The ORCHARDIST®

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HORTICULTURE NEW ZEALAND

Lemon growers feel the squeeze

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In this issue

Collaborating, innovating and supporting growers in New Zealand

For more than 100 years, Fruitfed Supplies have worked closely with growers, suppliers and industry bodies to support the success and sustainability of the horticultural sector.

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Fruitfed Supplies

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JULY 2022

He Waka Eke Noa – What it means for growers

He Waka Eke Noa (HWEN) represents a partnership between primary industries, government and Māori agribusiness, that is trying to find ways of reducing agricultural emissions while maintaining sustainable food and fibre production and profitability.

Barry O'Neil : HortNZ president

And therein lies the issue: reducing emissions while maintaining food and fibre productivity and profitability without yet having all the tools needed to achieve this. It was always going to be a challenge! The primary sector is still the major player in our economy, with over 80 percent of our exports and 11 percent of gross domestic profit (GDP) coming from it – including through the Covid-19 pandemic. The last thing we would want to see as a country is HWEN forcing the food and fibre sector to shrink.

Primary industries have always been committed to doing their very best to mitigate the impacts of climate change – we just didn't want to be taxed. We didn't want an approach and pricing mechanism that was focused primarily on revenue collection, but rather one that would support improved practices and behaviours and invest any revenue in finding new tools to maintain and increase production levels and profitability with lower emission levels.

The HWEN partnership was formed in response to the government's plan for primary industries to begin paying a price on emissions. It was the only opportunity to find an alternative to government putting agriculture into the Emissions Trading Scheme (ETS), which would be the tax approach we didn't want.

New Zealand has already passed climate law, the Climate Change Response (Zero Carbon) Amendment Act 2019, establishing long-term emission targets, the mandate for emissions budgets and an independent Climate Change Commission to advise government. The bill passed unanimously, meaning all political parties supported it, not only Labour and the Greens.

Targets have now been set in law, including a net greenhouse gas emissions target of zero by 2050, reducing methane emissions by up to 47 percent and requiring biogenic emissions from agriculture (methane and nitrous oxide) to have a carbon price in place from 2025.

HWEN partners considered and consulted on various options with the key elements of split gases (methane priced lower than nitrous oxide as it is a shorter-lived gas) and providing for sequestration to offset emissions.

A farm level split gas pricing mechanism was supported by sector partners, which includes:

- Calculating short (methane) and long-lived (nitrous and carbon dioxide) emissions.
- Recognition of on farm efficiencies and mitigations, along with incentivising use of approved practices and technologies that reduce emissions.
- On farm sequestration ineligible for the ETS available to offset the cost of the emissions levy.
- Levy revenue is reinvested in research, development and extension.
- An oversight Board with expertise and representation from the primary sector providing recommendations on levy rates and who sets the strategy for use of levy revenue.

HWEN has a logical focus on pastoral farming as they are by far the largest agriculture emitters. Horticulture, by contrast, contributes less than one percent of New Zealand's total agriculture emissions.

The thresholds agreed upon for animal numbers and levels of fertiliser use account for 97 percent of all agriculture emissions. Rather than add to the complexity and administration costs by requiring all farmers and growers to comply with the system, it was logical the focus would be on the largest group of emitters. This isn't picking on the largest farmers and growers, rather it is an efficiency argument that still achieves the emissions reductions without cumbersome and large administration costs.

For horticulture, growers who apply over 40 tonnes of nitrogen through synthetic fertiliser per year will be liable to pay a levy under HWEN.

This equates to less than 200 growers who will be involved, as most don't use more than 40 tonnes of nitrogen per

year. Even though the majority of our 6000 growers will not be part of the scheme, all growers still need to do their very best to reduce their emissions.

There is also the potential for the growers involved to offset costs using sequestration or approved practices and technologies. Horticulture New Zealand commissioned a report from Plant & Food Research Ltd on what sequestration opportunities there are in horticulture. Unfortunately, they concluded we don't have that much opportunity as growers to use sequestration offsets, other than in recently developed orchards.

What will it cost the growers that are involved? HWEN wants a price ceiling where the levy rate for each gas would be no more than if agriculture entered the New Zealand ETS (along with the government's commitment of 95 percent free allocation phasing down by one percent per annum). While costs will surely increase as the carbon price increases and free allocation reduces, the HWEN proposal will initially cost growers that use more than 40 tonnes of nitrogen in the order of an additional $7 per tonne.

The HWEN proposal will now be reviewed by the Climate Change Commission. Government will make a final decision on the recommendations in December. If progress to reduce emissions is insufficient, the Act includes provisions for agricultural emissions to be brought under the New Zealand ETS at a processor level. If that happens, the impact on horticulture would be similar, apart from all 6000 growers paying the $7 per tonne, as it would be based on anyone who purchases fertiliser.

Despite frustrations and emotion colouring the debate over how agriculture greenhouse gas emissions should be priced, horticulture is already well positioned as a food and fibre sector.

As growers, we need to take climate change seriously, do what we can to minimise emissions and mitigate the real risks that we are starting to see happen in New Zealand and around the world. Many of us have taken or are starting to take action in this regard, but this journey must continue for us all. As we learn more about improved ways of growing that reduce emissions, we must be early adopters. And we can't lose sight of what our consumers are increasingly demanding, as well as doing what is right for New Zealand and our international responsibility.

I would like to especially thank HortNZ's strategy and policy manager, Michelle Sands, for her expertise, guidance and patience as we worked through this very complex issue. Michelle was part of the HWEN steering group and has been outstanding in her efforts to get the right outcomes for horticulture and growers.

Kia kaha.

Will steady growth be enough?

The latest Situation and Outlook for Primary Industries *(SOPI) report has horticulture – including wine – growing steadily, with export revenue forecast to increase by two percent to $6.7 billion for the year to 30 June 2022, driven by record harvest volumes for gold kiwifruit and wine grapes.*

Nadine Tunley : HortNZ chief executive

This steady growth is in the context of the objective to double the farmgate value of horticultural production from $6 billion to $12 billion by 2030 while at the same time, improving grower margins.

Concurrent with the release of the SOPI report, the Ministry for Primary Industries (MPI) also released a progress update on *Fit for a Better World*, which is a multimillion-dollar programme "for accelerating New Zealand's food and fibre potential."

This report shows that MPI and our industry has invested almost $117 million in horticulture industry projects between June 2018 and May 2022. It shows that this level of investment is the highest in the food and fibre sector, with dairy coming next at just over $93 million. Some would see this as a clear signal from the government that it supports seeing more focus on horticultural development to assist in New Zealand's climate response requirements.

Much of the investment in horticulture to date has been focused on technology such as the robotic asparagus harvester; sustainability through a spray-free future for our apple industry, as well as the *A Lighter Touch* programme, which will reduce the use of agrichemicals across multiple crops; and diversity, that is, getting a wider range of people to consider careers in horticulture.

In the coming year, investment is expected to focus on improved breeding of cultivars, and rootstock trials for a wide range of fruit and some vegetables; and market access and development, with investment in other years being directed by the Horticulture Action Plan, currently under development.

The Horticulture Action Plan needs to bring everything

The ORCHARDIST

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together and deal to the contradictions that abound within current government policy as it affects the food and fibre sector. On the one hand we have high levels of investment in the future but on the other, we have growers across our industry struggling to survive, thanks to the often complex and contradictory policies and practices that do not support growing and business, in the context of ever rising production costs and drastically reduced margins.

Our industry has been remarkably resilient over the past two Covid-19 affected years. However, it will not be able to reach its potential, the *Fit for a Better World* targets and the government's objectives for the food and fibre sector if the government continues to 'give with one hand and take away with the other.'

At the moment, there are just too many contradictory things going on. The government says the country cannot rely on migrant labour, but it celebrates the lowest unemployment figures in more than 50 years. At the same time, the government introduces an Income Insurance proposal closely followed by the Fair Pay Agreement proposal, both of which Horticulture New Zealand has joined with product groups and organisations such as Business New Zealand to oppose.

At a recent government event, a Minister stood up and said the government 'can't fix the labour shortage' and was leaving the solution to 'market pressures and responses.' In normal market conditions, we would turn to migrant labour to assist us in our growth to meet the required government growth targets, which will in turn assist New Zealand in its economic recovery post the past two Covid hampered years.

I have been deeply saddened to hear of an orchard that has been in a family for 108 years being removed because it has just become too tough. Small to medium size operations, be it vegetables or fruit, are under excruciating pressure, financially and emotionally. I have had these growers ask me, 'is this government not here to fight for me the small to medium operator?' Again, amidst the contradiction and confusion, I have no answers for these growers at the moment.

A step change is required

In answer to the question I posed at the beginning of this column, no, steady growth will not be enough for us, the horticulture industry, to meet our potential and targets. There are just too many headwinds in today's world for that to happen.

We need to accelerate growth across our industry in order to take advantage of one of the chief factors we have in our favour. That is, growing worldwide demand for New Zealand produced food and fibre.

New Zealand Inc is a fantastic brand especially right now, in a world far more focused on how things are done, which in our case is how things are grown – sustainably, with respect for the environment, people and the land, from 'paddock to plate.'

> **The government must come together and align to support New Zealand Inc and the food and fibre sector's goals**

The government must come together and align to support New Zealand Inc and the food and fibre sector's goals, as outlined in *Fit for a Better World*. Without that alignment, return on our industry and the government's investment will just not be as high as it could be, which will be a grave waste of opportunity. ●

Horticulture New Zealand
Ahumāra Kai Aotearoa

Horticulture New Zealand Notice of the 17th Annual General Meeting

Wednesday 21 September at 4.00pm at the Headingly Centre, 2 Headingly Lane, Richmond, Nelson

DATE CHANGE

Business

1 Welcome and Apologies
2 Voting and Proxies
3 Obituaries
4 Approve Minutes of the 16th AGM
5 President's and Chief Executive's Report on HortNZ's Activities
6 Approve Audited Financial Statements for year ended 31 March 2022
7 Levy Rate
8 Director Remuneration
9 Approve 2022/23 Budget
10 Approve Auditors for 2022/23
11 Notices of Motion
12 General Business

Call for Notices of Motion

Any Board Member, Affiliated Organisation or Active Grower Member wishing to have a matter considered at the AGM must give notice in writing to the Chief Executive of Horticulture New Zealand of the notice of motion no later than Wednesday, 3 August 2022 at 4.00pm. Notices should include the wording of the motion to be voted on and up to one A4 page of explanatory notes. Notices of motions will be listed on HortNZ's website **www.hortnz.co.nz** on 10 August 2022 and will feature in the HortNZ magazines (September issue). Any questions or notices can be sent to the Chief Executive c/-kerry.norman@hortnz.co.nz.

YOUR LEVY AT WORK

INDUSTRY WIDE ISSUES FOR INDUSTRY GOOD

The Future of Leadership

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Natural resources and environment

Michelle Sands : HortNZ policy and risk manager

Climate Change Adaptation

The Government's draft plan sets out actions to support the adaptation of all sectors and communities to the locked-in impacts of climate change, like rising sea levels and more frequent and severe weather events.

HortNZ submitted on the Climate Change Adaptation Plan in June 2022. Key issues raised were:

- Plant varieties and breeding
- Biosecurity risks and management
- Flood protection and land drainage
- Infrastructure investment
- Maintaining the productive capacity of highly productive land
- Food security
- Seeking greater clarity on proposals within the Climate Change Adaptation Act.

NPS Freshwater and NES Freshwater revisions submission

A number of changes are proposed to the National Policy Statement for Freshwater Management (NPS-FM) and the National Environmental Standards for Freshwater (NES-FW). These changes relate primarily to the wetlands provisions and also include other changes that seek to improve clarity and correct error.

The changes relating to wetlands are in response to consultation on the Managing our Wetlands discussion document. HortNZ submitted on the discussion document and will prepare a submission on the NPS-FM and NES-FW.

Key issues for HortNZ related to wetlands:

- Ensuring constructed wetlands and planted riparian margins are not captured
- Enabling biosecurity activities and responses.

National Policy Statement for Indigenous Biodiversity

The government has released an exposure draft of the proposed National Policy Statement for Indigenous Biodiversity (NPSIB). This exposure draft follows a consultation in 2019–2020.

The changes made since the 2019–2020 version include:

- Addressing effects management in Significant Natural Areas
- Strengthening the role of tangata whenua in decision-making
- Including public conservation land within the scope of the NPSIB.
- Tweaking the provisions for pastoral land, areas outside of significant natural areas and existing uses for clarity.

HortNZ submitted on the earlier draft and will work with growers to submit on the exposure draft as well.

Government policy updates

Michelle Sands : HortNZ policy and risk manager

Income Insurance Proposal

The Income Insurance scheme proposed by the Government would support some workers with 80 percent of their income for up to seven months if they lose their job through no fault of their own. The scheme would also support some workers whose ability to work has been affected by a health condition or disability.

> **HortNZ suggested several changes to address these issues and is meeting with the Ministry of Business, Innovation and Employment to provide more input**

Horticulture New Zealand considers the scheme unfair because it would require compulsory contributions from horticultural workers, but many horticultural workers would never be eligible to receive payments under the scheme.

HortNZ submitted on the proposal in April 2022. The key issues raised in our submission were:

- The proposal is unfair for people who work on short-term contracts.
- The proposal is unfair for industries that offer employment to those starting off in or re-entering the workforce.
- The proposal is unfair for industries that employ migrant labour.

HortNZ suggested several changes to address these issues and is meeting with the Ministry of Business, Innovation and Employment (MBIE) to provide more input.

Fair Pay Agreements Bill

The Fair Pay Agreements Bill would provide a framework for collective bargaining for fair pay agreements across entire industries or occupations, rather than just between unions and particular employers.

HortNZ submitted on the Bill in May 2022, then presented evidence at the Select Committee in June 2022.

Key issues raised in our submission were:

- The proposal is disproportionate compared with its proposed benefits.
- The diversity of crops in the horticulture sector means the proposal seems unlikely to be workable.
- We do not agree with the criteria for the public interest. The criteria include migrant labour and seasonal labour, and we do not consider these factors are of themselves an indicator of a labour market problem.
- We dispute the claim that increased labour costs would drive more investment in technology. Investment in technology is occurring, but for many roles there are no viable alternatives to human labour.

Modern Slavery and Worker Exploitation Legislation

The proposal would create new responsibilities across the operations and supply chains of all types of organisations in New Zealand, with more responsibilities for larger organisations.

Under the proposal:

- All organisations would be required to take action if they become aware of modern slavery or worker exploitation.
- Medium and large organisations would be required to disclose the steps they are taking.
- Large organisations and those with control over New Zealand employers would be required to undertake due diligence.

HortNZ submitted on the Bill in June 2022.

The key issues raised in our submission were:

- HortNZ broadly supports the proposal.
- We sought better alignment with Australian and United Kingdom legislation.
- We seek regulatory equivalence for Good Agricultural Practice (GAP) to enable growers to demonstrate that they meet the requirements through the use of GAP add-ons such as GlobalG.A.P. GRASP and NZGAP Social Practice and the contractor standard.

A guide to New Zealand's biosecurity system

Part 3: Guarding the gate – preventing pests and diseases from crossing our border

Eve Pleydell : HortNZ risk policy advisor

In this third article focussing on New Zealand's biosecurity system, we're looking at what happens at our country's border. In this increasingly interconnected and complex world, how do the biosecurity border teams know whether a passenger arriving from Australia is bringing an orange with them, or whether there are stowaway insects inside secondhand farm machinery being imported from Europe, or whether a small packet from South America contains seeds that someone has ordered on the internet?

