommended serving of vegetables (186g of fresh vegetables a day) - which is worse than in New Zealand, statistics suggest. And the speakers said due to the cost-of-living crisis, consumption of vegetables in Australia has fallen in the last two consecutive years.

While I am in two minds about boosting consumption through powders, it is certainly a thing in Australia, as are big marketing campaigns to increase consumption, one of which is akin to our own 'Add One More Vegetable' initiative.

“**...just do something to promote the industry, because if we all just do something and keep on doing it, we will create momentum**

As everything is big in Australia, it is very easy to feel quite provincial. I sat through a panel discussing the importance of brand to increase consumption. I was blown away by the initiatives underway and the fact that they are supported by so much data about consumer behaviour. Basically, these marketing experts (who supported quite niche sounding family farms or retailers) could show cause and effect. They said they would not invest in a campaign if they were not confident in a result, based on previous experience.

That said, one of these marketers was very direct in their messaging. Twice they compelled everyone in the audience to “just do something to promote the industry, because if we all just do something and keep on doing it, we will create momentum, which is our only chance to make a difference against the likes of Coca-Cola”.



At the Hort Connections Gala dinner every dish was made using vegetable powder

Another marketer cited how a month-long, A\$60,000 social media and public relations campaign boosted banana consumption in Victoria after a quiet month. I use this example at the risk of contradicting my 'everything is big in Australia' theme. However, there is another difference in Australia, which I also believe comes about because of size. The horticulture industry all works together - collaborates - in the belief that everything that is done to promote the industry and increase consumption benefits the whole industry, no matter who is doing it and for what produce.

Lastly, regarding falling consumption but also the positive impact of size, it was said that if every Australian added one more serve of fresh fruit or vegetables to their daily diet, it would boost the industry by A\$8 billion.

So many speakers, so much thought-provoking content

It is hard not to be overwhelmed by a conference of this size, particularly when every topic is relevant to the challenges we face in New Zealand.

Australia is very aware of what is happening in the European Union (EU) in terms of increased compliance and reporting, because of the flow-on effect in Australia, even if the farmer (growers tend to be called farmers in Australia) grows only for the domestic market. *(Note, Australia still sees Southeast Asia as its biggest growth market.)*

One presenter said how they felt that Europe was doing better to promote consumption, because their campaigns focused on “touching the heart” and telling the grower/farmer story. Another said that ideology was replacing evidence, and the industry talks more about how fruit and vegetables are grown, in the context of providing a solution to climate change.



An Australian farm growing 1000 acres of celery (about 400 hectares – acres are still a more common unit of measurement in Australia)

However, a recurring theme was that most consumers are not prepared to pay a premium for produce produced sustainably, and they certainly won't be prepared to pay a premium in the future. In terms of sustainability, one of the very large growers said they were doing everything they could to be sustainable (and had done so for more than a decade) because it attracted the supermarkets. "We weren't going to wait around for regulation to require it," they said. Again, scale supports this approach: when you're seriously big, you have bargaining power.

“
... consumption of vegetables in Australia has fallen in the last two consecutive years

Another grower farming more than 400 acres had broken the farm into 30-acre 'farms', so if something went wrong, rather than revert to chemicals, they just left the crop in the ground. Over the past decade, this grower family had moved its philosophy to sustainability and "ensuring that the land is in a better place when we leave it". But I did not get the impression that they were leaving any time soon, the business having been established by the father in the late 1950s.

This gentleman was in the background during this farm visit. His sons presented and he said very little. However, the smile on his face said everything. He was so very proud. Back at the conference, I observed the family again – father, two sons, and two of the sons' sons. So proud, but also so humble.

Which was not always how things came across at the conference, but that may just have been because of how provincial I was feeling. Because in reality, the New Zealand horticulture industry has a good reputation in Australia and we were made to feel most welcome.

Plus, without exception, everyone said if we felt they could help our industry with our challenges, all we had to do is ask.

I close this reflection on Australia by quoting an extremely successful businessman presenter, whose philosophy and advice to the Australia horticulture industry was this: "if your idea is good enough and you are best in class, you will find someone to fund it".

Again, I am sure scale comes into this equation. However, in many ways, the New Zealand horticulture industry is best in its class, and we have good ideas. So, picking up on another strong theme at the conference, collaboration: let's all work together – industry as well as government and regulators – for the benefit of the whole horticulture industry, and at the same time, New Zealand's food security, environment and economy. ●

For more details about the annual Hort Connections event, visit hortconnections.com.au

For Sale by negotiation
19.1 ha free draining fertile silt loam

Manawatu/Whanganui region

-  Sheltered with high sunshine hours, reliable rainfall.
-  House and various sheds, set up as vegetable unit including chiller
-  Pumpkin washing machinery negotiable

Contact 021-081-49152



LAST CHANCE TO RSVP FOR TOMATOES CONFERENCE!

Dinah Cohen : TomatoesNZ business manager

The TomatoesNZ mini conference and Annual General Meeting is taking place on Thursday 8 August. Please join us for a great line-up of speakers:

- ‘Keeping nasties out of New Zealand: what the seed companies are doing’. **James Bertram** from Rijk Zwaan and a rep from **NZ Grain and Seed Trade Association** presenting an overview of the current practices to keep unwanted pests out of New Zealand.
- Panel Discussion and Q&A with seed reps from: Terranova Seeds Ltd, Premier Seeds, Lefroy Valley and Bayer, including seeds resistant to ToBRFV (Tomato Brown Rugose Fruit Virus).
- ‘Controlling common greenhouse pests (whitefly, psyllid, russet mite, aphids & caterpillars) with biologicals as part of an Integrated Pest Management Programme’. **Lex Dillon** will give updates on our A Lighter Touch trial that looks at alternatives to chemical controls. Our greenhouse tomato IPM pack will be available to take away. The update will be followed by a Q&A with growers who have been part of the trial.
- ‘Best practice hygiene for your greenhouse: the Dutch perspective’. **Jasper Verhoeven** from Royal Brinkman will give an overview on greenhouse hygiene and what all growers should be doing to protect their businesses.

The programme is open to all growers, with a travel subsidy for those attending from outside Auckland.

