The ORCHARDIST®

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HORTICULTURE NEW ZEALAND

Investing in packhouse tech

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JUNE 2023

We seem to have lost our mojo

Prior to Covid-19 parts of horticulture had seen unprecedented growth in the last decade with exports doubling in value.

Barry O'Neil : HortNZ president

There seemed to be an insatiable appetite for further growth. The horticulture sector grew by over 60 percent during this period due to significant investments in new orchards, new breeding varieties, in alternative growing techniques, and in harvest and post-harvest practices.

In my industry, kiwifruit licence and property values went through the roof – we couldn't seem to go wrong. But then along came Covid-19 and the horticulture wheels started to wobble. Then with this season's awful weather causing such huge stress and pressure, in some cases the wheels have nearly fallen off.

> "We should be celebrating business success, not strangling it from succeeding

Alarmingly, the current appetite for investment in horticulture is low. Investors both large and small are holding back, and who could blame them. In Hawke's Bay and other areas affected by Cyclone Gabrielle, some growers don't even have an orchard left to invest in even if they could get funding.

We seem to have lost our mojo in this current climate of labour shortages and related issues of productivity and affordability, input costs in many situations doubling, fruit and veggie yields low and crops not storing well due to seasonal weather events, increased transport and shipping disruption and costs, and unfortunately the list just seems to go on and on!

As growers we know weather is something that changes. We are looking for ways to be more resilient to changing weather and an increasing number of extreme events. So let's park weather for once, and look at what else needs to happen for us to get our mojo back.

Unfortunately, quite a bit. The good news is that we know the reasons why, but we do need to align our efforts and energy on addressing these so they work for us, rather than against.

There was recently a launch of a plan to get us back to growth. Horticulture New Zealand was actively involved in the development of the Aotearoa Horticulture Action Plan – a positive initiative to get us back on the path to prosperity and growth. For me this plan ticks all the boxes regarding what we need to do in order to prosper again, and my thanks to the wise heads from across all horticulture and government that have brought this plan together.

The plan of course requires industry to invest, which it will do if there is confidence that government is with them and not against them. Unfortunately, recent government policies have made it really challenging for horticulture businesses to succeed. Whether that be migrant labour settings being too restrictive for seasonal workers, wage settings or worker protection programmes dictated by government being difficult for growers to meet, or whether that be additional Resource Management Act requirements being constantly introduced.

> "I really struggle to understand why the government is not showing greater leadership in working with us

There has been a lack of leadership from government to support recovery from the devastation caused by Cyclone Gabrielle. All the expert analysis, including from the heavyweight Boston Consulting Group, says the minimum required just for Hawke's Bay horticulture

alone is over $700 million if we are going to save $3.5 billion of future horticulture industry value over the next six years. If government is committed to spending $15 billion for light rail in Auckland, or $1.24 billion on contractors and consultants in the public service to tell them what officials should already know, why aren't they equally passionate about supporting the economic powerhouse of New Zealand, our primary sector businesses that keep Aotearoa ticking? I really struggle to understand why the government is not showing greater leadership in working with us, and supporting us to get back on our feet?

Investors need certainty of favourable government policy settings for the lifetime of their investment. Who would invest $20 million in horticulture without certainty of for example access to affordable migrant seasonal labour, or if resource consents for water takes are restricted to only ten years?

As an investor I am prepared to take some risk, but I don't expect government policy to be working against me. Yes I want to grow using less nitrogen and sprays, yes I want to look after the land and rivers better, yes I want a neutral carbon footprint, yes I want to support the people in my community and to be a good neighbour, but to do all these my business needs to be successful economically.

Making money in being a successful horticulture business seems to be frowned upon by some in government these days, which I find absolutely ridiculous, even pathetic. Surely no one wants us to see us become a developing country, not able to afford modern health, welfare, education, and law and order.

We should be celebrating business success, not strangling it from succeeding. As a country we need to restore a focus on economic prosperity, not just social equity and environmental stewardship. Some would say I am the wrong generation to be making this statement, being one of those "fortunate" boomers, but my goodness when I fill in a census that seems to be more worried about what gender I was born as, rather than why my business is losing money, I worry a lot about where this country is going and what my grandchildren are going to have to fix.

Despite all these headwinds I am very confident in the future of horticulture and regaining our mojo and confidence to invest, as we produce great tasting and healthy products that consumers are wanting and needing.

And to help future governments support us to grow successfully and profitably, HortNZ has led the development of a manifesto document to focus discussion leading up to the election on some of the critical actions and changes that are needed. Check it out on our website, and I welcome any feedback and suggestions.

Kia kaha.

Yes, we do have a future

The government's 2023 Budget – Support for today, building for tomorrow – *was announced late last month. Prior to Budget Day, Finance Minister Grant Robertson and other government Ministers visited the Hawke's Bay, where they announced more than $1 billion more in government funding for the recovery from Cyclone Gabrielle, on a nationwide basis.*

Nadine Tunley : HortNZ chief executive

Following this announcement, the Minister made some clear statements on Radio New Zealand's *Morning Report* on 15 May:

- "The government cannot be expected to pay every dollar of the recovery and rebuild."
- "Clearly the government cannot be expected to run and fund every industry in New Zealand."
- "We want to work out a way where we can support them [the horticulture industry] that is fiscally sustainable."
- "We acknowledge the timing issue. We will again be sitting down with the [horticulture] industry and running through the options to give them the certainty they need as they head into winter."

The horticulture industry has advocated tirelessly since 14 February when the cyclone struck. There have been multiple reports written, groups formed, and meetings held. In all this, the government has been quite clear that while the recovery is being nationally funded, it will be community led, in contrast to how the recovery from the Canterbury earthquakes in 2011 was run. However, the government has not engaged with our industry on the full range of funding options to support the recovery.

Many growers are demoralised and are facing going out of business or substantially downsizing their business.

The ORCHARDIST

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That's not a situation that Horticulture New Zealand can support or would wish on any grower.

However, faced with a stark reality, affected growers, other businesses and some communities will need to start to find ways to move on, working closely with those in their communities tasked by the government to lead the local recovery.

> **We have a bright future, but it is going to look different to the trajectory that growers were on**

Uncertainty remains as to what 'community led, government funded' looks like. The Finance Minister indicated in his Radio New Zealand interview on 15 May that he expected the situation to become clearer in early June. If you are not already well connected to what's happening on the ground, it would be a good idea to make a strong connection. We will continue to update growers based on the meetings we are having with the Ministry for Primary Industries and other government departments, as well as the meetings we are having with the various groups formed to lead the regional recoveries, particularly in the Hawke's Bay and Tairāwhiti.

As a mayor in the Hawke's Bay has said, "it's hard to be positive about the future when you are surrounded by silt". However, I would like to encourage as many growers as possible to be positive about the future.

Yes, this is an extremely challenging time, but the industry has successfully come through many challenges – for example, Psa – before.

We do have a bright future, but for several years it is going to look different to the trajectory that growers were on in the Hawke's Bay and Tairāwhiti, in particular. ●

> **The government has not engaged with our industry on the full range of funding options**

Uncertainty remains
as to what 'community led, government funded' looks like

YOUR LEVY AT WORK

INDUSTRY WIDE ISSUES FOR INDUSTRY GOOD

Recognise the importance of horticulture

Michelle Sands : HortNZ strategy and policy manager

Horticulture New Zealand continues to highlight to the government how New Zealand's productive land should be protected for the sake of the country's food supply. Recently HortNZ submitted on the Ministerial Inquiry into Land Use as well as the Review of Electricity (Hazards from Trees) Regulations. Regarding the New Zealand Emissions Trading Scheme, government policy should make it practical and affordable for growers.

Improving Market Governance of the New Zealand Emissions Trading Scheme

Horticulture New Zealand has submitted to the New Zealand government regarding the regulation of the New Zealand Units (NZU) market. HortNZ has expressed concerns that extra regulations would create an administrative burden. The submission focuses on four topics: growers' ability to continue the current practice of surrendering units to offset carbon costs directly to energy suppliers, the need for small minimum NZU bundles that are practical and affordable for growers, allowing growers to trade NZUs without the need for financial advisors, and the assertion that no additional Anti-Money Laundering and Countering Financing of Terrorism (AML/CFT) Act obligations should apply beyond the current legislation. HortNZ believes that businesses that receive free allocations and participate in the scheme have dedicated in-house knowledge, and requiring trades of units to occur via a financial advisor would create additional costs and processes. HortNZ supports the current AML/CFT legislation, which already captures activities of interest in the NZU market to deter money laundering and financing of terrorism.

Review of Electricity Hazards from Trees Regulations (2003)

There is an ongoing tension between the needs of electricity lines companies and horticultural growers. Horticultural operations do not see the need to increase the Growth Limit Zone beyond the current range of 4m when there is electricity network infrastructure within or adjacent to the operation. Increasing the Growth Limit Zone would reduce the productive capacity of the land available to horticultural operations and have an adverse economic impact. An increase in the Growth Limit Zone would create tension between the proposed regulations and the National Policy Statement for Highly Productive Land, which seeks to prioritise primary production on highly productive land. Horticultural operations are often located on highly productive land. If changes are made, costs and compensation for the loss of productive land must be considered. Horticultural trees do not reach the heights of radiata pines, and thus the regulations must make a clear distinction between plantation forestry trees and horticultural operations.

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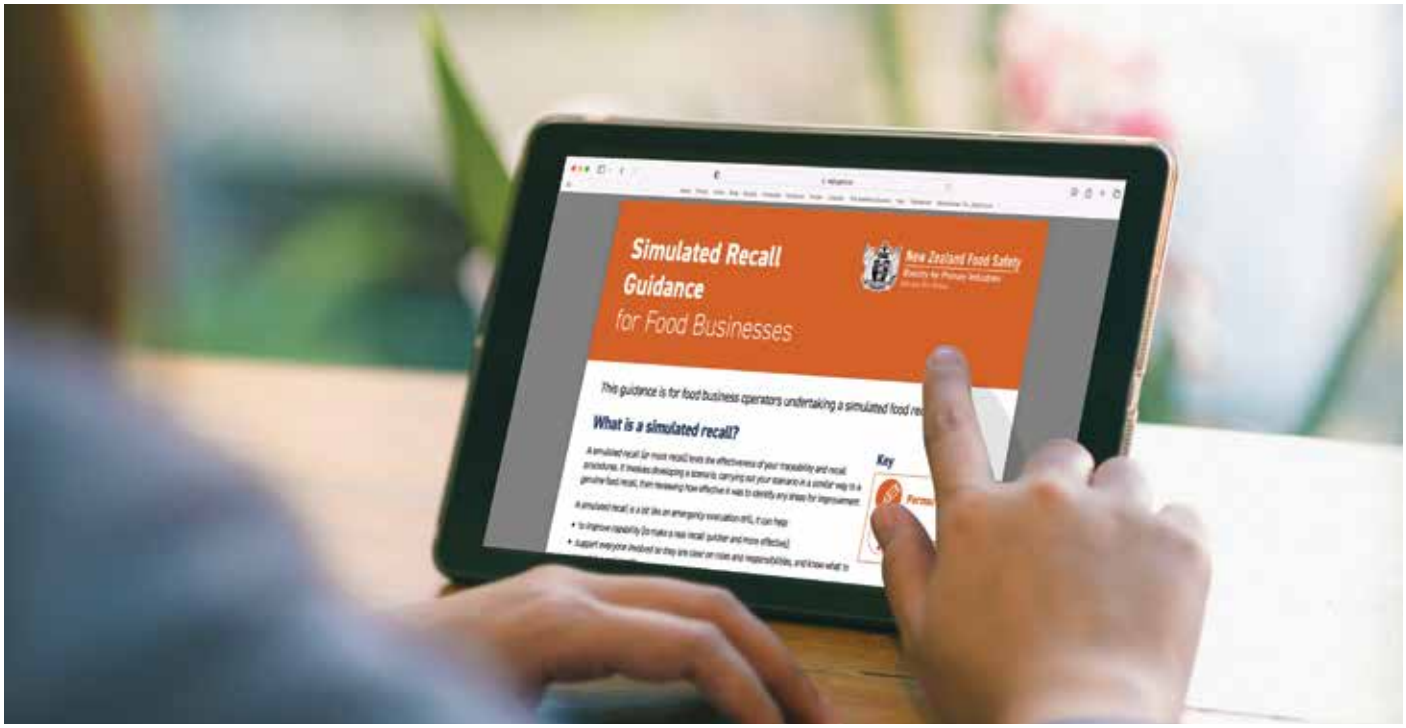
Submission requests:

Ministerial Inquiry into Land Use

Cyclone Gabrielle had a devastating impact on horticulture, destroying crops and causing damage to homes, facilities, equipment and infrastructure. The cyclone also highlighted the vulnerability of horticultural land on floodplains to the large climatic events predicted to become more frequent with climate change. Financial support is needed for immediate relief, while clear national policy direction across resource management, freshwater, and climate change is required to enable and provide for low-emissions food production on highly productive land in the long-term.

The submission recommends making an explicit policy provision that recognises the importance of food production and supply, protecting highly productive land for primary production, and supporting those who are willing to reshape the landscape to avoid erosion and sediment-related problems. Regional councils must take responsibility for catchment modelling and maintaining flood infrastructure in line with changing climatic conditions. Gisborne requires improved connectivity to other regions in the face of disaster through significant investment in road infrastructure.



From 1 July, your business may need to carry out an annual simulated recall

Recall simulation enhances food safety readiness

New regulations requiring food businesses to carry out simulated recalls at least every 12 months are good news for both consumers and industry, says New Zealand Food Safety deputy director-general Vincent Arbuckle.

Elaine Fisher

"Consumers can be confident in the knowledge that, should the need arise, food businesses will be able to act quickly and effectively to remove any unsafe or contaminated products from stores and the food chain.

"For businesses, these exercises will test the effectiveness of their traceability and recall procedures in a controlled way and – with the support and guidance of New Zealand Food Safety – provide valuable learnings and improvements," he says.

