The ORCHARDIST®

VOL 97 | NO 01 | FEBRUARY 2024

HORTICULTURE NEW ZEALAND

Thriving with organic

Page 10

In this issue

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Contents

FEBRUARY 2024

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2024 here we go!

A belated happy New Year to all, and my New Year wish is that 2024 will be a great year for growing!

Barry O'Neil : HortNZ president

Lots of good things are lining up, including a newish government that is keen to do stuff, an El Niño weather system that is both hot and hopefully not too wet, and fresh fruit and veggies are still very much in demand!

Horticulture New Zealand has a big year ahead. Every six years we have to under law renew our Commodity Levy Order, so we are about to begin the process of engaging and discussing with our members a new Commodity Levy, as are a number of product groups.

Commodity Levies are the legal basis that organisations like HortNZ, many product groups, DairyNZ, Beef + Lamb New Zealand, NZ Winegrowers all operate on. They give us the legal basis to operate within specific parameters, as well as enabling us to collect a specific levy from growers.

Our current Commodity Levy which came into effect in 2019 enables us to do the following:

- research and development
- market and trade research, development, and promotion
- industry promotion
- development and implementation of quality assurance
- education and training, including attracting people to the industry, and developing and retaining them
- information and communication, including advocating for and representing growers
- protection and improvement of the health of plants, including biosecurity activities
- day-to-day administration of HortNZ, including central grower registration systems.

Very wide based so we need to prioritise, but HortNZ is not allowed to spend levy money on commercial or trading activities, as we are an industry good body and must carry out activities that support and benefit the wider industry.

While the above list of activities was current and relevant in 2019, much water has passed under the bridge since then and both HortNZ and product groups have evolved in their roles and their primary areas of focus. So, part of the conversation we will be having is what are the areas growers are wanting HortNZ to focus on for the next six years? And product groups will be having the same discussion as to what areas they also need to be focusing on.

Good engagement and discussions I hope will occur in our meetings to especially understand what value HortNZ adds, but also on the question of whether there is too much duplication in horticulture, with 22 product groups as well as HortNZ operating in what at times seems to be similar space?

I believe the value HortNZ adds is very significant, and ultimately results in central and regional government having policy and standards settings that support growing. We don't lobby and focus on results for one type of growing or product, that's what product groups do. Our focus is on the wider horticulture, covering all products and all types of growing, to give growers either now or into the future, choice about what they will do with their land.

HortNZ was created so that all growers can have an organisation with critical mass to give effect to change at central and government level, to align efforts and avoid unnecessary duplication. HortNZ formed out of the merger of the NZ Vegetable and Potato Growers' Federation (Vegfed) and the NZ Fruitgrowers' Federation (NZFF) in 2005, and to me it seems growers have even more need for HortNZ today than in 2005.

We engage on really big issues for the good of horticulture and growers – such as climate change mitigation and adaptation, sensible environmental settings for freshwater and biodiversity, biosecurity settings to protect our sector, social licence to grow, which is especially important as urban centres expand into our growing areas. Most importantly we try and focus on the future big strategic issues for success in horticulture, to which HortNZ has aligned the Aotearoa Horticulture Action Plan – such as labour, water storage, science that delivers practical solutions for us, and so on.

Our goal is to double the farmgate value of horticultural production from $6 to $12 billion by 2035, in a way that improves prosperity and protects our environment. To me this seems very achievable, as horticulture has already overtaken forestry in exports, and will in the next decade I am sure, overtake beef and lamb.

There is an opportunity in the way we work in collaboration with product groups, and I am convinced we can do better. It is great to see initiatives underway exploring collaboration within both vegetable and fruit groups, looking seriously at how they themselves can better align, as well as how we can all better coordinate together.

Government is very clear that it does not want to be dealing with multiple small individually focused groups. Rather like they have in the dairy or meat sectors, they want a central horticulture organisation that they can engage with, and HortNZ is that central body that develops the relationships with Ministers and policy leaders, and an understanding of the central and regional pan-sector policy issues.

> **Our goal is to double the farmgate value of horticultural production from $6 to $12 billion by 2035**

The high-level skill sets required for policy analysis and advocacy are unique, and through a consistent focus on both recruiting and retaining people highly skilled in this area, HortNZ has a reputation that attracts fantastic staff that are committed to delivering for growers.

That of course doesn't stop both product groups and industry groups engaging with government directly as always has been the case, whether that be Fonterra, Zespri, T&G, NZ Kiwifruit Growers, Vegetables NZ or other groups. But when it comes to national and regional policy settings there is real benefit in having a coordinated and aligned position to benefit all growers.

HortNZ also works closely with the other primary sector leaders and groups to get both understanding and hopefully alignment of our policy needs. We are not an island and want to work positively and proactively with the wider primary sector. As chair I sit on the Food and Fibre Leadership Forum with the other food and fibre industry good chairs in order to progress this.

We by no means are suggesting the status quo is the only way, and our new Commodity Levy that we hope will be strongly supported by growers will serve as an indication of what specific areas of focus our members wish us to be focusing on. It is also an indication of our desire to work proactively and constructively with product groups and industry to find better ways of operating, to deliver even greater value for our grower members.

We look forward to coming to a place near you shortly to have the conversations and discussions about what we are doing, what is going well, and what can be improved and how. I am really looking forward to the discussions, and while I am wanting to get to as many of our meetings as possible, I won't be able to attend all of them, so Bernadine our vice chair along with our board directors will be present also.

Kia kaha.

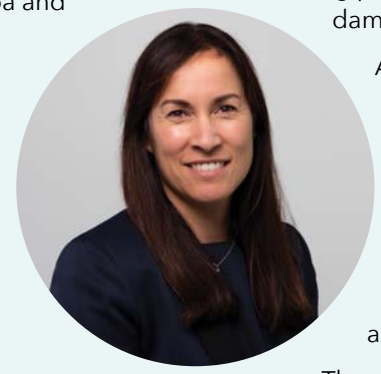
Positive outlook for horticulture

On behalf of Horticulture New Zealand, we hope all growers and their families managed to take some time out of what is a busy time for many of you, and relax a little over the festive period.

Nadine Tunley : HortNZ chief executive

Like you, we're pleased to see the back of 2023, which was an extremely challenging year for the horticulture sector.

It is now a year since Cyclone Gabrielle devastated businesses and communities in the Hawke's Bay, Tairāwhiti Gisborne, Northland, Bay of Plenty, Wairarapa and northern Manawatū.



At HortNZ, our thoughts are with those still working to recover from this extreme weather event. The rebuild and renewal process will take a generation. Growing areas and infrastructure are in a serious state and significant investment is required so these areas can once again thrive.

What will be vital is a collaborative and constructive relationship with the new government. We were pleased the government's 100-Day Plan signalled a real commitment to supporting the recovery. The industry and communities in these regions have displayed remarkable resilience in recovering from the devastating impacts of Gabrielle and other extreme storms, yet additional assistance is required.

Stakeholders across the sectors continue to work together to meet both the immediate necessities and ensure the prolonged recovery of the impacted areas. Given the rising frequency and severity of adverse weather events, taking proactive measures to mitigate and minimise damage is vital.

As the horticulture sector anticipates another dynamic year in 2024, we hold a positive outlook for the future of our industry. This optimism is grounded in recent government announcements, particularly those highlighting resilient infrastructure and favourable employment policies, essential for the sector to achieve our ambitious growth targets.

The creation of a National Infrastructure Agency and the formulation of a new Government Policy Statement on Roads of National Significance are particularly encouraging. These initiatives will play a pivotal role in boosting production and streamlining the supply chain for locally grown fruit and vegetables.

The ORCHARDIST

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Currently valued at $6 billion annually, the sector aims to double this figure by 2035. We commend the government's commitment to doubling renewable energy production, recognising its crucial role in supporting our sector's expansion needs.

Aligning the country's infrastructure policies with the specific needs of the horticulture sector is imperative. HortNZ advocates for prioritising highly productive land for primary production and policies facilitating the construction of essential facilities, including packhouses, glasshouses, seasonal worker accommodation and covered crop protection.

Moreover, policies addressing water storage expansion and streamlined water consent processes can provide growers with the certainty needed for investment and increased production while maintaining environmental sustainability.

The government has already repealed the Natural and Built Environment Bill and the Spatial Planning Act. HortNZ is focused on ensuring enabling the growing of fruit and vegetables remains a priority in the proposed resource management and freshwater reforms.

The recent Court of Appeal decision quashing the specified vegetable growing areas in Horowhenua and Pukekohe highlights the risk of truncated consultation. We look forward to working alongside the government, iwi and community to develop enduring environmental law and policy that recognises the value of horticulture and provides clear, pragmatic and fair rules to maintain and improve environmental quality.

The government remains committed to the roll-out of Freshwater Farm Plans. HortNZ will continue to advocate for a clear equivalence process, so industry assurance programmes such as GAP (Good Agricultural Practice) can support growers to demonstrate they are meeting regulatory and market requirements in an efficient and integrated way.

The recent changes to employment policies by the coalition government are also a positive development, bringing relief to the horticulture industry. The decision to halt the Income Insurance Scheme, repeal the Fair Pay Agreement legislation, and restore 90-day trial periods is a step in the right direction, alleviating pressures faced by horticulture businesses.

Looking forward, there is an overdue need for sustainable policies surrounding the Recognised Seasonal Employer (RSE) scheme and immigration processes, ensuring the sector remains an attractive destination for workers contributing to the New Zealand horticulture industry.

The sector's Aotearoa Horticulture Action Plan will serve as a blueprint to attract, retain and grow a diverse workforce, ensuring a responsible and ethical industry for future generations.

Meanwhile, we are looking forward to meeting growers ahead of our upcoming levy referendum. In March 2025, HortNZ's Commodity Levy Order, which funds the work we do, will expire. We will be seeking grower support for the continued funding of the organisation.

Without grower support in this referendum, HortNZ will close, so it's crucial that you engage in the process and have your say.

Your investment in HortNZ enables us to support you in making more informed decisions, providing tools and services to enhance your productivity and profitability, and ensure your voice is heard. We also advocate on your behalf for sound and sensible policy settings.

The horticulture sector is certainly stronger by working together.

Collective investment by growers provides the size and scale needed to achieve things that no individual grower can achieve alone. Collaboration with government and industry partners enables the sector to expand traditional markets and explore new opportunities, fostering a resilient horticulture sector.

No matter the size of your business, HortNZ is your united voice on issues affecting all growers at both local and central government level in areas such as the environment, compliance, access to land, water and people.

HortNZ advocates relentlessly for regulatory settings to provide an environment where growers can thrive whilst providing a reliable and resilient supply of fresh vegetables and fruit for New Zealand and our international markets.

As the enabler of initiatives like A Lighter Touch, HortNZ advocates for growers' needs and equips them with knowledge and the tools to address the challenge of meeting consumer demands for safe food that is produced under sustainable pest management programmes, while also being gentle on the environment.

With growers continuing to fund HortNZ, it will enable us to continue pushing the case of growers with government in key areas including water storage, ensuring the reliable supply of healthy locally grown fruit and vegetables, streamlining assurance processes, employment flexibility, removing current legislative barriers to businesses and providing certainty for Pacific workers and employers.

Look out for more information about the levy referendum and grower meetings in the next few weeks.

With 2023 behind us, we look forward to working with growers, product groups, partners and government to develop policy and practices that create an enduring environment where all growers thrive, and New Zealand prospers. ●

YOUR INDUSTRY

ACROSS THE SECTOR — ACROSS THE COUNTRY

Juice processing success
Page 23

Global research opportunities are there for the taking

Just after stepping down as chief executive of Lincoln Agritech, Peter Barrowclough argues for a greater role in international research collaboration. This year Lincoln Agritech joined a Horizon Europe project as a partner, linking New Zealand research on digital monitoring systems for diseases and pests with one of the largest research programmes in the world.

Peter Barrowclough

Aotearoa New Zealand's primary sector is built on a history of world-beating innovation, born of necessity, and taken to the world.

In the early 1900s, Wairarapa dairy farmer Norman Daysh invented the first commercial vacuum-pump milking machine, picked up by DeLaval, and launched to the world in 1917. In the 1930s Bill Gallagher invented the electric fence. Gallagher Group now exports to more than 160 countries.

Peter Barrowclough has stepped down after 14.5 years as CEO of Lincoln Agritech

The list goes on – aerial top dressing, the world's first farm bike, kiwifruit as a commercial crop, the rapid development of Zespri SunGold in response to the arrival of Psa. In the past 150 years, our country has punched above its weight in creating world-class solutions to agricultural and horticultural problems.

So what of a future that is hugely more complex – but also offers vast opportunity? Is Aotearoa New Zealand's research and innovation ecosystem fit for purpose in a globalised world?

After more than 14 years leading Lincoln Agritech – one of the country's most innovative primary sector research and development companies – I'm optimistic about the potential.

Why? Just look at the industry, its capabilities, its successes, and the opportunities to grow from here.

At the core of our research industry are the Crown Research Institutes – CRIs – established in 1992 to research new science, knowledge, products, and services. Key to their success is a mandate for applied research, often market-driven and customer-led, to solve identified problems.

Several focus on our primary industries. Plant & Food Research, AgResearch, Manaaki Whenua – Landcare Research, and Scion have all, for 31 years increased the sum of our sector's knowledge and solved many of its problems. For example, endophyte strains identified and commercialised by AgResearch are now core to pastoral farming success and in 2017 were estimated to contribute $200 million a year to the economy. And the $2.6 billion kiwifruit industry rides high on the back of gold kiwifruit bred by Plant & Food Research.

The CRIs are joined by universities in world-beating research, with Lincoln and Massey Universities standing out in the primary sector. In 2013 Biolumic was established based on intellectual property developed at Massey University. The company delivers ultraviolet light to seeds and seedlings to trigger increased plant growth and yield. More recently, for the dairy sector Ravensdown commercialised Lincoln University research that cuts methane emissions from effluent ponds, marketing the technology as EcoPond™.

Former EU Ambassador Nina Obermaier (centre) visited Lincoln Agritech with Selwyn MP Nicola Grigg. Lincoln Agritech has recently joined a Horizon Europe research project

Then come the independent research organisations such as Lincoln Agritech, Cawthron Institute, Aqualinc Research and Bragato Research Institute. Independent Research Organisations collectively are equivalent to about two CRIs and are an integral part of the science ecosystem.

One reason for our research success is the connectivity between research organisations and industry. For starters, many within our industry have come from a horticultural or agricultural background, meaning they personally understand the issues that need to be addressed. In my own case I grew up on a dairy farm, got an honours degree in horticultural science from Lincoln University, worked in a CRI and the private sector, and started a company exporting wasabi to Japan, before becoming chief executive of Lincoln Agritech.

Those connections continue at the organisational level, with much research funded or part-funded by industry bodies, in response to an industry need. For example, in my time on Lincoln Agritech, our scientists have carried out research funded by bodies such as NZ Apples & Pears, DairyNZ, and the Wool Research Organisation of NZ (WRONZ).

A second reason is the primary sector's importance to our economy. Although declining in percentage terms over the past decades, the primary sector accounts for five percent of our GDP (gross domestic product). It is an even bigger proportion of exports, with dairy, meat and animal products accounting for 28 percent of total exports by value in 2022.

Our three major fruit exports (green and gold kiwifruit, and apples) accounted for another 4.9 percent.

This means there is significant willingness to fund research, which attracts world-leading researchers. Armin Werner, Lincoln Agritech's group manager, precision agriculture says one of his main motivations for emigrating to Aotearoa New Zealand was that it was a first-world country where agriculture made up a significant portion of GDP and was regarded as strategically important.

> **“ One reason for our research success is the connectivity between research organisations and industry**

To continue growing our research capabilities and impact, we need to ensure we are researching global issues, and able to take our research to the world. The best way to do that is through close connections with international researchers and research organisations.

On a recent trip to Europe, it became obvious to me that other economies face the same issues as ours: the need to meet climate obligations and find more sustainable ways of growing food and fibre, as well as labour shortages, seem universal. Other countries also face issues with food security.