> "It is unrealistic to simply expect our biosecurity border teams to catch everything

Key points:

- Biosecurity New Zealand's border staff have the challenging job of checking whether people are following the biosecurity rules.
- Every year there is more air freight, sea freight, and international mail to check. Tourist numbers have taken a temporary knock but will go up again as international travel resumes.
- Risk assessments and intelligence are used to help identify the people and consignments that are more likely to be non-compliant and more scrutiny is applied to these.
- The border is more than just Biosecurity New Zealand's responsibility. Many functions, individuals and organisations contribute to providing our biosecurity line of defence.

Protecting New Zealand from biosecurity hazards becomes more challenging each year due to the steadily increasing volumes of cargo, people and mail that are arriving on our shores. According to Ministry of Transport figures, 513,809 containers of goods entered New Zealand in the ten months before March 2022.

Prior to Covid-19 border closures, the number of international tourists arriving had multiplied 1.5 times per decade since 1998, with 3.9 million people visiting our country in 2018.

As for international mail, New Zealand Post is investing hundreds of millions of dollars in increasing its capacity to handle the growing numbers of parcels and packages arriving from overseas. The number of people purchasing items online has been increasing steadily for several years, and while global Covid lockdowns have hit our high street stores, the electronic high street is booming and it brings a unique set of biosecurity challenges with it. How do online consumers know where the product they are purchasing is really from? How many of them are unaware of biosecurity requirements? What proportion of them may be trying to use this route to deliberately bypass biosecurity requirements?

> **How do online consumers know where the product they are purchasing is really from? How many of them are unaware of biosecurity requirements?**

When you take a step back and consider the situation, you quickly realise that to visually check every container, parcel and item of luggage brought into New Zealand would require a large regiment of border officers and impose significant delays on importations and travel. For this reason, the Ministry for Primary Industries' (MPI) border staff rely on rapid risk assessments to help them decide how to manage individual passengers and consignments. We can see this happening when we return to New Zealand after an overseas trip. The border staff have a few short moments with each passenger to assess whether that person's luggage should be checked further or whether it is safe to let them enter without conducting a visual inspection. The x-ray machines and detector dogs then act as a second layer of protection to catch those forgotten about pieces of fruit or the deliberately hidden items in someone's bags. On the spot fines of $400 are used to help to deter non-compliance.

In a similar way, all containers and cargo being brought into the country have to be accompanied by paperwork demonstrating that they have met the requirements and are safe to enter. Teams of evaluators assess this paperwork to check that the rules of the Import Health Standards have been complied with, and try to identify fraudulent and deliberately non-compliant activities. Based on this evaluation, either an MPI inspector will check the consignment themselves or they will clear it to go to an approved Transitional Facility where a trained Approved Person (a legal status) will conduct that inspection on MPI's behalf. This means that MPI inspectors are generally reserved to check the riskiest goods.

MPI uses performance and risk-based profiling to target border interventions to the right place at the right time. In 2020–2021, 16.3 million importation documents were received by MPI. Screening these identified 277,000 to potentially pose a risk to biosecurity. Following further risk assessment, 66,000 consignments were then individually inspected. On MPI's website it states that 20 percent of the containers inspected by MPI inspectors fail that inspection. This is a pretty high hit rate.

If irregularities are seen in paperwork or if visible contamination, high risk goods, or live insects are found, then MPI has the legal power to manage that situation by offering treatment, or reshipping the goods, or destroying them. It is the importer's responsibility to cover all costs incurred by these actions, and they may be subjected to a higher level of scrutiny the next time they bring something into the country.

Importers of horticultural plants also encounter another aspect of border quarantine procedures, the post-entry quarantine facility. Not all viruses, bacteria or fungi will cause visible signs of disease in the plants they have infected. This means young rootstock or budwood could be infected without showing signs. Growing the plants in a contained environment allows time for symptoms to develop and for diagnostic tests to be run before the

3.9 million

international tourists visited our country in 2018

513,809

containers of goods entered New Zealand in the ten months before March 2022

$400

On the spot fines of $400 are used to help to deter non-compliance at the border

plants are released into New Zealand. This is a necessary step in our biosecurity protection, but it does bring constraints and expense with it.

> **Not all viruses, bacteria or fungi will cause visible signs of disease in the plants they have infected. This means young rootstock or budwood could be infected without showing signs**

It is unrealistic to simply expect our biosecurity border teams to catch everything. Each of us has a responsibility to make sure that we know what the requirements are and stick to them, and to ensure that our visitors or employees coming from overseas know what they can and cannot bring with them before they get to our border. We can also consider calling out non-compliant behaviour when we see it, such as casual comments about things people have bought from overseas that may appear in a social media group we belong to. It is so easy to buy anything online from practically anywhere and sometimes people have not considered that what they are purchasing could be a risk to the country. When it comes to biosecurity, what each of us does matters.

2020–2021

1.6 million
importation documents were received by MPI

277,000
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66,000
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20%
of the containers inspected by MPI fail that inspection

The horticulture sector opens up exciting career pathways for our young people

Hastings' mayor, Sandra Hazlehurst, said the awards were a great opportunity to recognise and celebrate industry excellence

Future leaders shine at industry awards

The future of Hawke's Bay's horticulture industry was on display at the Hawke's Bay Fruitgrowers' Association Industry Awards night in June.

Supplied

The awards night recognised the achievements of Eastern Institute of Technology (EIT) and Primary ITO graduates, scholarships recipients and contributions to the horticulture sector.

The inaugural Emerging Achiever Award was presented to Emma Sherwood from NZ Apples & Pears Inc. for her demonstrable ability to positively impact horticulture through the Recognised Seasonal Employer (RSE) scheme and for her leadership skills that have strengthened industry relationships.

"Emma has developed strong relationships with senior government officials and has become a trusted colleague to many within the horticulture sector and central government," says HBFA president, Brydon Nisbet. "Her considered and enthusiastic approach has been pivotal to the successes that growers have seen over recent times with access to RSE workers from the Islands."

The H2ortigator innovation, developed by Brendan Hamilton, earned the Fourneau Trophy for innovation in horticulture.

H2ortigator is a tool for plant water management that provides young plants with specific irrigation, whilst providing physical protection and reducing or eliminating competitive weed growth.

The innovation has been trialled for the past two years on a number of orchards and vineyards such as T&G Global, Freshco, Mr Apple, Rockit, Te Mata Estate, Villa Maria and more.

"Results to date have been extremely exciting with significant growth gains on those blocks H2ortigator has been trialled on," says Brendan. "We are excited to offer

Emma Sherwood from NZ Apples & Pears Inc. received the inaugural Emerging Achiever Award

Brendan Hamilton was awarded the Fourneau Trophy for his H2ortigator innovation

this as a commercial service to the industry this year and are honoured to be the recipient of the [Fourneau] trophy."

The Hawke's Bay Fruitgrowers' Association Charitable Trust, in conjunction with funding from the Horticentre Charitable Trust, also provide 29 scholarships for students living in Hawke's Bay that are working towards their Level 4, or higher, Industry Training Qualification. Excellence among those scholarship recipients was also recognised at the Awards night.

Toby Ploeg of Bostock NZ was awarded the Bostock NZ Organic Trainee of the Year Award and the Horrocks Memorial Award for overall excellence in Horticulture was presented to EIT student Luke Atkinson and Primary ITO student, Manoj Negi.

Hastings' mayor, Sandra Hazlehurst, who spoke at the awards ceremony, said it was great to recognise and celebrate industry excellence.

"The horticulture sector employs more than 8000 full-time and seasonal workers. It [horticulture] opens up exciting career pathways for our young people."

In 2010 the SoftRider Trailer made its debut at the Fieldays, winning the NZ National Agricultural Fieldays premier Innovation for Future Profit award,

being designed and built by Simon Priest.

Now 2022, the original trailer design has had 12 years of refining and improving; however, the original trailers are still going strong.
Pyes Pa Engineering in Tauranga took over the SoftRider trailers from Simon as demand grew beyond the capability of one man and are built under licence.

We at Pyes Pa Engineering/SoftRider Trailers, have set about building on an already great design and offering more service to the customers with a full array of spares and the ability for call outs, trying to ensure orchardists and contractors have little to no downtime when the odd mishap should occur.

The trailers themselves are fully fabricated in Tauranga and hot dip galvanised for durability.

Although they are reasonably light weight, they are a tough unit and dimensionally small, allowing the ability to negotiate tight orchards. The SoftRider trailers have the ability to be towed behind a standard vehicle and to be fully road legal if required, making transport between orchards easy, safe and legal. This SoftRider suspension design is one of the gentlest riding for fruit to help maximise yield. Combine that with its tailgate that insures all 3 fruit bins are secure on the trailer.

PYES PA ENGINEERING

Contractors have repeatedly informed us that our SoftRider trailer is their product of choice for many BOP orchardists. One tractor and trailer unit can replace at least 3 of the older style tractor and standard roller trailers. With labour units in short supply, it's no wonder we've seen growth.

This year saw a small adjustment to the trailer design for a customer for his Rockit apple orchard and has now been added to the plan as an option.

Pyes Pa Engineering has been operating since 2004 and our small but dedicated team work hard to ensure customer satisfaction often going above and beyond. As well as the Softrider trailers, custom trailers including transport trailers rated to 3500kg are common, as well as all general engineering. Not being the type of business to rest, Mk2 the stacker trailer is under design currently.

All SoftRider trailers are built to order. With this in mind, if you're in the market getting in early is strongly advised with long turnaround times for galvanising etc.

A short video can be viewed on our website www.pyespaengineering.co.nz

For any other information contact Tim Sidwell; tim@pyespaengineering.co.nz Phone +64 27 256 4250, LL 07 541 1277

SOFT RIDER TRAILERS

YOUR INDUSTRY

ACROSS THE SECTOR — ACROSS THE COUNTRY

FEATURE ARTICLE

Horticulture general manager, Wayne Hall, oversees all of Wi Pere Trust's horticultural activities near Waerenga-a-Hika, just out of Gisborne

Persimmons part of growth plan

Implementing a strategic planting strategy that offers many points of difference is paying dividends for a Tairāwhiti-based whānau trust. KRISTINE WALSH reports.

Thirty-five years after persimmons were first established commercially in Gisborne, there is an award-winning new kid on the block, Wi Pere Trust (WPT), with grand plans to grow the persimmon industry further.

Wi Pere Trust emerged from the desire of its founding father, Wiremu Pere (Te Whānau-a-Kai/Te Aitanga-a-Māhaki), to preserve ancestral lands for future generations and to retain, protect, build and grow them for the benefit of whānau. Today, WPT has more than 500 beneficiaries and net assets valued at over $100 million, including sheep and beef farms, forestry land, 20-hectares of newly planted Rockit™ apples and another 20-ha earmarked for other apple varieties, 20-ha of newly established navel oranges, four hectares of blueberries and more.

WPT horticulture manager, Wayne Hall, oversees all of WPT's horticultural operations near Waerenga-a-Hika, just out of Gisborne; including 26-ha of conventional and organic Gold kiwifruit and four hectares of persimmons.

The Trust's persimmon plantings are a big change from WPT's early days of growing grapes – which are now all gone. Wayne says it's all part of a strategic business plan devised a decade ago to focus on high-value export crops coupled with high-earning varieties for the domestic market.

"We were price-takers on low-value crops and that did not bode well for the future," Wayne says. "We developed this strategy that gives us a point of difference."

While WPT is a whānau trust, it is also a commercial entity that has obligations to its beneficiaries, he says.

The early maturing M7 oranges have already proved their worth, with their late-June harvest ensuring WTP hits the market when New Zealand navels are in short supply and new season fruit is eagerly awaited by the domestic market. Kiwifruit have already given four years of high-end returns too.

The new persimmon crop hit full production in 2021, two years ahead of schedule.

The knowledge, skill and care of Wi Pere Trust orchard manager, Eddie Collins, resulted in WPT earning a "Freshie" award for Best Performing Persimmon Orchard

To get the work done, the horticulture arm of WPT has ten full-time employees and up to 65 casual workers during peak orchard times. Twenty-seven staff are dedicated to the persimmon harvest alone.

"Our aim is to achieve the economy of scale needed to offer more permanent, full-time employment, especially to locals," says Wayne. "We see that time getting closer and closer especially as the apples, which are still in their infancy, come on stream."

Income from the kiwifruit has allowed the Trust to fund licences and infrastructure, while future-proofing its orchards and crops.

"The trust does have a strategy (Wi Pere Kaitiakitanga Whenua Plan) to ensure good environmental guardianship, but the reality is the climate is affecting us all and we wanted to reduce our exposure to that," says Wayne. "Investing in things like netting and ground cover for the persimmons and tunnel houses for the blueberries, offers at least some protection from both bird damage and bad weather."

> "Our aim is to achieve the economy of scale needed to offer more permanent, full-time employment, especially to locals

WPT's approach to orchard care was so successful that the Trust earned itself the "Freshies" award for Best Performing Persimmon Orchard.

"Our approach has been to treat it [the persimmons] like growing kiwifruit, in that you want to put a lot of effort into achieving as much first-grade fruit as you can," says Wayne.

Persimmon Industry Council (PIC) manager, Ian Turk, says the fruit was looking great as growers geared up for the 2022 season. Fruit was good in size and in volume, with a higher supply from many growers compared to last year.

That was the case at WPT where the team had hoped to build on the back of their 2021 harvest of 10,000 trays per hectare. Orchard manager, Eddie Collins, believes the trust would get close to achieving that top result.

Despite the number of catastrophic rain events that have occurred in Gisborne since late 2021, Wayne was not too worried about the small impact on the quality of some of the fruit.

"We managed to get up to 70 percent export grade at the start of harvest and that's what we were shooting for,

Persimmons (*Diospyros kaki*) are the fruit of deciduous trees that originate in China and have been cultivated for centuries in Japan.

New Zealand growers tend to focus on the non-astringent Fuyu variety which, after harvest in mid-April to late-June, is sought after for its high colour and rich flavour.

Persimmons grow well in soils with a slightly acid pH (6–6.5). If grown on clay, they require good drainage. On lighter sandy soils they will not tolerate dryness and need irrigation.

Renowned for their delicate, sweet flavour, persimmons are rich in vitamins A and C, potassium and fructose.

knowing we were going to get a bit more rain towards the end," he says. "First Fresh and the Persimmon Industry Council have done a great job of marketing, so we've got those offshore buyers, but there's also a growing interest in the domestic market.

"Persimmons used to be a real luxury item but they're a bit more accessible now, which is good for consumers. First Fresh's decision not to handle Tag 3 (lower grade) fruit has stabilised things by improving buyer trust and interest in the product."

With freight issues easing since the start of the pandemic, Ian says most of this year's commercial crop was bound for the overseas market.

"Around 70 percent of our crop, worth about $10 million, will head to Australia, the United States, China, Japan, Thailand, Singapore, Malaysia and Hong Kong," Ian says. "We're also developing markets in Vietnam, which will increase demand for our fruit in the coming years."

Meanwhile, Wayne is juggling the day-to-day demands of his day job with his position as chair of Citrus New Zealand and his recent appointment to the Persimmon Industry Council executive.

He believes those roles are just another way of getting his boots dirty.

"There are already a lot of strengths in the persimmon industry and we can only build on that for a stronger future." ●

POSITIVE FORECAST FOR PERSIMMONS DESPITE CHALLENGING TIMES

If there's one thing about Gisborne in winter it's that it sure looks lovely, fruiting oranges, mandarins and lemons stamping citrus-coloured jewels across the landscape.

Perhaps even more striking are the persimmon plantings where, being deciduous, the trees offer spectacular autumn colour as well as those glowing globes of fruit.

First Fresh managing director, Ian Albers, says the region's persimmon crop has gone from strength to strength despite a challenging season.

"This February and March, Gisborne experienced some of the wettest weather seen in decades and while that has been challenging from a harvesting point of view, the heat and moisture has made for some great colour and good-sized fruit," Ian says.