From 1 July 2023, businesses with a plan or programme under the Food Act, Wine Act, or Animal Products Act, as well as importers and exporters, will need to carry out a simulated recall. Regulations will require this at least every 12 months after a simulated recall, or a genuine recall if that recall demonstrated the traceability and recall procedures to be effective.

Melanie Dingle, technical advisor New Zealand Good Agricultural Practice (NZGAP) says a grower testing their ability to effectively carry out a recall, prepares them to prevent financial and reputational loss and can only enhance their food safety readiness to reduce risk to human health, if the need arose.

"NZGAP has long recognised the importance of traceability and recall systems. Currently NZGAP certified growers are required to have in place a recall system, test the recall system annually, determine its effectiveness and document follow-up actions – meaning there will be little or no change for NZGAP certified growers.

"Traceability from production through to distribution is a key part of the NZGAP Programmes and is a key aspect of any recall system."

Anne-Marie Arts, Technical Advisory Group, United Fresh New Zealand Incorporated, says carrying out a simulated food recall means businesses are well prepared should an issue arise with their products.

"When things go wrong, they usually happen at an inopportune time. By carrying out a simulated recall you have a plan in place to implement if you get a call that a problem has been detected."

> "When things go wrong, they usually happen at an inopportune time

This is not a new requirement under the Food Act, and is important in making sure traceability and recall processes are robust.

For most small to medium-sized businesses, the plan doesn't have to be complicated, and in designing a simulated recall, Anne-Marie suggests businesses develop a realistic scenario as the basis for the exercise.

"Base the scenario on things which might have happened in the past, such as discovering a bolt missing from the pack line after packed product has been dispatched.

"Other potential scenarios for fresh produce are non-compliant residue results or unfavourable microbial test results, which come in after product has been dispatched to market."

Anne-Marie cites the case in March this year when tahini imported from Turkey, used as an ingredient in a range of New Zealand hummus and tahini products, caused multiple recalls from shelves due to the possible presence of *Salmonella*. Fresh produce recalls can also be challenging because the distribution routes to the consumer can be complex, and the products are perishable.

Traceability is vital for any recall system to work, and "growers should be able to trace a product needing recall back to the day's batch at the very least. A 'packed on date' label on pre-packed product is an important tool, so that any product with that date can be pulled from the supply chain."

United Fresh has carried out a three-year project, *The Case for Traceability, Produce Industry Traceability Guidelines*, funded by government through the Sustainable Farming Fund (now the Sustainable Food & Fibre Futures Fund) that investigated traceability within the industry. The report can be found on the United Fresh website.

Anne-Marie says internationally tested and implemented GS1 assessment methods were used to examine the present state of traceability across the fresh produce supply chain and to then generalise the results as far as possible, across the whole sector, with guidance on how to maximise effectiveness. Strawberries and lettuce were the crops used in the pilots. ●

WHAT YOU NEED TO KNOW ABOUT SIMULATED RECALLS

Detailed information about the legal requirements for regular simulated food recall and step-by-step guides on how to develop and work through scenarios can be found on the New Zealand Food Safety website.

A simulated or mock recall tests the effectiveness of your traceability and recall procedures. It involves developing a scenario, carrying out your scenario in a similar way to a genuine food recall, then reviewing how effective it was to identify any areas for improvement.

A simulated recall is a bit like an emergency evacuation drill, it can help:

- to improve capability (to make a real recall quicker and more effective)
- support everyone involved so they are clear on roles and responsibilities, and know what to expect in a real recall
- identify any gaps or areas for improvement in your procedures
- demonstrate the importance of good traceability record-keeping to staff.

A successful simulated recall scenario should result in either:

- a consumer-level simulated recall, which involves simulating the process for removing affected product from the supply chain and simulating communication to consumers, or
- a trade-level simulated recall, which involves simulating the process for removing affected product from the food supply chain.

For more information visit:
https://www.mpi.govt.nz/food-business/food-recalls/doing-food-recall/

YOUR INDUSTRY

ACROSS THE SECTOR — ACROSS THE COUNTRY

Stephen and Sally Darling of Ettrick

Otago apple growers hoping for a return to profitability

Export apple growers in Central Otago are anticipating a much better season than last year in an increasingly difficult market.

Aimee Wilson

Remarkable Orchards owner Sid Birtles says last season's returns were "catastrophic" – down 25 percent on the previous year – but this year he is more positive.

His Roxburgh East orchard is a 50:50 split of stonefruit and pipfruit, and in total there is 70ha in production.

He employs 19 full-time staff and 25 Vanuatuans through the Recognised Seasonal Employer (RSE) scheme, which he feels most fortunate about.

But compliance costs, accreditation and other regulations cost the orchard thousands every year.

Sid believes they are still in the hangover from Covid-19, "where there's pressure on everyone to make a dollar."

Out of the six varieties he grows, 50 percent are Royal Gala, because customers still want the reddest fruit.

Twenty or thirty years ago, Red Delicious was one of the favourites, and Remarkable Orchards still grow a small amount of this variety.

"It's all about the colour. Royal Gala, the Fuji varieties … we get a premium for the colour," he says.

Australia remains the hardest country to get into, so most of his fruit heads off to Asia and Europe.

The quality of apples this season is very good, "the season has been favourable for fruit development," he says, and Central Otago has enjoyed a long late summer.

Further south in Ettrick, Stephen and Sally Darling at Darlings Fruit have been a part of the Central Otago fruitgrowing community for many years, along with Stephen's brothers – with orchards in Ettrick, Roxburgh and Cromwell.

The packhouse in operation on the last day of picking for the 2023 season

The couple have continued to expand the orchard, fruit packing and apple juicing operation, originally developed by Bill and Joyce Darling in 1963, and introduced many new varieties to keep up with world markets.

Stephen has been in this game long enough to know there are many risks to pipfruit growing. The length of time from picking, packing and then shipping the produce to offshore markets as far away as the United Kingdom, means final settlement can be up to six months later.

"One of the issues of apple growing is that there is no clear end to one season and the beginning of the next. You are pruning apples for next season while still packing and shipping from last season.

"Because of the uncertainty in most world markets, the time to ship to market is longer, as a consequence of Covid-19, and it's not improving yet."

The 25 Vanuatuans celebrate the last day on the job for Sid Birtles (pictured at rear), of Remarkable Orchards in Roxburgh East

He says markets are struggling to improve, wage levels have increased 38 percent in the last five years, while fruit value has not improved much.

"Five years ago we had a margin, but costs are now higher than ever."

Stephen says even if you are growing a higher value apple, some overseas customers are not always prepared to pay the premium price.

"And then we're competing with South Africa and Chile markets," he says, who are producing them cheaper and supplying those same customers for significantly lower production costs.

> **"We need to reposition New Zealand's offering and have a cost structure that returns a profit margin**

"So now we're becoming uncompetitive in the market," he says.

The pipfruit industry has faced tough times before, and some Central Otago growers have already pulled out their apple trees and just concentrate on stonefruit instead.

"But we are becoming efficient producers," and growing new varieties is one of those ways, Stephen says.

Darlings Fruit grows New Zealand Rose, New Zealand Queen, Dazzle™, Granny Smith, Cox's Orange, Royal Gala, Honeycrisp, Fuji, Koru® and Kanzi®.

Older varieties such as Braeburn are now not profitable to export, while the heritage fruit is starting to make a comeback domestically.

Darlings Fruit is reliant on the export market for 90 percent of its sales, and has 28ha planted across its two orchards

in the Teviot Valley. There is another 18ha of apricots grown for export as well.

Stephen says the outlook for apples is challenging, and there are not many of the older growers left in Central Otago.

> **Now we're becoming uncompetitive in the market**

The number of growers has reduced over the past ten years due to a lack of succession, and the increased pressures and lack of reward has "resulted in people losing heart," in recent years, he says.

Panmure Orchards in Earnscleugh is an example of a grower who pulled out all of their pipfruit trees back in 2011 to concentrate on stonefruit instead.

A prominent Cromwell fruit grower stopped exporting apples this season, and another orchardist in Ettrick has decided to get out of fruit growing altogether.

"The lack of labour has been the hardest stress, and not being able to do it well, but we can't blame it all on Covid," Stephen says.

He believes if horticulture is to go back to a growth stage, growers need to regain confidence in profitability.

Growth in his own business has been as a result of the investment he made five years ago, but it takes that long to see results.

There is a wait time for new varieties to be ordered from the nursery, and then it takes a further few years for them to grow to full potential.

"We need to reposition New Zealand's offering and have a cost structure that returns a profit margin again. People have been treading water or going backwards for the last few seasons."

Future labour supply is critical to becoming a high value producer, he adds, but there are also increased costs to that as well, with the RSE scheme currently under review.

Stephen employs 33 RSE workers and they are crucial to his operation, but it is possible that an "unintended consequence" of the new review will be that staffing costs will increase and become unaffordable.

Central Otago only makes up five percent of New Zealand's pipfruit export market, but only time will tell how much of this already small minority will continue in the future.

Soil samples provide hope

Post-cyclone soil samples provide hope

Soil testing of sediment deposited by Cyclone Gabrielle hasn't uncovered any 'smoking guns' in the form of any contamination so far, says LandWISE manager Dan Bloomer.

Glenys Christian
Photographs : Paul Taylor

With colleague Alex Dickson and others he's involved in sampling flood affected sites and collecting nutrient and contamination samples in Hawke's Bay, Gisborne and Northland. The aim is to provide information for growers now, so sampling seeks representative sites to help both those landowners and their neighbours.

The sampling is supported by the Ministry for Primary Industries (MPI) and Vegetables New Zealand and aims to collect 100 nutrient samples in Hawke's Bay, 50 in Gisborne and 20 in Northland.

After the cyclone, LandWISE wanted to help its members by collating good information on how to manage their existing or 'new' soils. It reached out to the science community including Plant & Food Research, AgResearch, Massey University and independent horticultural consultants. Historical information was gathered from a big Gisborne flood of 1948 and a 2004 storm event that impacted the southern North Island.

SAMPLE LOCATIONS:

Hawke's Bay: 100
Gisborne:50
Northland: 20

"We got a huge response and pulled the information together to give people a way to plan immediate responses," Bloomer says. "The way people nationally responded with generosity was a heart-warming experience at such a bleak time. The Crown Research Institutes (CRIs),

universities and consultants responded immediately, and a treasure trove of information was uncovered."

Information was loaded on the LandWISE website and presented at grower meetings organised by the vegetable and apple sectors.

A soil management decision tree created following the 2004 storm provided the template for guidance that LandWISE gave orchardists and growers. What to do is site-specific and depends on land use, be it for fruit, vegetables or arable crops. "It's a case of digging the sediment out or living with it."

With shallower sediment deposits it is possible to cultivate it into the underlying soil.

"But anything over 20 centimetres is difficult to mix in, and the very deep sediments will have to be developed into a new soil."

> **It's a case of digging the sediment out or living with it**

In some areas such as Dartmoor and the Esk Valley, there had been a metre of sediment deposited, compounded by woody debris and vehicles dumped. Fruit growers have a high-value crop and a very long time and high cost to re-establish, so many are trying to dig the sediment out and take it away. It may be different for cropping land where the huge cost of sediment removal is harder to justify.

Regardless of the situation, getting something growing as soon as possible is essential to help remove excess water and start rebuilding soil, Bloomer says. Sediment deposited after flooding was unstructured, with varying textures from coarse to fine. It's typically sandier where water moved quicker, and heavier where there was ponding.

"Growers should plan on sowing their drier areas first while there is moisture for the new plants. The medium textures might be sown later once you can get on it. On the finer, really wet, sloppy sediment where water takes a very long time to fully drain away, you can't walk on it or get machinery on it. But you need to get plants established before it dries out because it bakes into bricks or curls up like roofing tiles and you won't get anything growing. So your option is to fly seed and nutrients on from above."

The seed will germinate and as it grows, help draw out the excess moisture, and getting roots into the soil that will encourage worms to start creating new channels for air and drainage.

The raw sediment is low in organic matter, which together with soil-life is necessary to build structure. Compost is expensive to buy and truck in, so LandWISE recommended growers grow as much of their own biomass as possible. "You want to grow as much as you can as fast as you can. Get the biological systems running."

> **You want to grow as much as you can as fast as you can**

Work from 2004 was based on re-establishing pasture. Studies then showed that the sediment was likely to be low in nitrogen and phosphate, so the default position was to sow a ryegrass-clover mix and use diammonium phosphate (DAP) 'to kick it off'. Now soil test results are coming in, the Hawke's Bay group is finding some of the heavier sediment contains more nutrient that expected, even if lower than desired. It suggests there may be topsoil from upstream properties mixed with the river sediment. The Hawke's Bay advice was to drill whatever grass species or winter cereals were available, ideally including a legume, as soon as possible while there was still soil warmth and daylight. In some cases, growers were able to carry on with planned rotations, especially in mixed systems with longer crop rotation cycles.

As plans developed, the benefit of following measured sites over time was apparent. Where the 2004 flooding affected most pastoral farms, Cyclone Gabrielle hit high value horticulture in three key regions. The Heretaunga Plains and Poverty Bay flats have some of the best growing soils anywhere, and different management responses are possible, Bloomer says.

"We were approached by Massey University and AgResearch asking if they could help survey sites. So together with Alec Mackay and colleagues at AgResearch, Alan Palmer from Massey University's Farmed Landscapes

Near Dartmoor, flood waters deposited up to more than a metre of sediment, compounded by woody debris

Research Centre (FLRC) group, and Stephen Trolove from Plant & Food Research, LandWISE has been collecting a lot of additional information at each site.

Alex Dickson says they've taken nutrient samples, and in target sites contamination samples too.

"We have also collected a lot of extra information about the sediment depth, texture and moisture content. We've looked at the soil underneath. We've done visual soil assessments and counted earthworms and recorded any actions the farmers have taken or plan."

The aim of this extra unfunded work is to establish baselines, so that if a long-term study is possible, there is solid information to work from.

