The ORCHARDIST®

VOL 95 | NO 04 | MAY 2022

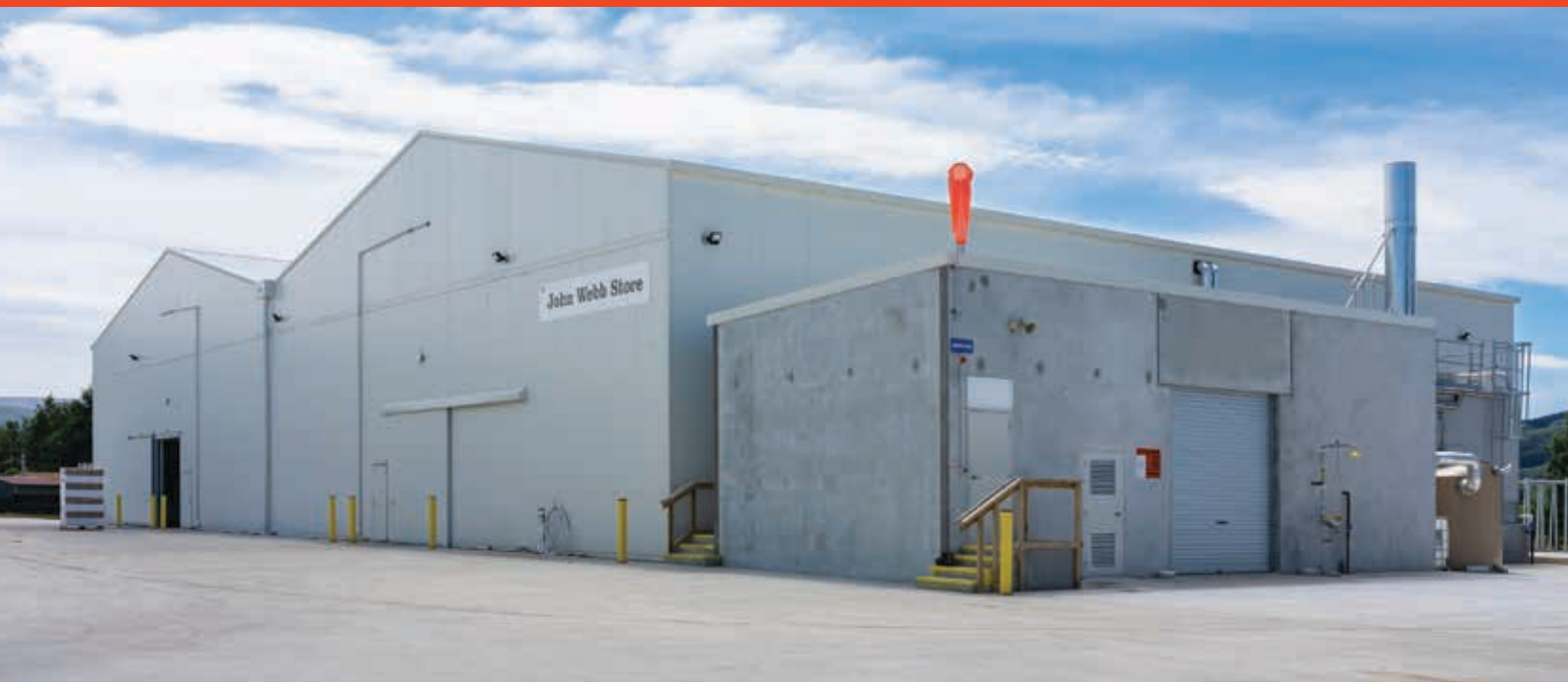
HORTICULTURE NEW ZEALAND

Citrus project will lighten touch

Pages 15-17

Understand. Solve.

Agrispace. Commercial. Industrial.



Tuatara Structures are leaders in the design and construction of structural steel buildings, across New Zealand.

Specialising in large-scale industrial, commercial, and agrispace solutions, our team will take the time to understand your business goals and challenges, ensuring we provide a build solution that fits.

With fixed-price contracts, free feasibility studies and turn-key design-build outcomes, our experienced team has the capability and mettle to deliver outstanding results every time.

Call us today to see how we can help you achieve your business goals.

TUATARA STRUCTURES | OUTPERFORM. OUTLAST.

0800 600 750 **tuatarastructures.com**

Contents

MAY 2022

The positives in change

I was reflecting recently on how, within such a short period, there have been huge changes in our country, our business and our lives.

Barry O'Neil : HortNZ president

As the saying goes, 'the only thing constant in life is change', and it seems to me we have had more than our fair share over the past couple of years!

And while the primarily Covid-19 driven change has been hard, the impacts of too many disconnected government policy changes have been just as hard. But rather than go into a dark place, I thought I would try and focus on the positives of where we are at.

We just have to look back in time to see that change and disruption create opportunities, such as what happened to Blockbuster, with Netflix going on to become a real winner, at least until the competition caught up!

So with the plethora of difficult challenges that are facing us at the moment, are there actually some opportunities that we could be pursuing?