"As we approached the end of harvesting and packing in mid-June, fruit not already shipped was keeping well in the lead-up to being sent to market in the following six-to-eight weeks."

The New Zealand persimmon industry has grown to export around 350,000 trays (1400 tonnes) each year, compared to just 5000 trays (20 tonnes) in 1986. Production of the sweet, crisp Fuyu persimmon variety is measured in four-kilogram trays and has seen solid growth over the years.

Approximately three-quarters of the national crop is exported, leaving some 320 tonnes for domestic buyers, who bought 20 percent more persimmons in 2021 than they had the year before.

Persimmons destined for the United States and China are subject to strict on orchard and post-harvest protocols that include up 35 days of cold treatment prior to shipment.

Ian says the tough decision was made not to supply those markets this year given the uncertainties and complexities around market access due to Covid-19.

"That was disappointing as both of these markets look to have great potential," he says.

Market pricing has been better than last year but costs across the supply chain, including grower costs, have increased significantly.

"We need those increases in order to keep pace but sometimes it isn't as simple as that," Ian says. "For example, we have the upside of prices stabilising in air freight as more airlines start flying again, but the downside of big hikes in ocean and road freight costs across the board for the 2022 season.

"For exporters, that volatility seen from the start of the Covid-19 pandemic is likely to continue until things settle into a new normal."

Despite those challenges, greater consumer awareness has fuelled continued growth in the market, says Ian.

"There is still relatively limited supply on a global scale so there remains room to develop for the future by growing the market base for this product." ●

Twenty-eight-year-old Maatu Akonga won the 2022 title of Hawke's Bay Young Fruit Grower

Hawke's Bay talent garners Young Fruit Grower title

Just a decade into his career in horticulture, T&G Global assistant manager, Maatu Akonga, has added another accolade to his name, taking out the title of Hawke's Bay Young Fruit Grower of the Year.

Emily Pope

The 28-year-old vied against six other contestants in a series of theoretical and practical modules designed to exercise horticultural skills and knowledge.

The win came as a surprise even after delivering a strong speech on the awards night, he says.

"I feel very humbled and honoured to have won," says Maatu. "I knew I hadn't done too badly, but it was difficult to know with such tough competition."

Maatu says the achievement is not only a celebration of his professional journey but the personal growth it took to get there.

"I said in my speech that it isn't until you step outside your comfort zone that you know what you're truly capable of achieving," says Maatu. "I have really had to push myself to get to where I am today."

When Maatu first joined the industry in 2012, he wasn't sure what he wanted to do.

This year's competitors (left to right): Ben Jarvis, Dharam Singh, Maatu Akonga, William Horsefield, Alex Te Kere, Nga Stanley and Junior Vaai

"I lacked direction and motivation, I had housing problems at the time and couldn't hold down a job long enough," he says. "I wasn't making good life choices."

> **"I feel very humbled and honoured to have won ... I have really had to push myself to get to where I am today**

It wasn't until Maatu landed a packhouse job in 2014, that he realised horticulture could be a lucrative and rewarding career for him.

"I enjoyed it more than I thought I would. Being an outdoors person, it made me realise that it could be a great career option."

The packhouse offered secure hours while supporting Maatu to upskill – enrolling him in Eastern Institute of Technology's Certificate in Sustainable Horticulture, Level 3 Fruit Production.

"I did that course for six months, spending three days in the classroom and two days out in the field working," says Maatu. "The personal growth since joining this industry has been great for me.

"I've not only built a career but have gained life skills and met a lot of inspiring people along the way that have really made me see that horticulture is an exciting sector, full of opportunities. That's something I want to be part of."

Building on his career prospects is what attracted Maatu to try his hand at the Hawke's Bay Young Fruit Grower of the Year competition.

"These competitions are all about personal growth," he says. "I wanted to get myself out there, benchmark where I am in my career and identify areas where I could improve, build my skills and learn more.

"I learnt a lot on competition day, identified areas of opportunity and challenged myself. I can now go back to my job and pass on some of those skills to others."

As much as the competition is about homing in on horticultural skills, it's also about the people, he says.

> **"I learnt a lot on competition day, identified areas of opportunity and challenged myself**

"Connecting with the other contestants will always be a highlight. The competition has created this great networking system where I've now got people in the industry I can reach out to, bounce ideas off and ask for help from – and they can reach out to me too.

"Having that network is so valuable."

For those who are considering entering the Young Grower competitions, Maatu says not to hesitate.

One of the modules competitors were tasked with was to build a wooden produce crate

Maatu with the Hawke's Bay Young Fruit Grower trophy on awards night

"There is nothing to lose. Get yourself out there, enter the competition, see where it takes you and watch the benefits follow."

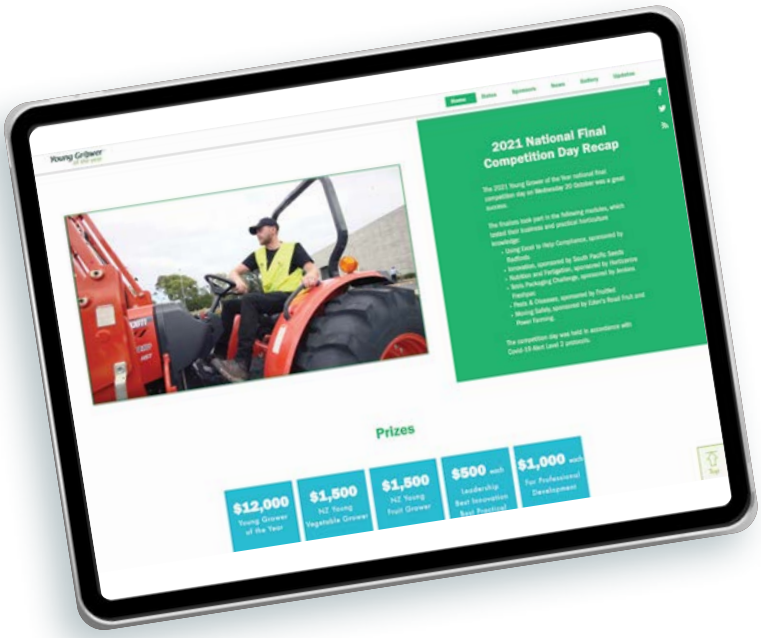
Maatu will be taking a step back and recharging before the national Young Grower of the Year finals in Nelson on 21 and 22 September.

"I see it [horticulture] as a good career path for myself going forward," he says. "The end goal is to take management and ownership of my own block and give back to people in the same way that people have invested in me since I joined the industry." ●

> **"The competition has created this great networking system where I've now got people in the industry I can reach out to, bounce ideas off and ask for help from – and they can reach out to me too**

"I'll probably start prepping a few weeks out, but I'll definitely be making sure my speech is sorted well before then," he says.

Regardless of whether he takes out the national final title, Maatu already feels like he is on the winning track with his career.



Apprenticeship funding a boost

The announcement of continued government financial support for apprentices will help the primary sector attract and train the thousands of new people needed, Primary ITO chief executive Nigel Philpott says.

Until the end of 2023, employers will be eligible for $500 a month for each first and second-year apprentice. The support comes from the Government's Apprenticeship Boost scheme, which has been extended until the end of 2023.

Nigel says the announcement is very welcome for employers. "At Primary ITO, we've seen massive growth in apprenticeship numbers since the Apprenticeship Boost was launched at the start of the Covid-19 pandemic.

"The growth we've had shows that the cost of training was a barrier for employers and prospective apprentices. It is fantastic to see that recognised by extending the financial support.

Primary ITO has over 20,000 learners in total, with nearly 8,000 of them doing full New Zealand Apprenticeships. Training for horticulture production has remained strong in 2022 with around 800 people enrolled in apprenticeships and training across crop, fruit and vegetable production and post-harvest.

"Apprenticeships are becoming an increasingly important feature of the primary sector," says Nigel.

"In future years we will see the growing pipeline of apprentices graduating, becoming industry leaders and taking on their own apprentices. The investment going in is extremely welcome now when employers are crying out for skilled people."

Primary ITO learners are also currently benefiting from the Government's Targeted Training and Apprenticeships Fund, which is paying nearly all training fees until the end of 2022.

For more information about government support available, visit primaryito.ac.nz

How your industry steers Primary ITO training

From onions and asparagus, to tomatoes, berries and apples, a group of horticulture production experts are meeting several times a year to make sure growers across New Zealand can access the type of training they need.

Primary ITO's Production Horticulture Industry Partnership Group (IPG) members are the voice of industry to steer how Primary ITO supports training and develops training programmes for the sector.

They are responsible for knowing what skills industry needs and working with Primary ITO on the best ways for people to gain those skills – whether that's through an apprenticeship, a programme, or a one-off "micro-credential", aimed at a specific set of workplace skills like operating a tractor.

The group members are representatives of some of New Zealand's biggest growers as well as family-run operations.

If you would like to talk about what's needed in workplace training in the production horticulture sector, get in touch with the IPG Chair, Antony Heywood, on antony.heywood@hortnz.co.nz

Primary ITO
Rōpū Whakangungu Ahuwhenua Ahumahi

FEATURE ARTICLE

As the Meyer lemons offer three harvests a year all family members – (from left) Tracey Scott, Hamish Hulme-Moir, Georgia and Campbell Hulme-Moir, and older siblings (absent) Nina (21) and 19-year-old Blake Marshall – are often roped in to help with the picking

Revitalising the family orchard's roots

An ageing orchard, drainage issues and a lack of experience failed to deter a duo of newbie growers from reinvigorating a family orchard. KRISTINE WALSH reports.

Tracey Scott and partner, Hamish Hulme-Moir, say there are advantages to knowing little about orcharding.

The duo has spent years establishing an orchard in the small inland settlement of Ormond, just out of Gisborne.

"Because we were newbies, right from the beginning we got stuck into learning absolutely all we could," says Tracey. "To give ourselves the best chance, we committed to doing everything as best we could from day one."

The three-hectare orchard is part of a five-hectare navel and valencia orange orchard that Hamish's parents, Lachie and Kris, had bought as a going concern in the early 1990s.

"But by then Hamish was ready to leave home to train as a diesel mechanic so, apart from occasionally fixing Lachie's tractors, he wasn't really part of it," Tracey says. "He [Hamish] was as new to growing as I was."

When the couple met, Hamish was living in a house he built on the property – replacing an existing cottage. Tracey, a solo mother with two young children at the time, lived just up the road.

"We always joke that we didn't have to go far to find each other… less than 150 metres!" Tracey laughs.

Tracey and Hamish had two children together by 2014 – the same time that Lachie and Kris decided it was time to put their feet up.

"Hamish had always said he would buy them out but made sure that's what I wanted, too," says Tracey. "He knew it would be a lot of work for both of us so, me being a townie, he made sure I knew what we were getting into."

Having worked out a split arrangement where they bought one half of the orchard and leased the other, Hamish and Tracey ended up with decades-old orange trees that had

seen better days and a whole heap of blackberry.

"We did persevere with the oranges that first year but Hamish is such a perfectionist that was never going to do. We decided to start all over again and do it right first time."

Neighbour Matt Carter was a citrus grower working as technical manager at Gisborne sales and marketing company, First Fresh.

He connected them with colleague Mathew Bannister, compliance co-ordinator at First Fresh and between them, offered advice and support to Hamish and Tracey from day one.

"Between their input and our research, we leaned towards lemons," Tracey says. "We learned that, if you treat the trees right, you can pick three or even four crops over a 12-month period.

"Because we knew we'd be doing most of the work ourselves that idea of spreading the load across the year really appealed."

After devouring every bit of information they could access, the couple decided that, in their "funny little microclimate under the hill in Hill Road," they would keep a small area of the orange trees behind the house, working to improve their health and pruning them to a manageable size.

The rest of the plantings were to be replaced with two hectares of Meyer lemons and just over half a hectare of Bearss limes.

"In those areas we really did have to start from scratch," Tracey says. "We ripped everything out – including the shelter-belts."

> **"We learned that, if you treat the trees right, you can pick three or even four crops over a 12-month period**

Following Matt's advice not to plant citrus on citrus, the couple leased the property for a crop of maize to help improve the soil structure and nutrients.

They then levelled the ground where it was needed, did more work on the soil, installed new tile drainage and began planting.

One thousand lemon trees were planted in the spring of 2015, followed by another 1000 lemons and 240 limes in autumn 2016.

Tracey Scott and Hamish Hulme-Moir planted 2000 lemon trees between 2015 and 2016. They're now expecting to pick a solid 400 bins for the 2022 season

They did as much of the work as they could themselves, with a bit of help from family and friends.

"We had family shelter-belt planting days out there in the mud and the rain; a friend dropped off a tractor with a GPS (global positioning system) to help us plan the rows; the kids used fluorescent pink iceblock sticks to mark where the holes should go; another friend came with the machinery to dig the holes and we all got stuck into planting," Tracey says.

In those early days, a lot of energy went into ensuring the fledgling trees were well established and put on good growth from regular hand-fertilising, to Tracey trimming the flowers with a pair of teeny, tiny scissors.

That investment of time has paid off.

"In 2018, we picked three bins – about 280 kilograms – of lemons, which we thought was pretty great," Tracey says. "This season, we're hoping to achieve 400 bins."

As planned, the variety of plantings – which fruit early due to the climate – makes for smoother schedules in both harvest and cash-flow. The smaller lemon picks are in October and November, then February and March. Navels are harvested before the main push on lemons from late May through to July, and the limes come off from late January into early March.

Though Hamish is responsible for all the spraying and mowing, he still sets off each weekday for his truck workshop in Gisborne city while Tracey remains hands-on at the orchard.

While Tracey's older children, Nina (21) and Blake (19), are now living independently, the couple's young'uns, Georgia (15) and Campbell (11), are still at home.

"I don't like to think about them growing up, but they will and when they do, I will probably put even more time into the orchard," Tracey says. "It's been a steep learning curve from the beginning and that never stops.

"I recently did a course in pruning, which was really useful, and there's always lots to keep up with around compliance and health and safety."

First Fresh continues to handle the orchard's fruit, seven years on from those first trees being planted. Most of the fruit goes to export, with some retained for the domestic market.

> **"In 2018, we picked three bins – about 280 kilograms – of lemons, which we thought was pretty great ... This season, we're hoping to achieve 400 bins**

It hasn't all been plain sailing.

A higher than usual rainfall this year has led to lemons being larger than consumers might expect and, like other growers, Tracey and Hamish have struggled to secure labour in a Covid-19 environment.

"We get a small crop in summer – always the best one in terms of value – and we can handle most of that ourselves," says Tracey. "But we need to get contractors in for the main winter harvest and that's been an ongoing issue which, unless the backpackers return, we don't see easing up any time soon."

When the orchard can secure workers, Tracey feeds them a hot lunch, bracketed by morning and afternoon tea, to keep them keen.

She says networking, especially with other women growers, is also useful.

"It helps to know that everyone is in the same boat and you are not the only ones facing issues," she says. "It somehow makes those problems seem less insurmountable."

The orchard was also fortunate to have the 'mum gang' this year – two mothers and a couple of teens – who were employed to help with the lime harvest.

"The five of us were able to do it ourselves within working hours that suited us all," Tracey says. ●

TIME FOR 'NZ INC' TO BUILD ON LEMON BRAND

There were sour faces in the supermarkets when customers realised they couldn't get the lemons they needed to sharpen up their summer salads.

The January shortage was the result of a perfect storm: hold-ups in shipping coincided with the months when lemons were out of season in New Zealand.

The squeeze was bad news for consumers desperate for a bit of lemon zest. New Zealand's heavy winter harvest comes when lemons are out of season in offshore territories – creating a market ripe for export and earnings for growers.