In Gisborne, a team from the Gisborne District Council is spearheading data collection from properties affected with sediment and flooding. And another group is doing the same in Northland, looking at the effect of long-term inundation on kumara paddocks. They're using the same data collection protocols as in Hawke's Bay, so all can be used to generate understanding.

One thing that has surprised everyone is a very thin layer under the sediment that has sealed the underlying soil. Once this layer was dug through, soil life was still quite good underneath and earthworms were found.

"A couple of months in, we are starting to see early responses to the grower's management," says Alex. "Growers who used helicopters to spread grass seed and fertiliser have been pleased by the results, watching plant roots develop, creating holes as well as structure in the soil and helping to boost earthworm numbers. Roots are what's going to get things started, and so the bigger and deeper the better.

"We worked on larger farms at first, but we have been trying to get around the little ones. We know they need help too and they don't have the technical backup."

The individual nutrient sampling along with density and quality assessments takes less than an hour.

"That has in most cases been after we have talked to farmers to find out what's going on for them."

"It starts with a conversation about the flood, the impact it had on the farm and the actions they took in the days following the flood," Dan says.

"Quite often growers have an idea of what they want to do but seem to like running their plans by someone else. They've been through a traumatic situation they've never experienced. They want someone to talk to, kick ideas around with, and resolve in their own head what's next."

> **"We can leave even better guidance for growers adversely impacted by future weather events**

The discussions were very helpful in identifying where best to collect samples to provide the growers with useful information going forward.

The hope is that properties being sampled through the study will be followed over the next three to five years with the aim of finding out the best approach to remediating soils. That way the 2004 information can be expanded to cover a wide range of land use types, and we can leave even better guidance for growers adversely impacted by future weather events. ●

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FEATURE ARTICLE

Covered kiwifruit and avocado

Covered crops key to profitability

About an hour's drive southwest of Auckland city sit two orchards owned by David French and his partner Jocelyn Patterson. HELENA O'NEILL sat down with David to talk all things avocado and kiwifruit.

Photographs : Helena O'Neill

David and Jocelyn own an avocado orchard and a kiwifruit orchard at Glenbrook Beach, near the Manukau Harbour. They manage the orchards themselves while also running a small orchard labour contracting team and a Hydralada hire business.

"This was an orchard we managed initially, that later went on the market. It just fell into place … it's turned out to be a good decision as it's a bit of a microclimate here and the kiwifruit is almost 100 percent frost-free," David says.

In 2004, David and Jocelyn bought a 12-ha block of land down the road, planting avocado trees there the following year.

"It was a bare block of land used for commercial growing – potatoes, cabbages and things. It's approximately five canopy hectares and some grazing land."

Having the avocado block such a short drive away makes it feel like one farm, he says. The 7.9-ha kiwifruit orchard is more profitable, but David hopes the avocado block will help balance out any future bad kiwifruit years.

"I think the avocado industry has a few bumpy years ahead. The avocado orchard pays its way, but I would like the avocados to be able to carry the kiwifruit orchard in a bad year. It's probably optimistic, but that's what I'd like to see happen."

To that end, David has been experimenting with growing avocado trees along wires.

"I installed the wires, and then I planted the trees. I think that's a crucial point, as some growers plant the trees and then add wires. I'm quite happy with how it's looking, but the trees are only two years old and it doesn't mean it will be a successful trial."

"I think the future of avocado growing is certainly not growing tall trees. Big trees are on the way out. We must get better quality, better production, and more efficient harvesting."

> "Picking your crop is a bit like getting your report at the end of the year

Part of improving production is covering orchards, both for kiwifruit and avocados, he says.

"I started covering the kiwifruit about ten years ago, covering the other half about five years ago. Then three years ago I covered part of the avocados because it worked well with the kiwifruit. Roughly half of the avocado orchard is covered now. It makes sense, especially if you're planting on bare land, by the time you plant shelterbelts and get them growing it's several years before they're providing beneficial protection. The covers reduce the risk of hail and wind damage, while also increasing your production area with less shelter trees needed."

Another benefit is the reduced water needs and more even growth amongst the trees due to the lower demand on water.

David says that when he and his wider family bought their first orchard it was all green kiwifruit, and Zespri was just starting to promote Hort16A, or gold kiwifruit.

During the 1990s, Zespri began cultivating a new variety of kiwifruit, developed through a natural breeding programme and run in partnership with HortResearch (now Plant & Food Research). This new yellow-fleshed gold variety dubbed Hort16A was less furry than the green variety, with a sweeter, more tropical taste. Kiwi growers worked hard to learn to grow this new crop of golden kiwifruit. By the turn of the century, growers began exporting Zespri's gold kiwifruit all around the world.

"I still remember clearly, I went to a field day out at Awhitu which included a talk from the late Mike Muller. I remember him saying that it was the greatest opportunity you guys will get as growers to try something new. He gave us some fruit to take home, my kids were very young, and they sat at the table and ate one after the other. I thought if the kids like eating them and they are healthy, then mothers will be happy to buy them so I might give this crop a go."

Each crop faces different pest challenges, he says, but both orchards benefit from consistent monitoring and a good spraying schedule.

"About four years ago the kiwifruit had a big issue with scale, mainly due to my missing a couple of crucial sprays. The following season I did everything I could to get rid of it, and I haven't had an issue since.

"With avocados, the worst pest that can get away on you is probably the six-spotted mite because it can quickly get out of hand. You have to be on to it with monitoring and spraying."

In April, Auckland hosted the World Avocado Congress. This year's conference was the fourth David has attended, although this time around he was a host on one of the field days. He says he enjoyed hosting and got some great feedback from the Mexican delegates.

"At the end of the day, it was a good excuse to tidy up the orchard, and I have no problem talking about the orchard and what we're doing. I have been to previous conferences and for me the highlight was always the field trips. So, I thought I would quite like to be the highlight for someone else."

David says he hopes to share his experience as a grower of both avocados and kiwifruit with other orchardists.

"A lot of orchard jobs can be quite repetitive, but the end result is exciting – the harvest. Picking your crop is a bit like getting your report at the end of the year, you're always trying to be a little bit better. I like being outdoors and I feel like I'm achieving something useful." ●

The Tutti™ apple was chosen to reflect the fun, fresh feeling of the eating experience, as well as the core concept of the Hot Climate Partnership

Tutti™ apple tipped to open up new growing regions

A 20-year collaboration has finally borne fruit with the release of a hot new apple variety. By Kristine Walsh.

If testing goes well, trees for a distinctive new apple variety should be available to New Zealand growers in two to three years.

Tutti™ is the first variety picked for commercialisation from a suite of products being developed by the Hot Climate Partnership.

Its launch at February's Berlin Fruit Logistica trade show came after some 20 years of breeding, scientific development and more recently, growing trials under its variety name of HOT84A1.

The Hot Climate Partnership (HCP) is a collaboration between Plant & Food Research (PFR) in New Zealand, Spain's Institute of Agrifood Research and Technology (IRTA), the Catalonian fruit producers association FruitFutur, and T & G Global's genetics and variety management business in New Zealand, VentureFruit™.

It was established in 2002 in response to challenges experienced by Spanish growers, with the idea that learnings could be applied all over the world.

That will be music to the ears of many New Zealand growers who are facing warming conditions that cause problems from low red colouring and sunburn to soft fruit texture and a higher incidence of storage disorders. Warming conditions also mean fewer of the 'chill nights' that help apples set great fruit.

At the launch of its first apple, VentureFruit™ general manager Morgan Rogers said Tutti™ – whose parents include the New Zealand-bred Scilate Envy™ and Scired Pacific Queen™ – was a stand-out fruit that met both grower and consumer needs.

"With the world's climate changing, it's vital innovative new varieties are developed to withstand high temperatures and enable growers across all major continents to adapt and have sustainable businesses, while providing consumers with great tasting apples," he said.

"Tutti™ has been specifically bred to grow in hot conditions and produce a deliciously light crisp apple, with bright red skin and a rounded sweet fresh flavour. It also grows successfully in different conditions, having been tested throughout Europe, including Italy, France, Germany, Switzerland and the United Kingdom."

Here in New Zealand, VentureFruit™ business development manager Kate James says things are off to a good start with Waimea Nurseries taking the role of Master Territory Licensee for Hot Climate Varieties around the country.

The benefit for New Zealand growers is that Tutti™ meets their requirements in both challenging and temperate climates, has high-production pack-out (fewer defects than traditional varieties when grown in hot climates), and offers a great eating experience for consumers, Kate says.

"Growers around New Zealand have already indicated interest and we've identified regions like Gisborne, Nelson, Canterbury and Otago as being of particular interest.

"That will offer testing opportunities across different conditions – some that might not suit traditional varieties of apples – so we can offer good data to growers all over the country."

They will already have access to some data … Tutti™ has been evaluated for up to five years at IRTA fields in Mollerussa (in Lleida) and La Tallada del Empordà (in Girona), where summer temperatures can reach more than 40°C.

And a couple of years down the track they may be able to trial even newer varieties of apples and pears from the HCP, for which material has already come out of quarantine in New Zealand.

"The HCP is working on a huge variety of apple and pear products to suit different growing conditions, marketing opportunities and commercial models," says Kate.

"It is laser-focused on providing top-quality sustainable new varieties to growers and consumers around the world."

VentureFruit™ business development manager Kate James says Tutti's™ translation from Italian means 'everyone' or 'all together'

Assuming the testing of Tutti™ goes well, commercial quantities of trees should be available by 2025–26 and Kate says Kiwi growers will contribute to global plantings of at least 600 hectares, with 320 hectares already signed up in Spain and the United Kingdom.

"Because Tutti™ is bred to be tolerant of warmer growing environments, the benefits to growers in hot regions like Spain are obvious," she says.

"But there's a big upside for New Zealand growers as well. They also grow incredibly well in more traditional apple growing environments, meaning they will deliver high yields and a great eating experience now, while being resilient to future changes in conditions.

"And growers also get the support and brand recognition that comes with a licensed variety, which also offers them surety going forward."

For Kate, the collaboration between New Zealand's PFR and IRTA in Spain, is an exciting one.

"We all know PFR is at the top of its game in developing apples, and IRTA brings similar knowledge from its own territory," she says.

"Basically we've got a lot of very smart people doing very smart things, and that's going to benefit growers on a global scale." ●

COLLABORATION THE KEY TO CLIMATE PARTNERSHIP'S SUCCESS

The collaborative Hot Climate Partnership is a unique combination of science and commercial expertise that will provide options for growers as they adapt to the effects of climate change, says Plant & Food Research chief executive David Hughes.

And while the partnership has a range of products in the pipeline, apples and pears are the initial focus.

"Growers need plants that perform well and are resilient in challenging weather, consistently delivering good yields of high-quality fruit, while consumers want fruit that looks and tastes good," he says.

"By bringing together the science of Plant & Food Research (PFR) and Spain's Institute of Agrifood Research and Technology (IRTA), combined with the commercial and marketing expertise of VentureFruit™ and FruitFutur, the varieties being developed will meet the needs of the entire apple and pear supply chains."

The Hot Climate Partnership (HCP) – formerly the Hot Climate Programme – was initiated in 2002 in response to the challenges experienced by Spanish growers.

On the near horizon it has an extensive pipeline of more apple and pear varieties, 13 of them in their final years of evaluation and testing.

As a result, VentureFruit™ expects that, over the next seven years, it will be able to commercialise an additional five new varieties, all specifically bred to be tolerant of hot climates.

The new varieties offer growers long-term sustainable solutions against rising temperatures and poor fruit quality, says VentureFruit™ general manager Morgan Rogers.

"This will enable them to produce high-quality pipfruit into the future, and identify potential new growing regions for apples and pears," he says.

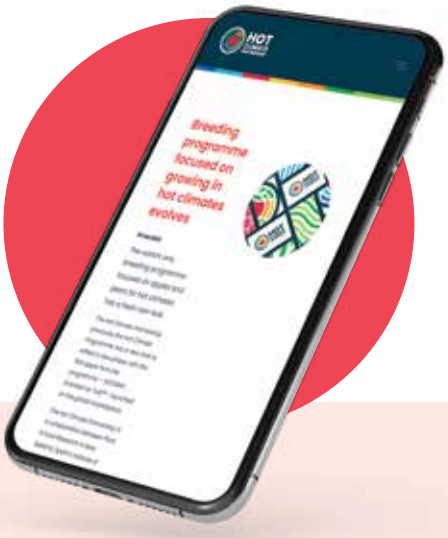
"Grower benefits extend to improved pack-outs of marketable fruit and a reduction in waste and harvest costs. This means continuity of supply, consistent quality and great tasting fruit to meet demand."

For IRTA chief executive Josep Usall, it's all about working together for a great result.

> "On the near horizon it has an extensive pipeline of more apple and pear varieties, 13 of them in their final years of evaluation and testing

"HCP is the first breeding programme focused on climate, and its success is grounded in the strong and long-lasting collaboration between two leading research institutions and a group of committed growers," he says.

"We first identified the need for new varieties adapted to warm climates in Catalonia, and it's exciting to be able to make these varieties available globally."