The TomatoesNZ AGM and Vegetables NZ AGM will be part of the day. All TomatoesNZ AGM documents can be found on the website here: www.tomatoesnz.co.nz/about/2024-agm/. ●



Levy Referendum Result

Fresh tomato growers have voted to renew the TomatoesNZ's commodity levy, with a weighted 96.8 percent in support. Thank you to everyone who voted during the referendum - the 46 percent of growers who cast their vote represent a majority of industry value. As a reminder, the final proposal was 'no change' to the current levy terms. Please keep the feedback coming to ensure that TomatoesNZ continues to work to benefit all growers.

TOMATOESNZ AGM AND MINI-CONFERENCE

| | |
|--------------------------|---|
| DATE | Thursday 8 August |
| TIME | 12pm - 5pm |
| VENUE | Navigation Homes Stadium, Franklin Road, Pukekohe |
| RSVP FOR CATERING | forms.office.com/r/GR3nEd2buz or use the QR code |





GROWERS VOTE IN SUPPORT OF PROCESS VEGETABLES NZ

Matt Thorn : Process Vegetables NZ business manager

Process vegetables growers have given Process Vegetables NZ a strong mandate to continue their work.

We would like to thank the growers who engaged in the process and invite all growers to the Annual General Meeting (AGM) in Dunsandel on 1 August. We welcome feedback and grower views on their levy priorities to benefit all growers.

The AGM will include speaker sessions from Talley's, Kraft Heinz, Plant & Food Research, and updates on the A Lighter Touch programme, Vegetable Research & Innovation and Sustainable Vegetable Systems (SVS). ●

Please RSVP for catering requirements to Matt Thorn, 027 553 7848, matt.thorn@hortnz.co.nz before **16 July**

PROCESS VEGETABLES NZ - SPEAKER SESSIONS & AGM

| | |
|--------------|--|
| DATE | Thursday 1 August 2024 |
| TIME | 7pm |
| VENUE | Dunsandel Community Centre 1456 Tramway Road, Dunsandel |

SPEAKER SESSIONS:

| | |
|---------------|---|
| 7.00PM | Talley's grower update - Simon Abel Wattie's update - Greg Noller / Nigel Rowe-Lucas |
| 7.15PM | A Lighter Touch programme and Vegetable Research & Innovation summary - David Hadfield |
| 7.20PM | 'Cold-tolerant rhizobia' and 'Evaluation of biological products' - Soonie Chng, Plant & Food Research |
| 8.00PM | Sustainable Vegetable Systems (SVS) - Andrew Barber |
| 8.15PM | Process Vegetables NZ AGM |
| 8.45PM | Tea, coffee, drinks and nibbles |



Levy referendum result

The recent Commodity Levy referendum concluded with 86 percent voting in favour and with the weighted result at 96 percent in favour. Our industry is valued at \$60 million and growers representing \$48 million in value voted, giving an 80 percent weighted vote.



MatMan
Washing Solutions Ltd
knows
Crate Washing

- Hire
- Sales & service
- Contract washing
- Mobile units available

Contact us today for all your crate washing needs
www.matmanwashing.co.nz e: matman.cratewashing@xtra.co.nz
 m: +64 27 288 8299 t: +64 7 825 9190

ENERGY WORKSHOPS AND NEW BOILER CONSENT REQUIREMENTS

Ellery Peters : Vegetables NZ energy engineer project manager



A tour of Zealandia's new biomass operation, which produces its own chip for fuel

May was a busy time for Vegetables NZ, as we hosted and participated in a range of events related to innovation and energy efficiency in the industry.

In this article I want to talk about the Energy Reduction Workshops held in May and provide insight on the new boiler consent requirements for covered crop growers whose growing operations are emitting more than 500T of CO₂ every year.

Energy Reduction Workshops were hosted for covered crop growers in Pukekohe and Christchurch to discuss energy efficiency opportunities and some new innovative technologies which are beneficial for growers. The initial discussion was on the support Vegetables NZ can provide for growers, including new tools and resources such as the new "Reducing Energy Emissions: Covered Cropping Decision Tree" which provides detailed information and

a pathway to installing thermal screens, dehumidifiers and twin-skin plastic. These tools and resources are still available at the Vegetables NZ website through the Grower Resources tab.

Adrian Kerr, director of Decarbonised Energy Solutions, was the first of the guest speakers, discussing variable flow heat pumps, which are heat pumps that work well in greenhouses by combining heating and dehumidification, and have proven to provide a smaller payback than other options for fuel switching. Michael Rait from BioEnergy Solutions spoke next, on the potential for biogas in New Zealand, and about their product, the Energy Junction, which can generate heat and electricity from biomass. The last presenter was from Simply Energy, and discussed the electricity market and provided solutions for reducing your electricity bill. After these presentations, there was a site visit to Zealandia Horticulture for a tour of their biomass boiler system and to hear their key learnings from this.



Growers at the Energy Reduction Workshop listening to Adrian Kerr speak about heat pump technology

| Fuel Type | Typical Units |
|----------------------------|----------------|
| Natural Gas | 9400 GJ |
| LPG (liquid petroleum gas) | 170,000 kg |
| Coal - sub-bituminous | 250 Tonnes |
| Diesel | 187,000 Litres |
| Waste Oil | 170,000 Litres |

Table 1: Quantity of fossil fuel used to reach the 500T threshold for needing a new consent

If you are interested in the presentations given at the Energy Reduction Workshop, they are available from me on request.

Something of interest that came up from many growers during the workshop was the new industrial process heat consent requirements being enforced from **26 January 2025**. These require all growers whose growing operations emit 500T of CO₂ per year to obtain an air emissions resource consent which contains an emissions reduction plan. You do not need to have a consent by 26 January 2025, however you will need to have begun the process. That means communicating with your local council as soon as possible and documenting this progress. If your fuel usage is above or near the values found in Table 1, it is recommended you reach out to me or go to the Vegetables NZ website to find more information on the consent requirements. ●

For further information, contact Ellery Peters on: **027 322 2887, ellery.peters@freshvegetables.co.nz**

FORIGO
roteritalia



NEVODA
EQUIPMENT CO. LTD

09 238 0770 021 959 948
nevoda@hyper.net.nz
70 Tuakau Road PUKEKOHE



STRONG MANDATE FROM GROWERS

Kate Truffitt : Potatoes NZ chief executive



Potatoes NZ has been given a strong mandate by potato growers to work on their behalf for the next six-year levy cycle.