Our science is as good as any science in the world, but we need to actively seek collaboration to ensure we are included in creating the solutions for the issues facing the primary sector in Europe and Aotearoa New Zealand. That's why Lincoln Agritech was delighted to last year join as a partner in a four-year Horizon Europe project.

Horizon Europe is the European Union's key funding programme for research and innovation, with a total budget of €95.5b (NZ$173b) for its ninth seven-year cycle. In 2023 New Zealand became an associated country, meaning our researchers can join to establish and run research projects on equal terms with European partners and receive funding.

> **The primary sector's importance to our economy means there is significant willingness to fund research**

Actively seeking to be involved in such international projects means our scientists get more opportunities to collaborate globally, and to show to the world the excellent, globally useful science we are capable of. That is where our industry's future must go.

At the end of last year (2023), I stepped down as chief executive of Lincoln Agritech. Over the past 14.5 years I've seen the research industry grow in size and confidence. I leave secure in the knowledge that it is now realising the global impact it can have and is determined to grab the global opportunities that are there for the taking.

HAWKE'S BAY PILOT FOR HORIZON EUROPE PROJECT

Lincoln Agritech has joined universities and research institutions from Greece, Austria, Italy, Belgium, France, and Lithuania on a Horizon Europe project. Known as STELLA, the project aims to provide the tools to establish digital monitoring systems. Lincoln Agritech is contributing expertise in presymptomatic sensing of fungal diseases and digital decision support.

It will run one of the use case pilot programmes, in Hawke's Bay. This will involve monitoring spores and infections of Neofabraea alba, a fungus that causes bull's eye rot in apples. In New Zealand the project will collaborate with the Sustainable Food and Fibre Futures project "Smart & Sustainable" managed by NZ Apples & Pears.

FEATURE ARTICLE

Doug Voss says organic growers in the Oropi district are seeing crops comparable to their conventional neighbours

Getting the conditions right for organic

COVER STORY

As the international market for organic kiwifruit continues to flourish, one of the pioneers of organic growing, Doug Voss, reflects on 47 years of growing the fruit in Tauranga.

Carly Gibbs
Photos : Richard Voss

Doug Voss jokes that his grandfather did a "great selection job" when buying the land that he now owns, 103 years ago.

A stalwart of growing organic kiwifruit in New Zealand, Doug owns 40ha of 259ha his grandparents settled in the farming district of Oropi, south of Tauranga, in 1921.

Gradually most of their land was sold, but what remains in Doug and his partner Paola Galimberti's ownership is an optimal environment for their 32ha of organic green, gold and red kiwifruit, as well as avocados and flowers, in an operation called Manaia Orchards.

Doug also owns Oropi Management Services and is a former owner of Waimapu Packhouse and Coolstore.

He started growing kiwifruit in 1976 and converted to organic over three years from 1983, just as the practice was taking off.

Neighbours in the Oropi-Pyes Pa area converted at the same time, and the growers banded together to support one another.

Nowadays, more knowledge and support exist, and growers have access to all the required organic inputs to grow their crops, except for a direct replacement for Hi-Cane.

This year, Manaia Orchards had its "best bud burst ever", thanks to ideal climatic conditions, combined with its good elevation and the organic practice of tying down more new cane than in conventional orchards.

Doug says organic growers in the Oropi district are getting comparable crops with their conventional neighbours, and nationally many are using increasingly sustainable practices.

In both conventional and organic farming there is an increase in the use of compost, which is one of the mainstays of organics for soil health.

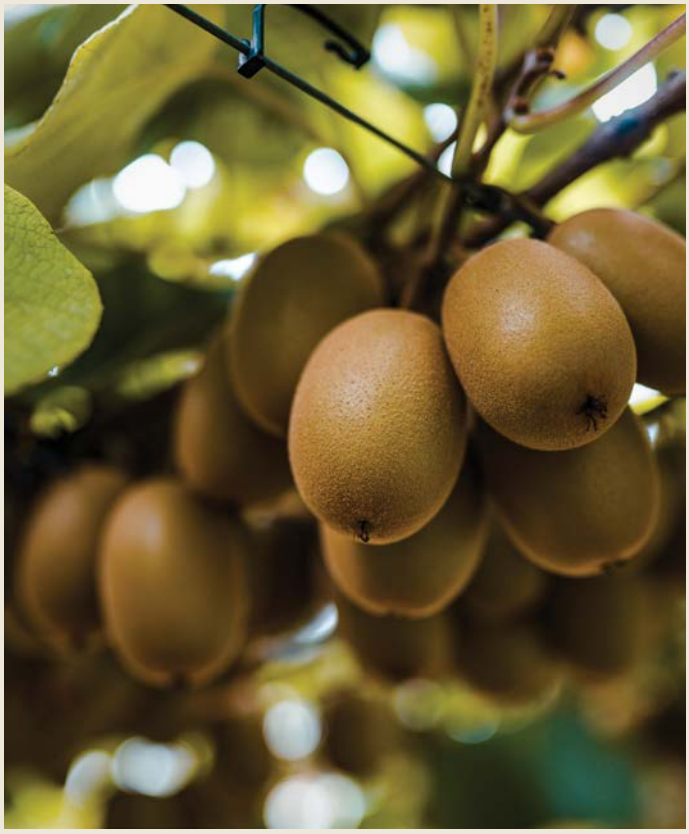
Doug has seen first-hand how natural processes work. In his orchard, strains of bacteria that cause rot had become resistant to fungicides. "Then when we stopped using them they (slowly) looked after themselves. Nature balanced the whole thing."

> **"Consumers are taking more interest in 'where does this fruit come from?'**

Consumers are also taking more interest in 'where does this fruit come from?' and that is helping lead a bigger movement, Doug says, adding that millennials and Generation Z are at the forefront of change.

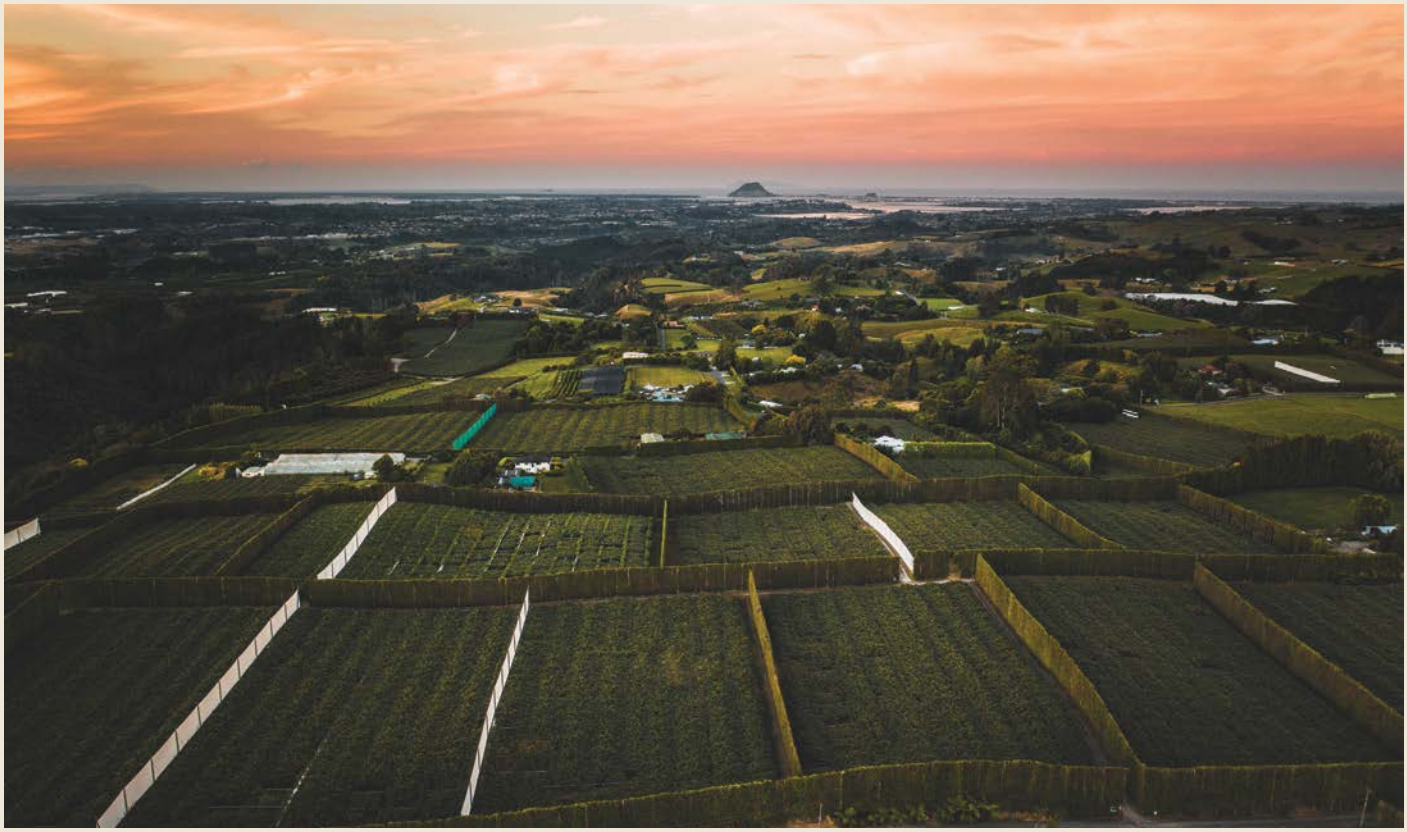
Two of Doug's four children Stephanie, 40, and Richard, 33, work full-time with him on the orchard and live on the property with their families.

They bring their approach and Doug brings his experience. He is a former director and chairman of Zespri International and Zespri Group. He has served a term as president of the International Kiwifruit Organisation and is currently an executive member of the NZ Certified Organic Kiwifruit Growers Association (COKA), a former chair of Organics Aotearoa (OANZ) and a member of the Organic Sector



Advisory Council (OSAC). He has a Diploma in Agriculture, and a Diploma in Valuation and Farm Management.

For those kiwifruit growers who are not interested in converting to organic, Doug says conservatism and "intensive" auditing are two things that may put them off, with a tight paper trail of practices required. Historical certification does not guarantee current or ongoing certification for organic inputs.



Manaia Orchards had its "best bud burst ever", thanks to ideal climatic conditions, combined with good elevation and the organic practice of tying down more new cane than in conventional orchards

However, once a grower develops a system of growing organic fruit, the time involved isn't any greater, and while conventional green is currently being paid out at $9 per tray, organic green is $12, 30c off the price of gold.

There is no rule as to how far apart an organic orchard needs to be from a conventional one, but both organic and conventional growers must comply with local and regional councils with the requirements to have effective boundary shelter. Doug advises seeking advice from an experienced organic grower or consultant.

> **"As the organic market progresses, standards are taken extremely seriously in the international marketplace**

Conversion to organics begins with BioGro, the sole certification agency appointed by Zespri. To obtain organic certification, kiwifruit growers must use only certified inputs for at least three seasons and can start after the last non-organic input.

BioGro requires a record of all non-organic products used on the property during this time, and they will conduct a soil test to detect any leftover conventional product residue. The orchard is then audited annually.

As the organic market progresses, standards are taken extremely seriously in the international marketplace.

In New Zealand, the Organic Products and Production Bill was passed in parliament last year (2023), so those who want to market their products as organic need to meet certain criteria. This was a process Doug helped to drive. Previously, New Zealand did not have national standards.

Also important says Doug, is National's proposal to end a ban on genetic modification.

New Zealand developed kiwifruit cultivators without genetic modification and it would be a shame to see things change, he says.

"The negative impact on New Zealand organic products in the international marketplace is likely to be significant.

"Currently, the international marketplace understands GMOs aren't used in New Zealand, but if that is taken away we must expect a backlash."

Right now, the market for organic kiwifruit is expanding in North America and Europe, where organics have become mainstream, and demand for organic kiwifruit is growing in Asia, particularly in Japan and China.

Doug visited Italy with his son Richard last October on a Zespri trip, where on the Zespri SunGold orchards he visited, they averaged 13–14,000 trays per hectare. Doug says it should be noted that the use of Hi-Cane is banned in Italy.

"They have enclosed canopies completely because they have problems with a stink bug there and that's the best way of controlling that, and they were also having a problem, which seems to be a green kiwifruit problem, which is wilt disease," he says. "It makes using bees difficult, but Italians have never been big users of bees for pollination, they reckon the wind does it… but then tell you there's not much wind in Italy."

They do use artificial pollination, which is something Doug also advocates. His partner Paola used to specialise in pollination and acted as a consultant in Italy before moving to New Zealand in 1988 on a combined Italian and New Zealand Government Scholarship and working at the Department of Scientific and Industrial Research (DSIR), now Plant & Food Research, in Auckland's Mount Albert.

"Some people think you can't use artificial pollination if you're organic, but we are convinced that we want to use it and I think the better you can pollinate your fruit, there's all the normal things – size will be better, but I think it does have an impact on taste."

In conclusion, Doug says organic growing is "good for you, good for the neighbours, good for everybody", and more importantly, organic fruit has shown its potential to thrive just as much as conventional kiwifruit.

NZ Summer Fresh Ltd director Sharon Kirk

New apricot varieties set to hit the international market

February is a big month for apricot growers involved with the new Nzsummer varieties being exported into Hong Kong, Singapore, Malaysia, Vietnam, Thailand, the Middle East, United States, United Kingdom and Australia for the first time this season.

Aimee Wilson

Ardgour Valley Orchards near Tarras in Central Otago is the largest producer of the new varieties, with 25ha planted over the past three years.

Hortinvest was involved with diversifying 38ha of Ardgour Station, which is situated in a non-traditional fruit growing area of Central Otago, from sheep and beef into horticulture. It is now producing both cherries and apricots for the export market.

Other significant plantings are in Roxburgh and Alexandra, with smaller numbers in the assessment stage in other areas of New Zealand including Canterbury and the North Island.

The original apricot breeding programme was a collaboration between the summerfruit industry and Plant & Food Research – which still owns the varieties.

Plant & Food Research provided small numbers of trees to growers across different parts of New Zealand, and an apricot working group was formed, before NZ Summer Fresh Ltd started a company in 2022 to commercialise the new varieties.

Hortinvest director Sharon Kirk, along with Summerfruit NZ vice chair Roger Brownlie, Roxburgh growers Stephen Darling and Gary Bennetts,

Twenty-five hectares of new variety apricots have been planted by Ardgour Valley Orchards near Tarras in Central Otago

as well as Alexandra grower Trent Wilson make up the board of NZ Summer Fresh Ltd.

Stephen is the chair of the board and says what they have learnt so far is that the new varieties perform differently in different locations with specific microclimates.

In the Ardgour Valley, the new Nzsummer2,3,4 varieties are grown on a north-facing elevated site at 380 to 420m above sea level, which makes it perfect for late season apricots.

Sharon says the apricots have more than impressed with their consistently high brix (measure of sugar content), making them super sweet with low acidity, firm textured and an exceptionally bright colour.

Quality apricots generally have a brix of between 11 and 14 but the new varieties have consistently been achieving a brix of 14 to 18. "They are exceptionally juicy," she says.

Two of the varieties – Nzsummer2 and 3 – store longer than other apricots due to an ethylene-recessive gene, making them ideal for export.

Stephen says Nzsummer4, the earlier variety, is a good December apricot but is not a storage variety, and better suited to the domestic market before Christmas.

> **"The original apricot breeding programme was a collaboration between the summerfruit industry and Plant & Food Research**

It has taken more than 20 years of research, and in the process thousands of apricots were assessed, with input by growers, industry leaders, and overseas buyers of summerfruit.

The brief for the Nzsummer varieties was for firm, late apricots with great flavour, good texture, and a blush of red colour. It all started at the Craig family's Coal Creek Gardens orchard in the Teviot Valley.