Unfortunately, exports were down 15 percent for the 2020–2021 season. Thirty-six percent (2665 tonnes) of the crop went offshore, 32 percent of the Yen Ben crop and 40 percent of Meyer. Japan, the largest export market, imported 1760 tonnes of New Zealand lemons, including all 1145 tonnes of Yen Ben, while the bulk of the Meyer exports (1520 tonnes) went to Japan, the United States and China, with smaller volumes to the Pacific Islands and a couple of other markets.

First Fresh managing director, Ian Albers, says most of the recent issues with exports come down to logistics.

Increased shipping costs, departure delays, lack of space, competition from other producers like Chile, extended transit times and a strong New Zealand dollar have all meant that shipping has been tough going.

Ian says that exporters have done well to get the volumes offshore that they had, particularly those destined for Japan where Covid-induced states of emergencies curtailed trade.

Despite the challenges and summer shortages here at home, he says it is important to keep striving to achieve strong exports to prevent saturation of the domestic market.

Even in the face of recent challenges, Meyer lemons continue to be New Zealand's major citrus export with almost no offshore sales of satsuma mandarins and navel oranges.

First Fresh represents about 40 Gisborne lemon growers – more than half of all those in the country. Halfway through the 2022 harvest in mid-June, First Fresh already had more than 20 containers on the water and were confident they were sending great quality fruit.

Despite big encroachment from high-value products in the Gisborne region, Ian Albers believes growing lemons still has a lot going for it.

"What our growers like is that lemons don't have big infrastructure set-up costs, they don't require as intensive care as some products, and returns are generally steady," Ian says. "In terms of export opportunities, we will always be a niche counter-seasonal supplier, which is a big advantage, we know we can produce good volumes, and not having to apply chemicals post-harvest also gives us a competitive edge."

Ian is keen to see that advantage built on in future, by investing in a higher profile for a 'New Zealand Inc' type brand for lemons overseas, for example.

In the meantime, the focus would be on addressing the challenges of increasing costs and the resulting diminishing returns, he says.

"It is the same as for all product groups: freight is expensive, labour is tight and costly, and compliance costs keep going up."

For growers and their representatives, the challenge will be minimising those costs while maximising yield, quality and returns without alienating buyers and consumers.

Between 1 April 2020 and 31 March 2021 New Zealand had a commercial production of 7423 tonnes of lemons for both local and export markets, up six percent on 2019 (6999 tonnes) and down two percent on 2018 (7600 tonnes).

Eighty-five percent of the 2020–2021 crop was produced predominantly in Gisborne and 15 percent in Northland.

Both Yen Ben and Meyer lemons have their heaviest crops from May until September. Yen Ben, a thin-skinned, high-juice volume crop with minimal seeds, represented 48 percent of the total lemon crop this year, while the Meyer lemon, a slightly sweeter variety with a colour sought after in overseas markets, represented 52 percent of this year's overall crop.

Exports were down 15 percent for 2020–2021, with 36 percent (2665 tonnes) of the crop exported.

The average price for lemons across the 2020–2021 season was $2.74/kg, with a low of $1.68/kg in June 2020 to a peak of $4.06/kg in April 2020.

New Zealand's domestic lemon crop was valued at $13 million in 2020, 20 percent higher than in 2019.

Statistics sourced from Citrus NZ

Cherries under cover

Continued growth of international cherry market faces challenges

While global cherry production has doubled in the past 20 years, several challenges need to be addressed if the industry is to achieve its further growth potential.

Summerfruit New Zealand

This is the conclusion of Max Ciccioni, technical manager at the AgriChain Centre, who attended the International Cherry Symposium in Rimini in early May 2022.

"The significant increase in global cherry production has been due to increased demand and prices," says Max. "The increase has been led by the three main exporting countries: Turkey, the United States and Chile. Cherries still have significant potential for growth, however, several challenges need to be considered."

These include:

- Growth in supply will need to be matched by strenuous demand expansion efforts.
- Segmentation of markets (for example, sluggish mature markets, rapidly expanding markets, and markets with growth potential) will require coordinated marketing and sales efforts geared to each type of market.
- Demand for fresh produce could be affected by slow or declining population growth in many major markets.

- Weakening of conditions favourable to expanding world trade, with the World Trade Organisation (WTO) losing its ability to prevent trade barriers, weakened flow of trade caused by the Covid-19 pandemic, and growing geopolitical tensions.
- Climate change, with milder winters and late frosts, higher rainfall intensity and concentration, and increased frequency of hailstorms and extreme weather events.

Max says that due to climate change, there is growing demand for new cherry cultivars that are able to adapt to environmental adversities while producing high quality fruit.

"The cultivar development process has been speeded up, but new scientific approaches, methodological tools, and more knowledge on a wider range of traits are needed.

"Labour shortages and the high cost of pruning and harvesting are current issues, with harvesting accounting for 45 to 60 percent of the total cost of production. One speaker said that to be competitive over the next ten years, the orchard you plant today should create a planar fruit wall because it is easier to harvest, has better yields, optimises worker efficiency and safety, reduces the environmental impacts of some pesticides and facilitates orchard covering systems as well as mechanisation and automation."

Max says from an investment perspective, the best performing plant system seems to be the high-density planting (1200–2000 plants/ha) followed by the medium density (500–1000 plants/ha) and lastly the very high density (5000 plants/ha).

"Planting intensification needs to consider a considerable increase in initial cost and a reduction in the productive lifespan of the plant. However, the payback time is shorter, which reduces risk.

"Harvesting hours can also be controlled by reducing the percentage of damaged fruit at harvest due to cracking or insect damage. Protective covers are effective tools to control the level of damaged product. Put in perspective, the increase in harvesting hours goes from 6–7 percent to 50 percent for fruit with 10 percent damage at harvest compared to fruit with 30 percent of damage at harvest."

Max says cracking is still one of the biggest causes of significant economic loss for cherries. "The introduction of rain shelter can help reduce the risk. However, cracking can still happen under rain shelter and also during post-harvest handling because it is the wetness of the surface that damages the fruit.

"This can be prevented by opening the canopy and using a short grass mulch to maximise transpiration and remove excess soil moisture from the tractor alley. These measures will also avoid condensation during post-harvest."

Max says mechanisation will play an important part in increasing orchard sustainability. "Washington State University has been working on the mechanisation of labour-intensive operations such as pruning. The results demonstrate increased labour efficiency, which can be 13 to 29 times faster than hand pruning, depending on the type of training system and tool used – sickle bars or circular saws – without compromising quantity and quality.

> **"Due to climate change, there is growing demand for new cherry cultivars that are able to adapt to environmental adversities while producing high quality fruit**

"More recently, the development of robotic vision systems is of interest because they are more selective than the mechanical tools.

"Assisted mechanical harvest and fully mechanical harvest are also being investigated as shorter and longer-term solutions. Although progress is being made in this area from a harvest efficiency point of view, the biggest challenges will be maintaining quality of the product and consumer acceptance of stemless cherries."

Lastly, Max says, post-harvest technology innovation is investigating non-destructive tools to determine firmness and soluble solids with the aim of improving segregation and uniformity. "Biodegradable films with the controlled release of antimicrobial compounds connected with biosensor technology are being worked on."

Max went to the symposium with support from Summerfruit NZ.

Five things you can do *right now* to future-proof your business

Let's face it: times are tough. But frustration without action gets us nowhere, so here are five things you can do in the quieter winter months to increase resilience and improve your operation's future readiness.

1 *Reach out.*

Pick up the phone and call your family, friends, colleagues, and fellow growers. A connected network is a strong network. Open communication is key to understanding our communities', suppliers and consumer needs. Keeping an ear to the ground helps us pick up industry trends early and pivot towards future-proof solutions. And of course, keeping up the kōrero within our network is important for our mental health – and that of others!

2 *Tell your story.*

Telling our stories and empowering consumers with the right information allows them to support growers that align with their values. Join a local Facebook group. Email local publications such as an industry group newsletter or a magazine. Find out how your retailer can effectively market your story to their customers. There is crossover between our growers' priorities, local consumer trends and global consumer trends: minimising waste, offsetting carbon emissions and reducing harmful chemical residue on our land and in our food. By using environmental and social certification schemes such as GAP, GRASP, carbon zero and organic, growers can verifiably communicate to consumers that their food has been produced sustainably, acting in the best interests of the land and future generations.

3 *Stay up to date with regulatory change.*

It is easy to feel overwhelmed by regulatory change and market access requirements, and how these may affect your business. Knowledge is power – find out what resources are available through your industry body and Horticulture NZ to keep you in the loop. Make sure that you're subscribed to industry newsletters such as the HortNZ Weekly Briefing, and sector specific publications e.g., NZ Apples and Pears Pipfruit Newz, Summerfruit NZ Prunings. Attending industry-hosted webinars or in person grower meetings are also a great way to make sense of the changes that are coming, and have your questions answered.

4 *Think about water efficiency.*

The impact of climate change and inconsistent rainfall is putting pressure on our water sources. Check the efficiency of your irrigation system – is it applying the correct volume and distributing water evenly? A performance assessment of your irrigation system will highlight any issues and improvements that can be made prior to the drier summer season.

5 *Consider diversification.*

Consider your business operation as a whole – are there areas of land that could be used to trial a higher value or more sustainable product? Consider new opportunities that could be viable in your region under a changing climate, or value-added products to increase the viability of what you are already producing. Diversification of your horticultural business can help to buffer the impacts of market variability and climate change and increase resilience.

The WSP Primary Industries team combines practical experience in growing systems with industry recognised qualifications and up-to-date knowledge of regulatory change. Our team can offer pragmatic advice to enable the horticultural sector to stay ahead of the game and move forward with future-proof solutions.

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FEATURE ARTICLE

Helen Scott, orchard manager for the Māori Investments Ltd owned Whiritoa orchard, and Kaumātua Rex Anderson, who oversaw the development of the organic orchard

Whiritoa orchard innovating and growing with cover crops

Carrots, brassica, radish, chicory, clover, sunflowers and cosmos are not usually found growing beneath kiwifruit vines, but these and ten other plants are flourishing on the Whiritoa organic gold kiwifruit orchard in the Eastern Bay of Plenty. ELAINE FISHER reports.

"Growing this cover crop under 12 rows is a trial for us, to see what impacts these plants have on soil health and soil biology," says Helen Scott, orchard manager for the Māori Investments Ltd (MIL) owned orchard near Te Teko.

The 5.3-hectare organic orchard and its neighbouring 6.87-ha conventional gold kiwifruit orchard, both owned by MIL, are entrants in the 2022 Bay of Plenty Ballance Farm Environment Awards.

New to organic horticulture, the company's board supports Helen and her orchard team in trying new initiatives.

"We took soil samples before planting the cover crop, and will repeat them again to find out if it has made a difference," says Helen.

Kaumātua Rex Anderson, who oversaw the development of the Whiritoa organic orchard and works closely with Helen and her team, also takes a keen interest in the cover crop.

"Instead of mowing all the time, many organic growers roll their cover crop to control it. We tried that and it works well," Rex says. "We have also mowed it three times, including before picking, and it came back with vengeance."

Rex and Helen know that many of the plants won't thrive once the four-year-old gold vines reach full canopy, but the aim of the trial is to see what will endure and if the biodiversity brings benefits.

"This part of the orchard is now more than a monoculture," says Helen. "Cutting the grass returns nutrients to the soil, and slugs and snails tend to eat the cover crops instead of the vines. The plants also attract insects, giving us an early indication of what pests might be coming in."

Everything growing under the vines is edible.

"When I showed the cover crop to our chief executive, Kiriwaitingi Rei, she ate some of the chicory, which didn't taste that nice."

The organic orchard has been developed from what was a nashi pear orchard, purchased by MIL in April 2017. Rex, who oversaw the redevelopment started in 2018, says some of the nashi trees have been retained to provide fruit for staff and for local marae.

MIL was successful in a bid to buy Zespri SunGold organic licences, and commissioned Southern Cross Horticulture to develop the orchard in 2019. This included the construction of a large pond to provide water for frost protection.

Initially the pond's overflow caused flooding in parts of the orchard, but the water has now been redirected away from the vines, and better drainage in the orchard has resulted in improved vine health.

Innovation reflecting close links to the natural environment and the iwi's spiritual and cultural values are evident throughout the organic orchard, including in its young shelter belt.

"All the trees are native species, and something is flowering virtually year-round providing food for beneficial insects and birds," Helen explains. "Many are also beneficial to humans, from leaves which can flavour aioli to those which provide an ingredient for a balm to repel biting insects. The plants bring beauty and yet more diversity to the orchard."

The steep banks of the frost protection pond are also planted in native species from grasses to low-growing hardy shrubs, landscaped in a series of triangles to represent the teeth of a taniwha.

MIL encourages staff to grow their own vegetables and the orchard is an exemplar of how this can be done, with raised gardens made from old pallets outside the orchard staffroom and storage shed – the old nashi packhouse. Kamo kamo vines planted close to the pond were still producing ribbed, squash-type fruit in mid-May.

"They are easy to grow and there's little effort required to produce food from them," says Helen. "But it is unusual for them to survive this late in the year, which to me is an indication of climate change."

Rex says MIL's policy is to employ its people in preference to contractors, and to provide opportunities for shareholders and their families to work on the orchard. The team is made up of seven full-time staff and five people on fixed term contracts.

Creating an environment which attracts native birds is an important part of the management of the Whiritoa organic gold orchard near Te Teko

Helen says the aim is to give staff as close to full-time employment as possible, which includes a guaranteed number of hours of work each week.

"That is so much better than the conditions for many casual staff who don't know from day to day if they have work or not," she says.

Helen says Covid-19 has resulted in greater benefits for local workers, as employers have had to offer greater incentives to attract and retain local employment pools.

"However, we do still have a skill shortage," she says. To help address that, the Whiritoa orchard encourages staff to gain horticultural qualifications.

"Often on a wet day, they will come in and we work together to get through their training," Helen says.

Rex says the orchard's team members have a real commitment to the business.

"They understand the 'why' of what we are doing," he says. "They know that monotonous jobs like bud thinning are important to produce a good crop, and take a real pride when they see the quality of fruit at harvest time."

A strong belief in taking care of the environment and improving the health of all involved in the orchard is also the driver behind MIL providing all staff with reusable, metal drink bottles and having a small fleet of push bikes for getting around the orchard.

"Our rubbish bins used to be full of plastic fizzy drink bottles. Not anymore," says Helen.

The push bikes, fitted with carriers for tools, have proven to be a popular way to quickly get round the orchard, and they cause less soil compaction too.

While the orchard is operating under organic principles, it won't achieve full BioGro certification until 2023. This season's fruit was packed by Apata Ltd's certificated organic packhouse as an introduction to how the process works. The fruit was picked early for the KiwiStart programme.

When it came to the conventional orchard, fruit was packed by two post-harvest operators with half the crop going to controlled atmosphere (CA) storage.

"We decided to use three companies to spread our risk because of the possibility of packhouse closure because of Covid," says Helen. "This worked well and we were supported to do so by the companies."

Eventually the conventional orchard, which produces up to 21,000 trays a hectare, may convert to organic too – based on the performance of the yet to mature neighbouring organic orchard.

Whatever decisions are made, Helen and Rex say the aim is to produce quality fruit at volumes which don't over tax the vines and at the same time care for the environment.

"In 100 years' time, when perhaps kiwifruit may not be as profitable as now, we want to ensure that these soils and this land will be able to sustain and support whatever our people wish to do," Helen says. ●

HELEN'S JOURNEY FROM FRUIT PICKING TO SKILLED ORCHARD MANAGER

Elaine Fisher

Helen Scott's introduction to the kiwifruit industry came 20 years ago when a neighbour knocked on her door and asked if she wanted to go fruit picking.

Today Helen is orchard manager for the Māori Investments Limited (MIL) Whiritoa organic and conventional kiwifruit orchards in the eastern Bay of Plenty.