Expanding knowledge supports grower practices

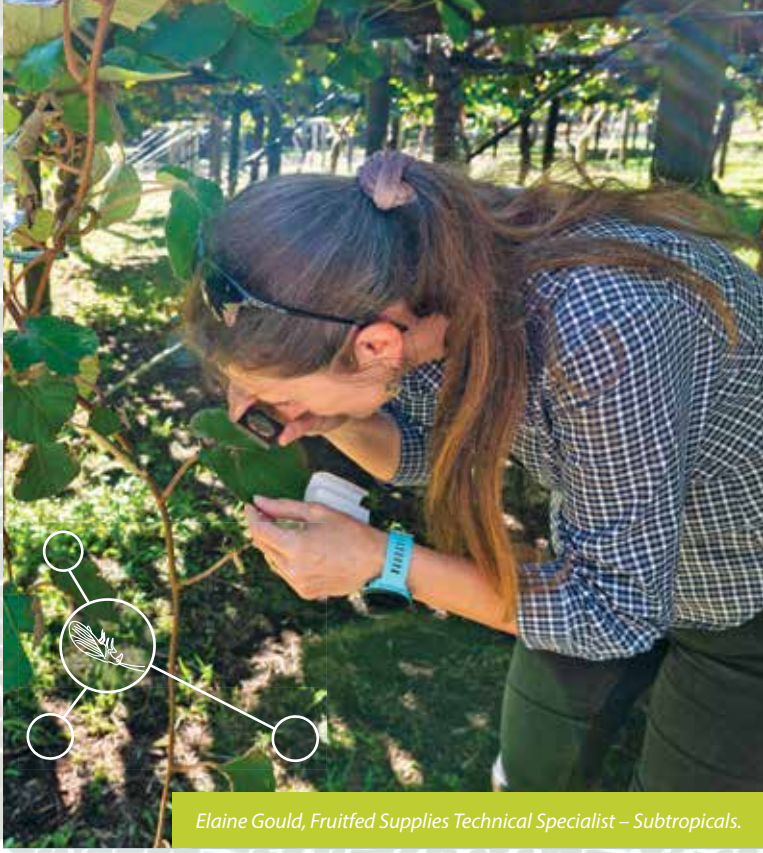
Fruitfed Supplies' Technical Horticultural Representatives (THRs) work alongside growers in formulating and implementing crop protection programmes. The know-how possessed by THRs comes in part from the learnings passed on by the Fruitfed Supplies Technical Team which encompasses research and development (R&D).

Last year, 59 R&D trials were conducted by the team on a range of products including plant growth regulators, biostimulants, biopesticides and agrichemicals across all crop sectors. Taking place over several seasons, the trials allow a large breadth of research to be collected, providing growers with practical, in-field data. The trial data is often used to form a part of the technical information required when applying to the New Zealand EPA and ACVM for new product registrations or label extensions.

In her role within the Technical Extension Team, Elaine Gould, Technical Specialist – Subtropicals, shares information about newly registered products with the wider Fruitfed Supplies team and growers as she explains.

"Education forms an important part of my role. I impart knowledge from the wider industry, new product releases and R&D trials to the Fruitfed Supplies team through a variety of channels, ensuring all THRs and store teams are kept up to date. Extending the learnings from R&D trials allows us to provide our teams with clear messaging they can pass onto customers."

Elaine believes the findings from R&D trials provides the Fruitfed Supplies team with valuable information. "When a product comes to market, we already have an in-depth understanding of how it works in local conditions, the most appropriate application timings, and the finer points that can only be known from testing the product in the field."



Elaine Gould, Fruitfed Supplies Technical Specialist – Subtropicals.

"Armed with this knowledge, our THRs understand how the product fits within a spray programme and can therefore provide growers with the most up-to-date information on the best products available."

Involved in horticulture at an industry level, Elaine formed a kiwifruit extension group. "Myself, and others from post-harvest facilities, Zespri, and Kiwifruit Vine Health, meet regularly to ensure the technical advice we are delivering to growers is consistent." She also attends industry meetings, keeping abreast of any developments. From there Elaine passes relevant information onto THRs so they can update crop protection programmes as required, including adjustments to application rates or pre-harvest spray intervals.

With the Fruitfed Supplies Technical Extension Team covering the major horticultural crops, each specialist is aware of the current issues within their crop sector and the available products. This allows them to provide THRs with training on how best to manage pests and diseases along with the most effective way of delivering nutrients to crops.

A tornado blasted through Thawley Orchard near Mapua on Easter Monday and ripped trees apart

Horticulture risk increasingly hard to insure

Tasman's Easter Monday tornado highlighted the limits of insuring a crop, and the country's largest rural insurer says the reality is it would be unaffordable for its clients to cover all risks.

Anne Hardie

FMG's chief insurance officer Alex Johnston says insurance cover cannot cover every eventuality and prudent decisions have to be made to ensure it can continue to operate as an insurer for years to come.

It follows the tornado's destruction of trees laden with fruit that were insured for hail, fire and flood, but not high winds.

FMG is the country's main underwriter of crop insurance and Alex says it is quite open about wind being omitted from its Orchard Fruit policy as it tries to strike a balance between affordability and coverage.

"It would not be affordable for clients to cover all risks – the more risks we include in the policy coverage, the more expensive the premiums would be."

She says insurance is only one component of risk management and cannot cover all eventualities.

> **"The nature of crop insurance means FMG can't provide this cover without the support of specialist reinsurers**

Because of that, clients need to have a robust risk mitigation plan in place, such as netting for hail and various frost protection measures.

"Clients invest heavily in these areas and make business decisions based on their risk tolerance and capacity.

Our Orchard Fruit policy would largely be seen as contributory to the client's wider risk management planning."

Increasing severe weather events have created more risks for both growers and insurance companies. Already this year there have been two events the Insurance Council of New Zealand (ICNZ) has labelled unprecedented climate-related disasters, the Auckland Anniversary weekend floods and Cyclone Gabrielle, with the latter having a massive impact on horticulture.

"There is no getting away from the fact that in the current inflationary environment, alongside compounding weather events, we too are facing increased claims costs." A range of events have led to significant changes in the crop insurance market in recent years, she explains. It includes the withdrawal of a specialist crop insurer, large hail losses in Motueka in December 2020, plus continuing losses offshore from North American and Australian wildfires which all impact on a small number of crop reinsurers.

She says FMG has continued to provide cover in the horticulture market when other providers have pulled out, by substantially increasing the risk retained for the product. But it has become harder to maintain,

FMG chief insurance officer Alex Johnston says insurance is one component of risk management

with reduced appetite from reinsurers resulting in increased cost and further cover restrictions.

"The nature of crop insurance means FMG can't provide this cover without the support of specialist reinsurers."

Alex says crop insurance is a niche market that fluctuates from year to year, based on the economy and whether growers can afford the cover. A tough season and large crop losses is one of the triggers prompting more growers to take on cover.

An ICNZ spokesperson says there are limits on how much can be insured for orchard cover because of restrictions from reinsurers. In New Zealand, there is no cover for storm or wind, and if it was available it would have to be affordable to both insurers and orchardists.

FEATURE ARTICLE

Without government support for clean-up, a lot of silt is still sitting on farms and orchards

Urgency now required in cyclone recovery, growers say

Several months after Cyclone Gabrielle tore a destructive path through Hawke's Bay, orchardists and vegetable growers are frustrated by the lack of leadership. While the numbers speak volumes, BONNIE FLAWS finds that it's growers' personal stories that paint the big picture.

Photographs : Paul Taylor

"If we don't get this right, and fast, the impacts are going to be long-lasting," says Lesley Wilson.

The implication is that the Hawke's Bay's economy and social fabric will come under pressure if timely and well considered decisions aren't made by those at the top, to support growers in the aftermath of flood devastation.

urgent action required

An orchardist in Dartmoor, Lesley and her family have farmed there for decades. But one of the family homes and orchards was directly in the path of one of the first stopbank breaches.

The damage was horrendous, and she and her family are now working to get hundreds of thousands of tonnes of woody debris and silt – mountains that literally dwarf people – off their property before any remedial work can begin.

In total, two homes and three properties were affected. They have now picked what remained of the apple crop – about 30 percent – and have managed to remove debris from trees so that they will be able to grow a crop next year.

Trucks sent by the regional council are arriving regularly to remove woody debris, but the process is slow going, she says.

Insurance payouts have been made for flood damaged vehicles and house contents, but like so many things, the claim on her damaged houses won't be accepted until the government makes clear which homes will be allowed to rebuild and which ones won't. And while she has no desire to rebuild the house that took the brunt of the water – the geography is too dangerous – the home she lived in with her husband is repairable.

> "We just need some quick decision making so we know what we are doing

While the government has announced the criteria it will use to guide these decisions, they have not yet been made. And the more difficult cases such as Lesley's are being left until last.

"There are no timelines on that. So I guess one of the major things is that we really need some urgency around this. We've got people up the valley living in caravans and tents, house buses. These are people wanting to be back on their farms.

"I understand that they are going to make the easy decisions first, but they should have been made already. We're going into winter and people with kiddies are living in containers, there are retired people moving a caravan and tent onto their property today. We just need some quick decision making so we know what we are doing."

$3.8 billion
Direct and indirect losses in Hawke's Bay between now and 2030

$1 million per day
Losses of Hawke's Bay horticulture industry

$1.5 billion
Estimated cost of cleanup for Hawke's Bay growers

$70 million
Central government funding so far for silt and debris cleanup in Hawke's Bay and Tairāwhiti

$1.2 billion
Hawke's Bay horticulture's contribution to the New Zealand economy

6700
Permanent Hawke's Bay workers employed in horticulture

Source: Boston Consulting Group report

$3.8 billion in direct and indirect losses between now and 2030 unless immediate investment is made

Winter is coming

Talking to growers, I've heard this refrain a lot. And by the time this story hits print, winter will well and truly have arrived.

Hawke's Bay Fruitgrowers' Association president Brydon Nesbit notes that the bay has had exceptionally lovely weather throughout April and early May, which has helped dry everything out, but a lot of silt is still sitting on farms and orchards. Once the real winter weather hits, the silts could alternate between dust and mud – neither are pleasant prospects.

> **"Once the real winter weather hits, the silts could alternate between dust and mud – neither are pleasant prospects**

Central government funding for silt and debris cleanup has only recently been announced – for growers in Hawke's Bay and Tairāwhiti there's $70 million.

"It's a bit difficult – on the one hand we are grateful and we always appreciate funding and it is great they're giving us a hand, but it's still nowhere near enough.

It's actually less than ten percent of what we've asked for, but we've only asked for half of the $1.5 billion that Horticulture New Zealand estimates is needed. Growers are asking for $750 million and we've been given $70 million," Brydon says.

The funding is on a cost-share basis and capped at $210,000 per commercial property.

But Brydon says even with this package, there will still be growers who can't afford to pay their half, and for many growers, cleanup costs run into the millions. Others are underinsured. And every grower is in a unique situation because the volume and types of damage vary widely depending on what was upstream.

"It depends how big their blocks are, what the silt is like, what their balance sheet is like. Remembering that we've had two hard years and there are many growers out there that were in debt anyway, and had to borrow to get the crop to where it was.

"They were hoping for the harvest to pay back the debt for the next coming season, and now they will be wiped out. So the banks aren't chomping at the bit to give us more money. They are waiting for the government to move."

Central Hawke's Bay vegetable grower Hugh Ritchie says complaints about how long things are taking to get done are a fair grievance. Things haven't been moving as fast as initially promised, and it is putting mental stress on people far more than is needed.

"I was there when they made promises about getting things done, and it just hasn't happened."

Hugh has just finished shifting over 10,000 tonnes of sand back into holes that the velocity of the flood water carved out, and flooded farm cottages are waiting for assessors to take a look.

"We lost all of our carrots, beans, most of our squash, and all of our sweet corn was wiped out. But we are very lucky to have a mixed business and our beef and lamb went well the year before, and we still have a maize crop. Financially, we are probably in quite a lot stronger position than many people, I suspect."

He reckons he's lost about ten kilometres of fencing, and just shy of $1 million in gross income, and has spent about $300,000 shifting soil.

> **Lost about ten kilometres of fencing, and just shy of $1 million in gross income**

"We've probably lost more soil than we've gained, including a lot of valuable top soil, but we have grass back in and it's looking okay," he says.

Lambs will come back onto the paddocks of the crops they've lost, and so he thinks he'll be in a position to sow new crops fairly quickly.

He had been particularly lucky – and thankful – that friends and volunteers had come to work on the farm cleanup. He knows of others whose mental health isn't as good because they have a bleaker short term future, with more difficult situations.

"You have to be mindful of that."

> **We always appreciate funding, and it is great they're giving us a hand, but it's still nowhere near enough** – Brydon Nesbit

> **We just need some quick decision making so we know what we are doing** – Lesley Wilson

> **They made promises about getting things done and it just hasn't happened** – Hugh Ritchie

> **There are lots of angles to argue that some responsibility rests with the Regional Council** – Paul Paynter

Looking ahead

After three months of initial shock and stock-taking, growers are now able to see what needs to be done and are thinking about medium-to-longer term sector recovery.

After the cleanup is finally done, blocks will need to be replanted, posted, wired and irrigated, all of which requires more money, in an environment where banks and insurers are feeling nervous. Everyone is looking to the government to lead the way, growers say.

The region's horticultural sector is at an important crossroads, and decisions made now will make it or break it, according to analysts.

A Boston Consulting Group report commissioned by Rockit says there is potential for Hawke's Bay to suffer about $3.8 billion in direct and indirect losses between now and 2030 unless immediate investment is made. A staged recovery plan has been proposed, with the aim of creating a higher value and more resilient and innovative sector by the end of the decade.

Yummy Fruit grower Paul Paynter, who suffered major damage to his operations, reckons the sector could shrink by a third in a worst-case scenario. He can even see a potential scenario in which Esk Valley still looks the same in ten years – the levels of investment needed to replant it in grapes and orchards could be too high.

"We're all broke. Our bank security was our orchards and they're not worth so much anymore."

He has laid off 21 people to cut costs and get in the good books with the banks, he says. The only other option was to inject capital and there was none.

"My view is that cleanup is a fair taxpayer expense. You could make the argument that investments in producing a crop that is now gone is fair too. This is particularly so in Pakowhai where it was an infrastructure failure that could be put partly down to slash, partly policy and management of riparian strips, and partly to management of waterways.

"There are lots of angles to argue that some responsibility rests with the Regional Council. I'm sure foreign reinsurers will explore potential legal action in these areas as they'll be out of pocket hundreds of millions."

This is a view shared by Hugh Ritchie, who says if council had focussed more on flood protection systems, things might not have been so bad – he believes his own property wouldn't have flooded at all if shingle had been cleared from the Waipawa River.

Paul Paynter's own idea is that a government issued 20-year Gabrielle bond with a 4.5 percent coupon rate could be a solution. In this model, orchards and vineyards would borrow based on a business proposal in the same vein as the Provincial Growth Fund at about five percent. Initially taxpayers would pay the interest to give growers time to get fruit production to reasonable levels and generate cashflow and break even. Then growers would be responsible for the interest and amortisation for the following 16 years.