Ardgour Valley Orchards' specialty apricots were bred for size, colour and appearance

Orchardist Bill Craig's father, Andrew, noticed a branch on one of his Moorpark apricot trees with fruit hanging on it much later than the rest of the tree. He took the initiative to have several trees budded from the branch, and then decided it could be of use to the summerfruit industry and offered it to Plant & Food Research for the breeding programme.

The 'Craig's Late' was used to breed a whole new series of apricots, and then the physiology team at Plant & Food Research got involved to carry out more detailed assessments including on-tree performance, pollination and fruit set, harvest criteria, multiple storage timings and shelf-life performance.

The final stage involved handing them over to the NZ Summer Fresh Ltd for commercialisation.

A total of 44,000 to 45,000 trees spanning 44 to 46 hectares were originally planted in the new varieties.

Wanaka locals had a taste of the fruit fresh from the trees last summer. "You hand them to people and what they don't expect is that the juice goes everywhere when you bite into them," Sharon says.

What was most surprising was the slightly tropical undertone of flavour they also produced.

"Each variety is unique and they have a real glow on the trees when you go to pick them," she says.

Despite losing some of the crop to frosts leading into the season, the company expects to produce between 70 and 80 tonnes this season, with growers having thinned out up to 90 percent to boost size due to the heavy load during the spring.

70–80 tonnes

expected production this season

The trees, which are coming into their fourth season, will reach full production in 2026 to 2027 when output is expected to reach 500 tonnes.

Fifth generation grower Gary Bennetts of Roxburgh, who is vice chair of NZ Summer Fresh Ltd, has been growing about 4ha of the Nzsummer 2 and 3 varieties. His trees are already eight to ten years old and he expects a huge crop this season.

His business, NZ Orchard Direct, was involved in the very early trials of the varieties, along with his cousin and former grower Stephen Jeffery. Gary says the whole point of the new initiative was to give existing growers some more variety.

But there was some cost involved in the new plantings and that had put some orchardists off, after what had been a hard few years for apricot growing in particular, he says.

But Stephen says there has also been renewed interest in the apricots, and that is promising.

China is the big market but there is no access there just yet. New Zealanders can also expect to start seeing the new varieties in supermarkets later in February.

Gary adds that the Australian market is particularly tough because under the Offshore Pre-shipment Inspection scheme they used to have an inspector come onto orchards to sign them off before leaving the country.

"But now we have to send them offshore and we don't know if they will pass when they get there or not."

Other varieties, Kioto, and trial cultivars Summer 92 and Summer 820, will also be available in limited volumes this month.

Sharon, an experienced export and marketing executive, says she will seek feedback from the market before developing a brand for the apricot offering in time for next season.

In September 2023 she attended the Asia Fruit Logistica in Hong Kong which generated significant excitement and they've had huge interest since – including from a large importer in Australia.

"We're fostering long-term relationships with buyers and retailers which we want to grow into the future. Customers in Dubai are planning to launch at retail level and we're in negotiations with major supermarket customers in the United States and Australia."

Hortinvest has several significant orchard developments underway near Tarras and Mt Pisa, spanning 245 hectares, and 150,000 trees planted so far.

The apricots will hit peak season in February

The new plantings mean Central Otago's orchard growing region now spans more than 100km from Tarras in the north to Ettrick in the south.

Stephen says he has been quite encouraged by the early fruit on the young apricot trees and is very focused on the export opportunities for them.

"We think they have amazing eating qualities, but time will be the judge." ●

FEATURE ARTICLE

Exporters, shippers and buyers will meet at this year's Fruit Logistica in Berlin from 7-9 February

Will the European Union remain a key market?

After years as New Zealand horticulture's top export destination, the European Union has fallen well behind China and just below Japan. Last year's earnings from the trading bloc tumbled almost $350 million from the 2021 high. However, 2024 could see a return to form thanks to strong supply and an end to tariff trade barriers.

John Gauldie

New Zealand's first 2024 onion exports to Europe left in January, but may not benefit from the New Zealand-European Union Free Trade Agreement (NZ-EU FTA).

At the end of 2023, the European Parliament voted in favour of ratifying the agreement. However, the agreement will not come into force until the New Zealand government follows suit.

"The ball is now in our court," says Stephanie Honey, chair of the New Zealand Horticulture Export Authority. "The new government has a heavy legislative agenda but we hope that getting the FTA ratified will be an early priority, so that the sector can start to take advantage of those tariff savings for the coming season."

Onions NZ chief executive James Kuperus agrees. "We have been vocal with ministers to make sure they are aware of the urgency. It's one of our top priorities for the new government."

Onions and kiwifruit, with their large EU markets, stand to benefit most from tariff relief. Based on last year's export figures, around $60 million in tariffs per year will be slashed from day one, including nearly $52 million on kiwifruit alone. Zespri's first fruit is scheduled to depart for Europe in mid-March.

Stephanie says that tariffs don't just matter in terms of better export returns but also because they impact on our competitive position in the European market. "Thanks to the FTA, we will now have a level playing field for tariffs."

While New Zealand kiwifruit and onion exporters have been facing EU tariffs of between 8.8 and 9.6 percent, many of our biggest Southern Hemisphere competitors gain entry for their products duty-free. Other New Zealand fresh, frozen and processed horticulture products face even higher EU tariffs – in some cases, up to 33 percent.

Securing the FTA has been a major achievement for the New Zealand government and everyone involved in the negotiations – particularly while our neighbours across the Tasman still have a long way to go with their own EU FTA.

> **The new government has a heavy legislative agenda but we hope that getting the FTA ratified will be an early priority**
>
> Stephanie Honey, chair of the New Zealand Horticulture Export Authority

> **Around $60 million in tariffs per year will be slashed from day one**

"Horticulture is one of the big winners from the FTA," Stephanie continues. "Getting our exports onto a more predictable, lower-cost footing is very important to the resilience and prosperity of the sector. It is also timely, given that the international trade environment continues to be buffeted by supply chain disruptions, trade tensions and other challenges."

The FTA also includes some valuable new commitments on non-tariff measures, including greater use of digital tools and deeper cooperation on phytosanitary rules, reflecting that we are a trusted trading partner with proven compliance on biosecurity issues.

"All of this will help to ensure that exporting is more streamlined and less costly – which really matters after several years of supply chain disruptions," Stephanie says.

"The FTA is a very good outcome for New Zealand onion producers," James confirms. "It remains to be seen how the zero tariff will benefit growers directly – either through increased farmgate value or more competitive supply into the EU. But it's extremely significant – 10 percent relief is a huge jump for the sector when we are used to negotiating over smaller margins."

However, New Zealand horticulture's overall export earnings (FOB) from EU trade have dropped significantly during the last two years – from close to $1 billion in 2021 to almost $614 million in the year ending November 2023.

While supply issues have affected EU exports, Hamish Marr, New Zealand's Special Agricultural Trade Envoy, also sees changing consumer demand behind the trend.

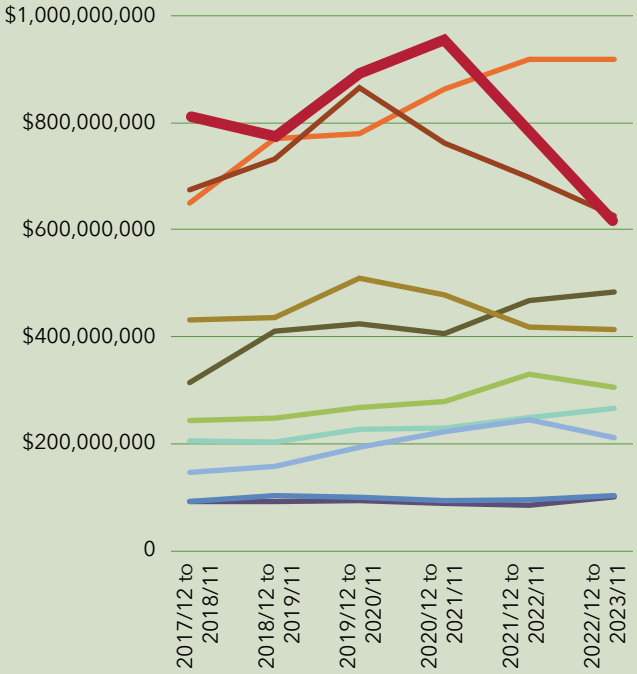
"Consumers in Europe increasingly think about buying local and can't get their head around the distance to New Zealand. We have a hell of a good story, even with the environmental cost of shipping included, but the consumer perception is something else."

The buy local trend is certainly one of the factors driving a decline in all onion imports into the EU, James says. Onion imports from all countries in the Southern Hemisphere declined from 250,000 tonnes in 2000 to about 100,000 tonnes in 2023. Another factor is the greater and better storage capacity in the EU. However, he doesn't believe New Zealand growers have been hit as hard as other Southern Hemisphere onion producers.

> **"Every second sentence that I was hearing at the Commission was about sustainability**

"New Zealand onion exports have remained at about 60,000 tonnes – because we are a preferred supplier. We have developed a reputation for food safety credentials and our reputation for reliability and quality. Europe will still need counter seasonal supply and we firmly believe the EU will remain a top market for New Zealand onions."

NEW ZEALAND HORTICULTURE'S TOP 10 EXPORT DESTINATIONS (EXCLUDING WINE)



	NZ horticulture export earnings FOB 2022/12 to 2023/11	Earnings per capita
China	$920,400,687	$0.65
Japan	$622,637,688	$4.95
EU	$613,976,485	$1.40
ASEAN	$486,076,616	$0.72
Australia	$411,925,681	$15.58
Taiwan	$308,353,352	$13.08
USA	$268,663,121	$0.81
South Korea	$213,003,245	$4.12
Hong Kong	$106,781,258	$14.40
Pacific Islands*	$103,539,400	$7.57

Source: Statistics New Zealand

Aggregated Harmonised System (HS) codes FOB values, Vegetables and certain roots and tubers; edible (7); Fruit and nuts, edible; peel of citrus fruit or melons (8); Preparations of vegetables, fruit, nuts or other parts of plants (20)

*Pacific Islands includes Pacific Island Forum countries excluding Australia and NZ, including American Samoa

The FTA is welcome news for kiwifruit growers who have had a tough couple of seasons dealing with challenges including the changing climate and rising costs, says Zespri's head of global public affairs, Michael Fox. However, with the harvest set to get underway this month, Zespri is forecasting an increase in New Zealand supply to all key markets, including Europe.

"Planning is well underway with initial estimates suggesting we're looking at volumes similar to the 2021 season, which will likely be our biggest year-on-year growth in volume. Global demand for our fruit continues to grow, and despite a number of headwinds in the last two seasons we believe the opportunities ahead of us to create value for New Zealand communities are significant."

The FTA will also help to strengthen commercial and cooperative relationships – including cross-border investment, licensing, and information sharing between New Zealand and European producers, investors and producer organisations. As Trade Envoy, Hamish has held many conversations with EU politicians and European industry leaders in Brussels. He has also hosted them at his Canterbury farm where he grows arable crops and process vegetables.

"Everyone speaks very highly of the trust between New Zealand and the EU. We have a long, healthy and trusted relationship. We need the stability that Europe can offer. But you have to remember that the EU is a highly regulated economy with a heavily subsidised agricultural sector and a degree of market protection that we don't have."

While the FTA includes some ground-breaking commitments on tackling environmentally harmful subsidies, Stephanie says, unfortunately it stops short of new commitments on agricultural subsidies, which can have a range of negative effects not just on competitive exporters but also on the environment and global food security. EU member states may also apply rules differently and can introduce their own regimes on sustainability – particularly as the EU's Green Deal ambitions come under pressure.

Late last year the European Parliament rejected the European Commission's proposal on the Sustainable Use of Plant Protection Products (SUR), effectively dropping a key pesticide ban in the bloc's Farm to Fork strategy in the Green Deal. Shortly afterwards, the European Commission renewed approval for the herbicide glyphosate, just before its existing authorisation expired. There has been a highly polarising public debate on these policies in the EU.

Hamish Marr is New Zealand's Special Agricultural Trade Envoy: "When people want to partner with you, it tells a story."

Hamish notes that industry organisations in Europe such as COPA-COPEGA (Committee of Professional Agricultural Organisations-General Confederation of Agricultural Cooperatives) have been saying for years that the Green Deal is problematic. "What I think we're seeing now is that the pesticide section is likely to fall over, simply because there are no alternatives. Now the EU is looking more favourably at genetic engineering. I think it's 'watch this space' with the Green Deal. You will see a change coming."

> **"I think it's 'Watch this space' with the Green Deal. You will see a change coming**

However, Hamish believes sustainability will remain the number one focus for the Commission on agriculture. "It won't go away but it will change. Every second sentence that I was hearing at the Commission was about sustainability."

"The overall direction is pretty clear," James says. "EU regulations will have a big effect on onion growing here but I think New Zealand growers will be well prepared. As a sector we're more cohesive and work well with government, which makes us able to react faster. The reaction to the EU ban on Mancozeb is a good example. It shows that we can do it."

Zespri will continue to strive for more sustainable ways to provide the best quality fruit to its markets, Michael says. "However, it's important that growers are supported in this transition, particularly when they've been under so much pressure in recent years."

Zespri also sees opportunities in the FTA for New Zealand to partner with European counterparts on key challenges including sustainable food production and climate change – for example through access to Horizon Europe, Europe's largest science collaboration platform.

"This will allow experts and innovators in both parties to work together to tackle these challenges," Michael says. "It will be important to consider how New Zealand can access the benefits of this innovation, including through permissive and aligned regulatory settings where appropriate."

Stephanie says that one of the novel elements of the FTA is a new formal cooperation chapter on sustainable food systems. This creates an important platform for engagement on organic and regenerative farming, the use of fertilisers and chemicals, resilient food supply chains, indigenous knowledge in food systems and the environmental and climate impacts of food production.

"It will be very useful to keep engaging with Europe on these issues. It also gives us the chance to showcase our unique approach and credentials in this area."

It makes sense that Europe wants to work with New Zealand on sustainability, Hamish says. "When people want to partner with you, it tells a story. We have to remind ourselves how good we are. We're conscious that we are small player, but having said that, we well and truly punch above our weight. Be proud of what you're doing and tell that story to the world." ●

Gary, Steph and Cam Bignell in their new factory in Alexandra, surrounded by thousands of bottles of freshly made cherry juice

Juice processing boom

They say that one person's trash is another's treasure, and that couldn't be more true for Eden Orchards, which has one of the industry's most successful sustainability stories.

Aimee Wilson

Turning waste cherries, blueberries, raspberries, boysenberries, blackberries and plums into a range of premium juices for the Australasian market, the growth has been so exponential in the past 12 months that the company recently had to find larger premises, so they converted an old honey factory in Alexandra.

The founders of Eden Orchards, Gary and Steph Bignell, started out using their own waste cherries from 20,000 trees on their Blenheim orchard in the 2016–17 season to make fruit juice.

The heavy rain from that season wasn't great for exports, and so the time was ripe for trying something new.

"Those seasons of heavy rain forced people to think outside the box," their son and now company general manager Cameron Bignell says.

Central Otago was the logical choice for a juice factory with the abundance of cherries grown in the south, and in 2018 the family started processing their fruit juice from a smaller facility in Alexandra's industrial area.

The head office is in Auckland but Cam is based in Sydney, dividing his time between the two cities and Central Otago – employing a full-time team which will soon increase to 15 staff.

General manager Cam Bignell with the popular cherry juice

Eden Orchards founders Gary and Steph Bignell

With a background in accounting, he's enjoying getting back to his horticultural roots, and travelling around meeting all of the growers that supply their fruit, as well as the retailers who now stock the juice.

In December 2023, Eden Orchards moved from its original processing and bottling plant out to the former Otago Bees site in rural Alexandra. This has allowed the company to increase the production and range of products significantly, generating 15,000 bottles a day from its new factory – doubling the output from 2023.

Production over the short cherry season has increased from 300 tonnes to 700 tonnes, and Eden Orchards is making the same amount of juice in one day that they once did in an entire season two years ago.

"That saves a lot of fruit from being dumped," Gary says. Everybody wants to be part of the sustainability journey."