It's a role the solo mother could never have imagined for herself, that first day on the job so long ago.

"I put the kids on the bus to go to Kōhanga Reo [a whānau-led early childhood setting which offers immersion in Te Reo] and went to work on an orchard whose owners were very family orientated," says Helen. "They allowed me to work when I could with no pressure, which was not common back then. They gave me a place to "work and started my journey in the industry."

Helen, who grew up in the Te Teko area, went on to gain horticultural qualifications, working for EastPack and later, its Prospa orchard management company.

"I managed orchards in different landscapes, learned so much and loved problem solving," Helen says.

In 2018, she helped train MIL orchard staff, and her talents were instantly recognised by the company's management. Kaumātua Rex Anderson, who oversaw the development of Whiritoa organic orchard and today works closely with Helen, speaks highly of her skills.

"Helen has a big 'E' for experience and we saw in her the attributes these orchards needed," Rex says. The experience Rex speaks of includes Helen's considerable and growing knowledge of orcharding, organics and the natural environment, and also the life skills and empathy she brings as a mother and employee.

In line with the philosophy of MIL, Helen and Rex actively encourage team members who wish to gain qualifications in horticulture, and to fully understand and take ownership and pride in the work they do.

"I love working here, being supported in my principles and given the opportunity to try new things and to grow as a person," says Helen. "I have asked others to come to work here because I know they will be valued and given the chance to undertake further training, should they wish."

Māori Investments Limited began in the 1960s as a tripartite partnership between Tasman Pulp and Paper Mill, the Crown and individual Māori landowners, who all vested land in Tarawera Forest Limited. In turn, each party received shareholding in proportion to the value of land they had contributed.

Significant events have included the subsequent purchase of the entire landholdings by Māori.

Investments Limited from Tarawera Forest Limited in 2004, and two forestry rights in place with Tiaki Plantations Limited and Kaingaroa Timberlands Limited.

The investment portfolio of Māori Investments Limited now includes agribusiness, high value horticulture including the Whiritoa conventional and organic gold kiwifruit orchards at Te Teko, honey, an investment in a significant tourism asset and a portfolio in bonds and equities.

Image: Helen Scott, orchard manager for the Māori Investments Ltd owned Whiritoa orchard

Yen Ben lemons at Kainui

Yen Ben lemon harvest underway in Northland

COVER STORY

Wendy Laurenson

Kainui Pack & Cool

Last year was a tough one for lemons, so Alan Thompson of Kainui Pack & Cool in Kerikeri is hoping for an improvement this season as harvest gets underway.

Kainui now has 26 hectares of Yen Ben lemons with most of these being new plantings under three years old. However Alan and Helen Thompson are not new to lemon growing. They have been involved with horticulture in Kerikeri since the 1980s and have an extensive family business that includes kiwifruit and lemon production, a packhouse and coolstore, an export company, and more recently wine and beer production.

"While SunGold kiwifruit is our main production focus across 70 hectares of orchards, Yen Ben lemons have always been a particular passion of mine since commercialising the variety in the 1990s," says Alan. They crop most of the year and have a strong Asian export market but they're tricky to grow. Several Yen Ben lemon crops up here have been pulled out, and in Gisborne and Bay of Plenty, Meyer is the dominant lemon variety and has already hit a glut. So my confidence in Yen Ben persists even in the face of the massive logistical challenges in the last couple of years. Prior to Covid-19, we had increased our plantings more than tenfold from our previous two hectares."

"Then last year was a disaster for our lemon exports because of supply chain issues including lack of containers, and some fruit arrived in bad condition after 30 to 40 days stalled in transit, so returns were awful. We've just started this year's harvest and we're hoping for fewer logistical obstacles as the world starts to function again."

Alan says the fact that Kainui's newer plantings are only just

coming into production is an advantage for now. "We have time for the issues of Covid fallout to settle down as we tick away with a lower volume crop. We also need time to re-establish our Asian markets that have been lost because of these issues. With some growers pulling out their Yen Ben lemons to plant more SunGold kiwifruit, the consistent volume of supply of New Zealand lemons needs to be re-established with our markets and this will take time. We're also in the middle of building a new packhouse to better position ourselves for our increased production."

> **"... my confidence in Yen Ben persists even in the face of the massive logistical challenges in the last couple of years. Prior to Covid-19, we had increased our plantings more than tenfold from our previous two hectares**

Yen Ben lemons have several fruit sets a year, that require select picks each time. Alan explains, "This makes them more expensive to produce than a single pick crop like kiwifruit. Seventy to seventy-five percent of the Yen Ben crop is harvested from mid-June to September with an export pack-out of 80 to 90 percent, and then a later harvest from November to early February, so they're producing almost year-round with fruit setting at the same time as harvest. This makes crop management like spray programmes more complicated, and it increases our labour demand."

As with most horticulture, securing labour continues to be a significant issue. Alan says, "This year was the hardest for us in our packing shed because as well as having no backpackers, there was a lot of competition up here for local packhouse workers. We pack our own kiwifruit and citrus (mandarins and lemons) but the recent massive kiwifruit crop expansion coming on stream meant the big packhouses were doing more night shifts with more demand for staff."

"Fortunately we have a great team of regular local staff who have been coming here for years, and on orchard we have a great Recognised Seasonal Employer (RSE) scheme team from Vanuatu. One team was finally able to get home at the end of last year, so we have a new team that started March until September for harvest and pruning, then a summer team comes from September to February for thinning. But costs are up considerably and we need to tweak systems to keep up with the constant changes."

Kainui Pack & Cool sells domestically through MG Marketing and exports citrus through Primavera Trading Company Limited, both of which the Thompsons have a shareholding in, and their kiwifruit exports are through Zespri.

T&G Fresh

T&G also grow Yen Ben lemons with 35 hectares across three Kerikeri orchards, and they contract pick a further 16 hectares.

Joe Lenaghan, citrus manager for T&G Fresh, says their main winter lemon harvest started late May. "We've had a great growing season with a heavy flower-set last spring, so our crop volume estimates are expected to exceed 35 tonnes per hectare. We were fortunate to miss the two cyclones that really impacted Gisborne citrus this season, but consistent rain through our growing months has meant pest and disease pressure has remained high through summer and autumn."

T&G exports lemons primarily to Japan but continues to work towards new opportunities in Southeast Asia and North America. "We export roughly 70 percent of our annual crop through the winter months, with the remaining 30 percent supplied domestically through the summer months," Joe says. "Our export focus is with Japan as we have reliable relationships with our partners there and Japan tends to offer T&G a higher return on our product."

RSE picker, Alick Korah, at Kainui

Mature Yen Ben lemons and next flush of flowers

"The citrus industry has faced some challenges as a result of the impact of Covid-19 in the last two years, from shipping delays and subsequent logistical and quality issues, through to shortages in labour supply. T&G has developed a national strategy to employ more permanent staff all year and supplement these shortages with seasonal RSE and local workers when required."

> **"Higher returns are well overdue for the industry but for citrus production to remain sustainable in Aotearoa, the importance of keeping citrus greening out of the country will be paramount**

As well as shipping transport and labour issues being a current and future focus, Joe points to increasing inflation and higher orchard input costs. "We're now reviewing all our systems to get the best possible returns for our product and our partners. Higher returns are well overdue for the industry but for citrus production to remain sustainable in Aotearoa, the importance of keeping citrus greening out of the country will be paramount. We have regular spot checks to identify this disease and biosecurity remains vigilant at our borders, but we need to stay on our toes." ●

26 ha

Kainui now has 26 hectares of Yen Ben lemons with most of these being new plantings under three years old

70–75%

of Kainui's Yen Ben crop is harvested from mid-June to September with an export pack-out of 80 to 90 percent

35 ha

T&G grow Yen Ben lemons on 35 hectares across three Kerikeri orchards, and they contract pick a further 16 hectares.

70%

T&G exports roughly 70% of their annual crop through the winter months, with the remaining 30% supplied domestically through the summer months

ADVERTORIAL

Supporting growers with sustainable practices on-orchard

As a member of the Hastings Fruitfed Supplies team for the past 17 years, Lara Dunningham has seen the horticultural industry evolve in its use of sustainable products and growing practices on-orchard.

Now a Technical Horticultural Representative for the company, Lara is in the field daily with growers and has first-hand knowledge of sustainable products and growing practices.

"Growers are discussing sustainability in response to export requirements and consumer demand. This includes corporates with investors factoring in social responsibility and environmental efforts into their investment decisions," says Lara.

Discussing sustainable techniques and products she has recommended on-orchard, Lara gives the example of Dionysus slow-growing cover crops from PGG Wrightson Turf. Used in horticultural applications, the crops will help suppress weeds, encourage beneficial insects to help reduce insect pest numbers while also reducing the number of tractor passes through the orchard.

Installing irrigation and fertigation systems can contribute to more sustainable practices as Lara explains. "Sub surface irrigation helps suppress weeds, while a fertigation system removes the need for top dressing ground fertiliser and the chance of overapplication. Using soil tests to guide what to apply and when, fertigation systems will apply nutrients when the soil needs it, delivering it straight to the plant."

The increasing focus on sustainability has seen the development and use of biostimulants. "Growers understand the importance of treating an orchard as complete eco system. We offer products and services that look after an orchard's biodiversity, including biostimulants, used to stimulate soil microbes and contribute to soil and tree health."

Fruitfed Supplies' Crop Monitoring team delivers an essential service to pipfruit growers, checking crops for disease and insect pests such as mites, woolly apple aphid, black spot and powdery mildew. This service provides growers with accurate data to form the basis of their decisions on the timing of treatment as Lara explains. "Controlling the codling moth population on-orchard, a spray programme is no longer delivered on a calendar cycle, rather sprays are only used when moth thresholds have been reached."

Recycling initiatives are supported by Fruitfed Supplies with Agrecovery containers on site at selected stores throughout the country. As well, Lara says the Hastings store actively assist with contacting customers to organise them to deliver their used bird and grape vine netting to a designated place to be collected for recycling as part of the Plasbak scheme.

With the apple industry receiving $15 million[1] in funding to research sustainable production practices over the next seven years, Fruitfed Supplies will continue to support the industry in achieving these goals. Fruitfed Supplies' Technical Manager Kevin Manning is involved in the initial stage of this project, and as it evolves, the wider team will share its knowledge and in-field experience of disease and pest management and how these practices fit within an Integrated Pest Management programme.

Fruitfed Supplies is a trading division of PGG Wrightson Ltd (PGW). PGW and the writer do not warrant the information's accuracy, quality, outcome or fitness for any purpose.

Fruitfed Supplies

Visit **fruitfedsupplies.co.nz** to find out more about Fruitfed Supplies' range of products and services, or to find a store near you.

Reference
[1] Stuff. *New Zealand apple industry aims to be 'spray free' by 2050*. Retrieved on 16 June 2022 from www. stuff.co.nz/business/farming/128560716/new-zealand-apple-industry-aims-to-be-sprayfree-by-2050.

FEATURE ARTICLE

The walnut orchard last autumn

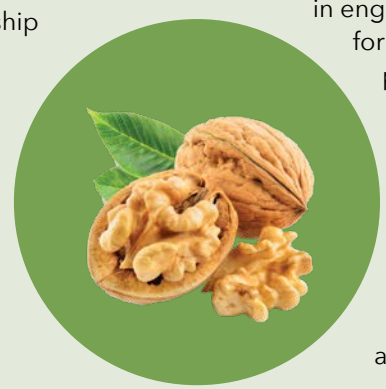
Full potential of walnut industry yet to be cracked

Being one of the pioneers of New Zealand's walnut industry offered plenty of challenges, but for one Canterbury woman, growing walnuts is hugely rewarding. HELENA O'NEILL talks to Dr Heather North about the young industry and its promising future.

Setting up a walnut orchard is a long-term investment, but the industry is young and full of potential, Heather says.

In 1998 Heather formed a business partnership with Dr Clive Marsh, starting Lightfoot Walnuts on a 16ha plot near Lincoln in Canterbury. They began planting that same year, with the bulk of trees planted in 2001 and 2002, finishing by the end of 2003.

It was a busy time as both Heather and Clive worked full-time jobs. Heather has a doctorate in image processing (measuring the movement of glaciers) and she now works as a contractor on satellite remote sensing to map New Zealand's agricultural land use. Being self-employed allows Heather to set aside time each year to work full-time on the harvest. Clive's doctorate is in engineering science. He previously worked for Lincoln Agritech and is now a consultant process engineer working in food, medical device and pharmaceutical manufacture.



It was a learning experience, Heather says, as they were also sorting shelterbelts and irrigation systems while working their regular day jobs. Getting enough young trees to plant was another issue as there was a limited amount available at the time they were setting up.

The orchard now boasts 2700 fully established walnut trees and has been profitable since 2014.

Mature walnuts with the husks cracking, just about ready to fall

A trailer load of freshly harvested walnuts

"Our trees are mainly Rex, which is probably three-quarters of our orchard, with the rest mostly Meyric although there are a few other varieties in there."

Walnut varieties

Rex is currently the most widely planted variety in New Zealand, yielding 2 to 3.5 tonnes per hectare at full production, depending on climate and disease conditions. Meyric is also used in many orchards. It has good nut quality but is less robust to walnut blight and tends to have lower yields than Rex. A third variety, Shannon, can yield more highly than Rex but has early budburst and flowering, so is more suited to areas with low frost risk.

Heather says they were the recommended varieties that came out of trials that the New Zealand Tree Crops Association (NZTCA) and Lincoln University did back in the mid-1980s through to the early 1990s.

The New Zealand Walnut Industry Group (NZWIG) was incorporated as a society in 2001. It grew out of the strong Tree Crops movement that started in the 1970s and another group called the Southern Nut Growers Association.

Ongoing trials

The industry group has ongoing trials, and of the three imported varieties, Lara is so far performing the best, and is higher yielding than Rex. The trial is only part way through, with data still to be gathered for another five years. The other two imported varieties – Howard and Tulare (both from the USA) – are not yet showing such good yields in the trial, but Heather says they both perform very well in California and Australia, so larger crops would be expected as the trial continues.

Heather is a founding member of the industry group and is keen to see more walnut growers join the industry.

"Walnut growing is an option for a farmer looking to diversify their land use or a lifestyler thinking about what they want to grow on their property. We have things quite well set up in terms of our orchard management practices and get some more supply through the processing factory."

Co-operative

Walnuts New Zealand Co-operative is a group of about 50 walnut growers, mostly in Canterbury, with some based in Otago and Nelson. They operate their own processing factory at West Melton in Canterbury, marketed under the Trickett's Grove brand.

"Most of our walnut supply in New Zealand is imported, so we only fill a small percentage of the domestic market so far.

Lightfoot walnut harvester in full swing

"The factory is going quite well. There's a high-tech sorter there to do colour sorting and infrared sorting of the walnut pieces, so all of that is done in an automated way which has been a major investment from us as a co-op. It has quite a high capacity available so it can definitely deal with more walnuts."

Growers and processors sell walnuts to consumers as kernel pieces for snacking and baking, in-shell, or as products such as walnut oil, flour, dukkah or walnut paste.

> **"The factory is going quite well ... It has quite a high capacity available so it can definitely deal with more walnuts**

Location, climate & irrigation

For those thinking about growing walnuts, water availability is an important factor in choosing a site. Walnut trees are unlikely to die from water stress in New Zealand, but lack of water will greatly affect growth and production and the nuts will not grow to full size.

In most of the drier east coast climates recommended for walnut growing, rainfall during the summer period is not sufficient and irrigation will be needed. The most common system used in walnut orchards is sprinkler irrigation, where each tree has its own micro-sprinkler, throwing water to a diameter of 6m to 7m. Dripper irrigation is an option in the first few years, but root development may be restricted to the smaller wetted area of the dripper, she says.