Brydon says there will be knock-on effects for the wider region if investment isn't made: businesses, employment, social cohesion, shrinking Gross Domestic Product, rising food prices. After all, Hawke's Bay is the country's food producing centre.

"What we are trying to get through to the government is that either way it's going to cost them, so it's better to get the growers up and running now, or they'll pay at the other end." ●

Strengthening the future of horticulture through innovation

Our Fruitfed Supplies Technical Extension team works closely with our R&D team, growers and many industry groups.

Imparting knowledge from the wider industry, new product releases and R&D trials, the Extension team ensures our Technical Horticultural Representatives and store teams provide reliable and up-to-date technical advice to growers.

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Fruitfed Supplies

A trading division of PGG Wrightson Ltd

Jerry and Jodi with one of their many copper stills – this one imported from overseas

That's the spirit in pip and stonefruit

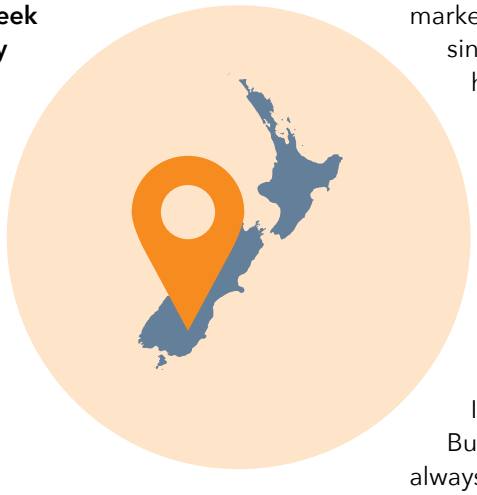
Wonderful things are coming out of the Teviot Valley, including fruit liqueurs, brandy, cider and gin that are proving a hit with locals and visitors.

Aimee Wilson

Up A Tree Distillery was born at Coal Creek Flat, north of Roxburgh back in 2020, by the owners of Fairview Orchard – Jered Tate and Jodi Gillam-Taylor.

When the former Aucklanders moved south in 2015, they originally bought a small orchard with cherries, apricots and plums. But they jumped at the opportunity to purchase the much larger commercial orchard across the road two years later.

Fairview Orchard currently harvests 15ha of stonefruit and a further 6ha of pipfruit for both export and domestic markets, but Jerry has been into distilling since he was a teenager, and the hobby has now turned into a great side hustle.



After a few years of experimenting, he's worked out that his Pacific Queen™ apples make the best spirit for his Apple Tree Gin. They're also used to make apple brandy and a base spirit for their liqueurs and cider.

"They are the sweetest apple I grow, so have the highest yield. But it's a challenging apple to grow always fit for export."

Every summer, staff are busy pulping the waste fruit – cherries, nectarines, peaches, plums and apricots, while afternoons in autumn and winter Jerry lives in his distillery creating new concoctions.

They've done the maths – just straight apple juice would only give them .4c/kg, "so if we do the extra work and make a gin, we could make up to $1-$2/kg."

THEY'VE DONE THE MATHS:

Apple juice = .4c/kg

Gin = $1–$2/kg

"Since moving down our neighbours have been so helpful

Jerry first set out to create a spirit from local strawberries gifted to him while living in Massey, West Auckland.

He had just finished helping a good friend finish constructing a stainless steel 100L still at the go-cart track in Silverdale. Turns out the home-made still was used plenty, and his hobby turned into something a bit more extensive.

He's upgraded considerably since then, and the investment is starting to pay off – now that he has access to fresh waste fruit on his own orchard.

The couple's first piece of technology was an Alembic 80L copper still called 'Bonnie.'

Researching and fine-tuning how to distill spirits from cherries, apricots and plums, they went on to purchase an Alembic 3L gin still, and finally, moved on to the gorgeous copper 20L whisky still.

"I'm basically set up as a microbrewery now," Jerry said, with craft beer and bourbon also on the list for later in the year once the brewing and barrelling process has been completed.

Up A Tree Distillery makes many different types of liquor from its small distillery at Coal Creek Flat

Pacific Queen apples are perfect for making spirits

In an effort to continue reducing waste, and after many years of research, Jerry had a custom 500L Copper Column still built, and shipped all the way to Roxburgh at the beginning of 2020.

Sounds like the perfect lockdown project, if you weren't already busy enough tending to your orchard year-round.

> "I'm basically set up as a microbrewery now

The pair now process their 'less than perfect' and 'out of spec' fruit (together with fruit from neighbours) to make delicious types of schnapps, gins, palinkas, brandies, fruity liqueurs and apple ciders.

"Even though it's waste fruit, it still has to be fresh," Jodi explained. Their apricot liqueur is a real winner and the apple gin is fast proving popular as well.

"With stonefruit, we have so many options of what we can create."

The couple are now working on refining their microbrewery to concentrate more on the popular liquors, with their top selling products becoming widely distributed throughout Central Otago in restaurants and bottle stores.

Meanwhile, the orchard still needs attention every day, and it has been a real learning experience for these former city dwellers, who moved south to try something completely new.

"Since moving down our neighbours have been so helpful, they told us when to spray and how to prune. Nobody wants anybody to fail," Jerry said.

"And if you can work a computer you can find staff," he added.

The orchard grows six different varieties of pipfruit and 95 percent of this is exported – while the business also has a successful roadside stall, selling fresh fruit ice cream, coffee and gifts.

It's a popular place to visit, particularly in summer, and the large bins of seasonal stonefruit and pipfruit out the front offer customers affordable fresh fruit straight from their orchard.

Just as good things take time in the fruit growing industry, the process of distilling fruit liqueurs can't be rushed either. Brandy spends two years in an oak barrel, as does bourbon and whiskey.

The brewery will be an entirely new project altogether. Schnapps and gin can be distilled instantly – but a full run of the distillery is still half a day's work.

> **There wouldn't be many other great examples of a complete sustainable orchard operation**

Jered's just finished bottling up this season's cherry liqueur and is almost ready for distribution once the labels arrive.

There wouldn't be many other great examples of a complete sustainable orchard operation, where so many wonderful by-products have been made from fresh and waste fruit.

Historically, the Teviot Valley has been known for its fruit juices and ciders, but Fairview Orchard has taken it right to the next level, as the next generation brings forth new ideas.

Dazzle marketing stands out with a collaborative promotional campaign in key growth markets China, Vietnam and Taiwan

Asian markets like Dazzle™ but no new plantings for now

Despite the challenges of this difficult growing season, particularly for those in Hawke's Bay and Gisborne regions, Dazzle™ (cv. PremA129) apples have performed exceptionally well. The fruit picked this season has strong red colour and excellent eating quality, with good firmness and Brix levels even for those growers in Hawke's Bay that have had to contend with a lot more rain and less sunshine than they are used to.

Supplied

Kiwi Crunch orchards manager Graham Hope has noticed that the PremA129 tree has generally great health, and this year has shown the ability to hold that under very wet conditions. Graham has been very happy with his Dazzle harvest this season. "Dazzle is a very easy to harvest apple, with even colour and maturity as long as the crop load on the tree is well balanced.

Graham feels it is important not to overcrop trees in the early years, otherwise they can stop growing and then set up too many fruit buds. But "once full canopy is established, 100 tonnes per hectare is achievable at an average size of 90 count. Depending on soil types, this level of tonnage is very achievable while still maintaining colour and eating qualities."

The Dazzle crop from New Zealand was expected to be close to one million cartons this year, but the impact of Cyclone Gabrielle has reduced that somewhat. Much of the fruit is destined for sale in Vietnam and China, where there is strong demand and pricing.

> **We have committed to a significant programme of offline and online activities to boost awareness**

However, in order to develop new markets in anticipation of the increasing crop expected in the next few years, the exporters from New Zealand have all committed to selling more Dazzle into other markets.

"Dazzle is a real highlight in otherwise challenging Asian markets, where slow economies are affecting apple sales rates", says Jane McLean of Bostock NZ. "There have been several Dazzle arrivals across key markets to date. With fruit arriving well with good quality and sales rates strong for the main part, there have been repeat orders across the board. For importers who were yet to start Dazzle, the success of the early season sales has given them confidence to now start placing orders. Most customers are taking a steady, weekly programme through to end of season and are looking to actively promote Dazzle to further help it stand out in the markets."

This season more than one million trees planted in New Zealand are producing Dazzle apples

> **It is really important that everyone understands that this is a controlled and protected programme**

Strong and proactive promotion is a standout feature of Dazzle marketing, with each of the exporters from New Zealand contributing to a collaborative promotional campaign as well as doing their own promotions with the help of their customers in the markets. Bridget Owen of Mr Apple has taken on the role of leading the coordinated promotion on behalf of the Dazzle exporters' group, and is excited about the promotional opportunities. "Dazzle arrived in China and Vietnam last week and customers can't wait to get their hands on the new season's apples. With China, Vietnam and Taiwan identified as our key growth markets, we have committed to a significant programme of offline and online activities to boost awareness and visibility for consumers. The focus this season will be building presence in-store with branded packaging and point of purchase materials, in combination with targeted online ads. Dazzle has huge potential and we intend to make sure it takes its rightful place on the world stage."

The outstanding performance of Dazzle in recent years has made it particularly attractive to growers, and there is strong interest in new plantings or conversions of poorer performing blocks of other varieties. However, Fruitcraft manager Steve Potbury confirms that there are currently no plans to lift the moratorium on new plantings. Fruitcraft holds the licence from Prevar for the global production and sales of Dazzle apples, and manages the programme with growers and exporters.

"There are more than one million trees planted in New Zealand already. We need to be absolutely sure that the market is ready for the fruit from those trees before we expand our production. We are currently GPS (global positioning system) mapping all of the orchards in New Zealand, and verifying that the trees planted are all authorised and as they should be according to the grower licences. We will use the determination of planted area to help us better predict production and decide if we can expand the plantings, but conversely, if we find unauthorised trees we will require them to be removed and we will be seeking compensation from offenders. It is really important that everyone understands that this is a controlled and protected programme, and that the plantings are restricted to ensure the success of the sales programme for the benefit of the growers involved." ●

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United Fresh has been working towards a sustainable fresh fruit & vegetable industry in New Zealand since 1991

United Fresh, New Zealand's only pan-produce industry organisation representing the entire value chain turned 31 last year. This is a great achievement for the non-profit industry organisation that relies on a voluntary membership from the New Zealand fresh produce industry to carry out the industry good work that has become award winning over the years.

To follow are some of the projects United Fresh will be working on during 2023:

REPRESENTING NEW ZEALAND INTERNATIONALLY

United Fresh represents New Zealand on the board of the International Federation for Produce Standards which is focused on improving supply chain efficiency of the fresh produce industry through developing, implementing and managing harmonised international standards.

More recently United Fresh has joined the board of the Global Coalition of Fresh Produce addressing increasing cost pressures for the fresh produce industry nationally and globally and the impact it is having across the whole value chain.

WOMEN IN HORTICULTURE (WiH)

United Fresh has taken over the leadership of Women in Horticulture (WiH) as of April 2023.

This is an exciting opportunity to champion women and diversity in our industry for the best possible productivity through inclusivity.

A strategy meeting is planned to coincide with this year's Horticulture New Zealand Conference in August. In the meantime, a database of interested people within our industry is being developed to enable WiH to connect to the regions and the activities planned around New Zealand.

FRUIT AND VEGETABLES IN SCHOOLS

United Fresh has managed the government-funded Fruit and Vegetables in Schools (FIS) initiative for over 20 years. This is now considered a gold standard programme.

FIS runs throughout the country in 566 schools reaching around 125,000 tamariki and school staff, equating to over 27 million servings of fresh fruit and vegetables delivered and eaten annually.

New data from an external evaluation of FIS from May 2023 shows:

- 97% of principals rated the management of FIS good/great
- 93% reported that FIS is a great support for feeding hungry children with healthy food
- 92% of principals said FIS supported a healthy food environment

THE 5+ A DAY CHARITABLE TRUST

United Fresh established the 5+ A Day Charitable Trust in 2007 to promote the consumption of fresh fruit and vegetables for all Kiwis.

Our communications strategy for this year is focused on the value of fresh fruit and vegetables with the objective of changing the narrative around cost. In season fresh fruit and vegetables are always the best value and our seasonal promotions build on this by providing recipe and serving inspiration.

Work through our United Fresh Technical Advisory Group includes:

FRESH FACTS

United Fresh is currently working on the next edition of Fresh Facts with input from members and industry. Plant & Food Research and Horticulture New Zealand (formerly responsible for the publication of Fresh Facts) have both indicated that they will remain strong supporters under United Fresh stewardship.

We look forward to publishing this valued resource in September this year.

SUSTAINABILITY GUIDELINES

In November 2022, United Fresh was a key organiser of the inaugural Global Sustainability Symposium held by the International Federation for Produce Standards (IFPS).

Since then, the UF TAG team has made it its business to understand New Zealand's sustainability position a whole lot better. This has resulted in the publication of our Guidelines for the New Zealand Fresh Produce Value Chain, working towards achieving the United Nations Sustainability Development Goals (SDGs).

The document provides guidance on how a fresh produce focused business, operating in Aotearoa New Zealand, can structure its sustainability journey with the help of the SDGs.

Produce value chain participants are encouraged to start their sustainability journey or validate what has already been achieved with the help of this guide available for download on our website **www.unitedfresh.co.nz**

If you would like to know more about United Fresh projects or how to become a member of United Fresh, please make contact with the management office by email **info@unitedfresh.co.nz** or call **0800 507 555**.

Join us on LinkedIn

Investing in packhouse tech

Waikato packhouse's first season with new automation technology

There is a reason Whitehall Fruitpackers chief executive Mark Gardiner looks a bit like the cat that just swallowed the canary.

Geoff Lewis
Photographs : Trefor Ward

Whether he's standing in the cavernous racking store or on a gantry overlooking the busy packhouse floor, it's all the culmination of a move to automation which is intended to set the business up for years to come.