Of course, the business is still weather dependent to some degree – and they also have to be able to keep up with demand. With 12 local growers all supplying fruit (there was a limit to the number they could accept) some days they are offered 400 bins of waste fruit, other days just ten.

Investing in state-of-the-art technology, a lot of work has gone into converting the factory to suit their needs.

Making cherry juice hasn't come without its challenges either and there have been many lessons along the way. In the first year it was a complete failure – all 5000 bottles fermented and exploded, Cam says.

Production over the short cherry season has increased from 300 to 700 tonnes

"We didn't pasteurise it to the extent that it should've been. And because we don't use any preservatives or additives, we have no back-up. There is no room for error."

And with such a short window to get it right – all of the product has to be made in just four weeks of the year – there are no second chances.

If a machine breaks down and the engineer needed to fix it is still on holiday, they could easily lose a day in processing.

The original ethos of the Eden Orchards cherry juice company was to produce a product primarily for the consumer market rather than retail. The family started out attending weekend markets, trade shows and field days, before hitting social media to target their customers directly.

"But now retailers want to be part of it, which is great," Cam says. Their products are also sold in more than 200 specialty stores and New World supermarkets around the country, with a further 100 in Australia, after attracting a loyal customer base.

The nutritional benefits of the juices are currently being researched by a Massey University student doing a PhD. Literature around the world has already confirmed there is natural melatonin in cherries and for her doctorate the student has tested different varieties of fruit for bioactives – so far with some interesting trial figures, Cam says.

Cherry juice is also known to increase muscle recovery after exercise, and the research work is looking into what makes the New Zealand fruit different from the rest.

"We have such high UV (ultraviolet) light and long sunshine hours that both help to push up the antioxidant levels in the fruit," Cam explains.

The reviews are all positive – online they are up to 4500 five-star reviews and they are all from genuine customers.

"It's really hydrating, and Cam and I always notice that we sleep really well over cherry season," Steph says.

> **"We have such high UV (ultraviolet) light and long sunshine hours that both help to push up the antioxidant levels in the fruit**

Sustainability is a huge part of Eden Orchards' journey. With the help of a grant from Sustainable Food and Fibre Futures, the company got involved in a new Central Otago Waste initiative in conjunction with Plant & Food Research and the Central Otago District Council.

Trialling frozen cherries that are pitted, the aim is to reduce the amount of fruit loss in the industry. Eventually that will offer their company another income stream, where they will look at partnering with another New Zealand company to sell frozen fruit for a range of different products.

And it doesn't just stop there. Eden Orchards is this season for the first time turning the pips and skins of the cherries into compost at a separate local site, that will then be used back out on orchards and farms.

All of the cherries are provided by 12 of the largest cherry growers and packhouses in Central Otago. The other fruit comes from Gary and Steph's berry farm that they bought in Motueka four years ago as a retirement project after selling the Blenheim orchard.

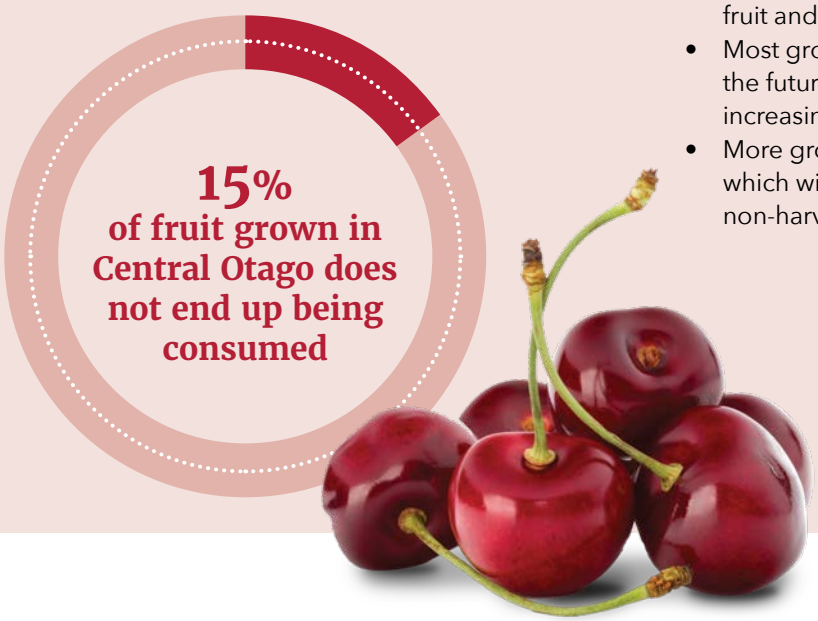
Once the cherry season is finished, the factory will then move onto juicing stonefruit like peaches and plums. Then finally the 50 seasonal staff, which includes a mixture of locals, backpackers and semi-retired travellers will take a break, having worked all summer.

"Back in the day as a family we did everything. But if you said that one day we'd be producing 300,000 bottles a season I would've said that's ridiculous," Steph says.

PROCESS CROP SET TO INCREASE

A report commissioned by the Central Otago District Council in 2022 showed that about 6000 tonnes or 15 percent of fruit grown in Central Otago does not end up being consumed.

Economic development manager Nick Lanham says Central Otago produces world class fruit for the New Zealand and international market but not all of it can be enjoyed fresh. "We have been supporting the industry to process more of the fruit that would otherwise go to waste."



Results from the report showed:

- Fruit not harvested was estimated at **8.6 percent (4151 tonnes)** of the total crop in Central Otago.
- Fruit harvested that was not sold amounted to **4.2 percent (2014 tonnes)** of the total harvested fruit crop. This fruit was mostly recycled back to the orchard.
- Export and local market fruit accounted for **85 percent** of fruit sold and process grade fruit was **11 percent** of harvested fruit. Process grade fruit was mostly used for juice, concentrates, dried fruit and pulp.
- Most growers agreed that fruit loss will increase in the future driven by substantial new plantings and increasing grade standards.
- More growers are moving towards strip picking which will increase the harvested loss and reduce non-harvested loss

The 2023 Pacific Labour Mobility Annual Meeting (PLMAM) took place in Port Vila late last year

High level dialogue about Pacific labour mobility

The New Zealand Recognised Seasonal Employer (RSE) scheme is an internationally recognised circular migration strategy that makes a considerable and essential contribution to the economic, social and cultural development of New Zealand and to the Pacific Island communities from which the workers come.

Helen Uiese : HortNZ Project manager, Aotearoa Horticulture Action Plan – Nurture People

It is now in its 16th year and continues to foster relations with the nine Pacific nations through the arrangement of seasonal employment in the horticulture and viticulture industries.

The 19,500 workers are deployed across 11 regions undertaking work including planting, maintenance, harvesting, packing and winter pruning. The scheme has a profoundly positive effect on the productivity, viability and profitability of the horticulture and viticulture industries, not to mention the benefits to the individuals (both workers and growers) involved. The communities and villages in the Pacific benefit through remittances, and also from the transferable skills workers acquire whether through on the job learning or the Vakameasina RSE Worker Training Programme while in New Zealand. Equally, we cannot turn a blind eye to the evolving challenges that are faced by workers, employers and Pacific countries.

The government of Vanuatu together with the PACER (Pacific Agreement on Closer Economic Relations) Plus Implementation Unit hosted the 2023 Pacific Labour Mobility Annual Meeting (PLMAM) in Port Vila, Vanuatu from 20 to 24 November 2023. The theme focused on harnessing the development benefits of labour mobility for the Pacific region and included a two-day regional workshop on sustainable reintegration.

NZ Apples and Pears chief executive Karen Morrish spoke at the meeting

An inaugural Employer Forum for Australia and New Zealand employers provided an opportunity for dialogue on the complexities and initiatives currently in play to address the challenges, and how to mitigate risks. The aim was to have an employer voice at the regional level.

A New Zealand employer, contractor and industry delegation attended the meeting in Vanuatu together with participants including workers, employers, government officials, delegates from the private sector, unions, civil society, academics and regional organisations from the Pacific, New Zealand and Australia. There were also delegates from global organisations. It was a good opportunity to share experiences, research findings and ideas on how employers can support the advancement of labour mobility in the Pacific.

NZ Apples and Pears chief executive Karen Morrish was elected by the Employer Forum to present the agreed commitments to supporting the development benefits of labour mobility in the Pacific region. An outcome statement compiled of agreed commitments and priority areas for the next 12 months will be discussed at the PACER Plus Trade Ministers Forum.

The PLMAM provided a great opportunity for stakeholders to present research findings to highlight what is working well and to propose best practice to address the social and economic complexities of labour mobility. It provided a wonderful learning and networking forum to hear and connect with our Pacific partners, workers and international organisations vested in making labour mobility work in the region.

The New Zealand delegation saw immense value in being part of the PLMAM to present an employer perspective in advancing labour mobility with Pacific partners. There are many success stories and best practice employers committed to a partnership with their workers and their Pacific communities. Horticulture New Zealand also supports and advocates for the 'New Zealanders first' approach and work is being done in this area.

> **Participating at PLMAM increases understanding of the operational challenges faced by the Pacific**

RSE scheme employers see the value of being more engaged at high level meetings with Pacific partners and international organisations in the next PLMAM gathering in 2024. For growers who employ RSE scheme workers, participating at PLMAM increases understanding of the operational challenges faced by the Pacific, as well as appreciation of how labour mobility affects the Pacific region.

HortNZ encourages all RSE scheme employers to consider attending the 2024 PLMAM, which is to be held in Australia. The RSE newsletter will provide further details once these are released by PACER Plus. ●

NEW ZEALAND FRUITGROWERS' CHARITABLE TRUST

The New Zealand Fruitgrowers' Charitable Trust is offering a scholarship for the 2024 academic year.

$5,000 LINCOLN UNIVERSITY DIPLOMA SCHOLARSHIP

The New Zealand Fruitgrowers' Charitable Trust is offering a $5,000 scholarship in 2024. The scholarship is available to New Zealand residents who are working in, or intend working in, the New Zealand fruit growing industry undertaking study towards a Diploma in Horticulture or a Diploma in Horticultural Management at Lincoln University.

The annual value of the scholarship shall be a maximum of $5,000 towards tuition fees or living expenses. $2,500 will be paid out in Semester 1 and on condition that all Semester 1 courses are successfully completed a second $2,500 will be paid out in Semester 2.

Application process

Applications for this scholarship close on 30 April 2024.

Further information and application forms are available from the Lincoln University website: **www.lincoln.ac.nz/study/scholarships/search-scholarships/new-zealand-fruitgrowers-charitable-trust-horticulture-scholarship**

Please note that the Selection Teams for this scholarship will be looking for:

- Commitment to the fruit growing industry.
- Potential contribution to the fruit growing industry.
- Past achievements.
- Individual approach, qualities and skills.
- Referees' comments.

NZ National Fieldays Society chief executive Peter Nation, agribusiness project curriculum director at St Paul's Collegiate School Kerry Allen, and past St Paul's Collegiate School headmaster Grant Lander with a 10th anniversary cake at the Fieldays 2023

Fostering primary industry futures for secondary students

Secondary schools are part of the pipeline of promoting horticulture as a career choice, but are they delivering the employees that growers need? HELENA O'NEILL takes a look at some of the horticulture programmes and initiatives in place in our secondary schools.

It's no news to anyone in the horticulture industry that there is a labour shortage. The Recognised Seasonal Employer (RSE) scheme came into effect in April 2007, allowing the horticulture and viticulture industries to recruit workers from overseas for seasonal work when there are not enough New Zealand workers. And there are programmes in place in our schools to help foster an interest in horticulture as a career, in a bid to secure the industry's future.

Horticulture New Zealand general manager of engagement Kate Longman says the labour shortage is a volume issue, but more specifically, a right people at the right time at the right place challenge.

"Fruit and vegetable production is intensive at some times of the year in some places, yet easy at other times of the year in other places, which influences the supply and demand of labour. Horticulture needs smart people that want to work in an environment that interconnects people, soils, water, climate and plants to food production."

GoHort is a brand that is used to promote horticulture as a career. Kate says that several initiatives have been implemented and branded GoHort, the most significant being the career progression network that supported growers in finding workers during Covid-19.

"Horticulture New Zealand's capability portfolio scales up and back depending on the priority, and through Covid-19, labour attraction was at the top of growers' concerns.

The need to promote horticulture as a career remains important but has become less urgent. HortNZ in partnership with the Fruitgrowers' Charitable Trust will continue to promote careers through the InZone Careers Coach [a bus] which visits secondary schools throughout New Zealand, and selected careers events and Field Days."

> **Horticulture needs smart people that want to work in an environment that interconnects people, soils, water, climate and plants to food production**

HortNZ is represented on the Subject Expert Group as a Career Pathway Adviser for the Ministry of Education in reviewing the secondary school curriculum for the Agriculture and Horticulture subjects at Level 12 (Form 6). In 2023 nearly 11,000 students took Agriculture or Horticulture at secondary school, with a further 524 taking Agribusiness as a subject.

One of the pillars of the Aotearoa Horticulture Action Plan (AHAP) is to nurture people, and within this pillar is a key priority of establishing a coordinated capability framework for horticulture and the action of integrating a school and tertiary horticulture programme pipeline within the New Zealand education system.

> **Learning horticulture skills offers practical learning experiences, promotes environmental awareness, improves health and wellbeing, and develops valuable life skills**

Kate says the goal is for this strategy to attract students to the sector, but of most importance are the skills that are learnt at school through studying horticulture.

"Learning horticulture skills offers practical learning experiences, promotes environmental awareness, improves health and wellbeing, and develops valuable life skills, as well as providing exposure to career opportunities in our sector."

She says there are a lot of people who are doing great work to encourage education in horticulture.

"A key aspect of HortNZ's strategy is to enable those in the education system who are already delivering horticulture by providing the support they need for their learners to have great experiences. This starts with a fit-for-purpose curriculum, programmes, assessments, and access to high-quality relevant learning resources. HortNZ works through groups like the Horticulture & Agriculture Teachers Association to understand what their needs are and how we can help. Some of the initiatives aligned with this include Sow the Seed (AgHort Science), Agribusiness in Schools, and Agri Futures."

Agribusiness in Schools marketing, branding and communications manager Catherine Bryant says the initiative evolved out of a 2013 parent survey at St Paul's Collegiate School in Hamilton that concluded it was not meeting the needs of its students with rural backgrounds in encouraging them to consider pathways into the primary sector.

John McGlashan College in Dunedin was invited to be a lead school in the development of the Agribusiness in Schools programme. By 2017 there were 11 lead schools with 308 students trialling the delivery of Agribusiness.

Dr Craig Preston is the director of Agribusiness at John McGlashan College and also teaches Science, Bioethics and Health, and IB (International Baccalaureate) Biology.

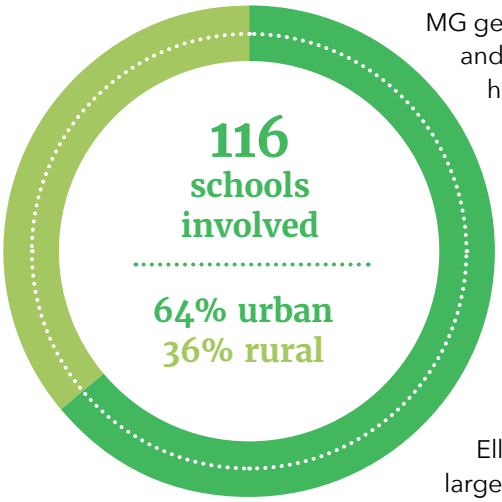
In an interview with Agribusiness in Schools last year, Craig said Agribusiness teachers have the opportunity to shape young minds, inspire innovation, and witness the direct impact of education on real-world challenges.

Agribusiness class at John McGlashan College in Dunedin making beef jerky, marketing and packaging the end product

Now there are 116 schools involved in the programme, 36 percent rural and 64 percent urban schools.

National Agribusiness subject advisor Melanie Simmons has been based at St Paul's Collegiate School in Hamilton since 2018.