Warwick Lampp of Electionz.com provided independent oversight as returning officer and delivered the official results on 16 May.

The final result was that 94.74 percent of growers who voted have agreed with the proposal that Potatoes NZ continue, and have supported the Commodity Levy for the 2025–2031 period. Votes were cast by 54.68 percent of growers eligible to vote in the referendum.

The vote is also recorded on a 'weighted' basis according to gross sales values. When adjusted to reflect the value of the vote cast, 95.83 percent supported a continuation of the Commodity Levy.

Comparing these results to the previous levy referendum in 2018, at that time 41.02 percent of growers eligible to cast votes actually voted. The result of the 'weighted' vote based on gross sale values adjusted to reflect the value of votes cast was that 88.56 percent supported the levy.

We are very pleased with this support from the growers for Potatoes NZ to continue to work on their behalf. Our organisation is focused on facing the challenges that are uppermost in growers' minds whether they are compliance, climate change or regulations, and ensuring that all of our value chain receives benefit from the business. To be able to advocate for growers and stakeholders we encourage continued feedback to Potatoes NZ to make sure we are focusing on the issues and opportunities that are important to them.

Potatoes NZ has applied to the Minister of Agriculture, Hon Todd McClay for a new levy order that would run for a maximum of six years.



Levy referendum result

The final result was that 94.74 percent of growers who voted have agreed with the proposal that Potatoes NZ continue, and have supported the Commodity Levy for the 2025-2031 period. Votes were cast by 54.68 percent of growers eligible to vote in the referendum.

Grow Home Safe

Grow Home Safe is an initiative to provide leadership and develop capability in health, safety and wellbeing. The horticulture sector is diverse and complex, with participants ranging from large corporates through to family operations. Grow Home Safe aims to develop new approaches to reduce harm and enable people to thrive throughout the industry. Visit the website for resources to enhance safety and wellbeing in the horticulture industry: www.growhomesafe.co.nz



Think about the business risk and manage it proportionately with your other business risks. The greater the risk the more vigilant you need to be. The first thing to consider is whether you can eliminate this risk. Remember that you also need to be prepared for an emergency or disaster and have a plan for what to do during one and afterwards.

Everyone has a role to play, it does not sit with you alone. There are lots of resources that help with your safety review, however first ask your workers. The WorkSafe website has loads of good tools to assist: www.worksafe.govt.nz

By prioritising health and safety practices on potato farms, employers can create a safer working environment for their employees and reduce the risk of accidents and injuries. This will protect workers and contribute to the overall efficiency and success of the farm operation. ●

Safety is just good business

It is often thought that safety needs to be something that you do in isolation, however it is just part of good business. Looking after your people is key to a successful operation, and part of that is making sure they go home in the same condition they did when they came to work. It is not as hard, expensive or time-consuming as many may think.

Use the change in seasons to have a review of what you do and evaluate your health and safety protocols on farm. Remember good health and safety practices protect workers, promote productivity and reduce costs, plus they also enhance reputation as well as ensure the sustainability of your farm and agricultural operations.

Contact

Please contact the friendly team at Potatoes NZ if you have any questions or feedback.

0800 399 674

info@potatoesnz.co.nz

www.potatoesnz.co.nz

Propham® Potato Dust | Prevents sprouts on fresh potatoes

It is a key part of good storage or shipping practice to apply **Propham® Potato Dust** to prevent sprouting and to keep potatoes fresh, preserve natural flavour, flesh quality and texture.

- Easily applied during loading of potatoes
- Just one treatment is normally sufficient to keep tubers in condition for 8 months at 6-8°C
- **Propham® Potato Dust** is packaged in 25kg bags for commercial use



STOP THOSE SPROUTS

Propham® Potato Dust is an ACVM MPI Registered product P003465

Contract Packaging & Storage (2021) Ltd | Phone: +64 (0)7 575 8853

Email: orders@contractpackaging.co.nz | Web: www.contractpackaging.co.nz/prophampotatodust

Manufactured and supplied by





VEGETABLE RESEARCH ROADSHOWS 'BEET' ALL EXPECTATIONS

Daniel Sutton : Vegetables NZ research, development and extension manager



Daniel Sutton speaking to growers in Gisborne during the Vegetable Research Roadshows

Several grower events to highlight the research and development occurring in the vegetable industry have been held across the country over the past four months.

The Vegetable Research Roadshows were a chance for the vegetable product groups (Vegetables NZ, Process Vegetables NZ, Onions NZ, NZ Buttercup Squash Council, TomatoesNZ and Potatoes NZ) to get research topics, findings and resources in front of the people for whom the research is conducted: growers.

The roadshows came about because getting in front of growers and the wider industry in person is the best way to engage. Face-to-face engagement allows for discussion and feedback right away and puts growers, researchers and project teams on the same footing. Each of the roadshows included a dinner afterwards, which allowed for networking to continue.

The roadshows were funded by Vegetable Research and Innovation (VR&I), which is a collaborative group made up of several vegetable product groups. Starting in Dargaville back in February, the roadshows visited Nelson, Pukekohe, Hawke's Bay, Ashburton, Invercargill, Ohakune, Palmerston North and Gisborne through until early May. In total, the roadshows drew an audience of more than 300 growers, advisers and others from the wider industry.

I was involved with planning and presented at all of the roadshows.

These events have highlighted the importance of extension when it comes to research. The best research is often done working behind the scenes, but if it is not getting into the hands of the people and industry who can utilise it, then it is not effective. This was the main driver behind holding these roadshows.

The industry's response, attendance and engagement at all of the roadshows has been fantastic. I think growers have really appreciated us coming to them, providing this information, and asking for feedback.

Many topics were covered, with final topics and speakers determined by the vegetables grown in the region being visited. The timing of these roadshows also aligned with the extension phase of the Sustainable Vegetable Systems (SVS) project, which is looking to develop a nitrogen decision support tool for vegetables crops.

- Vegetables NZ presented at all nine events and covered topics such as: black cricket research in kūmara, integrated pest management (IPM) and the work being done at the Pukekohe demonstration farm, and agrichemical resistance management.
- SVS was covered in eight of the roadshows, with Agrilink managing director, Andrew Barber providing an overview of the SVS tool, how it can be used and the key drivers behind the project.
- Onions NZ spoke at five events, covering the latest information on onion thrips management, control of *Stemphylium* leaf blight and resistance management concerns.