Based on Gorton Road near Karapiro, Whitehall is so named because it began not far away in the Whitehall hills behind Cambridge. Its first packhouse had been his dad's former sawmill building, which was re-sited and repurposed for its honey operation, workshop and equipment storage. There's a synergy with the honey bees as they serve a double purpose, pollinating the kiwifruit crops and making bush honey that is liquid gold.

In 2005 a new packhouse and cool storage facility was built at Gorton Road. Whitehall Fruitpackers is a family-based operation and crops Green and SunGold kiwifruit off around 250ha in the Waikato and Coromandel region.

Produce arrives at the Gorton Road site in 300kg bins, which are tipped onto a conveyor where workers begin the sorting process by picking out any fruit obviously damaged, badly-formed or blemished, which is all used as stock food.

Mark explains that the kiwifruit industry has grown hugely, and the inception of one-desk selling entity

Zespri (in 1988) has led to the need for greater sophistication to ensure consistent product quality and timely export scheduling.

This starts with a nationally organised online 'packing plan' created by Zespri which determines what quantities and qualities of fruit go to what markets, at what times, and throughout all kiwifruit packhouses in New Zealand. This is scheduled to coordinate, as far as Whitehall is concerned, with shipping from the Ports of Tauranga.

While labour remains a major part of the process, the move to greater automation is an essential part of the modern fresh produce handling and export process.

The 2022–23 season is Whitehall's first with its new automated systems.

The packing season runs from March to June. This year has had a staggered start, Mark says, because the fruit had poor dry-matter content, which is weather-related.

"There is a direct correlation between dry-matter and taste. We have our own laboratory to do the testing. But we have to submit samples for independent analysis – it's a Zespri export requirement."

Mark explains that the move to increased automation came from keeping close watch on what other processors were doing.

"We held off until the technology was right, so now we are at the leading edge of sorting and packing technology. There are more refinements coming, particularly around single-layer trays which are labour-intensive."

New technologies have been adopted along the way, including the whole-carton handling system. The technology is international with the speedy 'fold and bag' system perfected in Europe by a Dutch company, and the bin-feed system designed in Spain.

The layout and equipment for Whitehall's automation project were designed and installed by Auckland-based industrial process and automation specialists Compac – now part of Tomra.

"Compac developed the 'next available drop' system. The carton handling system was designed by JMP Engineering in Auckland, and came together as the science was perfected.

"We started talking to JMP about three years ago. We went to Auckland to see what they did and saw some of their machines, and watched some of their videos. They're exporting around the world. Their machines are commonplace in big factories. Everything is tailor-made and has gone quite well."

Among the clatter and hum of conveyors are two rather intimidating robotic box-stackers. These "fiercely accurate" machines are created by Kawasaki, but their specialist stacking heads were also designed and built by JMP, and can pack 160 6kg cartons onto a pallet.

The operation on the packhouse floor is overseen from a control room where screens display the flow of product, and the speed of the operation can be adjusted. Cameras allow the operators to see what is happening in every corner.

> "It is all governed by the maturity and taste of the fruit

A spectrum imaging camera sorts the fruit into grades. Around 90 percent of the fruit is suitable for export, and what market gets which fruit depends on the requirements of the market – some are rigorous when it comes to quality, others less so.

Quality control is covered by skilled staff who closely check fruit for any insect pests including scale, springtail and Fuller's rose weevil. Traceability is an international requirement, and each fruit is stickered and every box labelled with an identity code.

"It is all governed by the maturity and taste of the fruit. We still have some manual packing lines, which are what the whole packhouse used to look like.

About 80 percent of product goes out in 6kg 'bulk' cartons, while product for specialist markets – including

Quality control is covered by skilled staff who closely check fruit for any insect pests including scale, springtail & Fuller's rose weevil

organic fruit – remains hand-packed in single-layer trays and makes up the remainder."

Labour has been increasingly hard to get, and continues to push up production costs. This was one of the reasons for the move to greater automation. As Mark explains, the packhouse used to employ about 72 staff at the height of the season. With the new technology in place it now has around 42 workers, and fewer when it comes to packing for bulk markets.

"The problem with human beings is that they don't always turn up. With the whole labour shortage thing we were having to contend with running (packhouse) shifts with maybe 10 percent of the people missing."

The move to greater automation was a significant capital investment and about "how much you can raise in any year." So far it has soaked up around $7 million.

Whitehall has 14 coolstores, with the most recently completed being the new racking store.

"We did some modifications to our coolstores during Covid-19 which we want to automate. That should be about it, we're not planning anything huge from here on.

Meanwhile Whitehall Fruitpackers is the last packhouse left in the Waikato.

"There used to be eight packhouses in the Waikato. We are the only one left – we decided we wanted to be here for the long-term." ●

NZ Avocado Growers' Association Inc. Commodity Levy Rates and Fees

Commodity Levy rates for the **2023-24 season** were approved following the AGM on 27 April 2023.

Commodity levies:

- For avocados grown and **sold in New Zealand** for consumption as fresh fruit
  - the commodity levy will be 2.5% of the selling price at the first point of sale.
- For avocados grown in New Zealand and **exported** from New Zealand
  - $0.35 per 5.5 kg export tray.

Export systems fee:

- The export systems fee to deliver the strategy set out in the Export Marketing Strategy will be $0.20 per 5.5 kg export tray.

For further information contact New Zealand Avocado on 0800 286 2236 or email **info@nzavocado.co.nz**

Beehives were still washing up at locations like Gisborne's Makorori Beach some three months after Cyclone Gabrielle lashed the region

Cyclone just another blow to bee industry

The effects of Cyclone Gabrielle are still being felt by beekeepers, but as Kristine Walsh reports, the weather has not been their only problem.

Some apiarists were hit hard by Cyclone Gabrielle, but that is unlikely to impact on the horticultural industry, says Apiculture New Zealand chief executive Karin Kos.

ApiNZ believes around 6000 beehives have been lost due to Cyclone Gabrielle (February) and, in some cases, Cyclone Hale (January) – most in Hawke's Bay and Tairāwhiti, with some losses in the Northland and Waihi areas.

"But the biggest issue has not been in losing beehives in horticultural areas on the flats," Karin says. "It has been the problems beekeepers have experienced in reaching hives in more remote areas, impacting on their ability to care for them and to complete this year's harvest."

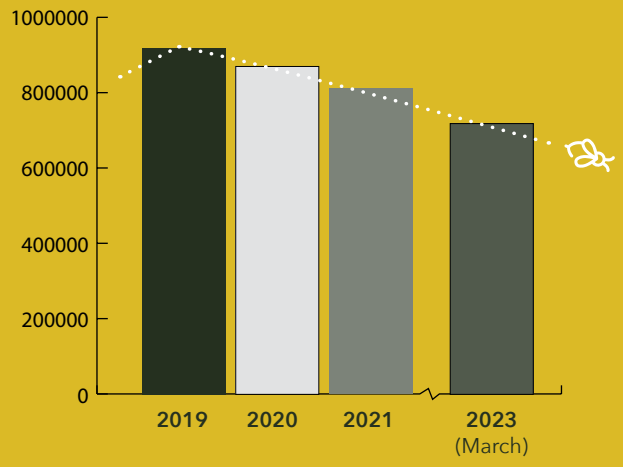
around 6000 beehives have been lost due to Cyclone Gabrielle

Those remotely located hives are generally used for honey production, compounding the problems in what Karin describes as an already "terrible" season plagued with cold, rainy weather that limited flowering.

"After a couple of good years beekeepers do have a lot of honey stockpiled – and honey does not go off – so there won't be a shortage," she says. "But any disruption to production may be felt down the track, so it is certainly not ideal."

As for the horticultural industry, Karin Kos says she has spoken to major operators who assure her they will be able to meet their commitments in supplying managed beehives for pollination.

Beehive numbers



Apiculture Monitoring Data from MPI shows that beehive numbers peaked at 918,026 in 2019, then declined to 869,056 (2020), 811,668 (2021) and last year to 730,806. And ApiNZ figures show a continuing decline to 718,214 as at March of this year.

ApiNZ received $250,000 in Ministry for Primary Industries (MPI) funding for beekeepers to address biosecurity and bee health risks for hives in areas affected by Cyclone Gabrielle.

"But what's especially gratifying is that we've seen a lot of support from beekeepers in unaffected areas to get those affected up and running again."

In any case, while the loss of some 6000 hives is a big blow for the apiarists involved, it is tiny compared to the drop of nearly 200,000 registered beehives recorded in recent years.

Karin Kos says that in addition to the incursion of the Varroa Destructor mite, the ongoing drop in registered hives reflects a challenging business environment – especially for larger operators – where returns have fallen against a rise in the cost of production.

"People have been taking a hard look at their businesses and some have decided it is simply not sustainable to stay in the industry.

"It's been difficult but we believe that decline has plateaued now that exporters are able to travel and demand for honey is good. So there's a glimmer of hope there, but we're anticipating a tough six months ahead."

Of the existing registered hives, most are for honey production, while between ten and 20 percent are managed for horticultural pollination, Karin says.

Without pollination, plants don't produce fruit or seed, and while honey bees aren't the only insect pollinators, they are key players especially when hives are placed in proximity to a crop.

Because they do some 95 percent of the work, there have been warnings to orchardists and growers they should address an over-reliance on honey bees to pollinate crops worth more than $2 billion annually to the New Zealand economy.

MPI says populations of alternative pollinators will need to be resilient to cope with the impacts of climate change, including projected increases in both warm temperatures and in extreme weather events.

Recommended options include encouraging unmanaged pollinators – like native and non-native bees and flies – through, for example, maintaining non-farmed habitats on properties, and managing the use of pesticides.

Citrus growers turn to research

Research project Rowan's response to fatal citrus virus

Four weeks after taking ownership of their Bay of Plenty citrus orchard, Rowan and Tiffany Wallace lost 250 trees and at least half their income when two blocks succumbed to Citrus Tristeza Virus (CTV), also referred to as Sudden Death Syndrome.

Elaine Fisher

Now almost 12 months on from the impacts of the virus, Rowan is about to embark on a research project into how the citrus industry might format an accreditation scheme for disease-free nursery stock.

The 2023 recipient of the Citrus NZ Clark Fletcher Memorial Bursary will be studying for the Lincoln Diploma in Horticulture Business alongside the Graduate Diploma in Agribusiness Management through the Southern Institute of Technology.

It was his immersion into "all things CTV" and the discovery that there is no national citrus programme to ensure the supply of healthy accredited seedlings or the management of a disease- free source of budwood from 'mother' trees that prompted Rowan to apply for the bursary.

"The research paper of the Graduate Diploma will be used to critically compare existing international citrus schemes along with other parallel horticulture policies here in New Zealand, such as the NZ Avocado Growers Association High Health Scheme, using a grounded theory model to identify lessons and opportunities for Citrus NZ to replicate.

"My desire to do this research is to leave the place a little bit better for all those involved in the citrus industry," he says.

Rowan also wants to reduce the risk of others suffering the same experiences he and Tiffany have been through. In August last year, shortly after taking ownership of their 6.5ha Yen Ben lemon orchard in Ōmanawa, in the Kaimai ranges near Tauranga, the couple noticed problems with around 250 trees in five rows of the orchard.

Five rows of lemon trees which dropped all their fruit because of viral infections

Liverwort mats beneath the infected trees were smothering the soil and affecting aeration

Dead, dying or barely coping trees on the Wallace family orchard

"The trees were starting to experience fruit drop, along with tree decline and rapid death. Within two weeks, all the fruit and leaves had dropped to the ground, creating a giant yellow and green carpet."

> **"I really love pruning and mulching and the heavenly scent of citrus in the air**

The cause was Citrus Tristeza Virus (CTV), a disease endemic in New Zealand, which has also killed, or rendered unproductive, millions of trees throughout most of the world's citrus-growing areas.

"We had no idea what it was and called on consultant Erica Faber who identified the disease, which was confirmed by samples sent to the Ministry for Primary Industries."

The test results provided another blow – the trees also had Citrus Vein Enation Virus (CVEV). "The orchard continued to experience stem-pitting and sudden death of what were once healthy trees only weeks before. Trees in other parts of the orchard were not showing symptoms, but it is likely they also have the virus."

The virus, which affects the site of the graft between the rootstock and scion, hinders the tree's ability to effectively operate its vascular system.

"It affects the carbohydrate sink to the roots, so the roots degrade. If a tree is not growing feeder roots, it can't take up water, so dies rapidly, going from green to black in two weeks."

CTV is spread by an aphid with a lifecycle of seven days. "You can't kill the aphid unless you nuked the environment with chemicals every three to four days and killed all the beneficials as well, which is pointless. We came to the conclusion that we needed to find ways to live with it.

"We removed and burnt all the dead and highly infected, declining trees to reduce the source of the virus. Then we set out to support the remaining trees to have a better nutritional status, looking at the balance above and below ground so trees would have the chance to live with the virus for as long as possible."

The disease has been a real blow to the couple's income and there is no compensation for their losses. It will be several years before replacement trees yield commercial levels of fruit.

While no citrus trees are immune to the virus, some rootstocks provide some resistance to its impact. The most susceptible trees are those growing on Brazilian sour rootstock, which also promotes the best crop yields.

Tiffany and Rowan are relative newcomers to orcharding. Tiffany, who grew up in Napier, worked school holidays in Esk Valley vineyards before joining the Navy and then the New Zealand Police. Rowan's family where sheep and beef farmers, and his first 18 years were spent living on farms in

Hope for the future – new cox mandarin trees ready for planting

Replacement Citrus trifoliata *trees planted in October 2022 after dead trees were removed*

Healthy Citrus trifoliata *trees just before harvesting and pruning late last year*

Taranaki, the King Country and Coromandel. After school he joined the New Zealand Army. Between them Tiffany and Rowan have more than 45 years of public service.

It was starting a family which prompted the move to a rural lifestyle. "I wanted to be a present father, rather than a 'deployed-overseas' father to our children."

The impacts of the viral attacks on their orchard haven't diminished the couple's commitment to the citrus industry, despite the financial and emotional toll they have suffered.