"Agribusiness is a multi-disciplinary subject with approved university entrance status. It integrates concepts from a range of learning areas including Sciences, Technology, Commerce, Mathematics and Statistics and has underlying themes of growing value, future-proofing and sustainability."



Melanie says there is an urgent need for initiatives that encourage long-term career choices for students and an improved link between secondary schools, tertiary institutions and the agribusiness sector.

Large horticulture employers like MG see the importance of building pathways into the wider horticulture industry, implementing and supporting several initiatives.

MG general manager of communications and sustainability Ellery Tappin says that having a pathway into the horticulture and produce industry for young Kiwis is very important.

"While the likes of RSE scheme workers and backpackers on holiday visas will remain an important part of our industry in the future, we still need a pipeline of strong local talent to keep driving the industry forward."

Ellery says this challenge, along with a large portion of the workforce being at the older end of the age spectrum, is a concern and something the whole industry should be focusing on.

"The MG Charitable Trust is also putting a strong emphasis on supporting initiatives which enhance education in the industry. The trustees have funded projects right from the primary school level in the past, but moving forward are only focusing on supporting those about to enter the industry or growers already in the industry who want to take their careers to the next level."

This focus led to the MG Charitable Trust becoming a funding partner with Agribusiness in Schools.

"It's designed to help prepare the best and brightest students for careers in the primary sector. A key criterion for the MG Trust investing in the programme was to have more horticulture content included in the delivery of the course," Ellery says.

> **Agribusiness integrates concepts from a range of learning areas including Sciences, Technology, Commerce, Mathematics and Statistics**

"There's a misconception that the industry is about digging up crops. We would like to see horticulture and the produce industry promoted in a way that highlights the depth and breadth of what's on offer. It's sophisticated, innovative, technology-driven, scientific, analytical and progressive – it offers so much right across the supply chain. It's also incredibly important to provide everyday Kiwis with fresh, healthy produce."

Te Pūkenga ako network director food and fibre and executive director at Primary ITO Andrea Leslie says that through its business divisions including Primary ITO, Te Pūkenga is committed to the horticulture industry.

"[We] provide vocational education online, on campus and in the workplace to ensure the appropriate skills and knowledge for each of the horticulture sectors are developed and implemented to benefit this vital part of our economy."

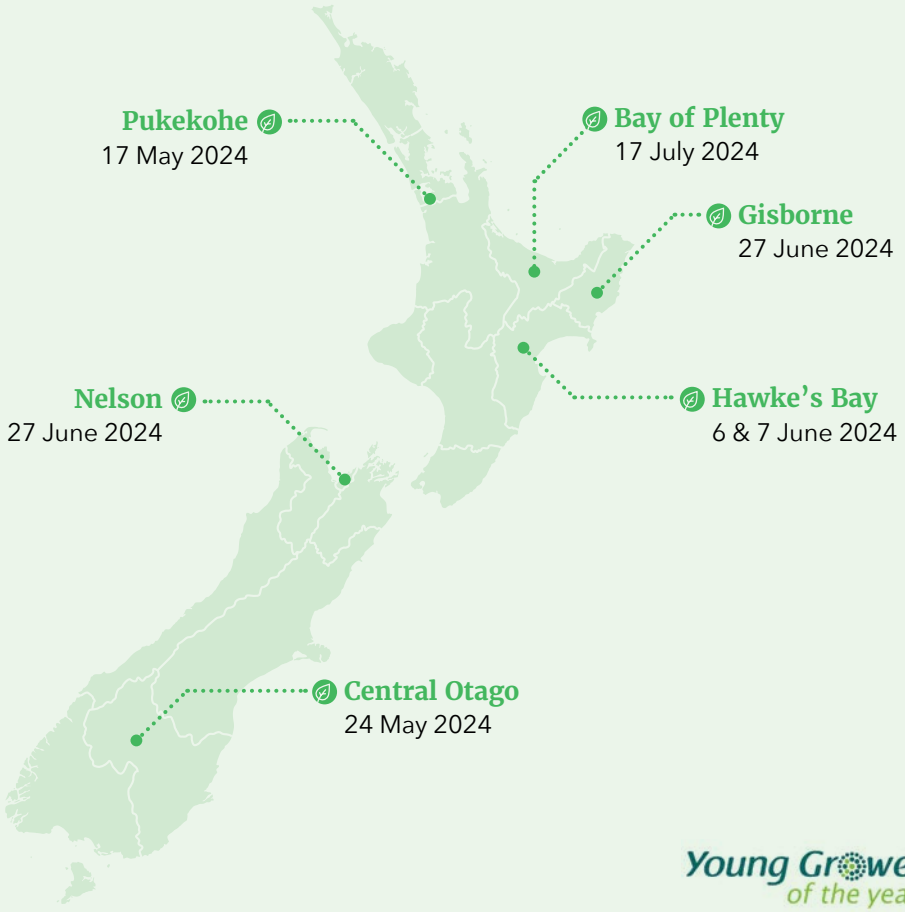
Andrea says that Te Pūkenga works with employers to ensure programmes are meeting their needs and also supports attraction initiatives through marketing, industry events and within its school programmes.

"We also work closely with Horticulture New Zealand to support its initiatives such as the development of micro-credential delivery which is focused on specific and tailored needs for the industry".

DATES FOR YOUNG GROWER REGIONAL FINALS

The Young Grower of the Year is an annual competition run by regional organisers and Horticulture New Zealand to select the finest young grower in the country. The competition supports the next generation of horticulture industry leaders.

Find out about the regional events and how to enter on the Young Grower of the Year website: **www.younggrower.co.nz**



HIGH RISK

Brown marmorated stink bug (BMSB)

It's taken over most of the world, but we can protect New Zealand from these stinky invaders. Brown marmorated stink bug (BMSB) is hard to control once established. Prevention is our best chance.

BMSB characteristics

- Size 14 – 17 mm (about the size of a 10 cent NZD piece).
- Brown shield-shaped shell with marbled pattern (adult BMSB).
- Shell, legs and antennae with light-coloured alternating banding.
- Produce a smell of dirty socks or coriander when agitated (= stink bug).
- BMSB looks very similar to New Zealand's brown shield bug (*Dictyotus caenosus*), brown soldier bug (*Cermatulus nasalis*), and Pittosporum shield bug (*Monteithiella humeralis*).

The brown marmorated stink bug (*Halyomorpha halys*) is a polyphagous sucking insect that feeds on a wide range of host plants including commercially important crops like pipfruit, stonefruit, citrus, berries, kiwifruit, sweet corn, grapes, asparagus, beans and corn. The bug pierces through the plant or fruit skin causing damage and general plant health decline, also with the potential to transmit various plant diseases. In Italy BMSB has led to an estimated 30 percent crop loss annually through declined productivity, fruit drop and unmarketable fruit damages.

Native to Asia, this pest quickly spread throughout North America, Europe and more recently South America. Prolific breeders and long-distance flyers, BMSB can spread quickly across large areas. The pest overwinters (hibernates) underneath debris or in natural crevices as well as vehicles, machinery, shipping containers, general household goods or passenger luggage.

What can you do?

1. **Keep an eye out for BMSB.** Early detection gives us the best chance to manage this unwanted stinky invader. Be vigilant checking your crops.
2. **Thoroughly inspect any recently imported machinery and vehicles or luggage** when returning from an overseas trip (particularly on-farm visits) for any signs of this bug. Keep windows closed when unpacking your suitcase and also look into crevices and underneath the lining of the case.
3. **If you spot it, catch it, snap a photo and report it!**
   a. Use the Find-a-Pest app if you find anything suspicious: www.findapest.nz.
   b. Call the Ministry for Primary Industries' pest and disease hotline 0800 80 99 66 or use the online reporting form.

Extra resources

MPI BMSB flyer: **www.mpi.govt.nz/dmsdocument/10784-Brown-marmorated-stink-bug-fact-sheet**

www.mpi.govt.nz/biosecurity/pests-and-diseases-not-in-new-zealand/horticultural-pests-and-diseases-not-in-nz/brown-marmorated-stink-bug-threat-to-nz-and-identification/

FIND A PEST

Download on the App Store

GET IT ON Google Play

ARE WE READY FOR A FIGHT WITH BMSB?

The best chance for success we have is to keep the brown marmorated stink bug out of New Zealand.

During the BMSB season (September to the end of April), Ministry for Primary Industries (MPI) border staff are extra vigilant to detect this pest, especially in passengers' luggage and other high-risk goods like imported vehicles and machinery. Biosecurity incursion investigators will respond to any notification through the MPI exotic pest and disease hotline (0800 80 99 66).

However, given that an incursion only requires small numbers of these invasive bugs, we need to be ready to fight back. MPI and likely affected industries formed the Brown Marmorated Stink Bug Council (BMSBC) under the Government Industry Agreement (GIA) for biosecurity readiness and response.

Life stages of the BMSB (www.researchgate.net/figure/Life-stages-of-BMSB-The-life-stages-of-BMSB-are-shown-starting-with-eggs-followed-by-1st_fig3_265175730)

The search for more options continues, but we currently have a few tools in our toolbox:

- Options are being investigated for a range of traps to attract and kill BMSB.
- Insecticides that are most efficacious against BMSB fall into the broad-spectrum pyrethroid and neonicotinoid classes. Many of the chemicals that are used overseas to manage BMSB are either not available in New Zealand or are at risk of being banned for long-term use in the future. For example, bifenthrin, a synthetic pyrethroid, is currently being investigated by the Environmental Protection Authority (EPA) under their chemical reassessment process.
- Biological control agents (BCAs) are another option that has been used overseas. The BMSB Council has sought and gained conditional approval from the EPA to use the parasitoid wasp *Trissolcus japonicus* (the samurai wasp) in the event of a BMSB incursion. This little wasp is one of the natural enemies of the BMSB, capable of reducing the BMSB population by killing its eggs.
- While exclusion netting has been shown offshore to be effective to keep BMSB out of an orchard or vegetable field, covering all productive land with nets cannot be the answer. ●

At the opening of the new Viscount FCC facility left to right: Regan Hill from Viscount FCC, growers Frank Wai Shing, Vijay Bhana and Amrut Bhana, and Alvaro Zapata from Viscount FCC

Crates: an unsung success story

Reuseable plastic crates (RPCs) are the glue that sticks the domestic fruit and vegetable sector together according to Anne-Marie Arts, food safety representative on United Fresh.

Glenys Christian

"And they're one of the unsung sustainability stories of the industry."

In New Zealand they've been used for most produce moving through the domestic supply chain for the last 30 years, travelling from grower to packhouse, to wholesaler, to retailer and back again many times over in their tens of thousands.

Crate hygiene measures have become increasingly important for all crate users, especially as the risks of microbial contamination are better understood and there's been a significant investment in washing infrastructure by crate companies in recent years. Whilst RPCs are not regulated under the Food Act, the crate washers Viscount FCC, CHEP and Loscam Fresh have HACCP (Hazard Analysis Critical Control Point) based food safety programmes at their crate washing facilities. Despite recent seasonal challenges, complaints about dirty crates haven't been a concern.

"No news is good news," she says.

Retailers would reject produce if it was in crates which were visually dirty.

In 2020 Anne-Marie was part of a United Fresh technical advisory group which looked at RPC hygiene management internationally after the incursion of pepino mosaic virus. The conclusion reached was that washing systems with good hygiene controls could assist in reducing the potential spread of viruses via crates. However, every member in the crate reuse cycle needed to be conscious of their responsibilities in managing crates.

Glasshouse growers were urged to include a separate internal crate pool for harvest and transport to their packhouse, with the external crate pool used to transport products to market. A washing system for the grower-owned crates was also needed.

> **All members of the supply chain have a responsibility to manage RPCs to minimise the risk of contamination and spread of pathogens**

Microbial and hygiene swab testing of crates was required to ensure crate washing processes were working and were not a route for pathogen spread.

Crate companies were urged to share their biosecurity and food safety risk mitigation plans and review their supply agreements with users when it came to minimum handling, storage and cleanliness expectations.

Viscount FCC's new facility in East Tamaki lifts the company's capacity for washing and drying RPCs by 250 percent

"All members of the supply chain have a responsibility to manage RPCs to minimise the risk of contamination and spread of pathogens, whether biosecurity or food-borne illness."

It was also recommended that growers should develop a standard operating procedure (SOP) for receiving and inspecting RPCs which enter their properties. And crate users, label providers and suppliers should work together to look at the effect of the label adhesive on cleaning, and label retention on the crate for traceability purposes.

Viscount FCC has opened a new crate wash and processing facility in East Tamaki, Auckland, to service New Zealand's fresh food and grocery supply chains. Not only does it boast 30 percent more office and warehouse space than the previous premises in Mt Wellington, it delivers a 250 percent lift in the company's capacity for washing and drying RPCs.

"The additional capacity enables us to turn around crates quicker and respond to peaks in the market demand. Delivering dry crates is very important to many growers," says general manager, Regan Hill.

With two lanes running on the Brüel system, which was imported from Denmark, two different sizes of the reusable PRCs can be washed and dried at the same time. Eighty-five percent are collapsible, and they can last for ten to 15 years, or around 140 uses. In an average peak period day 37,000 crates can go through the new plant.

They are unpacked off pallets, placed on the lanes then washed in hot water with detergent and a sanitising spray applied. The crates are spin-dried, stacked and shrink-wrapped ready to go back to growers. Quality assurance testing is carried out on every shift, as well as extra testing every week. The plant uses 75 percent less water than previously.

> **"The additional capacity enables us to turn around crates quicker and respond to peaks in the market demand**

The move has been in the planning for the last two years as part of the company's investment to better service the produce industry. Around 65 people, including a number of vegetable growers, got a firsthand look at the facility for themselves at its official opening at the end of November, and a number of others have come in since to check out the building, which has a five-star green rating.

Solar panels on its roof produce 20kW of power, and rainwater collection tanks provide water for washing which is recycled. There is also CO_2 detection, automatic LED (light emitting diode) lighting and there are electric vehicle (EV) car chargers at the building where 45 staff work. A further 25 workers are employed at Viscount FCC's washing plants in

Palmerston North and Christchurch and at depots in Tauranga and Pukekohe. The company is a division of Viscount Reuse, a Trans-Tasman joint venture between Pact Group and global infrastructure investment manager, Morrison & Co.

Regan Hill says as well as the improved service, the new plant will provide an online order portal and refreshed website, which should make crate ordering easier for growers. And a track and trace system to be further developed through this year will help the company better understand crate demand timing.

"We have been very happy to see the surge in demand, given the great spring growing conditions," he says.

"The key focus for 2024 is partnering further with growers, grower groups, markets and retailers to support the industry."

CHEP, part of the Brambles company, has 19 locations around the country with three RPC washing and sanitising facilities in Auckland, Palmerston North and Christchurch. An independent service in Nelson the company was using closed down in the middle of last year. It runs two different pools of crates, one for Woolworths and Countdown stores and the other for the general market.

EVO crates which were designed with the help of growers and supermarkets, ensure uniform temperature control during storage and transport and eliminate single-use packaging and its associated environmental impact. The company has been providing its grower customers with annual certification since 2021 so they can showcase their reductions in CO_2 emissions, solid waste and water use by moving from cartons to crates.

Last year a water treatment system was installed at its Penrose, Auckland site, resulting in a 90 percent reduction in the amount water dumped every year, an over 75 percent reduction in chemical usage, and decreasing the amount of gas used. A palletiser robot was also installed to stack washed crates onto pallets.

CHEP is certified to HACCP protein standard after some years ago identifying that returned crates could be contaminated with meat, fish or egg products. Upgrades in its processes have ensured it is sanitising and disinfecting crates against any of these pathogens. Washed crates are also swabbed and their quality verified by independent labs on a regular basis.

Loscam Fresh, which entered New Zealand in 2011, operates from 17 depots across the country. Its fresh flagship depot was opened in Penrose, Auckland in mid-2015. It featured the company's first Australasian crate washing facility, and now it has 12 crate depots servicing the whole country.