"Anywhere on the east coast is fine as far as climate goes. You really want a low-humidity climate otherwise you've got a lot of disease pressure, which is walnut blight in this case, it's a bacterial disease. You could grow them in Marlborough and Hawke's Bay, but those places are already full of grapevines and the like. Some are in Otago or Nelson and scattered around elsewhere but the bulk of walnuts are in Canterbury.

"There's actually not too many things that walnuts are prone to other than blight and root rot."

Bacterial walnut blight is the only disease that New Zealand walnut growers need to spray for routinely, she says. It causes black lesions on the walnut husks, which can go through and rot the kernel. It is usually managed with applications of copper-based sprays, often mixed with dithiocarbamates (dithane/mancozeb). Some copper sprays may be used in limited amounts by organic growers.

The spraying season is from late September until Christmas and the frequency of spraying increases with rainfall, humidity and temperature. In a dry season, three sprays may be sufficient to effectively manage blight, whereas in a warm, wet season, as many as six sprays may be required.

The other main disease for walnuts is *Phytophthora*, a soil-borne fungus that attacks and rots the roots of a tree; it is the destruction of the root system that kills the tree. Phytophthora thrives in over-wet soils, and it is difficult to eradicate the fungus from the soil and root system once it is established there. Walnuts should be grown in free-draining soil and not over-watered.

Cropping

"We've been at full production since 2017 when the canopies were touching so you're using the whole land area for production", Heather says. "Even prior to that point we were producing some reasonable crops."

She says you might get enough for a small harvest at year six or seven, building up until full production at year 16 or 17.

Orchard sizes commonly range from four to ten hectares, with some as large as 20ha to 40ha. At this stage, the typical New Zealand orchard is small by international standards, but Heather expects to see more large orchards as the industry continues to develop.

"There are a couple of orchards larger than ours, the trees are a little bit smaller, but their crops are starting to surpass ours. We're starting to see some really pleasing crops coming through. It is quite early in the walnut industry.

Late March to late April harvest

Harvesting usually runs for about four weeks from late March to late April.

"The harvest season was a little bit shorter than four weeks. We had really good quality and we're happy with our crop this year."

Once established, a walnut orchard is relatively low maintenance. Walnuts drop when ripe or are helped along by tree shakers towards the end of the season before being lifted from the ground and then washed, graded and dried.

> **We're starting to see some really pleasing crops coming through. It is quite early in the walnut industry**

Mechanical harvesters can be used to pick them up – human fruit-pickers are not needed, which keeps the labour requirement at harvest relatively low compared to some other horticultural crops. Harvesting on very small orchards is more of a manual process, however, with the use of hand-pushed nut rollers.

"Our maximum crop from our orchard has been 44 tonnes in a year, while this season is roughly 35 or 36 tonnes. With the Rex variety that we are growing at the moment, we are seeing orchards doing 2 to 3 tonnes per hectare when they're at full production. I'm hoping that as the new varieties that we've imported are planted we would hope for better production going forward."

Future for walnuts

In February about 30 people attended an open day organised by NZWIG and Walnuts NZ Co-operative, aimed at those interested in growing walnuts commercially. The event was held at Andrew and Jo Horsbrugh's 43ha Tunlaw Farm near Rolleston. Heather and other growers hope interest in the industry will continue to grow and lead to the development of new walnut orchards.

"I'm quite hopeful that we will see more walnut orchards scattered around in our landscapes. Maybe people will feel it will be a useful thing to integrate into their farming systems," Heather says.

Interested in growing walnuts commercially? Check out NZWIG at **www.walnuts.org.nz.**

Official opening marks beginning of new era for fruit packing

Geoff Lewis

The official opening of the Tomra Field Research Centre in June marked the end of an era for a family of Waikato blueberry growers, but a new phase in the development of horticultural technology in New Zealand.

The $14 million state-of-the art facility is located on a four-hectare block at Rukuhia near Hamilton and has been purpose-built as a research and development hub for technology and equipment used to sort, grade and pack berries and small fruits.

The field research centre is the largest operation in New Zealand of the Norwegian global fruit sorting and packaging equipment company, Tomra.

Half the site houses 1800sqm of new office and research and development space, while the other half is being developed as a horticultural trial plot with plantings to allow newly designed equipment to be tried, tested and developed with the aid of practical expertise. Three thousand square metres are dedicated to a factory and fabrication area.

There is also a space dedicated to intellectual property development and workshops for hands-on electronics, engineering and fabrication; a science office and test facilities along with space for collaboration with other technology developers and institutions.

Outgoing chief executive, Geoff Furniss, says the drivers for development come from growers.

"We have (produce) category managers out working with our customers. The aim is to make their operations more efficient, reduce product damage and losses and bring the value back to the growers as profit. We've learned a hell of a lot in the past 20 years."

"Developing new sorting and packing equipment means working closely with growers locally and internationally

Geoff Furniss overlooking the fabrication and manufacturing area. Photos, Trefor Ward

and brainstorming options. Selling around the world into markets including Australia, the United States, Canada and Europe means any new technology must comply with the standards in those nations, Geoff says.

Part of the process is a two-hectare test planting area including a one-hectare 'plant library'. This will allow the research centre to grow fruits in season, with experience passed on to Tomra's research and development activities.

The Centre's official opening on 15 June marked the culmination of a 40-year journey by the Furniss family, who cleared and planted blueberries on the peat-rich Moanatuatua wetland near Ohaupo in the 1980s. The initial operation, known as Blueberry Country, continues today. Its subsidiary, BBC Technologies, developed over 20 years into the lion's share of the business designing and manufacturing sorting and packing equipment.

This attracted the interest of Tomra, which bought BBC Technologies in 2018.

The year before, Tomra had also bought Auckland-based Compac Sorting Equipment Ltd, both of which are now respectively Tomra Fresh Food and Tomra Processed Food.

Geoff oversaw the construction of the field research centre and says Tomra's decision to invest in a facility in a small nation at the end of the earth demonstrates the company's vote of confidence in the quality of local research and development.

"New Zealand is not a cheap place to do business," Geoff says." But we have an edge. We can develop world-class technology. A purpose-built test facility is something we've never had before and we're just starting to get people in from Australia, the United Kingdom and California.

The exterior of Tomra's new premises

"This is where the process starts and where we have the space to sort out any problems, inventing, brainstorming and creating so we get to the stage where we have machines that can be sold. We are also talking to a couple of other local companies interested in sharing the space.

The facility will benefit other types of produce too.

> **"A purpose-built test facility is something we've never had before and we're just starting to get people in from Australia, the United Kingdom and California**

"We have some really good projects already underway with larger fruit like kiwifruit and apples, citrus, avocados, stonefruit and cherries," Geoff says. "We can pick the skills and resources to match any project."

Although the end of June marked Geoff's last day, he and his wife Maura will continue to be involved in the horticulture space, having just launched Edison Darby – another horticulture-related enterprise.

"We are looking at how we can use our experience as investors and engage with others whenever opportunities occur, building on our experience and finding smart people to do some pretty cool things," Geoff says. "Anything that doesn't require 14 hours a day," he says.

Kiwifruit New Zealand

NOTICE OF ELECTION & NOMINATION OF CANDIDATES

Kiwifruit New Zealand is established under the Kiwifruit Export Regulations 1999 for the purpose of authorising Zespri to export New Zealand grown kiwifruit, to determine collaborative marketing applications, and to monitor and enforce measures that mitigate the potential costs and risks of a single desk exporter.

The Kiwifruit New Zealand Board consists of six members of which three members are elected by producers for a three-year term. Due to one member's term expiring on 30th September 2022, KNZ will be conducting an election in the coming months to fill that position.

VOTING ELIGIBILITY:

Producers who are eligible to vote in the election are:

1. the owners of land in New Zealand on which kiwifruit is produced for export sale; or
2. such other persons determined by the Board to be producers of such kiwifruit

All producers will be receiving a Notice of Election which will be mailed early July 2022. If you believe you are eligible to vote in the election, and do not receive a Notice of Election, please contact Kiwifruit New Zealand (details below). To be eligible to vote, producers are required to provide sufficient evidence that they qualify as a producer. Based on the information provided, the Board will determine the eligibility to vote.

NOMINATIONS:

Nominations are invited for the election of one Director to the Board of Kiwifruit New Zealand. The election will be held in September 2022.

To request a candidate nomination form, please contact KNZ at the details below. If more than one nomination is received a postal vote will be held. The voting papers will be posted to all producers on 26th August 2022.

The candidate receiving the most votes will take office for a three-year term effective from 1 October 2022.

TIMETABLE

Nominations open	25 July 2022
Nominations close	8 August 2022
Voting papers posted to producers	26 August 2022
Voting opens	29 August 2022
Voting closes	12 September 2022
Results announced	13 September 2022
Newly elected Director to take office	1 October 2022

Contact:
Amy Te Whetu
PO Box 4683 Mount Maunganui South, 3149
Phone: (07) 572 3685 Email: admin@knz.co.nz

Lucy Bond pruning on Thawley Orchard

Collaboration key for 2022 Tasman harvest

Tasman orchardists have tackled the ongoing labour shortages head-on this season, banding together to share the employment pool so the 2022 crop was harvested. ANNE HARDIE reports.

Heading into harvest, growers knew that with the labour constraints, it was going to be a challenge to get crops off trees. Apple and kiwifruit grower, Evan Baigent, says Covid-19 caused continuous disruptions on orchards too, with workers either falling ill with the virus or unable to work due to being classed as close contacts.

"From one day to the next you wouldn't know how many pickers you would have," Evan says. "But what was really beneficial this year was growers helping growers out by sharing Recognised Seasonal Employer (RSE) scheme workers."

He says growers were constantly on the phone with other growers to find pickers. When windows in the harvest arose between varieties on one orchard, pickers moved on to another orchard that needed a variety picked.

"It seemed to work really well," says Evan. "Most people got their apples picked generally on time."

The same applied for kiwifruit, with the start of Tasman's gold kiwifruit crop – the majority of the region's kiwifruit – harvested in April, right in the middle of the main apple harvest.

By sharing pickers, Evan says growers were able to get crops harvested.

Packhouses had the same issues with Covid-19, with some forced to slow production as the virus reduced numbers available to work each day.

RSE workers who were due to arrive in March for packhouse work were delayed because of Covid, and the volcanic eruption in Tonga which made communication challenging.

Motueka Fruitgrowers' Association chairman, Richard Clarkson, says some growers tried a few different strategies at harvest to alleviate the labour challenges,

such as picking harder, earlier. Overall, he says it took more planning to make it work this year.

Richard says he doesn't see the labour shortage being resolved any time soon, despite the government's talk. New Zealand's borders were closed so long that he says many of the potential overseas workers are looking elsewhere now. Immigrating workers also want to know they will be able to get back home should a repeat of recent events transpire.

"I don't think the industry is as confident as the government," Richard says.

Despite the labour challenges, Tasman fared better than its North Island counterparts thanks to a good run of autumn weather to get fruit harvested.

A good-quality crop of apples was picked, even though volumes were down 7 percent on initial estimates – attributed to the lingering impact of last season's hailstorm as trees recovered from damage.

Evan says the hail had an impact on Braeburn apples, while Royal Gala and Koru also produced less fruit. On the other hand, varieties such as Pink Lady and Envy had heavier crops this year.

Tasman kiwifruit growers had a very good year for both volume and quality – reaching a record 5.2 million trays of fruit. The pack-out was normal, the average size up and volume equalling expectations.

Mainland Kiwi Growers Entity business and supply chain manager, Luke McKay, says the region harvested 16,000 trays per hectare, a record crop. The larger crop is attributed to larger fruit which averaged size 26. About three-quarters of the region's crop is made up of gold kiwifruit, constituting approximately 3.85 million trays.

A big relief for the region's kiwifruit growers was Zespri's charter vessels picking the fruit up from Port Nelson and being able to ship it in a timely fashion to its global markets. Luke says more bulk reefers shipped kiwifruit out of Nelson this year which worked well, though he would like to see a greater mix with container shipping in future for the flexibility they provided, both on the day of loading and to markets.

Evan says Zespri's charter programme has been beneficial for the region, enabling kiwifruit to be shipped out of Nelson throughout the season. By contrast, shipping was a struggle for the region's apple industry. Container ships regularly skipped Nelson's port and getting fruit onto ships depended on the scale of the shipments and the relationship each exporter had with shipping lines.

"Shipping is really volatile," says Evan. "Nelson seems to struggle because we aren't a deep-water port. I can't see any change and it's a real issue going forward."

Richard says the ability to get fruit out of Nelson is now the biggest issue facing the industry in the region – adding that ships also skip the port because it is not in a direct shipping line, and the shipping lines concentrate on getting ships to larger ports on time.

"We just didn't have the boats and containers to shift fruit and if you can't get fruit to market, you can't sell it."

Richard says the last thing growers want is to have their fruit stored for a long time and then repacked.

Alongside the challenge of getting fruit onto ships was the increasing cost of shipping, which Richard says has had a huge impact on growers, alongside other costs going up for labour, fertiliser and diesel which has hit an all-time high.

On a positive note, the upcoming Nelson Young Grower of the Year competition is a chance for the industry to celebrate its successes and recognise emerging talent in the Tasman region. ●

This board table made from swamp kauri now stands in Zespri's head office at Mount Maunganui. Photo by Jamie Troughton

Fascinating history of twin kauri taonga

An ancient forest and the tumultuous events which felled it, together with decades of the highs and lows of New Zealand's horticultural industry, are all ingrained in special taonga – two kauri tables; one in the Horticulture New Zealand boardroom and one in Zespri's head office at Mount Maunganui.

Elaine Fisher

Measuring five metres in length, 2.3 metres in width and weighing between 400 to 500kgs, the tables were made from part of an ancient kauri tree, preserved for possibly thousands of years in Northland's Waiharara Swamp near Kaitaia.

In April 1981, Warwick Davies and John Gardner milled the nine-metre diameter log after excavating around it and continually pumping to keep water below milling level.

Brad Davies, nephew of the late Warwick Davies, says when Warwick and John found the log, part of the top section was exposed and as a result, was rotten. From the sound wood Warwick eventually made two tables.

"John has told me that the tables are made from a cross section of the central point or thereabouts of the log. They milled from the top through the rotten section while the log was within the ground.

"They needed to pump water as they progressed, then rolled the log out of the ground and milled back from the other side, with the tables being the remaining unmilled central section of the log."

What felled the trees is the subject of research and conjecture, with theories including massive tidal waves, cyclones or flooding. "John Gardner's theory is, given the direction the logs lay, it was probably as a result of a tidal wave," says Brad.

Buried under a peat swamp, the trees have survived for centuries, sealed in a chemically balanced environment that has preserved the timber in almost perfect condition.

Once milled, Warwick made two tables from the ancient tree and donated them to the fruit growers of New Zealand.

Andrew Fenton, who as president of the New Zealand Fruitgrowers' Federation, and chairman of the Fruitgrowers' Charitable Trust, is custodian of the tables and has tracked their histories closely.

"The tables are an important part of the history of the New Zealand Fruitgrowers' Federation as they were gifted to the fruit growers of New Zealand by Warwick Davies, brother of Roger Davies, a well-known director of the Federation.

"The Fruitgrowers' Charitable Trust owns the tables and always has. On the 100th anniversary of the Federation in 2016, one of the two tables was gifted by the Fruitgrowers' Federation to Horticulture New Zealand. Today it stands in the boardroom of HortNZ's Wellington headquarters."

The second, an almost identical table now at Zespri's headquarters was for a time in the boardroom of the Katikati based kiwifruit post-harvest co-operative KatiPak.

"I well remember the table in that tiny room. The table was so big it was almost impossible to walk around," says Andrew, who at that time was chairman of Satara, the Te Puke based co-operative which evolved from BayPak.