- Potatoes NZ also presented at five events, providing an overview of its research priority areas: powdery scab, tomato potato psyllid and *Liberibacter*, tuber moth and early blight.
- Process Vegetables NZ presented at four events, showcasing their work on alternative control options for *Fusarium* in process peas and *Sclerotinia* in process beans. At the Ashburton events, they also covered their work identifying cold-tolerant strains of *Rhizobia*.
- NZ Buttercup Squash spoke at two events, covering the soil-borne disease project by highlighting the work currently underway and when results are expected.
- TomatoesNZ presented at three events on their work evaluating the use of biological control agents to manage whitefly in glasshouse tomatoes.

Additional content

Many of the roadshows had support from the Foundation for Arable Research (FAR) and Plant & Food Research. At the Hawke's Bay event, thanks to FAR and the A Lighter Touch (ALT) project, the roadshow included a presentation by Dr Paul Horne from IPM Technologies in Australia about his experience developing and implementing IPM for growers in Australia.

ALT projects made up a significant proportion of the content for all the roadshows. This included work on black crickets, the demonstration farm in Pukekohe, the alternative control option in process crops, and beneficial insect control for whitefly management in tomatoes. To stay up to date with these projects, please register for the ALT newsletter on their website: a-lighter-touch.co.nz

While feedback is still coming in, to date it has been overwhelmingly positive, with more than 90 percent of attendees rating the event a 4 or 5 out of 5 in terms of event satisfaction. Comments from attendees have included:

- surprise at the volume of research that is occurring in the vegetable industry,
- interest in resistance management for crop protection products,
- the value and use of the SVS tool,
- and how important it is for extension to occur and for the industry to hear about it.

Due to the timing of these roadshows and 2024 being a Commodity Levy year, they also provided an opportunity for vegetable product groups and Horticulture New Zealand representatives to engage directly with growers. ●

Keep a look out for communication regarding upcoming vegetable research events. Daniel is already planning how research roadshows can become an annual addition to growers' calendars.



Levy referendum result

Vegetables NZ would like to thank growers for their continued support. In the fresh vegetable commodity levy referendum, 38.64 percent of eligible growers voted, which is more than double the percentage of growers who voted in 2018 (16.5 percent). Out of those who voted, the weighted dollar value of those in support of continuing the levy was 92.51 percent. The next step in this process is to complete a formal application to the Minister of Agriculture to continue the fresh vegetable commodity levy order for another six years. We expect the Minister to make their decision by the end of the year.

MANAGE WEEDS WITHOUT HERBICIDES

Friday 26 July 9am-5pm | PIA Event Centre Pukekohe

Yes! It can be done!

With the multiple challenges facing herbicides including resistance, little new chemistry, consumer pushback and legislation this workshop is your window into the world of non-chemical weed management.

Robotics and AI Weeding Technology

Workshop presented by Dr Charles 'Merf' Merfield a world leading and NZ's only specialist in non-chemical weed management and award winning science communicator.

Register by email: charles@merfield.com

Including your background, by 17th July.



Visit www.merfield.com/merfield-agronomy-ltd/2024-non-chem-weed-management-workshop.htm for full workshop information.

YOUR INDUSTRY



ACROSS THE SECTOR - ACROSS THE COUNTRY



28 SMALL BUT MIGHTY!



The GOVOR robot spent 36 hours travelling the same path through rain and shine at Fieldays. "I'm impressed by how little rutting there is despite continuing to work through the heavy rain!" says Agovor founder and nurseryman Richard Beaumont.



ONION HEALTH BENEFITS – GLOBAL RESEARCH AND OPPORTUNITIES

Kazi Talaska : Onions NZ project coordinator



Through the SFFF partnership programme with Ministry for Primary Industries (MPI) Humble to Hero, Onions NZ has supported projects around finding an avenue for a value-add nutritional claim.

Although it is well known that onions as a vegetable can play a role in your 5+ a day and be a part of the healthy plate on your family dinner table, the further question is whether we can lean on highly valued consumer attributes in the market and, with research, translate this to higher return for the grower.

“

A high-level health claim identifies products that can protect against a serious disease or a risk factor for a serious disease

Over the past two years, Onions NZ, with support of onion growers across the country, facilitated the testing of two seasons of brown and red onion for beneficial phytochemicals, in particular the flavonoids (e.g. quercetin and anthocyanins), fructans and organosulfur compounds. UCLA Health defines phytochemicals as



SOME STUDIES HAVE SHOWN REDUCED BLOOD GLUCOSE LEVELS AND IMPROVED INSULIN SENSITIVITY IN SPECIFIC CONDITIONS AMONG BREAST CANCER PATIENTS

naturally produced compounds within a plant's immune system that defend against bacteria, fungi, viruses, and parasites. In humans, these phytochemicals can also support the immune system offering protection for cells against damage caused by environmental toxins or metabolic processes.

With the phytochemical data collected and a few different compounds identified, we reached out to Plant & Food Research to map out what the next steps look like for a health claims review. Identifying research or clinical trials available internationally can help the pivoting of a health claim in the onion space in the future.

The process for a health claim

A health claim is any claim that states, suggests or implies that a food or a property of food has or may have a health effect. In New Zealand, Food Standards Australia New Zealand (FSANZ) oversees the regulation.

Under the standard there are two classes of health claims:

- A general level health claim links a food product to a health effect that relates to general health and wellbeing – an example might be ‘Calcium is good for strong bones’
- A high-level health claim identifies products that can protect against a serious disease or a risk factor for a serious disease – an example might be ‘Diets high in calcium and vitamin D may reduce the risk of osteoporosis’.

Permitted claims can be nutrient content claims or self-substantiated. A nutrient content claim will describe the presence or absence of a nutrient in a food product such as “Source of fibre” that meet the criteria set out by the Food Standards code. A self-substantiated claim needs significant evidence to verify that the product contains an ingredient that can relate to a specific health benefit, “supports digestive health”.