A LIGHTER TOUCH UPDATE

Growers drive move to lighter environmental crop protection

Contributed

A programme supporting New Zealand growers to move to producing plant-based food with a lighter environmental touch is being driven by growers themselves, as much as by consumer demand.

The A Lighter Touch programme is a $27-million seven-year programme co-funded by industry and the Ministry for Primary Industries. Its partners include arable, viticulture and 13 vegetable and fruit product groups, as well as three crop protection companies.

Now in its fourth year, its work focuses on finding the tools to help plant food producers move from agrichemical reliance towards agroecological crop protection – sustainable farming that works with nature.

A Lighter Touch programme director Livia Esterhazy says despite consumers being more sustainability conscious in their purchasing, this does not translate into an appetite to pay a premium for food grown with less reliance on synthetic chemistry.

> **“In 2018, there were about 950 environmental measures in trade requirements. By 2022, this had increased to over 3700**

“Market intelligence shows very clearly that there is no longer a premium for ‘sustainably’ produced products. Rather, sustainable production is now a requirement for market access.

“This is demonstrated by the changing landscape for market access in terms of environmental considerations. In 2018, there were about 950 environmental measures in trade requirements. By 2022, this had increased to over 3700.”

As well as acknowledging changing consumer demands, the A Lighter Touch programme was born from growers and their industry recognising the necessity to change their crop protection practices for a number of reasons, including a need as a sector to be more environmentally conscious.

Monitor training days on the A Lighter Touch citrus project ‘Biodiverse planting in perennial crops’

“Many growers are wanting their farming practices to have a lighter environmental footprint. In addition, the partners in A Lighter Touch identified other factors including market access, the development of agrichemical resistance, and the potential regulatory removal of some crop protection tools from the grower’s toolkit, were also going to require a change in on-farm practices.

“It was a case of New Zealand growers themselves determining that to maintain their market access and the commercial viability of their businesses, a step change was required,” Livia says.

Ideally a move towards agroecological crop protection practices on farm would see New Zealand grown fruit, vegetables, grain and wine enjoying a market advantage for that reason. However, a number of consumer surveys

Integrated Pest Management workshops Vegetables NZ and A Lighter Touch hosted at the demonstration farm at Pukekohe late last year. Photo courtesy of Daniel Sutton

conducted by government agencies, universities and crown research institutes have shown a wide disparity in attitudes to food purchasing across different markets.

For example, consumers in Australia, the United Kingdom and the United States base their sustainable food and beverage product choices on seasonality, locality and packaging. In Japan, consumers have similar priorities, but are also more alert to the use of chemicals and pesticides. By comparison in China, consumers are more likely to seek products that are organic certified and have minimal impact on pollution.

Cultural preferences can also impact consumer preferences as some prefer locally grown products, regardless of growing practices, over imported products.

In addition, while some consumers are more concerned about use of chemicals and pesticides in food production, there is low public understanding of different crop protection practices, such as what agroecological crop protection looks like and how it differs, for example, from a chemically reliant or an organic approach.

Consumer preferences will no doubt continue to evolve and change over time, as will knowledge and awareness of food production practices. This will leave New Zealand growers who of their own accord are already moving towards less reliance on synthetic chemistry, in a prime position to take advantage of market changes in this space. These changes may well include market access requirements driven by environmental regulations, as well as those prompted by consumer demand.

Consumer preferences will no doubt continue to evolve and change over time, as will knowledge and awareness of food production practices

What is emphasised is that New Zealand growers are looking to be at the forefront of crop protection developments for their sectors, rather than being reactionary. The industry's partnership and co-investment with government in the A Lighter Touch programme is a key element in making that happen. ●

CITRUS NZ UPDATE

Citrus growers fired up about the future

The Orchardist staff

Citrus growers held their Annual General Meeting (AGM) and field days late last year, ushering in a new energy to face the future, says Citrus NZ chair Wayne Hall. The events in Kerikeri – the product group's first Northland AGM in eight years – replaced the traditional conference format with an excellent field day and networking events. Chrissy Williams, the new Citrus NZ executive manager, says the more than 100 growers and rural professionals who attended were enthusiastic about the industry.

However, after a tough year weighed down by weather events and domestic demand, growers were concerned about trade and biosecurity threats looming on the horizon.

While citrus imports grow, export market access for New Zealand citrus growers is increasingly difficult under the government's current prioritisation regime. This highlights the hindrances faced by smaller product groups trying to develop their markets.

> **Citrus research & development programmes will need to be innovative so growers have the tools to be at the leading edge of citrus growing**

A key focus for the Board of Citrus NZ is to advocate for its grower members through sound strategic planning that aligns with the priorities that growers see as important to their industry. Over the years Citrus NZ has delivered several projects that have assisted growers with their core business. Looking forward it is important that any existing, or new projects, across the four pillars of orchard and value chain performance, citrus sector profile, grower engagement, and market development deliver meaningful benefits to growers. Citrus research & development programmes will need to be innovative so growers have the tools to be at the leading edge of citrus growing, through the production of high-quality fruit that is in high demand by consumers.

Opportunity to sample a variety of citrus selections at the trial block

Biosecurity is a key concern, with the threat of an incursion of Asian citrus psyllid (ACP) and Huanglongbing (HLB) top of mind for New Zealand growers. Citrus NZ and the Ministry for Primary Industries (MPI) are leading a response plan. These pests are not in New Zealand, but the Florida citrus industry has been devastated, says Dr Sally Anderson, Citrus NZ's research manager, who participated in the Citrus Australia Biosecurity Study Tour of California and Florida.

It appears that Florida is at a critical tipping point and growers are holding out for a cure, as the current situation with increasing input costs and declining production is not sustainable. Genetic engineering appears to be the most likely solution. as traditional breeding is too slow.

Citrus NZ is working with Plant & Food Research to evaluate its citrus germplasm block in Kerikeri. Matt Carter, Citrus NZ Board and Research Committee member, says the various mandarin selections which have also been planted in a Citrus NZ trial block at Wi Pere in Gisborne, are all seedless or low seeded, great tasting, tolerant to some disease and they could extend the existing New Zealand mandarin supply season. Development is ongoing.

In November Chrissy Williams became the new Citrus NZ executive manager, replacing Peter Ensor. Wayne says the Board thanked Peter for the great work he has done on behalf of the citrus industry over the past year and half. Chrissy has worked with previous executive managers for the last 3.5 years, part of the Market Access Solutionz contract that has delivered management services to Citrus NZ for almost 20 years.

"It has been fascinating to work with citrus growers over the last few years behind the scenes," Chrissy says. "New Zealand's 330 citrus growers are amazing. The resilience and dedication I've seen this year is inspiring and I'm looking forward to this new challenge as executive manager."

Members attending the 2023 AGM

TECHNICAL

THE LATEST INNOVATIONS AND IMPROVEMENTS

Photo by Florence Charvin

Risks and rewards

Harvest is a very busy and stressful time of the year; the number one priority is getting fruit off the trees when they are at their best. The harvest period is also the most valuable time to quantify pests, diseases and disorders across orchard blocks, and evaluate variation in growth and crop load within blocks.

Sean Gresham : AgFirst Consultants Hawke's Bay

Although a lot of information can be gathered throughout the season, accurate data collection during the harvest period provides the best insights into orchard performance – at the time when the good, the bad and the ugly will be most obvious.

Gathering data in the field is important for assessing risks for this season's fruit, evaluating performance of each production area, and can be used to improve performance in future seasons. This article covers how good quality data can be used to inform decisions, enhance crop protection strategies, and contribute to a resilient and sustainable future for the New Zealand apple industry.

Export requirements

First and foremost, certain markets have specific protocols that require harvest assessments to be made to ensure fruit is free of actionable quarantine pests and diseases. For cryptic pests such as mites, scale, mealybug, woolly apple aphid (WAA), and apple leaf curling midge (ALCM), a hand lens is required. Bin assessments are designed to provide assurance that pest risk is very low but does not necessarily provide quantitative data on relative pest risks of the individual blocks beyond harvest and will not capture the amount of fruit discarded at time of harvest. Pest pressure for most pests will also be evident on the trees as bronzed leaves (mites), rolled leaves (ALCM) (Figure 1), or aerial colonies (WAA) (Figure 2). In addition to export requirements, it is valuable to gauge pest pressure and orchard performance across all blocks that may be registered in future for sensitive markets.

Storage quality concerns

A multitude of pathological and physiological disorders can impact apples in storage, and some fruit rots will only express after several months. The marginal cost of post-harvest losses has a higher impact compared with in-field issues because a lot of resources go into harvesting, shipping, storing and packing fruit. Pre-harvest factors such as fruit size, crop load, and tree vigour can influence storage disorders and interact with post-harvest conditions. Good data collection and reporting can therefore help optimise the amount and quality of fruit that makes it to market by appropriate allocation of storage conditions and duration based on predicted risks.

Long term orchard planning – predict future issues

A good team of pickers and orchard quality control personnel will maximise the market acceptable fruit that goes into the bins, often leaving behind undesirable fruit in the orchard. Data received from the packhouse does not always capture the actual results of each of the individual

Figure 1: *Rolled leaves caused by apple leaf curling midge (ALCM),* Dasineura mali *larvae. Late stage larvae exit the leaves to pupate in the soil and may fall onto fruit before harvest – becoming a quarantine pest for some markets*

Figure 2: *Woolly apple aphid (WAA),* Eriosoma lanigerum *infestation on lower trunk of apple tree. They are considered a quarantine pest for some markets and can hide inside the calyx cavity of fruit*

Figure 3: *Black spot,* Venturia inaequalis*, infects leaves and fruit. Much smaller "pepper spot" infections can express in storage*

***Figure 4**: Pre-mature colour development in apple resulting from ethylene production due to core rot infection*

variety management areas regarding fruit size, quality or class 1 recovery. Without in-field data on the incidence of pests, diseases, size, low colour, or otherwise poorer quality fruit, it is impossible to get an accurate picture of the performance of the management decisions that have been made in each of the blocks over the season. Therefore, collecting data before, during and after harvest will give managers a better idea of how well a block is performing and complement the data generated from the packhouse.

Collecting data in the field also allows for better resolution than what is available from the packhouse. It is common that packing runs are a mix of multiple management areas within a subdivision. It is also rare that any one variety management area (block) will be entirely consistent across all the trees, due to slight differences in topography, underlying soil attributes and climatic influences. Getting an accurate picture of where the best and worst performing areas are, is critical to precision orchard management. In addition to having finer-scale data, it is also necessary to be able to zoom out and compare data at the orchard and regional level to identify trends and make appropriate decisions. Precision management demands precision data to evaluate success and inform future decisions: the quality of data will dictate the quality of the decisions. There are multiple management systems and technological tools available for precision orchard management, but precision is only useful if the data is also accurate.

Using the data to optimise your future results

High quality data is of particular importance for newer cultivars and novel growing systems. The majority of the most valuable apple cultivars grown today are relatively new and therefore institutional knowledge about how

***Figure 5**: Fungal infection (core rot) of apple*

growing practices affect yield and quality are still being fine-tuned. Combine this with the variety of growing systems and differences among sites, there is still a lot to learn about how to get the best crop of apples.

Good monitoring is also useful for early detection of emerging issues and threats. New pests, diseases and disorders are a major threat to New Zealand growing systems, which is why biosecurity is of such high importance to the country. Many eyes and good data recording are a vital part of the biosecurity system and can help identify early on when existing minor issues start to become an increasing concern.

Timing

Pre-harvest

Given that the harvest period is a very busy time on the orchard, managing time spent on additional tasks is important. Fruit is sampled and tested for maturity to establish when harvest can start. This is also a good opportunity to collect additional data on pests, diseases, vigour and variation across the block. The additional time spent can assist in quantifying risk status, and therefore efforts should target issues that are important for the packhouse or export market.

Pests

Lepidopteran pests such as codling moth, leaf rollers and oriental fruit moth can cause distinctive damage to fruit, indicating increased risk status or localised pressure issues. Pre-harvest assessments can be used to complement pheromone trap data.

The canopy and fruit should also be assessed looking for sucking pests such as mealybug, woolly apple aphid, scale and other aphids. In high populations these pests can excrete a sugary residue that can encourage black mould growth on fruit and leaves.

ALCM is a quarantine pest for high value markets. They do not directly target fruit – a very small percentage of larvae may land on the fruit when they exit the infested leaves. Therefore, the risk of fruit infestation will be related to the level of new leaves infested prior to harvest. The level of actively growing shoots from mid to late summer can be a good proxy indicator of ALCM infestation risk.

Diseases

Black spot is a quarantine disease for some markets. Most infection happens during the spring, with an initial status of pressure in each block already established (Figure 3). The disease grows slowly and can spread and express in storage. Evidence of disease on the leaves and fruit prior to harvest indicates a high risk.

Core rots are generally caused by infections occurring over flowering but express close to harvest or post-harvest. As fruit matures, infected fruit will colour more quickly due to the increased ethylene produced by the infection and therefore, can be culled out (Figure 4). Removal and dissection of apples will reveal the infected core – so evaluation of fruit prior to harvest will give an indication of the proportion of fruit potentially infected (Figure 5).

Fruit rots such as bitter rot and bull's eye rot can contribute to high losses in storage. Although the infections initially begin in the orchard with wet conditions during the pre-harvest period, the disease expresses in storage. There are protocols in place for evaluating bull's eye rot for sensitive markets and in addition, pre-harvest fruit, twig or branch cankers (Figure 6) and leaf infection (Figure 7) can give an indication of risk.

Disorders

Bitter pit can contribute to large losses post-harvest (Figure 8). Risk of bitter pit is highest in pit prone varieties that have excess vigour with low crop loads and large fruit size, as the leaves and shoots compete for available calcium. Assessment of crop load and vigour pre-harvest is therefore a good indicator of bitter pit risk.

Internal browning is a post-harvest disorder affecting certain cultivars that is influenced by pre-harvest factors such as crop load, nutrient status, and climatic conditions at harvest. Risk assessments can be made pre-harvest so that appropriate storage decisions can be made.

Harvest

The amount and technique for sampling fruit at harvest will be largely dictated by export protocol requirements. Additional information can be gathered using similar methods on blocks not registered for sensitive markets – but resources are often limited.

Making sure that key staff are aware of the potential current and future risks around quality issues, pests, diseases and disorders is an efficient way to collect data during this busy period. Creating an on-orchard culture that allows quality issues to be shown to the harvest staff and encouraging the harvest staff to share their findings with the orchard management team, will help to ensure that critical information is captured. Any incidence of pest, disease or disorder that is identified during the harvest maturity monitoring process should also be shared as part of this overall block data collection process.

In the short term this information can be shared with the packing facility and used to ensure quality success in critical markets for this season. In the future it can be used by the orchard management teams to provide clear understanding of the performance, pests and diseases at harvest across the orchard creating critical knowledge to enhance future strategic decision-making.