In 2005 when KatiPak and BayPak merged, Andrew says it was no longer appropriate for the table to be in the boardroom of what was a commercial business.

"Hugh Moore of KauriPak offered to store the table in a crate in his packhouse until a new home was found. Then Zespri agreed to put the table in a big meeting room in its former headquarters at Mount Maunganui, and there it sat for some time."

However, Andrew says as the table did not have facilities to handle modern technologies including video conferencing, plans were made to again store it at KauriPak. "At the time the Hawke's Bay Fruitgrowers' Association were contemplating constructing a new building and there was a proposal to send it there as a boardroom table."

The new building did not eventuate, but before other plans could be made the table was moved for safekeeping to Te Awanui Huka Pak, also at Mount Maunganui.

"When Seeka bought Te Awanui Huka Pak I wrote to Seeka chief executive Michael Franks to explain that while Te Awanui had cared for the table, it was not a chattel of Te Awanui Huka Pak, but belonged to the New Zealand Fruitgrowers' Federation, which he acknowledged.

"Te Awanui Huka Pak have looked after for it many years, including through the uncertain times of the Psa-V vine disease and most recently the impacts of Covid-19."

Andrew says the table was then offered back to Zespri to be housed in its new building. "I am delighted that the table is in Zespri's new building, which is ideal to house such a large piece of furniture. This gorgeous example of New Zealand swamp kauri is now displayed where it can be appreciated and enjoyed by growers, visitors and overseas guests.

"This is a most outstanding and superb piece of native kauri and it represents over 100 years of fruit growing in New Zealand."

Neil Te Kani of Te Awanui Huka Pak says while it was sad to see the table go, the company is proud to have been its kaitiaki (guardian) during some of the kiwifruit industry's most troubled times.

This is a most outstanding and superb piece of native kauri and it represents over 100 years of fruit growing in New Zealand

"It is now where it belongs, but during its time here Ministers of the Crown have sat around this table with our kaumātua and industry leaders. It has been witness to so many important decisions for Te Awanui and the industry, including those around the formation of the Māori Forum of the New Zealand Kiwifruit Growers Inc. Decisions made by Māori are done differently, and I believe this table has helped those important decisions come through.

"Te Awanui Huka Pak whānau place reverence on this table. There is in the table a sense of wairua or the spirit of those who have sat around it, including our luminaries who set the foundations for Te Awanui Huka Pak and have passed away. In Māoridom, the kauri tree is revered and when a kauri falls, it means someone of importance has died."

Mike Chapman, HortNZ's previous chief executive who has been, on separate occasions, chief executive of Kiwifruit New Zealand and New Zealand Kiwifruit Growers' Incorporated, also has strong connections with both kauri tables.

"When I joined the kiwifruit industry in 2000 both tables were about, and I remember having meetings around both of them. What Warwick Davies did in creating both tables was to make them an integral part of so many industry discussions. They have been the silent witness to many very good and extremely important decisions.

"They are absolutely unbelievably fantastic tables which are part of the heritage of the industry. Given their history and their beauty, these tables have more gravitas than most modern board tables. It is important they stay in the industry. Where they are is not so critical. The critical thing is that they are part of the fruit growing industry going forward."

AVO UPDATE

Connecting again

Jen Scoular : NZ Avocado chief executive

New Zealand is open. Wow, that has taken a while and perhaps, taken its toll.

I successfully flew out of New Zealand, into Australia and back last week, to attend the wonderfully populated Hort Connections. I say 'successfully' because the system required to get into Australia and back to New Zealand is certainly not perfectly calibrated yet.

Uploading jpegs or scans of documents was not always successful, transferring from a download to an app created some difficulties. I then found one document which didn't match the Air New Zealand booking in my full name and was informed the documents were for the wrong person. The solution, after several hours of travel stress, was easy – 'please fill in this one-page form' and off you go. There was acknowledgement on the Australian side that the system was not quite ready. Hopefully officials will focus first on ensuring those very systems are taken away rather than fixing them.

Hort Connections, the Australian and New Zealand produce trade show and conference, was hosted by International Fresh Produce Association (IFPA Australia-NZ) and AUSVEG. IFPA is the new entity formed when Product Marketing Association (PMA) and United Fresh in the United States joined up. I joined the board of IFPA Australia-NZ nearly two years ago, primarily for networking purposes. It was wonderful to finally have my first in-person board meeting, meet fellow board members and be amongst the 3100 people at the conference.

After New Zealand's isolation, 3100 people is quite a lot! There is much more depth behind that familiar – 'lovely to see you'. Not just a casual greeting but, 'lovely to see that you haven't been struck by Covid-19, lovely to see that business still operating, lovely to see you in real life'. The restraint we have felt about hugging, even about shaking hands was gone.

The new Australian Agriculture Minister joined the conference, in day seven of his role. He was up with the play, on the challenges of labour, supply chain, input costs and the very low percentage of fresh produce that Australia exports. While he and a number of speakers talked up the projects to seek market access, I wondered if they really had the knowledge of the layers of system that need to be in place before market access is even contemplated by new markets. The on orchard, packer and exporter requirements, the grade standards and data management. The residue testing, the education and implementation of understanding on maximum residue levels or pre-harvest intervals.

Looking at Australia's statistics, their fruit and vegetable exports were AUD$1.7 billion. According to the *Situation and Outlook for Primary Industries* (SOPI) report, New Zealand's fruit and vegetable exports reached NZ$6.5 billion in 2021. Not bad, Kiwis!

> **"New Zealand's fruit and vegetable exports reached NZ$6.5 billion in 2021. Not bad, Kiwis!**

Our sector had a very tough year last year, but at least when the Australian market collapsed, we had options – and our exporters pushed three times as much volume to Asia compared to the previous year. Because those markets were open, we have been developing them for ten years and our systems support growers producing avocados with all market access. Significant assets developed with grower investment over a long time. ●

The 2022 persimmon season

Ian Turk : Persimmon Industry Council manager

Photo: Trefor Ward

The persimmon industry is midway through its 2022 export season. The crop is virtually all packed and we continue to export from product that is stored in modified atmosphere bags and kept at zero degrees Celsius.

It has been a difficult season – the extreme weather early in the year passed right over our growing areas. Flooding on the East Coast reached down to Gisborne, the largest persimmon growing area, accounting for two-thirds of the export volume. While the deluge passed through ahead of the harvest, wet weather has continued and fruit quality has been affected. Packhouses are reporting lower pack-out rates for export as export grade standards are maintained.

Labour shortages also hit the harvest, with strong competition across all horticultural sectors for the labour that is available for seasonal work. This has meant less than ideal delays in getting the fruit picked and packed.

The familiar story of logistical problems in getting fruit to market continues to cause issues for exporters and for retail customers who plan for a continuous programme throughout the export season. Persimmon exporters are reporting that space can be booked, albeit at high rates for both sea freight and air freight. Arrival dates seem to be continually delayed. While cold-stored persimmons are not as perishable as other fresh produce, delays are always a concern.

With such a mix of weather extremes this season, growers are also noticing signs of fruit not holding up as well as it has in previous years. Not ideal for markets that currently have long post-harvest protocols.

The good news is that market prices are holding well once quality fruit is packed and delivered, and with smaller than expected volumes, there is every reason for this to remain so throughout the season. This will go some way in helping make up for a drop in volume and the stronger New Zealand dollar at present.

The 2022 export crop is expected to be at a similar level to last year – 1480 tonnes –although there was hope for an increase in the order of 10 percent prior to the season. The local market continues to remain strong. It is expected that about 30 percent of the persimmon crop will be consumed locally this year. That growth in local consumption is largely thought to be down to the promotional efforts instigated by the Persimmon Industry Council (PIC) in 2020 through the 5+ A Day programme. The promotion was born out of the need for a strong local market in the face of Covid-19's impact on exports. PIC has continued this promotional work and now see the domestic market as a very important part of the industry's growth.

TECHNICAL

THE LATEST INNOVATIONS AND IMPROVEMENTS

Superb soils
Page 56

Everything about pre-emergence herbicides

Pre-emergence herbicides act on weed seedlings at early stages of development before they become established, but have no impacts on dormant (non-germinated) seeds.

Ardi Ash : AgFirst Nelson research associate

They arrest the growth of the shoot and/or root thorough a specific mechanism of action (MOA) which kills the weed. This ranges from interruption of key physiological processes such as photosynthesis, to inhibition of the biosynthesis of vital amino acids, by blocking the active site of the respective enzyme (Fig. 1).

Therefore, timing of herbicide application is very important, and for efficient and safe application, the life cycles of the target weed species need to be well considered. Due to impacts of environmental variables on seedling development, this is not always an easy estimation and may require modelling when you are dealing with a few weed species on a large scale. WeedSOFT is one of the softwares, developed by the University of Nebraska, which can support growers in making decisions about herbicides based on their efficacy, cost effectiveness, environmental safety as well as the specific weed species, their density and emergence time.

Due to the long-lasting activity of pre-emergents, they are classified as 'residual' herbicides (as opposed to 'knock-down' herbicides with a one-off action). This is due to the fact that pre-emergence herbicides once in the soil usually require activation by rain or irrigation. Activated pre-emergence herbicides in the soil create a barrier layer against weed seed germination (Fig. 2a). On the other hand, weed seedlings can still grow on soils containing inactive pre-emergent at the topsoil (Fig. 2b). Under dry conditions, non-activated herbicides can be carried over from season to season, posing a risk of damage to non-target plants and jeopardising growers' herbicide calculations.

Pre-emergence herbicides stay in the soil for some eight to 12 weeks and prevent weed growth until hydrolysed or degraded (by soil microorganisms). Generally, pre-emergence herbicides persist longer in alkaline soils, as chemical hydrolysis is slow at high pH levels and microbial decomposition is the primary breakdown pathway. Although reapplication before the active ingredient loses effectiveness is possible, it can be tricky and the product guidelines as well as environmental factors must be carefully considered.

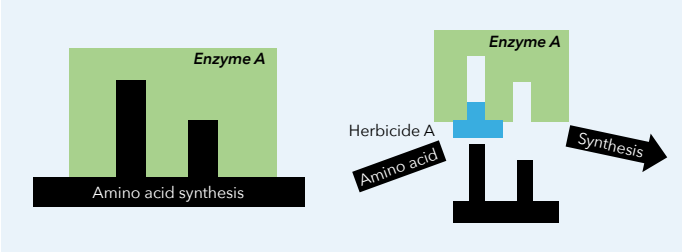


Figure 1. Schematic inhibition of amino-acid synthesis through blockage of the enzyme's active site by the herbicide (Luke Gerlach)

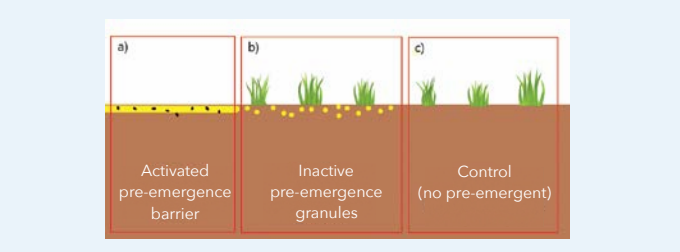


Figure 2. Roles of pre-emergence herbicide in weed control: a) pre-emergence barrier, activated by rain or irrigation arrests germination of weed seeds; b) non-activated (but incorporated) pre-emergence herbicide (granules) have no impacts on weed growth; c) weed growth in herbicide-free zone

Particularly in case of herbicides controlling broadleaf weeds, more caution is needed. Excessive application can potentially injure non-target plants including annual crops. More than one application of pre-emergent per season is not recommended. Moreover, similar to any other pesticides, there are potential risks of unwanted movement of pre-emergent through run-off, volatilisation or leaching prior to or after incorporation into the soil (Fig. 3).

With no two seasons ever the same, the observed performance of different herbicides is not only attributed to their chemical properties, but is also correlated to their interactions with soil, environment, and the particular weed species and weed burden they are placed under. To choose a right pre-emergence herbicide for your orchard or farm, pay careful attention to the technical information on the product label.

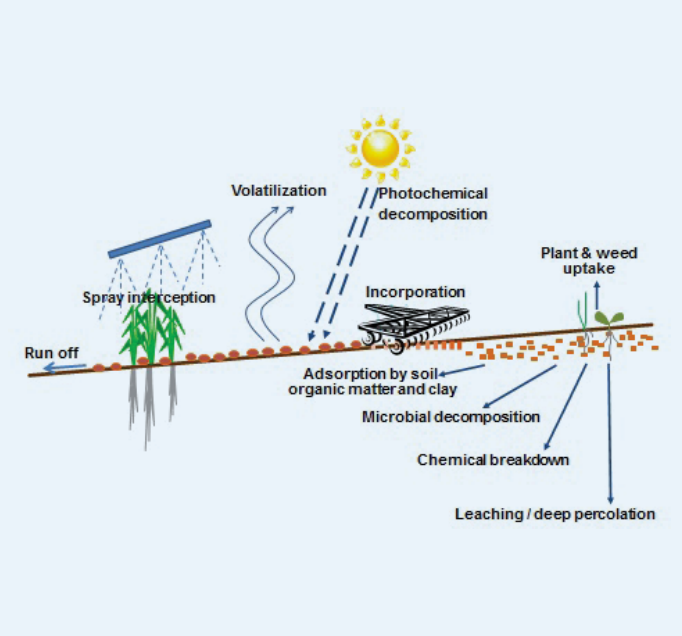


Figure 3. Possible pathways for movement or decomposition of pre-emergence herbicides before or after incorporation (GRDC, 2016)

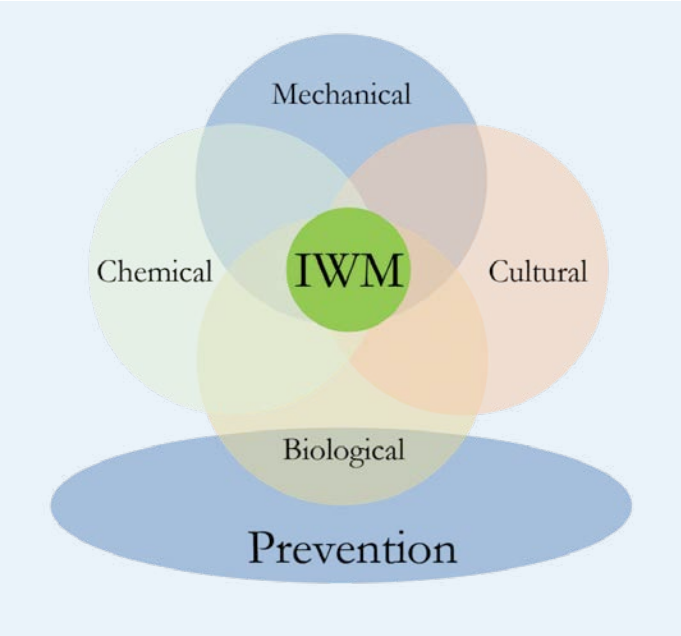


Figure 4. Four compartments of Integral Weed Management: Biological, Cultural, Mechanical and Chemical (GROW)

Nevertheless, like any other agrichemicals, these guidelines provided by the producers, are generic and may need to be optimised and fine-tuned for your orchard conditions – soil type, irrigation system and other relevant factors. Growers are strongly recommended to trial the new herbicides on a small scale (a few rows) first, before any large-scale applications. Obtaining advice from an experienced horticulture consultant is also helpful for selecting the right product.

Use of pre-emergence herbicides can be a relatively safe option for weed control in orchards, as there are no crops growing from seed. However, these herbicides can potentially have adverse effects on fruit trees or vines if applied excessively. This may range from interference in bud phenology (compromising budbreak) to reduced or inconsistent flowering, which reduce fruit yield and quality.