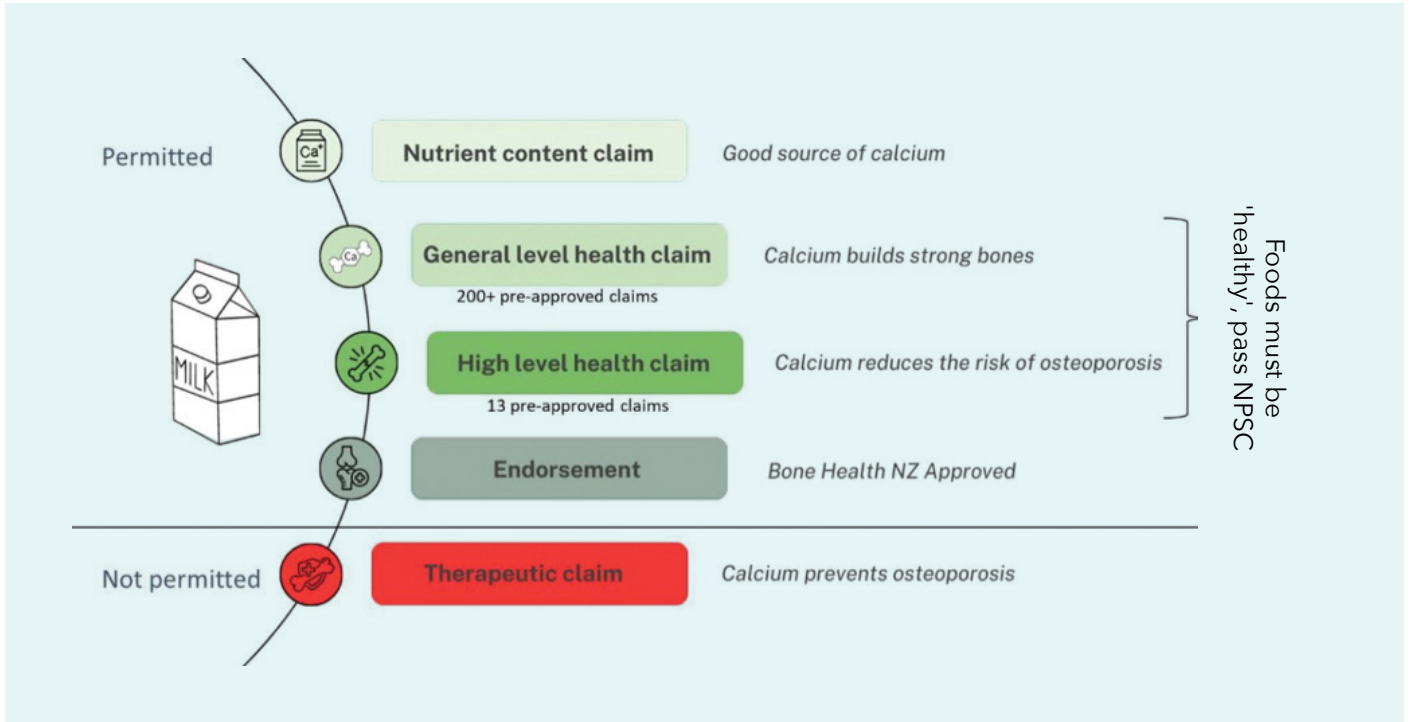


Figure 1. Examples of the claims permitted under Food Standards Australia New Zealand Standard 1.2.7 (<https://www.legislation.gov.au/Details/F2018C00942>) using milk as an example. NPSC = Nutrient Profiling Scoring Criterion. Graphic by Plant & Food Research

Key health areas for onion research globally

In our research we looked at the information in the literature on the health benefits of onions. Onions and their bioactive compounds have various health benefits some of which include antioxidant, antimicrobial, and anti-inflammatory properties, as well as their potential in combating obesity, diabetes, and even certain types of cancer.

Obesity/weight management: Slimming down with onions

A review by Chung et al. (2023) examined 38 studies on the anti-obesity effects of onions, focusing on five high-quality ones. The findings showed that onion consumption significantly reduced body weight, body mass index (BMI), waist circumference, and triglycerides, though it didn't affect cholesterol levels or obesity-related hormones. Onion peel, especially those high in flavonoids like quercetin aglycone, had the strongest effects. However, since these studies were conducted in Korea, where diets differ significantly, the results may vary elsewhere.

Cardiovascular health: Onions for a healthy heart

A meta-analysis by Huang et al. (2021) of 10 human clinical trials involving 446 participants revealed that onion supplementation significantly improved HDL (high-density lipoproteins) and LDL (low-density lipoproteins) cholesterol levels and reduced total cholesterol. Additional studies highlighted the cardiovascular benefits of onions, such as improved vasodilation and cholesterol levels (Nakayama et al., 2013; Jeon et al., 2013; Brüll et al., 2017a).

Diabetes/blood glucose management: Sweet benefits of onions

Onions contain compounds like quercetin, kaempferol, thiosulfinate, and S-methyl cysteine, known for their potential benefits in diabetes and blood glucose management. Some studies have shown promising results, such as reduced blood glucose levels and improved insulin sensitivity in specific conditions among breast cancer patients (Jafarpour-Sadegh et al., 2017).

“...onion consumption significantly reduced body weight”

Cognitive health: Sharpening the mind with onions

There has been a small amount of research that suggests that onions, particularly their quercetin content, may play a role in cognitive health and neuroprotection in the older generations. Studies in Japan have shown that quercetin-rich onions can enhance cognitive scores, reduce cognitive burden, and improve reaction times (Nishihira et al., 2021; Nakamura et al., 2022).

Bone health: Stronger bones with onions

While there is some evidence supporting the benefits of onions for bone health, particularly due to flavonoids, more specific trials are needed to substantiate these claims. Current research indicates potential benefits, but further investigation is required to confirm these effects.



Levy referendum result

Onion growers have voted to renew the Onions NZ commodity levy, with a weighted vote of 99.3 percent in support, and by vote of 'one grower, one vote' with 95 percent support. Thank you to everyone who voted during the referendum - Overall 56 percent of growers cast their vote. We are humbled by the support from growers and look forward to working hard to maximise the return to growers for the levies invested in Onions NZ.

Future of health claims and getting involved

While these studies point to potential opportunities to strengthen consumer purchasing drivers, health benefits can only be marketed for permitted claims, backed by robust scientific evidence. Making claims that have not been approved can lead to corrective action by the regulator/enforcer and erode consumer trust.

“
There is a portion of funds available each year for co-investment through SFFF: Humble to Hero

This piece of research, evaluating the global research on health benefits, is part of a longer standing research question being explored by Onions NZ. In the next project year (July 2024 - June 2025) of SFFF: Humble to Hero, more work is planned on continuing to explore what this could look like for the New Zealand onion sector.