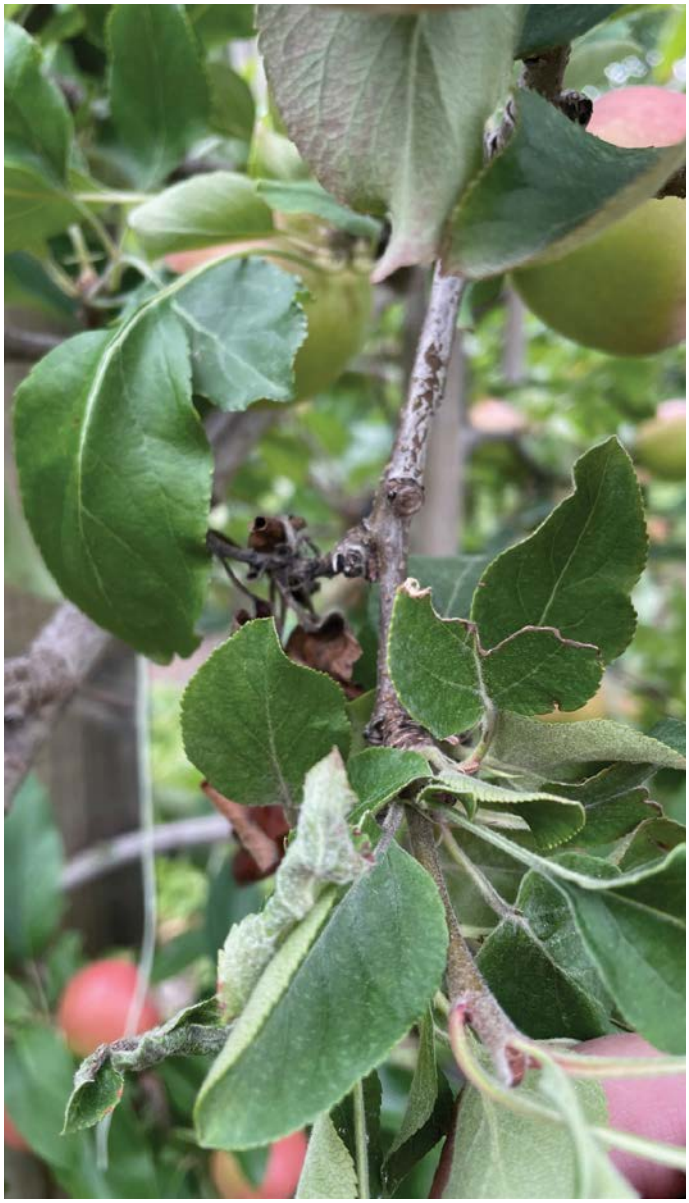


Figure 6: *Twig and branch cankers can be caused by a number of fungal pathogens that can also cause fruit rots*

Figure 7: *Glomerella leaf spot,* Colletotrichum spp. *Can defoliate trees and the same pathogen can infect fruit as bitter rot*

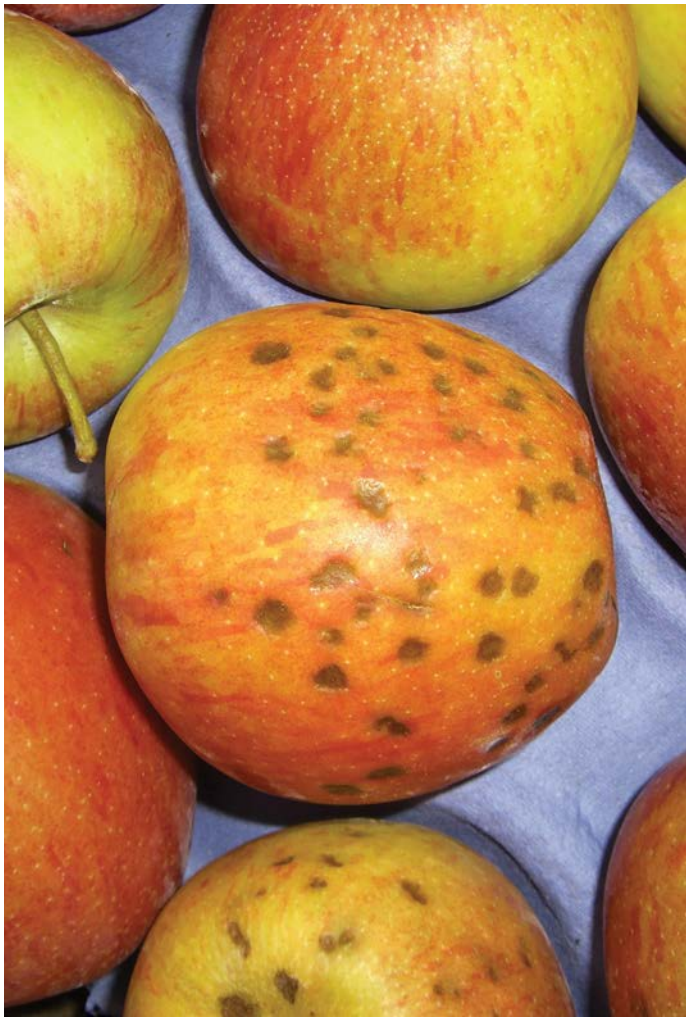


Figure 8: *Bitter rot is a physiological disorder related to insufficient calcium. Risk of bitter pit development in storage is related to crop load, fruit size and tree vigour*

Post-harvest

Post-harvest assessments are a good way to evaluate performance of a block and provide more flexibility in timing and risk status going into the next growing season. Assessments made soon after last pick will provide the most accurate data, but most factors will be consistent for several weeks after harvest. Post-harvest assessments can be used for quantifying fruit loss and determining the main reasons for it. At this time, pests such as WAA and ALCM will still be evident within the canopy, as well as fruit discarded with codling moth, leaf roller, and oriental fruit moth damage. Closer inspection of the trees can reveal pest pressure from mealybug, scale and mites, and risk of fruit rots from twig and branch cankers caused by a variety of fungal pathogens causing core rot, bull's eye rot, and other rots that can express in storage. Foliar diseases like powdery mildew, alternaria leaf spot, and glomerella will typically peak post-harvest after control measures are relaxed or stopped. Overall block vigour status as well as potential biennial bearing risk can also be assessed at this time.

Post-harvest assessments not only measure how things went this season, but also provide the data for making decisions for next season's crop. Problems with pests, diseases and disorders can multiply over time if not managed correctly, and post-harvest interventions may be necessary. Getting accurate data in a timely manner is critical to being able to intervene before problems get out of control.

Summary

Harvest is a critical period with high demand on permanent and temporary staff and it is also the most valuable time to collect data in the field to support precision and strategic orchard management decisions. Some markets demand in-field inspections for quarantine pests with a zero-tolerance policy. Beyond export requirements, collecting data on pests, diseases, disorders and fruit quality around harvest complements packhouse data to give a complete picture of orchard performance and is an important part of integrated pest management. Precision orchard management is dependent on precise data collection, and consistency and quality of the data improves strategic decision-making at the orchard level – allowing for the identification of trends and emerging issues.

What is the future of the herbicide strip?

The ubiquitous herbicide strip is facing increasing challenges. Foremost in most growers' minds is the banning of individual herbicides, particularly glyphosate. At the end of last year (2023) the European Union (EU) reapproved glyphosate until December 2033. Had the EU not reapproved it then there would have been a cascade effect where growers supplying the EU would not be allowed to use it either. Despite dodging a bullet on glyphosate, older herbicides continue to be banned. However, herbicide resistance is probably a much bigger risk.

Charles Merfield

Due to a five-year Ministry of Business, Innovation & Employment (MBIE) funded project on herbicide resistance the number of known resistant weeds in New Zealand has increased massively, with over 30 species resistant to herbicides from eight different modes of action.

On arable farms over 40 percent were found with cases of resistance, and on vineyards nationally one-third have glyphosate resistant ryegrass, and in Marlborough it's over 50 percent. Herbicide resistance is therefore widespread in New Zealand, so while sectors such as pipfruit and stonefruit have not been assessed, if they were, it is highly likely that resistance would be found to be widespread.

And don't think new herbicide chemistry is coming to the rescue. The last mode of action discovered was the ALS (acetolactate synthase) inhibiting herbicides in 1983. Forty years ago! The problem is now both the cost (getting a new pesticide of any kind to market is going to set you back over a billion dollars), and finding a chemical that is both effective and safe, which is pretty much incompatible.

Electrical weed management (EWM) seems to be living up to its theoretical potential to be a partial replacement for glyphosate. Photo courtesy of Zasso Group AG

The likelihood of new modes of action coming to market, especially in New Zealand with our very small market and drawn-out regulatory approval process, is as close to zero as you can get.

The only option is to redesign the orchard or vineyard system to become hostile to herbicide resistant weeds. This requires a whole system approach, which was how farming was done prior to the development of pesticides. Pesticides and mineral fertilisers allowed us to compartmentalise and simplify production systems. Weed management could be conducted separately from pest management and nutrient management for example. With fungicides and insecticides facing the same difficulties as herbicides with resistance and limited new chemistry, plus the increasing external challenges such as extreme weather, labour shortages and so on, there is a need to rethink production systems for multiple reasons. And the name for that redesign is 'agroecology', the science and practice of sustainable food systems.

The first step is to remember the primary purpose of the herbicide strip: to reduce competition from other plants, principally grasses, to increase yield. Prior to herbicides most orchards and vineyards had complete pasture cover – and were often grazed. The first alternative to herbicides is cultivation – as has been developed in organic systems over the last half century. Due to organics there is now a vast range of types and manufacturers of mechanical weeding systems. However, mechanical weeding is almost certainly worse than herbicides from nearly all angles.

40%

of arable farms were found with cases of herbicide resistance

Herbicides create a hard, capped soil, while mechanical weeding loosens the soil, making it at high risk of washing away in the next big rain event, or even just blowing away in the wind. Considering soil is the primary capital asset of a grower, loosening it is not only careless, it is the foundation of your business being lost forever. That says nothing about the damage to waterways and other environments receiving the soil.

Then there is soil health. A healthy soil will grow much better crops. But both herbicide and cultivation strips are literally killing soil life and health. There has been a massive revolution in our understanding of soil biology, the formation of organic matter and the drivers of soil health. It is not organic inputs to the soil such as leaf litter and compost that drive soil health, it is exudates of simple

There has been a massive revolution in our understanding of soil biology and the impact of both chemical and mechanical weed management

organic compounds like sugars from living plant roots that directly feed soil microbes and create around 80 percent of the organic matter, and thus drive soil health. The greatest damage done by both chemical and mechanical weed management is that they reduce the diversity and biomass of plants, i.e., their core objective causes the most harm. This is why the soil in the herbicide strip is so hard compared to the pasture in the alleyway – it is dying due to a lack of plant root exudates.

The agroecological answer is intercropping – the science and practice of growing multiple plant species together for many beneficial outcomes – beneficial both to the business environment and wider environment. In the case of perennial crops the main intercropping approach is 'living mulches'. These are service crops (i.e., non-cash crops) grown where the herbicide or cultivation strip would be. These crops suppress 'true weeds' (i.e., plants that cause harm), while providing other benefits such as protecting the soil from wind, rain and sun, and producing root exudates to feed soil biology. They also increase both soil and above-ground biodiversity, the loss of which is a far greater risk to humanity than the climate crisis. They can boost beneficial insects that attack crop pests, and improve pollination. Leguminous living mulch will fix atmospheric nitrogen, reducing the need for nitrogen fertilisers. A great example of this is the A Lighter Touch 'Biodiverse planting in perennial crops' project where 20 species of service crops were planted across the floor of citrus orchards.

The big challenge with intercropping is finding plants that will play nicely together. Unfortunately due to the dominance of herbicides for the last 80 years, both scientific and practical experience is limited. The above-ground interactions of plants, e.g. for light, their below-ground competition for nutrients and water and the chemical communications (allelopathy) among plants and also with other soil organisms is really complex and very poorly researched and understood. Intercropping compatibility is also likely to be affected by factors such as soil texture, climate, production objectives etc. Individual growers undertaking their own on vineyard or orchard trials is therefore going to be the main way forward.

The high voltage (5000-15,000 V) heats the water in weeds to boiling point so they explode from the inside out. Photo courtesy of Zasso Group AG

Another issue with living mulches is that the plant community will change over time. A clover living mulch will be invaded by grasses, which with their fine, shallow, fibrous root systems are highly competitive with the shallow feeder roots of woody crops. This is where mainstream growers have a big advantage over organic – they have the herbicide toolbox, so could use a grass selective herbicide every few years to clear the grasses out. And mechanical weeders could be used to do a more aggressive reset. So while intercropping is the ideal to aim for, don't be too precious, if you need to kill off the living mulch for a particular reason then the sky ain't going to fall on your head if you kill it off for a few months. What is really bad is continuous bare earth, this simply has to stop.

> **EWM uses high voltage (5000-15,000 V) to heat the water in weeds to boiling point so they explode from the inside out**

One thing that is becoming increasingly popular is growing annual cover crops (a form of service crop) such as ryecorn and vetch in the alleyways, instead of pasture, with the aim of improving soil health. Unfortunately this is totally the wrong thing to do. This is because of the soil organic matter cycle. Annual cover crops don't produce anywhere near as much root exudates as perennial pasture plants. So while a cover crop may produce a lot of above ground biomass, it feeds soil biology poorly and when turned into soil organic matter it decomposes in a few years, compared with the organic matter from exudates lasting centuries to millennia. By far the best thing in the alleyways is a diverse pasture, ideally eight or more species of grasses, legumes and forbs. And leaving the mower in the shed. We are a very tidy bunch of Kiwis when it comes to mowing the orchard or vineyard. This neat and tidy look is incompatible with a safe future. The pasture needs to be left as long as possible to get the most benefit from it, e.g., soil health and biocontrol. And not mowing all the time is the easiest way to save money, increase profit and reduce your carbon accounting costs. Just stop it!

> **The agroecological answer is intercropping – the science and practice of growing multiple plant species together**

Another newish tool is electrical weed management (EWM). First patented at the end of the 1800s, over two centuries later commercial machines have finally been produced. EWM uses high voltage (5000-15,000 V) to heat the water in weeds to boiling point so they explode from the inside out, which is very satisfying. Even more satisfying is that the electricity is applied to the foliage but returns via the roots, traversing the hypocotyl, which means that in many plants it has a systemic kill. Just like glyphosate… With independent research now being done, it looks like EWM is living up to its theoretical potential to be a partial replacement for glyphosate. This is with potentially lower lifecycle energy use than herbicides. It is however, still a cutting-edge technology so its full potential and costs and benefits are still being worked out. There are five companies globally selling electrical weeders: zasso.com, rootwave.com, theweedzapper.com and crop.zone. Both Zasso and RootWave have perennial crop weeders, and it would be hugely valuable to get their machines into New Zealand so they can be put through their paces and checked out. The Australians have already done this for a Zasso weeder so we need to keep up with the neighbours!

In summary, the herbicide/cultivation strip is dead (double meaning intended). The future is agroecology using intercropped living mulches. New tools such as electrical weeding will further facilitate the phase-out of herbicides. Organics proves it is entirely possible to farm without herbicides. A future without herbicides in perennial crops is therefore entirely achievable. At that point lack of new chemistry and herbicide resistance will be a non-issue. ●

Grow Home Safe

Risk management identifies hazards through systematic approaches and analysing, evaluating, and controlling these risks effectively

Managing risks in horticulture: A collaborative approach to education and safety

In the realm of natural disasters, few events rival the raw power and unpredictability of a tropical cyclone. February 2023 marked a significant chapter in New Zealand's climatic history as Cyclone Gabrielle wreaked havoc across the North Island.

Nat Bond : consultant

Between 12 and 14 February, Aotearoa New Zealand faced the fury of this severe storm. Heavy, unrelenting rainfall led to widespread flooding across regions. Ferocious winds tore through communities, and massive waves crashed along the coasts. This extreme weather left indelible marks on both the land and its people.

In the midst of this severe weather, the horticulture sector, a cornerstone of New Zealand's economy and identity, faced unprecedented challenges. The impact of Cyclone Gabrielle on the horticulture industry was multi-faceted, stretching from immediate physical damage to long-term operational disruptions. It underscored a pressing need for targeted strategies and knowledge to mitigate such risks and foster resilience within the industry.

In response, a series of workshops titled "Introduction to Managing Risk in Horticulture" were developed by a group of key industry players – Horticulture New Zealand (HortNZ), Grow Home Safe, IMPAC, and the Ministry for Primary Industries (MPI).

These workshops were a proactive endeavour to equip frontline managers and growers with crucial risk management skills. This initiative represented not just a reaction to a

singular event, but a strategic step towards empowering the horticulture community to navigate and thrive amidst the increasing unpredictability of weather patterns.

IMPAC, New Zealand's foremost experts in health and safety, played a pivotal role in the development and delivery of the workshops. In co-designing the course content, IMPAC brought their extensive knowledge and specialised focus on health and safety to the forefront. They were instrumental in developing content that was not only informative but also engaging. A significant contribution was their video content, which included a detailed case study of Apatu Farms in the aftermath of Cyclone Gabrielle. This case study provided a tangible, real-life example of the challenges and strategies in managing risks associated with severe weather events. By documenting this story, IMPAC ensured that the workshop attendees could see the practical application of the principles being taught, enhancing the overall impact and relevance of the training.