Some pre-emergence herbicides are unsuitable for the plant nursery setting or orchard blocks with young trees. This is because the shallow roots of young trees are exposed to the active ingredient within the topsoil, even though pre-emergents are believed to be non-systemic. Extra caution needs to be taken for application of pre-emergents in blocks consisting of young replants among older established trees, which is very common in orchards.

The potential for early application and the long-lasting effectiveness of pre-emergence herbicides are important advantages over the post-emergence herbicides. But their prolonged use may adversely affect the population of beneficial soil microorganisms, and in a bigger picture, orchard biodiversity, which is not desirable for sustainable orchard and farm management.

Integrated Weed Management in orchards

Integrated Weed Management (IWM) is a recently introduced sustainable approach based on rational use of **chemical** (pre/post-emergence herbicides) and non-chemical methods including:

Mechanical: cultivation, mowing, mulching, flaming (not to be confused with burning, as plant tissue does not ignite but heats rapidly to the point of rupturing cell membranes, resulting in weed death).

Cultural: screening irrigation water, cleaning field equipment, planting clean rootstocks.

Biological: planting cover crops (living mulches), releasing living organisms such as insects inhibiting growth or seed production of specific weeds.

The other advantage of IWM is its higher efficiency in weed control, as there are many species of weeds with different life cycles which would be difficult to control by a single method. Furthermore, controlling weeds with one method provides the weeds an opportunity to develop tolerance mechanisms, which is of concern. That is why IWM believes that the use of a mixture of control methods can provide optimum economic returns to orchardists. However, under the IWM system, remedial weed control actions often need to be justified by considering "weed threshold" – a point at which weed density causes important crop losses.

On the other hand, as shown in Fig. 4, one of the key strategies of IWM is prevention or early identification or eradication of weeds (at the early stages of infestation), as controlling established weeds is much harder and more costly. Early identification requires a systematic monitoring

plan, such as the one suggested below:

I. Survey your orchard for weeds in late autumn and again in late spring.

II. Monitor the orchard in a thorough and systematic manner. Include the entire orchard as well as block margins, ditch banks, and irrigation canals.

III. Check out all areas which are susceptible to weed infestation, such as areas with high soil moisture. Key information to obtain are weed species, location in the orchard, extent of control achieved by current programme, and herbicides and/or other measures applied (including timing, rates, and treatment dates).

IV. Write down your observations on a survey form including a map, enabling you to revisit the infested sites for weed control. Pay particular attention to perennial and stubborn weed species and spot their locations on the map.

V. Record weeds found in rows and middles separately. While weeds in tree rows must be managed, annual weeds between the rows can often be kept due to their benefits as an orchard floor cover. The benefits include reduction of soil erosion, and provision of food for natural predators and habitat for beneficial soil microorganisms.

A recent case study in two high-density fruit (apple and peach) orchards in Italy suggested that integrated weed management with mechanical approach-focused intervention (integrated mowing and integrated tillage) can increase orchard biodiversity with no adverse effects on tree growth, fruit yield and quality. Moreover, some fruit quality parameters including fruit firmness, soluble solids content (SSC) and dry matter content were improved, compared to a chemical weed control system. Likewise, here in New Zealand, promising outcomes were achieved from an 'agroecological' control approach by planting various cover crops in citrus orchards to supress pests and improve the ecosystem.

> **"WeedSOFT is one of the softwares, developed by the University of Nebraska, which can support growers in making decisions about herbicides based on their efficacy, cost effectiveness, environmental safety as well as the specific weed species, their density and emergence time**

Adaption of this approach in New Zealand, with help of emerging new technologies, would hugely benefit orchardists, and would also be aligned to the new government-backed programme *Spray-free by 2050*. ●

Ninety-five percent of the food we eat comes from the soil

Don't treat your soils like dirt

I remember a poster at a soils conference I attended a number of years ago that stated, 'Stop Treating Soils Like Dirt'. It was a catchy phrase and a play on words but the message was incredibly important as humans have been responsible for the degrading of soils for thousands of years.

Robin Boom : CPAg, Member of the Institute of Professional Soil Scientists

This has resulted in topsoil loss and desertification, with vast swaths of once productive land in the world now being virtually useless. Fortunately in New Zealand, most of our productive land has only been used for growing food for a couple of hundred years at the most, so the amount of degradation is significantly less than in much of Europe, Asia, North America, Africa and the Middle East.

The European Commission has come out with a Mission Area: Soil, Health and Food. It states *"Healthy soils are essential for our life and that of future generations. Soils form the skin of the earth and are fundamental for all life-sustaining processes on our planet. A mission in the area of soil health and food will mobilise resources and people (e.g. researchers, land managers, public authorities, businesses and citizens) to engage in activities for soil restoration, as this is* ***the basis for healthy people and a healthy planet.****"*

The physical components of soil are air, organic matter, minerals and water, so having these in the right ratios is important for determining a healthy soil, the life-sustaining skin of the earth. In rough figures, water and air should each make up approximately 25 percent of the volume of a good productive soil, organic matter 5–10 percent and mineral matter 40–45 percent. Breaking down the mineral matter into components, an ideal loamy soil for growing plants would comprise 40 percent sand, 40 percent silt and 20 percent clay.

Ancient geological processes have largely determined the mineral complexity of each unique soil type and these physical and chemical characteristics cannot be changed except with significant cost. Most soils degraded from human activity have lost pore space through compaction and over-working, so that the air and water ratios will have declined markedly. Similarly the organic matter content will have dropped through soil inversion, resulting in carbon dioxide being lost to the atmosphere. Much of the Northern Hemisphere's once productive soils on all continents now have organic matter levels between one and two percent, whereas in New Zealand most of our soils still have organic matter levels of five percent or more.

The functions of healthy soils are not only to provide food, fibre and wood for us, but they also provide important ecosystem services. They help prevent flooding as water is adsorbed through the topsoil, acting like a sponge, compared to a compacted soil where rain water just runs off, removing soil particles with it. With good pore space, soils also help retain moisture, lessening the effect of droughts, and they also have purifying factors in providing fresh clean water by filtering out contaminants.

> **"Healthy soil could contain as many as 20 billion micro-organisms in a teaspoon of soil – two and half times the current human population**

Good soils host a lot of biodiversity in terms of macroflora (earthworms, mites and nematodes) and microflora (bacteria, fungi, actinomycete and protozoa) and a healthy soil could contain as many as 20 billion micro-organisms in a teaspoon of soil – two and half times the current human population. Thirty years ago, this number of microbes was measured on the Horotiu Sandy Loam, a Class 1 soil type found at Ruakura Research Centre. Our soils should ideally be sequestering carbon and acting as a storage mechanism for greenhouse gases, part of the solution to a changing and warming climate. As well as recycling carbon, our soils ought to be recycling other essential elements such as nitrogen and phosphorus through microbial activity. The utilisation of essential nutrients applied to the soil as fertiliser is much greater in a fully functioning soil where leaching is reduced, and plant uptake enhanced.

> **"... about a third of the land once used for food production has now been lost by soil degradation**

Ninety-five percent of the food we eat comes from the soil, and sustainable soil management can not only maintain, but also significantly improve crop production by over 50 percent in many situations. Rebuilding topsoil is imperative to the survival of our species into the future. Each centimetre of healthy topsoil has taken hundreds, if not thousands of years to build up naturally in the past, yet within a short few years of abuse, this can all be lost. Restorative practices such as no till or minimum tillage, use of green manure crops, maintaining vegetative cover, and reducing herbicide, pesticide and synthetic fertiliser use to a minimum of what the crop actually requires, not overdoing chemical inputs, are all practices which will benefit soils and our planet long-term.

It is estimated worldwide, that about a third of the land once used for food production has now been lost by soil degradation from erosion, salinisation, compaction, acidification, pollution, contamination or leaching of nutrients. Topsoil loss resulting in the desertification of much of the Middle East and North Africa is testament to what happens when we 'treat our soils like dirt.' We need to protect this ever-diminishing precious resource, which we have become stewards of in this moment in time for the sake of future generations.

Top tips for maintaining frost fans

1. Regular servicing of your frost fans by a qualified service agent safeguards you from any unwanted issues in the colder months. To ensure your warranty remains valid, follow the manufacturer's servicing requirements.

2. Start and run your FrostBoss® frost fans every four to six weeks for at least ten minutes at operating revs. This brings the engine to operating temperature, gives the battery a charge-up from the alternator, moves oil thoroughly through the top and bottom gearboxes and helps reduce any build-up of water condensation. Lack of use is the major cause of failure in frost fans.

3. Check battery voltages regularly. You can do this manually yourself on many types of frost fans by checking the auto start controller LCD (liquid crystal display) screen or by checking online data if available.

4. If monitoring is not already fitted, consider having your frost fans monitored. This can be configured to notify you if there are any fault alerts requiring attention.

5. Be aware of the weather. Do not operate your frost fans in foggy or windy conditions. Refer to the manufacturer's operator manual.

6. Ensure your frost fans are operating at the correct rpm (revolutions per minute) and adhering to applicable noise and consent regulations in your local area. If you have any concerns, talk to your service agent.

7. Keep fuel tanks full. This is because the bigger the air gap, the greater likelihood for condensation to develop and contaminate the fuel. Water condensation also creates the perfect environment for the diesel bug, so removing the conditions for condensation to occur is the best form of preventative maintenance.

8. Ensure you have the 24/7 contact details for your service agent stored in your phone for any emergency repairs that may arise during the frost season. ●

This frost fan guide was created by Abbie Franklin at New Zealand Frost Fans.

NEW ZEALAND frost fans

Protamin strikes a note with both conventional and organic growers

With an ever-increasing focus for growers on nutrient budgets, soil preservation and environmental management we see the horticultural industry moving toward more **sustainable practices.** *This is primarily to accommodate the demands of an increasing world population and rising concern for environmental issues.*

The Biolchim Group recognised this trend during the last few decades and has been hard at work developing new technologies and products to support this shift in growing. Recently released to the New Zealand market, Protamin is used both in horticultural and agricultural markets and with increasing success.

Protamin is a BioGro approved solid fertiliser product line of organic and organo-mineral products based on hydrolysed gelatin and proteic activator of the rhizosphere (APR®). Protamin has three key aspects:

1. **Ability to supply high content of organic nitrogen and organic carbon in an efficient manner.**
2. **Ability to improve soil microorganism activity and soil fertility.**
3. **Ability to deliver nitrogen in a slow release pattern to crops.**

> **"Protamin is a great option in our organic vineyard. We side throw it under vine pre-budbreak and cultivate it in. I like the NPK product the best, as I have seen the results of using this product in pre-flower leaf samples**

Established in Italy in 1972, **Biolchim** is a leading company in the production and marketing of special fertiliser and biostimulant products that combine agronomic efficacy and environmental sustainability.

Thanks to the experience acquired in almost 50 years of activity, ownership of manufacturing technologies, raw materials and logistics has created a solid platform for growth and innovation. **Biolchim** offers a complete portfolio of safe and effective products that allow growers to maximise the yield of any crop, anywhere in the world.

The **Biolchim** headquarters are in Medicina (northern Italy), where products are manufactured and then shipped all over the world. The company is present in more than 80 countries in Europe, Africa, Asia, South America and Oceania.

Grower Testimonials:

Ryan Fraser – vineyard manager – Paritua Vineyard (Hawke's Bay)

"Protamin is a great option in our organic vineyard. We side throw it under vine pre-budbreak and cultivate it in. I like the NPK product the best, as I have seen the results of using this product in pre-flower leaf samples."

Miguel Peterle – production and harvest manager – Whitehall Fruitpackers (Waikato)

"We now get a similar response to growth in the organic orchards when applying Protamin when comparing this to the inorganic products used in the conventional orchards."

André Lategan – vineyard manager – Amisfield (Central Otago)

"Best choice of high value nitrogen for our organic vineyard. And in a very manageable dry granular form."

Biolchim
Concimi speciali

Protamin is available through most horticultural distributors and retailers in New Zealand. For more technical information on Protamin and other Biolchim products please feel free to contact **steve.cully@biolchim.it, 027 272 0799**

ThermoMax – frost protection

Frost. If ever a word was guaranteed to cause anxiety and stress to commercial orchardists and home gardeners, that word is frost.

The level of danger posed to orchardists from frost is best illustrated by the lengths growers go to and the costs they face attempting to neutralise or lessen its effects. From hiring helicopters through to setting up giant fans and irrigation systems, there is an array of anti-frost measures available. Most are expensive and their benefits vary.

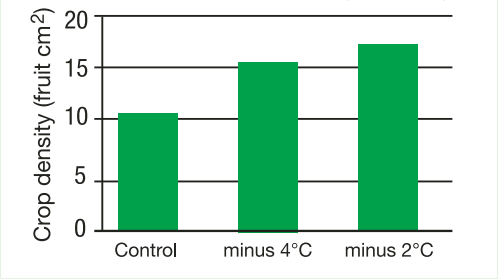
Among the products available in the anti-frost battle is ThermoMax, and it has been doing a very good job for commercial growers for the past 20 seasons. ThermoMax underwent independent testing and evaluation by HortResearch in 2002 (for full results see www.bdmax.co.nz), and has been shown in the field to provide up to 99 percent protection from frosts down to –2C when applied as directed. In colder temperatures down to –4C, ThermoMax has also shown greater levels of protection than would otherwise have been obtained. In these very low temperatures frost control is more effective when ThermoMax is used as part of a combined anti-frost product attack. It adds an extra two degrees of control to all other methods, and combines with all other products except urea. Being a liquid, application is easy. Just add it to your spraying round.

From modest beginnings in 2002, ThermoMax is now being used in a large number of orchards and gardens throughout the country. Avocado, kiwifruit, blueberry and tamarillo growers, and even the bromeliad folk, are the main users. However, it is effective with most crops. Citrus, grapes, pipfruit and stonefruit all benefit.

In addition to being relatively inexpensive when compared with other anti-frost measures, costing on average $240 / ha for nine weeks' protection, ThermoMax also provides secondary benefits, such as more compact flowering and a shortened growing season. This provides better spring starts, achieved by the internal warming it creates within the plant. Oh did we mention all the extra worry-free nights of sleep?

ThermoMax is a non-chemical, BioGro certified product, exempt under the Agricultural Compounds & Veterinary Medicines (ACVM) Act. It leaves no residues, and has no withholding periods. ThermoMax is diluted with water, applied with a normal agricultural sprayer, and is totally environmentally friendly. It is on the Zespri approved products list, and is part of the Agrecovery programme.

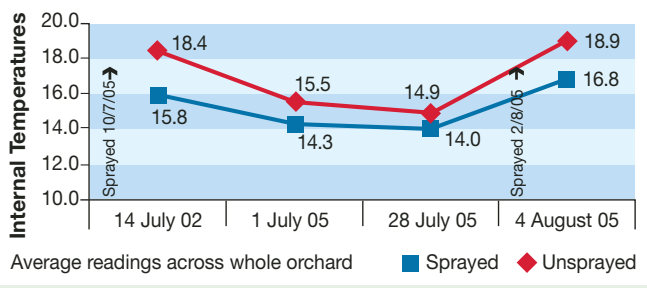
ThermoMax Trials (Oct 2003)



HortResearch trials have shown ThermoMax increased fruit set on apples by 50% at -2°C and 33% at -4°C frost. (See trial report on www.bdmax.co.nz)

The effect of ThermoMax on Avocados

Internal Temperature Trial



ThermoMax is available online, and also through Farmlands and Horticentre throughout the Bay of Plenty, Waikato, Auckland and Gisborne regions. There are two short videos providing answers to frequently asked questions available on the website **www.bdmax.co.nz**. Or call directly on **0800 735 859** or email **bdmax@xtra.co.nz.**

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