If you are an onion grower or exporter and are working on value-add projects within your business or community and would like your project supported by Humble to Hero, get in touch with kazi.talaska@onionsnz.com. There is a portion of funds available each year for co-investment through SFFF: Humble to Hero and facilitated by Onions NZ. Make sure to make the most of this opportunity. ●

Acknowledgements to Carolyn Lister from Plant & Food Research who has compiled the information reported in this article. References available on request: kazi.talaska@onionsnz.com

Ministry for Primary Industries
Manatū Ahu Matua



VALUE GENERATED - ZESPRI'S HEALTH CLAIMS JOURNEY

Zespri has a long history of research investment into health benefits. Many of Zespri's research studies are published in scientific journals and presented at international conferences. It became the first New Zealand company to receive a health claim from the European Food Safety Authority (EFSA), the first successful claim for a fresh fruit. Zespri's consumer research has found an upturn in sales following health-driven campaigns. You can learn from Zespri's journey, including useful resources, in a newly published Aotearoa Horticulture Action Plan case study. For a copy, please email Anna Rathé, Aotearoa Horticulture Action Plan programme manager: anna.rathe@hortnz.co.nz.

FIELD BINS FOR SALE

Reasonable condition
\$60 +GST

Contact
John 027 202 0540 or
Sara 027 254 7342

Waterloo Farm Christchurch



AGRITECH FOR CROPPING AND HORTICULTURE



Dan Bloomer : LandWISE Inc



LandWISE conference delegates visited the LandWISE MicroFarm for the practical session

Agritech always features at a LandWISE Conference: what's here and what's coming, what would be nice. The recent 2024 conference was no different.

Founded by growers and researchers partnering to solve problems, LandWISE has investigated no-tillage, strip-tillage, RTK-steering (real time kinematics), smart technology for field cropping, precision viticulture, GPS paddock contouring (global positioning systems), and precision drainage in orchards to name a few.

We quickly learned that a technology might perfectly fit one grower in one aspect of one of their operations but may not fit somewhere else or someone else. Every paddock in every farm, in every season, is different. Bespoke solutions are required - which is all but impossible for a tech company to deliver at scale. So farmers need a basic recipe that they can customise for their specific situation. LandWISE tries to give examples of fit and tell stories to show growers what is possible. Over 6,500 copies of our *Guide to Smart Farming* have been distributed across Aotearoa New Zealand and Australia.

The word 'agritech' makes many people think computers and gadgets. But we like to think of it in its broadest sense - technology for agriculture. So yes, computers and gadgets, but also biology and chemistry, and models

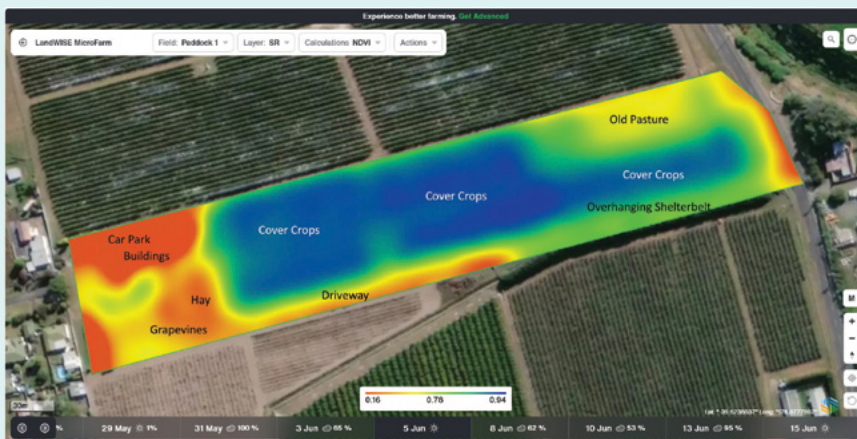
and mapping. Any techniques and technologies that let us do the job (hopefully better). The whole LandWISE Conference is about agritech if you look at it that way.

“

In crop protection, best practice is a science-based, sustainable decision-making process

In 2024, a conference discussion panel heard five agritech founders discussing their experiences and hard-learned lessons. There were presentations on technologies to capture and learn from spatial data, on integrated pest management, insects as predators and plant defence inducers as plant protection products. And, as a reward for sitting still for a day and a half, delegates visited the LandWISE MicroFarm for the practical session, with demonstrations of robots in the air and on the ground, new irrigation technology, and cover crops and predators.

“In crop protection, best practice is a science-based, sustainable decision-making process that uses information on pest and host plant biology, environmental data and technology”, Jessica Vereijssen of Plant & Food Research told delegates. “Best Practice growers use the appropriate available resources, biological, cultural, physical and chemical tools, in a compatible manner.”



Made with the DataFarming website, this image shows the Normalised Difference Vegetation Index (NDVI) 10 m pixel map of the LandWISE MicroFarm from 5 June, labelled to show what the different colours represent. DataFarming can identify crops, high and low growth areas, and disease zones. Imagery allows them to identify and locate individual weeds within row crops and create a spray map to automate precision application.

The 'Commercialising new technology' panel was chaired by Andrew Cameron from Callaghan Innovation's Agritech Activator. Founders spoke of the problem or opportunity that stimulated their startup, of their journeys and lessons learned.

Australian Agritech Association President Tim Neale co-founded DataFarming.com.au to provide "digital agronomy without the hassle". Jump on the website to access free 10 m pixel satellite data which is updated every five days. Check your crop canopy development and get a sense of variability - a good way to start planning your next inspection visit. If you want more detail, order higher resolution imagery to identify vegetable beds, trees in your orchard or vines in your vineyard. To turn data into action, you can choose different crop indices or zone fields and generate precision application maps for water, sprays or nutrients. Automating satellite image analysis brought the cost to farmers down and made better management information available faster.

"Good things take time" said Matt Flowerday, who established GPSit to map kiwifruit blocks and grew the company and its offerings to continue meeting new challenges. Matt advises budding entrepreneurs to

start small but dream big, and always keep an eye out for opportunities. He has investigated and added new offerings, but some were shelved. They weren't bad ideas or products; they just didn't fit his business. "Never waste a crisis", he says. "You can pivot, and you can help create the future!" Personally impacted when Psa decimated the kiwifruit industry, Matt found he could add value to the dairy sector. GPSit now has a sister company, Landkind, a map-driven digital platform for horticulture. It is a technical solution to a management problem that as a kiwifruit grower, Matt fully understands.