Rowan is relishing the challenge of improving the health of the orchard and finding ways to help the industry reduce the infection risk for others.

His initial research includes looking at what other countries and other horticultural industries do to reduce the risk of spreading diseases. When it comes to possible solutions, Rowan says "everything is on the table".

"My interest area is in ensuring that someone purchasing citrus trees commercially can know they are getting something grown under good practice protocols. I'm not looking for over-regulation, but good practice. It's important to get the balance right, and that will be the hard part because at the moment citrus has nothing."

Rowan's preference is for a graduated, voluntary approach to best practice. "There's no point in going straight to regulations, massive constraints and high cost unless that is warranted." When he's not researching, Rowan is working on ways to enhance the health of his trees, including the newly planted replacements for those which have died.

"The orchard had not been effectively pruned for quite a while, and as a result of shading and high rainfall in this area there is a lot of liverwort under the trees which is smothering the soil and affecting aeration, so we have to get rid of that."

Rowan is also using biodynamic management methods including commercial products, compost teas, vermicast and organic material such as compost and chicken manure to feed the trees and micro-organisms in the soil.

Being proactive is among the ways Rowan is dealing with adversity. "Horticulture is up and down and will always be that way. I've found that the citrus and horticultural industry has a lot of really awesome people who are willing to help if you reach out.

"I encourage anyone with a problem to use the good power of social media to say "hey I've got a problem, does anyone have a possible solution?" and you'll find someone who does have an answer."

And for Rowan sometimes the immediate answer is as simple as getting out in the orchard.

"I really love pruning and mulching and the heavenly scent of citrus in the air. The bug life is amazing. There are always bees around. The orchard is a fun place to be." ●

Rowan is keen to hear from anyone with information to share or questions to ask regarding his research into best practice protocols for the citrus industry. "This will be a journey of multiple minds, not just my brain." Contact him on **021 607 551**.

PERSIMMON UPDATE

Persimmons export season off to strong start

Ian Turk : Manager Persimmons Industry Council

As I am writing this column in early May, the 2023 harvest is underway and persimmons are appearing for sale in New Zealand. The very first exports of low volume airfreighted fruit have left the country for Thailand and Vietnam.

Persimmons are grown commercially across the top half of the North Island, so most of the country's growers have been through both cyclones Hale and Gabrielle a month or so before harvest was planned this season. Two-thirds of our growers are in Gisborne, and most of the rest are in North Auckland or Northland, so the few days when communication was virtually non-existent through to Gisborne certainly left me wondering how much of a season the persimmon industry would have left, and fearing for the state of persimmon orchards.

> "In our first truly post-Covid season we are hopeful of strong pricing and grower returns

Persimmons do not enjoy a wet autumn or wind – similar weather patterns in early 2022 saw the industry's lowest overall pack-out that I can recall, and export volumes last year at 1200 tonnes were well down on what we were planning on immediately prior to packing. Humidity markings and wind rub damage saw more than normal volumes of fruit not making our export grade.

We certainly feel for those growers who have been hit hard by the devastation brought by the cyclones, and appreciate the losses that they are no doubt still coming to grips with. But overall our industry has not suffered the degree of damage to on-orchard infrastructure or flooding that has featured in the media. Local authority floodbanks and their own flood protection has worked well for growers, and I'm sure a fair dose of luck has been involved.

I am aware of some growers though who have decided not to pack for export this season. As with last year though, much damage was done before the cyclone events, and we are all watching to see the cosmetic quality of fruit coming through packhouses.

My own taste testing and reports from our marketers suggest that so far, we will have good fruit supplies of great tasting and good sized fruit. We are all watching the weather through May and hoping for a good break at last.

From our markets – there has been a good level of enquiry, and in our first truly post-Covid season we are hopeful of strong pricing and grower returns. We remain on track at this early stage of the season to export a slightly lower volume of fresh persimmons than last year to consumers in Australia, South East Asia, Japan, Vietnam, the United States and China.

Our persimmons are sought-after in overseas markets as high-quality out of season fruit which are a good source of vitamin C to support the immune system. There still appears to be a strong sense of the health benefits of fruit in these post-pandemic times.

Most New Zealand persimmons will be eaten as fresh fruit, and all of the commercially grown varieties (predominantly Fuyu) are non-astringent, meaning they can be eaten just like an apple, while they are still crisp. A far cry from the old varieties that many still remember, which needed to be just about falling apart before the fruit was ready to eat. I certainly did not enjoy the texture when the old varieties got to that stage.

The New Zealand market continues to grow strongly and is becoming more widely known. As interest in New Zealand grows, we are also seeing more ways of using persimmons, and the number of recipes appearing is diversifying. There are plenty of good ideas on the 5+ A Day website (**https://www.5aday.co.nz**) to tickle your taste buds.

TECHNICAL

THE LATEST INNOVATIONS AND IMPROVEMENTS

Less rain expected this winter

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Balanced cropload

Crop loading considerations: from planting to maturity

Carefully considered successive crop loads from planting through to maturity will promote a balanced, productive block. The post-harvest period is a time to take stock and assess the harvest performance against the crop load at which the trees were set. This 2023 season has been a difficult one with numerous complicating factors. It will be important to understand your block's performance in these conditions, when setting the next season's targets.

Sarah de Bruin and Jack Wilson : AgFirst Consultants Hawke's Bay

Crop loading is often defined as a quantitative parameter used by the industry to control fruit density. It is often described by the number of fruit per tree, or fruit per trunk cross-sectional area (fruit /cm^2 TCA). As trees often set more fruit than required, managing crop load through the removal of buds and fruitlets during pruning and thinning will reduce fruit to fruit competition within the tree.

Crop loading:

No. of fruit per tree, OR fruit per trunk cross-sectional area (fruit /cm^2 TCA)

This also enables the grower to manipulate the tree's vigour response, to maintain a good vigour cropping balance, improve fruit quality and size outcomes, and ensure sufficient return bloom in the following season. Consequently, crop load management is an important strategy, which ultimately determines the profitability of a block.

Low crop load tree

A block's optimal crop load is greatly influenced by age of the canopy and tree size variation. Those fruiting buds on spurs and terminals are the ones which receive the most ambient light and therefore achieve the greatest size and colour outcomes. Accordingly, we want to make sure the crop load is set using the very best fruit to carry through to harvest.

When a block is carrying an optimal crop load, it means you are more likely to be able to pick the crop to good colour standard, with good internal quality. If we provide the consumer with an excellent eating experience of a fantastic looking apple, it means we can capture the maximum return available. By overcropping, you limit the proportion of fruit that sits in this category, as well as causing extra problems to a block by enforcing a swing towards biennial bearing.

> **The crop load targets set on each block create a framework for the downstream decisions**

Orchard labour is the largest single cost, currently accounting for around 70 percent of the total orchard expenditure. Thus, ensuring the trees are carrying an optimal crop load of the highest quality fruit is important to utilising pruning and thinning labour in the most efficient way. Setting a well-considered crop load target, using key metrics such as trunk cross-sectional area (TCA), percentage of full canopy, block history and variety benchmarking to inform the numbers of fruit needed per tree will allow for more precise management of pruning, chemical thinning and hand thinning to adjust the crop load. The crop load targets set on each block create a framework for the downstream decisions of the number of fruiting buds per tree needed, fruitlet numbers and spacing, and whether fruit needs to be in singles or doubles.

> **Labour on orchard is the largest single cost, currently accounting for around 70 percent of the total orchard expenditure**

Additionally, the first two to three years of a tree's life will determine the trajectory of a block's success in terms of yield, and the performance of the internal rate of return (IRR) over a 15-year financial period. Crop loading through this period can easily be the handbrake to this success when done incorrectly. Taking the time with data will help ensure good canopy development is achieved and therefore an excellent IRR.

Four key crop loading metrics

1 Trunk cross-sectional area (TCA)

The size of the trunk indicates the tree's cropping potential, as the TCA increases each year as the trunk thickens. This strategy is largely used in young trees, with diminishing efficacy as the tree gets older.

By measuring the trunk diameter approximately 25–30 cm above the graft union, you can calculate the TCA using the equation TCA= pi* Radius^2. A fruit number per TCA can then be set to determine the crop load for the block. Targets need to be fine-tuned for individual properties as the ideal fruit/TCA number depends on factors including variety, tree age and growing/soil conditions.

E.g. For a trunk with a 2.5cm diameter the TCA = 3.14*(2.5/2)^2 = 4.9cm^2. If using ten fruit per cm^2, the crop loading target should therefore be 49 fruit per tree.

2 Percentage of full canopy

The canopy fill as a proportion of the maximum canopy volume will give you a good indication of the appropriate yield. This can also be referred to as 'tree row volume'. In a two-dimensional system, this may be recorded as the proportion of wires full, and in a three-dimensional canopy, this may be the percentage of allotted space.

To determine the crop load using this metric, simply calculate the tree row volume (percentage of full canopy) and multiply this by the block's cropping potential.

tree row volume **x** block cropping potential **=** crop load

3 Block history

In mature canopies, understanding the tonnages achieved in the last three years helps to determine the block's yield potential. Looking at three years of history also allows for any biennial production swing to be understood and managed. To make a full estimate, be sure to account for fruit size and colour, yield and pack-out, as well as variety growth and vigour attributes, soil type and block potential.

Any climatic issues in the previous year such as hail, silt or wet feet need to be accounted for, as the tree's response may alter in the following season. For example, the La Niña weather pattern, coupled with Cyclone Gabrielle has seen many orchards in Hawke's Bay and Tairāwhiti suffering from various tree health issues caused by the extended wet conditions.

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Overcropped tree

Planting

In this stage, the focus is on nurturing the tree canopy. The tree needs to be in a 'no stress zone', so the soil fertility and soil moisture need to be adjusted where necessary to ensure these are not limiting factors on the canopy's growth potential. Trees must grow to fill their allotted space, otherwise the cropping potential of the block is reduced. Late planting reduces overall growth potential, so does allowing any other stress events. Refer to Meg Becker's article "Orchard development success for long-term gain" in the August 2022 edition of *The Orchardist* for more details on the basic planting principles.

YEAR 1

For the first year, canopy development is of the foremost importance. In order for the tree to promote maximum canopy growth, the crop should be removed. This can be done by hand, however to reduce costs, chemistry is the best option. Without the crop, the tree will be able to put all the energy into growing and developing the canopy. Consider your pruning and tree training strategy in the first year. Keeping some of the nursery branches can give you a head start, with early leaf helping to drive the tree growth. This wood will also become fruiting wood in the next season, unless these branches are too low or unbalanced, whereby justifying their removal.

YEAR 2 YEAR 3

Following the first-year focus of canopy growth, getting a crop load in year 2 is important to ensure cashflow and therefore advancement on internal rate of return. It requires a careful balance between getting an investment return and allowing the canopy to develop successfully, as the higher the crop load, the shorter the extension growth.

Fruit quality is improved on terminal buds or spur buds that are two years old, so crop should be encouraged to set on the parts of the canopy that were original to the tree at the time of planting.

This is the ideal time to let the TCA guide the crop load decision. The TCA number will be informed by the girth of the trunk and therefore the actual potential of the tree. Setting the crop load according to the tree size and development also gives an opportunity to balance up the trees and reduce any tree-to-tree variation (i.e. more crop on the bigger trees and less crop on the smaller trees).

YEAR 4 YEAR 5 YEAR 6

TCA will tend to overestimate cropping potential as the tree comes closer to full canopy status, because the canopy volume will eventually begin to limit the actual cropping capacity. The crop volume increases during this stage of the tree's lifecycle will be largely determined by the canopy potential. This emphasises the importance of adequate canopy development early, to allow the achievement of higher targets during this stage. History will also play a part here, as going too high too early will mean the carbohydrate reserves won't be put into increasing the canopy, and overall trunk size and won't allow sustained back-to-back yield increases.

YEAR 7+

Once a tree reaches maturity, the trunk will continue to size but the cropping potential will remain constant. At this stage in the tree's life, history is the main consideration.

If the crop loads have been well considered through the tree's life, tree to tree variation within the block should be minimised, allowing for an even, well-spaced crop of high quality fruit to be produced.

Conclusion

Crop loading decisions therefore impact the pruning strategy, as well as downstream hand thinning and chemical thinning. Making an informed decision is important, and something that needs to be considered carefully over the winter period before the pruning and thinning get underway. Setting well informed crop loads, using the key metrics of trunk cross-sectional area (TCA), percentage of full canopy, block history and varietal benchmarking allows growers to reduce variation between trees, maintain a good vigour to fruiting balance, and benefit from an internal rate of return advancement.

El Niño likely to bring less winter rain for Aotearoa

Chris Brandolino : National Institute of Water and Atmospheric Research (NIWA)

After three years of a rare 'triple-dip' La Niña bringing warm, wet summers to Aotearoa New Zealand, forecasters are now expecting that El Niño conditions may arrive during winter. NIWA's analysis at the time of writing (mid-May) indicates that El Niño has a 70 to 80 percent chance of developing during winter and continuing through spring.

The current atmospheric configuration is very different to the same time last year. June and July are on track to see a reduction in the amount of tropical and subtropical moisture available to passing weather systems, and therefore overall drier conditions are expected.

El Niño Southern Oscillation: what is it?

El Niño and La Niña are opposite phases of a naturally occurring global climate cycle known as the El Niño Southern Oscillation, or ENSO for short. ENSO influences rainfall, temperature and wind patterns around the world, including New Zealand. El Niño and La Niña episodes occur on average every few years and last up to around a year or two.

Although ENSO has an important influence on New Zealand's climate, it accounts for less than 25 percent of the year-to-year variance in seasonal rainfall and temperature at most locations. Nevertheless, its effects can be significant.

What does El Niño mean?

Typically during an El Niño event, ocean water from off the coast of South America (near Ecuador and Peru) to the central tropical Pacific warms more than average. The warming takes place as trade winds (the permanent east-to-west prevailing winds that flow around the equator) weaken or even reverse, allowing for warm water from the western Pacific to move toward the east.