The workshops, which reached five regions across the North Island, were a testament to the industry's resilience and commitment to safety. Workshops were offered in Kerikeri, Pukekohe, Te Puke, Gisborne, and Hawke's Bay and attended by over 60 participants including orchard owners, supervisors and health and safety managers.

Here's a reflection on the key learnings from the workshop.

Attendees delved deep into the Health and Safety at Work Act 2015, grasping its core purpose and essential components. This understanding is vital in ensuring not only compliance but also the safety and wellbeing of all involved in horticultural endeavours.

The workshop clarified the roles and responsibilities of various parties in the horticulture sector. Understanding the distinct yet interconnected responsibilities of PCBUs (persons conducting a business or undertaking), officers, and workers has empowered attendees to foster safer workplace environments.

A cornerstone of the workshop was the comprehensive risk assessment process. Participants learned to identify hazards through systematic approaches and to analyse, evaluate, and control these risks effectively. This process is critical in pre-emptively addressing potential hazards in horticultural operations.

Various methods for hazard identification were discussed, including incident investigation and task analysis. Attendees are now proficient at identifying a range of hazards, from mechanical to psychosocial, ensuring a holistic approach to workplace safety.

In terms of risk control and management, the workshop emphasised the hierarchy of risk control and the implementation of a Safe System of Work (SSOW). These concepts are essential for mitigating risks in a structured and effective manner.

The 'bow tie' method, introduced during the workshop, was particularly impactful. This visual tool aids in understanding and managing risks, encompassing causes, controls and preparedness measures. Its practical application was a highlight for many participants.

Real-world applications were not overlooked. Practical examples and case studies brought the theory into context, demonstrating the real-world implications and applications of risk management principles in horticulture.

> **"These workshops were a proactive endeavour to equip frontline managers and growers with crucial risk management skills**

Emergency preparedness and response planning were also covered. Attendees learned to develop comprehensive emergency plans tailored to specific business risks, a crucial step in safeguarding against unforeseen events.

The importance of Personal Protective Equipment (PPE) was emphasised along with guidelines for its proper use and maintenance. This knowledge is fundamental in ensuring the safety of workers on a daily basis.

Lastly, the workshop highlighted the significance of health and exposure monitoring in the workplace. Attendees learned about maintaining health records with confidentiality, emphasising the importance of regular health monitoring for workers.

A notable aspect of these workshops was their affordability, made possible by MPI's North Island Weather Events Fund (NIWE), allowing them to be offered at a heavily discounted rate of $75 +GST per person. This move significantly widened access, ensuring that the teachings of these workshops reached a broader segment of our community.

> **"The workshop emphasised the hierarchy of risk control**

Feedback from those who participated was overwhelmingly positive. Attendees particularly valued the practical approach to learning, with interactive elements aiding in hazard identification and risk assessment methods. Many highlighted the benefit of refreshing their knowledge on risk assessments and the 'bow tie' process model. This positive response underlines the success of the workshops in not just imparting knowledge but also in instilling a sense of confidence and preparedness among the participants.

One attendee commented, "I've gained invaluable tools and ideas to implement effective risk management practices. The workshop's relatable industry examples and interactive elements made the concepts vividly real, reinforcing the importance of hazard awareness in our

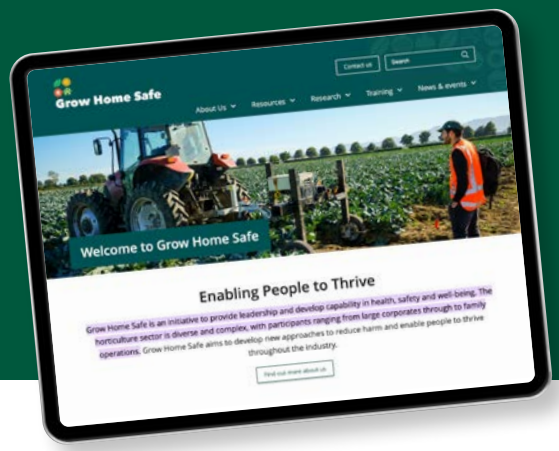
daily operations. As a member of the Health & Safety team, it's important that I stay informed to support our wider team, and this workshop has confirmed and expanded my knowledge. It served as a timely refresher in several areas, reminding us of the right measures we're already taking and providing fresh perspectives on areas we can improve. Whether it's operating tractors or aiming to explain our Health & Safety rules more clearly to the team, the workshop provided a really good overview, specific to horticulture, that will improve our control systems and risk assessment processes."

This initiative's success would not have been possible without the collaboration and support of various stakeholders. PGG Wrightson's help in providing meeting spaces was a valued contribution to the project. Their involvement shows the strong sense of community in the industry and highlights how working together is key for educational and safety initiatives.

These workshops represent a significant step towards a safer, more informed horticulture community. The collaboration of HortNZ, Grow Home Safe, IMPAC, MPI, and PGG Wrightson has set a precedent for future endeavours in industry education and safety.

In navigating the impacts of severe weather events, the power of collective effort in education and safety becomes ever more vital. These workshops have not only equipped our community with crucial knowledge and skills but have also demonstrated the strength of collaboration in overcoming industry challenges. As the horticulture sector continues to evolve, such unified efforts will remain pivotal for its resilience and sustainability. ●

For further information and resources, visit:
www.growhomesafe.co.nz
or contact: **info@growhomesafe.co.nz**



Partnership to improve rural and regional forecasting

Contributed

A partnership between New Zealand's national weather service MetService and homegrown agri-tech experts HortPlus will improve the quality of rural weather forecasts and allow weather data to be used in new and innovative ways.

The partnership will enable MetService and HortPlus to share information from their respective weather station networks, providing more data points for forecasting. MetService utilises more than 400 weather stations across New Zealand and HortPlus has a network of close to 100 on orchards and farms around the country.

MetService business development manager Peter Fisher says the sharing of weather station data is being introduced in tranches, with the first station data already being shared and the remainder being shared over the coming months.

He says the partnership will further enhance weather forecasting in New Zealand, particularly in some rural areas of regions such as the Bay of Plenty, Wairarapa, and Northland where the distance between its existing weather stations is the largest. As well as providing access to more weather stations, the agreement will enable data to be sent to MetService by HortPlus every ten minutes.

"You can never have enough data points as a forecaster. Having finer spatial and temporal resolution means we can better verify our forecasts and identify any anomalies with our respective stations.

"It is also helpful for longer-term forecasting. This is notoriously challenging, especially in a country like New Zealand where the weather changes quickly and often, but more data points and more regularly updated weather information helps forecasters make even more accurate predictions."

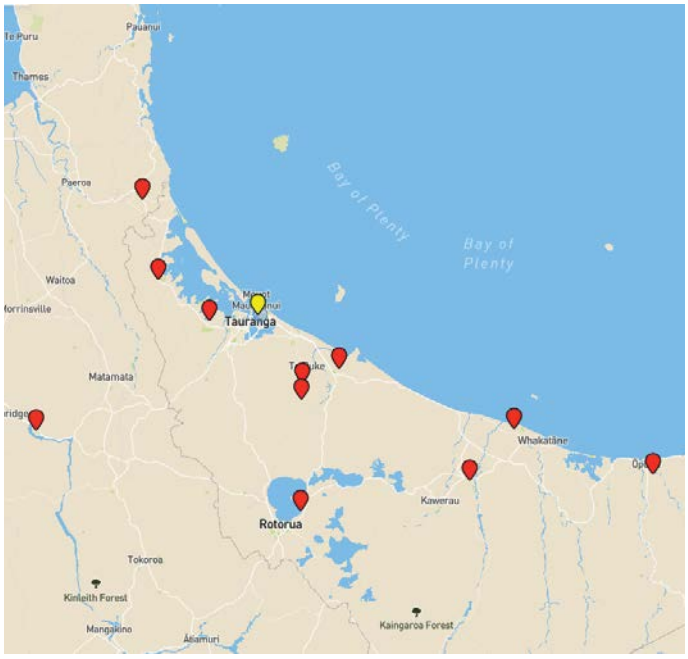
> "There's massive scope for growers to use more data in their decision making

HortPlus director Mike Barley welcomes the partnership and says access to MetService's vast high quality weather station network, along with stations of its partners, will "supercharge" the specialist pest, disease and water management tools HortPlus provides to orchardists and farmers via its MetWatch platform.

HortPlus' MetWatch platform combines weather data with scientific models created by leading New Zealand researchers, helping growers in industries ranging from kiwifruit and apples to vegetables and arable crops to make decisions about water management, land use, and which pest and disease controls to apply.

"We are thrilled to partner with an organisation like MetService that possesses such a degree of integrity and technical expertise, as well as an impressive forecasting network," Mike says.

"Access to data provided by MetService weather stations will instantly improve coverage for the tools we provide to our customers and may also give rise to exciting opportunities to serve up some of our specialist horticultural pest, disease and water management forecasting resources via MetService channels.



HortPlus and partner weather stations across the Bay of Plenty

HortPlus director Mike Barley with MetService business development manager Peter Fisher

A HortPlus weather station in Canterbury

"There's massive scope for growers to use more data in their decision making, whether to improve productivity, minimise risk, or provide for more sustainable solutions.

"Data driven decision making is particularly important today as our climate changes, because the weather norms of past decades can no longer be relied on in some regions. While changing weather poses a challenge, it also creates an opportunity, and we may well see some crops grown in regions where we previously thought it wasn't viable – think apples in Canterbury, or kiwifruit in places south of Nelson."

MetWatch is available by subscription, as well as free of charge to registered growers and researchers via weather and disease portals on the websites of Zespri, NZ Apples & Pears, Summerfruit NZ, Onions NZ, Vegetables NZ, NZ Plant Producers Inc and Foundation for Arable Research. **www.hortplus.com/technology**

Installed in drain sampling equipment

What's coming out of our tile drains?

Our changing climate and increased frequency of extreme rainfall events mean drainage systems under high value horticultural land are becoming more important to divert excess moisture from the soil and help waterlogged land become more productive.

Sarah de Bruin: "What's Coming out of Tile Drains" project manager; AgFirst Consultants Hawke's Bay

The AgFirst led project "What's Coming Out of Tile Drains?" is looking at discharge from tile drains under apple and kiwifruit orchards and cropping sites across the Heretaunga Plains in Hastings District.

The fruit sector is supporting this project with funding from NZ Apples and Pears, Zespri, and the Hawke's Bay Fruitgrowers Association. The interest in this project for the fruit sector is to improve understanding of water flow behaviour, nutrient and sediment discharge and concentration, with four of the 16 sites monitoring kiwifruit, and eight monitoring apples. Tile drain systems can be influenced by several factors including source groundwater, crop and soil type, management practices and weather or climatic factors. Increasing this knowledge will lead to improved environmental outcomes.

This three-year project seeks to understand the specific timing, scale and source of the nutrients and sediment when it leaves a cropping or orchard system through tile drains and enters surface water. The point source discharge results from the tile drain are compared to the receiving water body, to understand the catchment context and any relationship between the two.

There are 16 horticultural farms involved in the project, located within the Ngaruroro, Tukituki and Karamū catchments in Hawke's Bay. Fortnightly grab samples are taken from the tile drain exit and corresponding receiving

A technician measuring the pH, temperature, dissolved oxygen and conductivity of water from the tile drainage in an apple orchard

Soil moisture monitoring at kiwifruit site

water body. The grab sample method allows for the collection of regular, point in time water quality and flow behaviour data. "Event based" grab samples are also taken when a rainfall event greater than 15mm in 24 hours is recorded at a site.

Grower on-farm practices, local rainfall, soil moisture, soil nutrient content, and site-specific groundwater nutrient content is captured alongside the tile drainage discharge data, for information about the dynamic environment within which sub-surface drainage exists.

Flow meters and proportional samplers have also been installed at selected sites to provide complementary datasets. Some tile exits are regularly submerged by the receiving water body following rainfall events, thus are unable to be successfully grab sampled. The flow metering equipment will help us to better understand the flow behaviours when the tile exits are submerged, as well as the period and intensity of flow from different sites.

The Tile Drains project has just completed its second year of monitoring. The challenges due to Cyclone Gabrielle caused a range of different impacts across the project. This included some equipment damage, access difficulties due to silt and floodwaters, bank erosion and collapsed orchard canopy structures. However, several of the flow meters were able to capture tile flow over this extreme event, creating a valuable addition to the project dataset and allowing for some analysis of high intensity, high flow events.

So far project findings have illustrated the unique state of each tile, with flow behaviour, soil type, and groundwater influence all contributing to the complexity of discharge patterns and concentrations. The project has observed different types of flow behaviour from monitored tile exits, categorised as follows:

- **Dry:** No or very few flow events recorded during sampling runs
- **Event:** Only flows following a rainfall event of over 15mm
- **Seasonal:** Flows during spring, autumn and winter, but are summer dry
- **Continuous:** Flow regularly year-round with continuous flow recorded

These findings have informed understanding on how tile drainage flow fluctuates throughout the seasons and during weather events, as well as the variability in flow between different drains at 16 locations. This suggests that any mitigation strategies will differ by tile flow behaviour and will need to be specific for each tile drain system.

The project is now in the final year of monitoring, where work will focus on understanding whether any discharge seen is related to nutrient loss, and how horticultural land management may influence these discharges.

Thank you to our project funders: Ministry for Primary Industries, NZ Apples and Pears, Hawke's Bay Regional Council, Zespri International Ltd, Vegetable Research and Innovation Board, Horticulture New Zealand, Hawke's Bay Fruitgrowers Association, Hawke's Bay Vegetable Growers Association, Heinz Wattie's Ltd, and Bayley Produce.

The Grocery Code of Conduct comes into force

Emily Levenson
HortNZ Policy Advisor

Unfair trade under the supermarket duopoly has seen stifled innovation and competition in New Zealand's grocery sector, but new legislation is making a change. The Grocery Industry Competition Act 2023 came into force in September 2023 to rein in unfair trade practices. The Act and its accompanying Grocery Supply Code describe the rights and responsibilities of grocery suppliers, wholesalers and regulated supermarkets – for now, Foodstuffs and Woolworths. This means that growers who supply directly to supermarkets have a whole new suite of protections.

How does this help growers?

The Code contains rules that retailers need to follow, with a mandate to deal with suppliers in good faith. For example, supermarkets can't require suppliers to use a particular transport or logistics service, pay just to be stocked or listed, or fund promotions. In addition, retailers can only delist products for genuine commercial reasons, and there is a strict process they have to go through to do so. Supermarkets also can't threaten suppliers with ending their supply agreement without reasonable grounds. There are even special protections just for fresh produce suppliers. If there is evidence of unfair trade practices, the supermarkets can face financial penalties of up to $5 million.

How was HortNZ involved in this policy?

Horticulture New Zealand has made four submissions on various stages of this policy since August 2022. Our points about not requiring growers to use supermarket logistics companies, rules recognising the perishable nature of fresh produce, and prohibiting set-offs were adopted, amongst others. Most recently, we submitted on the proposed Grocery Industry Dispute Resolution Scheme, which lays out the process of how suppliers can seek mediation or adjudication to resolve disputes with retailers. Our key points were that the language of the rules should be simple enough for anyone to understand even without a lawyer, and that confidentiality in the process is key to protect commercially sensitive information.

Where can I learn more about my rights?

HortNZ will also be hosting a webinar on Wednesday 14 February, 12pm to inform growers about their rights as suppliers under the new Grocery Code of Conduct. Commerce Commission Grocery Team staff will present and be available to answer your anonymous questions.

Register for the webinar at:
tinyurl.com/grocery-webinar

To find out more, visit:
comcom.govt.nz/regulated-industries/grocery

www.hortnz.co.nz/about-us/submissions

or email:
emily.levenson@hortnz.co.nz

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