The chief executive and co-founder of Croptide, Hamish Penny, has built a strong technical team supported by expertise in marketing, viticulture and orcharding. Croptide partnered early with New Zealand companies trying to manage water better, and with growers in the United States and Europe where water is increasingly scarce. A couple of years further on, Croptide is active in kiwifruit, apples and grapes in New Zealand, California, Washington State and Europe. The data collected are sent to the cloud, interpreted and delivered to growers as management information, readily accessible on their phones.



BED FORMERS



ROTARY HOES



POWER HARROWS



STONE BURIERS



0800 327 642
 sales@farmgard.co.nz
 www.farmgard.co.nz



Airborne Solutions demonstrated using large quadcopters for spraying. LandWISE contracted them to apply slug bait and nutrient products to trial plots at the MicroFarm

Growers have many ways to gather all sorts of data, but how to realise its potential? Lia Willis from Vantage NZ talked about how data of different types and from different sources can be pulled together and stacked to give deeper understanding of spatial variation and management options. Agriculture is a spatial business, and spatial analysis makes sense! Things happen at a place, and other things happen there too. How are they interacting? What is the net effect? Can we change things at different places to optimise overall management? Will it pay? Where is the likely best return?



Good things can take time, but we have some amazing researchers and amazing technology companies serving agriculture and horticulture!

The Horizons regional council sponsored field event is a drawcard. Scotty Horgan of Airborne Solutions demonstrated using large quadcopters for spraying. LandWISE contracted them to apply slug bait and nutrient products to trial plots at the MicroFarm. Scotty also brought a ground based robot and demonstrated it spraying in our vineyard.

The GOVOR robot showed off under vine spraying using CDA (controlled droplet application) tech, and rounding out the robot display was the Luba lawn mower. Not exactly the tool for hay paddocks, its guidance and vision systems and the use of artificial intelligence in consumer level equipment were of interest. Development in the automated mobile machine space is rapid and accelerating!



In 2020, Agovor founder and nurseryman Richard Beaumont partnered with Simon Carroll, a seasoned automation engineer, to develop GOVOR, an autonomous mini tractor that could fit between his tree rows. One or more GOVORs can be managed from a phone or computer, using AI technology to navigate autonomously, and whatever attachments are needed to complete the task required

What did we learn at LandWISE 2024?

Good things can take time, but we have some amazing researchers and amazing technology companies serving agriculture and horticulture! Farming is complex and needs a range of interwoven tools. We need to think 'integrated' more and 'silver bullet' less.

Successful entrepreneurs understand their markets and products. Each story is different, including financing, growth paths and growth rates. Every success was a team effort. The team knows and supports the mission. If something doesn't work, tweak it, change it, swap it out for something else. If a good idea comes along, check it out, try it out, and roll it out or toss it out. ●



LandWISE's Alex Dickson showed the new MicroFarm 'insectaries', movable, raised beds planted with species that host both crop pests and their predators, and available on-site to be moved into a crop to give rapid deployment. Olivia Prouse at A Lighter Touch recommended plants based on the crops we will be growing, our locality, the pests we expect and the species that might predate them

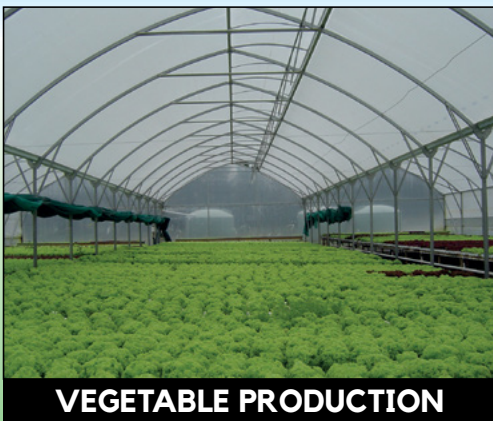


Tony Reglinski of Plant & Food Research explained that plants naturally have many layers of defences, but they can be expensive for the plant to maintain so some tend to be inducible. Akin to vaccination, 'inducers' are chemical or biological agents that have been shown to activate the plant defence response and make them more resistant to subsequent attack. The science to understand and develop inducers continues, but increasing numbers of products are being made available. LandWISE used some inducers as part of crop protection in the Carbon Positive trial when we grew tomatoes last summer



Greenhouses

"built stronger to last longer"



VEGETABLE PRODUCTION



FLAT ROOF SHADE HOUSES



PROPAGATION

Redpath Greenhouses and Shadehouses, Manufacturing and supplying the industry for over 35 years. Designs to suit your business and growing needs from the very large to very small. Designed, Manufactured, Delivered and installed on your site. Council plans and application work included. All buildings provided with manufacturer's warranty and our construction crews are based nationwide for efficient and speedy assembly and after-sales service. Check out our website below for the full range of buildings, greenhouse films and fabrics.

www.redpath.co.nz

FREE PH 0508 733 728



WILL NEW ZEALANDERS BUY OUR GENETICALLY ENGINEERED FRUIT AND VEGETABLES?

John Gauldie



Professor Dame Juliet Gerrard, the Prime Minister's Chief Science Advisor: "Consumers will need to see a clear benefit for any modification made." Photo by Elise Manahan

To date there have been no commercial GMO or gene-edited crops food crops grown in New Zealand. But if we could grow them here, would New Zealand consumers buy them?

NZGrower and *The Orchardist* spoke to the Prime Minister's Chief Science Advisor and researchers at Plant & Food Research and the University of Auckland about consumer perceptions here in New Zealand and overseas.

A quarter century after the furore following the report by the Royal Commission on Genetic Modification, the New Zealand consumer seems to have developed a more nuanced view, but still feels nervous about the technology.

Recent research commissioned by Food Standards Australia New Zealand (FSANZ) and Plant & Food Research shows that most Australians and New Zealanders remain uncomfortable with the technology applied to their food – suggesting a market advantage for produce that has not been genetically engineered (assuming it is easily identifiable for consumers) and organic produce (which is per definition not genetically engineered).