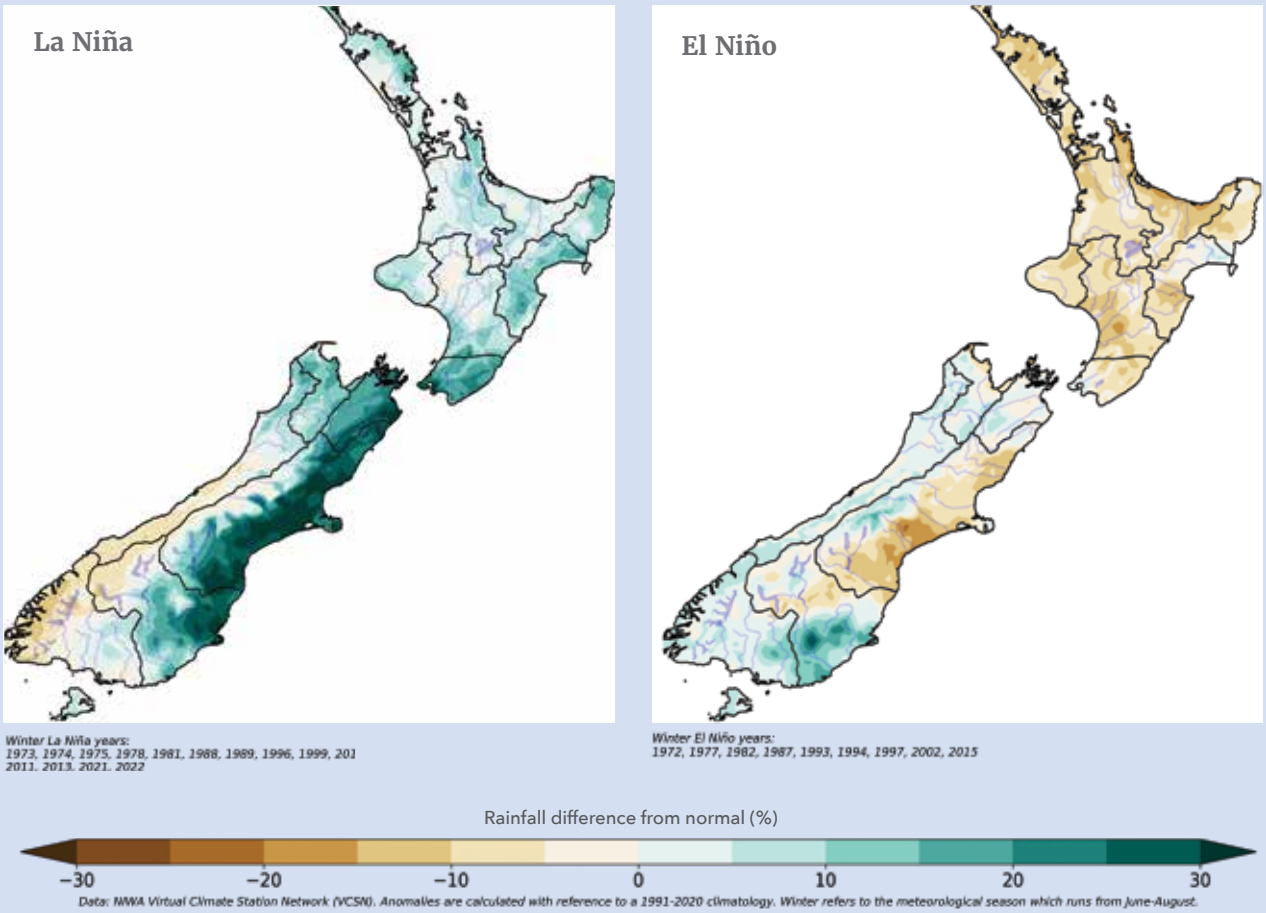
As a result, sea temperatures in the far western Pacific can cool below average. The unusually warm water in the eastern Pacific then influences the Walker Circulation (the circulation of air flow in the tropics caused by differences in heat distribution between the ocean and the land), acting as a focal point for cloud, rainfall and thunderstorms. It is this change in the Walker Circulation that impacts weather patterns around the world.

This year, changes observed to the equatorial Pacific Ocean during April included a sharp warming trend. The 30-day value reached 2.53°C above average, including warming of over a degree during April. This was the highest monthly value since July 2015, which occurred before the onset of the most recent El Niño (2015 to 2016, which saw a moderate-to-strong El Niño).

El Niño's average influence on New Zealand

It is important to remember that while we know the average outcome of El Niño because of historical data, no El Niño is average – each comes with a unique set of climate characteristics and therefore can be expected to influence the weather differently.

Winter rainfall during La Niña & El Niño



That said, during El Niño, New Zealand tends to experience stronger or more frequent winds from the west in summer, which can encourage dryness in eastern areas and more rain in the west. In winter, the winds tend to blow more from the south, causing more frequent cold snaps across the country. In spring and autumn, southwesterly winds are more common.

Outlook for winter

The start of winter is likely to be a pivot point. The persistent wetness and warmth that much of New Zealand has experienced in recent months, due in large part to the triple-dip La Niña, will give way to an eventual reduction of rainfall for many of the places that have experienced excessive rainfall this year.

We are also likely to experience more frequent southerlies, or cold snaps, this winter. However, this doesn't guarantee a cold winter. Other factors will play a role, such as local and regional sea surface temperatures and snowpack quantities.

But even if winter temperatures turn out to be near average, after three consecutive record warm winters, many people may find it relatively cold this winter. ●

For the most up-to-date information, check out our Seasonal Climate Outlook for winter (June to August) at **niwa.co.nz/outlook**.

Tuatara Structures – Deliver Well Built. Go Well Beyond.

Tuatara Structures is fast becoming a leading name in the delivery of highly effective agri-business facilities. Their innovative approach is making a difference for growers in Bay of Plenty, Hawke's Bay, Tasman, Canterbury and Otago. One client who has harvested the rewards of Tuatara Structures' skillset is Hume Pack-N-Cool.

To feed growing consumer appetite for kiwifruit, Hume Pack-N-Cool required additional coolstore facilities. In 2022, Tuatara Structures designed and built a 2,700 m² coolstore extension for the client at their packhouse site in Katikati, Bay of Plenty.

The new coolstore provides for additional storage of 750,000 trays of kiwifruit and was designed and constructed in just 20 weeks, between seasons, at a fixed cost.

To start, the team at Tuatara Structures approached the design from the inside out. The team started with the functional and operational internal requirements of the coolstore, then designed the building to wrap around this footprint. This functional approach allowed Tuatara Structures to design the most efficient building possible, lowering costs and the environmental impact of the building.

Another unique advantage of Tuatara Structures' offering is their free feasibility outline upfront. This includes a detailed design package and fixed price proposal, with a guaranteed completion date before any paid work commences. This is done obligation-free at no cost.

Simon Bowker, General Manager of Hume Pack-N-Cool, says they were very impressed with Tuatara's process. "We had good discussions upfront with the team around our unique operations, product flow and site constraints. Tuatara's in-house design team then presented a detailed package with a fixed-price proposal. All this was done before we had made any commitments."

Ryley Drake, Business Development Manager at Tuatara Structures, explains why this process works and why it matters. "We do our due diligence upfront so that we can be confident the end product is right for our customer. To us, it's simple. We cannot stand by and profess to be experts in our field without truly understanding the site-specific scope and fixing the costs to reflect this. This allows us to mitigate risk for both our business, and for our clients. In most other industries, this is normal, however unfortunately in construction it isn't yet."

With commitment, energy and innovation in spades, it's no wonder Tuatara Structures is gaining a solid reputation as the go-to design and build company for New Zealand agri-businesses.

To learn more visit **tuatarastructures.com**, or call **0800 600 750** to see how their team's free, no obligation feasibility study could make a difference for you.

TUATARA STRUCTURES

Bring your horticultural dreams to Fruition

Are you looking to advance your career prospects in the fast-growing horticultural industry? Look no further than Lincoln University's unique regional diploma, which can be completed in Nelson or the Bay of Plenty.

Cultivated from a long-established relationship between Lincoln and Fruition Horticulture, the Regional Diploma in Horticulture is a two-year part-time study programme covering the technical and managerial sides of the profession. It will also give you the opportunity to grow your expertise in computer technology for problem solving.

Learn about the entire value chain, attend classes led by horticultural industry experts and engage with others from your region in interactive and practical classes.

If you're already working in the sector and want to upskill, the programme is perfect for you. Take advantage of the flexible combination of online and face-to-face learning – remotely with Lincoln University and in person with Fruition Horticulture.

Aotearoa New Zealand's horticulture industry is internationally renowned, producing some of the highest yields worldwide. This creates plenty of prospects in terms of salary, global exposure and stability.

Gain the chance to learn from world-renowned experts in the field, with the crew at Fruition Horticulture offering a wealth of tertiary-level crop expertise and practical on-orchard solutions for Kiwi horticultural producers.

The opportunity to develop these skills is essential for advancing your career in horticulture, and working while you study means you'll gain invaluable industry experience, enhancing your employability in this fast-paced and dynamic field. ●

To learn more and apply, see the Lincoln University website: **www.lincoln.ac.nz/diphort**

Work with others or go it alone?

Unlocking the growth potential of New Zealand's horticulture sector requires a deep understanding of the underlying business arrangements that drive its success. To shed light on this, doctoral research at Lincoln University is focused on examining business structures and relationships within the horticulture industry.

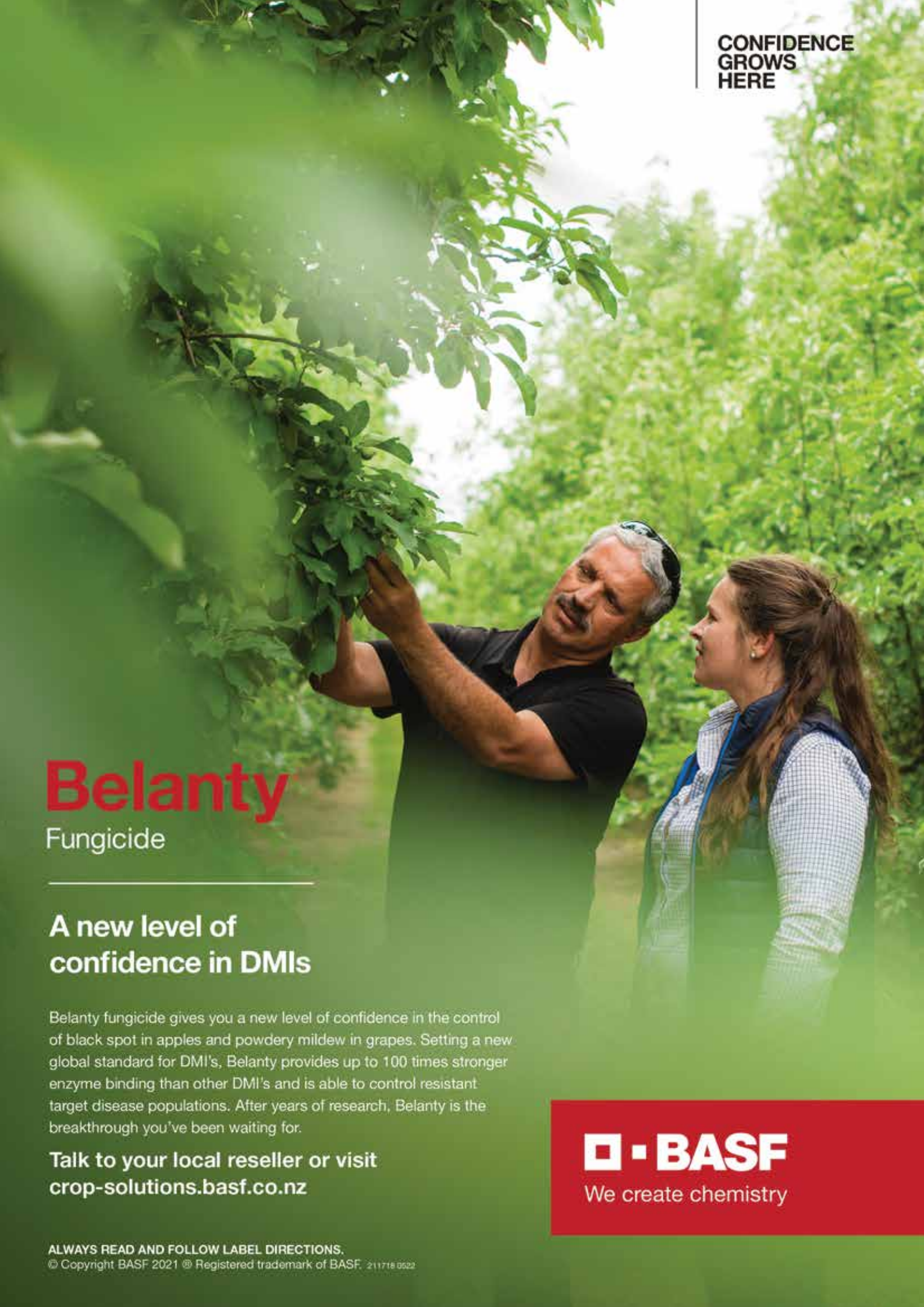
The primary goal of the research is to understand the business arrangements of horticultural producers and learn how these can lead to thriving businesses. This can help facilitate the transition of growers and sectors from small-scale operations to prosperous enterprises on both national and international levels.

The study has uncovered five distinct types of businesses operating within New Zealand's horticulture landscape, each with unique characteristics and strategies.

Notably, two intriguing behavioural patterns have come to the forefront – collaborative partnerships that harness the power of industry-wide connections, and independent ventures that carve their own path to success.

For the final phase of this research, we seek your valuable contribution. We aim to understand the potential structures that link business preferences with success. By heading to www.lincoln.ac.nz/hort-research-project, you can actively participate in this project and provide essential insights.

Participants will receive an exclusive industry report that presents the key findings, compelling conclusions, and actionable recommendations to drive your own business endeavours to new heights.



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