While genetic engineering is not a top food safety concern, the FSANZ study suggested that could change quickly. The topic is returning to the public arena as New Zealand debates new genetic engineering legislation and the FSANZ considers a proposal to amend the definitions of food produced using gene technology.

Consumers don't know much about genetic engineering

Although there are supporters and opponents, the data indicates that there is a large middle ground who feel wary but not informed enough to form a strong opinion.

A soon-to-be-published Plant & Food Research study will indicate that consumers saw little difference between legacy GMO technologies and new breeding techniques (sometimes called gene editing), but had limited knowledge of both. The FSANZ study also noted that levels of knowledge were the same among both supporters and opponents.

A similar study in the United Kingdom in 2021 indicated the terminology did not always help and can increase confusion. However, the more informed consumers became, the more accepting of gene-edited food they became.

A study in Japan showed that the public did see a slight difference between gene editing and genetic modification, finding the former less risky and more beneficial. However, they saw both technologies as very different from conventional breeding. Consumers expected anything genetically engineered to be transparently labelled.

The FSANZ study noted that demographics are not the best predictor of a person's likelihood of eating or avoiding genetically engineered food. Nor are cost, appearance, taste or nutritional content, a United States study found. Instead, consumers are primarily driven by their social values and how much they trust government, industry and environmental groups.

Are we tampering with nature?

University of Auckland's Katie Henderson says her qualitative studies for her PhD research of food system stakeholders showed that there are lot of paradoxes in consumer behaviour – reflecting that genetic engineering is only one attribute in the purchase decision.

“Some people had a sense of relief when told that genetically engineered fruit and vegetables are not for sale in New Zealand. Others wondered why we don’t have them already.

“Consumers think genetic engineering doesn’t seem natural. But that doesn’t necessarily mean that they don’t think it’s okay. Some thought that all plant breeding is tampering with nature. ‘Nothing’s natural anyway’. ‘We’re eating all kinds of processed things.’ Some thought (incorrectly) that red kiwifruit might be genetically modified.”

Studies of Māori perspectives on gene technologies show a broad range of views, roughly in line with non-Māori New Zealanders, and indicate that Māori perspectives on genetics have changed too. The context, objectives and consequences of genetic engineering are important. However, Māori have a higher degree of scepticism about commercialisation. They are most concerned about genetic engineering of taonga species, such as kumara.

Values will be the deciding factor

Many New Zealanders, both Māori and non-Māori, consider te ao Māori views useful in considering the ethics of genetic engineering technology.

In 2019, Professor Dame Juliet Gerrard, the Prime Minister’s Chief Science Advisor, highlighted the importance of Māori perspectives in the debate. Speaking in May 2024, shortly before the end of her tenure, she believes the national conversation has moved forward.

“In the horticulture space it’s not really a science argument,” she says. “Some scientists will go blue in the face trying to explain to me that this apple is identical to that apple, and

I’m not disagreeing with them. But some people won’t eat food from a certain country because of a value position, not because of a science position. Some people simply don’t want to eat something that was born in a lab.”

A new gene regulatory authority in New Zealand will have to navigate those ethical questions case by case, product by product, she says.

“**Consumers think genetic engineering doesn’t seem natural. But that doesn’t necessarily mean that they don’t think it’s okay**

“I think there’s a strong argument for introducing any trait that will make crops more climate resistant or more drought resistant. Or for some post-harvest traits where we would, for example really like to extend shelf life to reduce food waste. Consumers will need to see a clear benefit for any modification made.”

Katie Henderson’s research showed that food system stakeholders are aware that genetically engineered foods need to benefit consumers and society as much as themselves.

However, she says social licence and willingness to pay are often conflated: acceptability is not the same as uptake. If a product fails, is it because consumers are not willing to pay for a novel trait, or is it a wholesale rejection of the technology used to create it?

**NEW
PRODUCT RELEASE**

**TRIMAX
FURY**

**GEARDRIVE
ORCHARD
MOWER**

VISIT US ONLINE!

**WANT TO
KNOW MORE?**

trimax
MOWING SYSTEMS // **POWERING
PERFORMANCE.**

P +64 7 543 1892
E info@trimaxmowers.co.nz

f X IG Y in V // **TRIMAXMOWERS.CO.NZ**

Perceptions of GE in Australia and New Zealand

- Most consumers don't consider GMOs as a major food safety issue.
- Consumers are more concerned about carcinogens, chemicals and spray residues.
- Forty-two percent of people believe that genetically modified whole foods are already available for sale in Australia and New Zealand when they are not.
- Twenty-nine percent incorrectly believed that most fresh fruit and vegetables grown in Australia are genetically modified.
- Approximately 40 percent of consumers were supportive or willing to purchase genetically engineered produce.

Key GE concerns in Australia and New Zealand

- Safety to humans and lack of long-term safety data.
- The trustworthiness of GMO producers or scientists.
- Environmental impact.
- The unnaturalness of genetically modified food.

International consumer GE perceptions

- Gene-edited and GMO plant foods are more acceptable to consumers than gene-edited animals.
- Genetic engineering in medicine is more acceptable to consumers than the same technology used in food production.
- Genetic engineering is more acceptable to men than women, and to those who are younger, earn more or live in urban areas.

Dialogue and consensus are possible

"A lot of this isn't science," Juliet continues. "It's the intersection of what adds value, what people will pay for, and what people are prepared to sacrifice when they are nervous about technology."

Dr Marie McEntee at the University of Auckland says New Zealanders are taking a much more nuanced approach to evaluating the benefits and risks of the science based on a values system. She is principal researcher for a National Science Challenge project evaluating attitudes to genetic engineering and the environment. Workshop participants looked at different environmental scenarios and management tools, including genetic technologies and collaboratively determined what tools should be in New Zealand's environmental toolbox, and under what conditions.

"Our approach takes the contestation and conflict out of the discussion so people could meaningfully deliberate, and all perspectives could be valued and heard and to see if through this we can reach consensus around the tools that should be considered." ●

References available on request.
Contact editor@hortnz.co.nz

42% OF PEOPLE INCORRECTLY BELIEVE THAT GENETICALLY MODIFIED WHOLE FOODS ARE ALREADY AVAILABLE FOR SALE IN AUSTRALIA AND NEW ZEALAND



40% (APPROXIMATELY) OF CONSUMERS WERE SUPPORTIVE OR WILLING TO PURCHASE GENETICALLY ENGINEERED PRODUCE