Firstly let's not lose sight that we have a winner when it comes to what we are growing – amazing fresh fruit and vegetables! We have the most environmentally friendly primary sector growing system, and we are not destroying the planet when we grow our crops. And if we add in the benefits of the natural and healthy produce that goes out of our gates, which people are needing more of in their daily lives, we definitely have a winner.

> **"In a Covid-19 world, where people have a real focus on their family's health and wellness, we need to be doing everything possible to promote the health components of our products over and over again**

Surely this alone should be sufficient for future success? Unfortunately that's not so, as all of us have had huge increases in our production costs. As a result, we must continue to grow the value of our produce for our businesses to stay profitable.

The opportunity here is to do more and better in promotion of both the health benefits and the environmentally sustainable way in which we grow. Yes, I realise there are still some growing issues to improve on, which we are all proactively working on. But when I compare where we are at to others in the primary sector, I think we should be proud of what and how we are growing.

Zespri spends significantly on promoting Zespri kiwifruit, both the health aspects and the way in which it is grown. As a result, they have obtained significant premium from consumers. As an industry, we definitely don't want to be stuck in the commodity market in a race to the bottom. Rather, we need to be at the top of the 'food chain' in the healthy, added value space, in the consumer ready-to-eat market.

We are not all Zespris but can't we work together and with government to get greater leverage? 5+ A Day and United Fresh do great work domestically, but we all know we could be doing more.

Focus on health and wellness

In a Covid-19 world, where people have a real focus on their family's health and wellness, we need to be doing everything possible to promote the health components of our products over and over again. We already have some great messages, such as our produce contains antioxidants, vitamins and minerals, and is low in fat and calories. But now, with Covid-19 affecting all aspects of our lives, staying healthy is an even greater focus for nearly all the people of the world.

If free range eggs can command a premium in the market, surely we must be able to drive greater value with our healthy, natural, environmentally friendly products, in a world that is wanting and needing healthiness.

Our plant breeders provide real opportunities for us to not only produce even better vegetable and fruit varieties, but also to develop new categories that we are not currently growing, or that will grow better in a changing climate. Our primary sector's success has been based on amazing animal and plant breeding, such as the fantastic work in the apple and kiwifruit industries. Horticulture has developed in New Zealand due to plant breeders. Let's make sure we keep supporting them and give them the tools they need to succeed.

Arguably up to now, we haven't had to face so starkly the fact that people are critical for our success, but we sure do now! We are putting huge efforts into recruiting and retaining staff, and putting more effort into looking after our staff and their welfare. We have succeeded in employing 10,000 more Kiwis in horticulture and other primary sector roles, which is a fantastic result.

> "Look for those opportunities that exist in your businesses

Collaboration key

There is more opportunity I believe with our workers to be had from collaboration. We need to stop behaving like they are 'ours' and move to a mindset where sharing limited critical resources in quieter periods with others can achieve better outcomes for all. This is already starting to happen, but we can do a lot more. I have always been of the opinion that while we might be competing in the market place, we don't need to compete with each other when it comes to growing, rather, we should be collaborating.

Another more difficult opportunity, which has reared its ugly head with the Russian invasion of Ukraine, is the impact of sanctions and trade bans that have been implemented overnight. A reflection on this would make smart companies take the opportunity of moving to redress any current over-dependence on a single market or country, as this can come with significant risks in today's world. And while the prize might be so fantastic that it tempts us to send more and more to that market, it's not a smart situation to be in if the door to that market closes shut overnight.

In these rapidly changing times, try to stay positive and look for those opportunities that exist in your businesses. And let's make sure we take the opportunity to look after each other.

Kia Kaha.

Planning and working towards a bright and profitable future

Work has picked up again on the horticulture industry-led, government enabled action plan that is being developed to support our industry to reach the ***Fit for a Better World*** *target. That is, to improve grower margins and double the farm gate value of production – from $6 billion to $12 billion by 2030.*

Nadine Tunley : HortNZ chief executive

The work is government funded through the Ministry for Primary Industries (MPI). They have engaged KPMG who will consult with our industry on the opportunities and challenges we need to leverage or overcome to ensure we can meet the improved grower margins and doubling of farm gate value target.

KPMG and MPI have distilled a lot of feedback to reach five focus areas, after working with product groups early on and then more recently, the governance group:

1. Mitigation and adapting to climate change
2. Value-add products, services and markets
3. Māori in horticulture
4. Resilient cultivars and an innovation science system
5. Sector attractiveness and workforce education and training.

Within these areas, a number of topics are captured – water availability and storage, improving land use, access to new high value markets, increasing access to capital, adopting new cultivar development technology, improved labour certainty, and so on.

In the current operating environment, it is tempting to focus on the biggest pain point – labour – and not pay enough attention to the other factors that will make our industry a success. It is also human nature to want to get going on everything at once, even though that is unaffordable as well as unsustainable – sustainable being a word that comes up a lot in conversations about our industry within the food and fibre sector.

Our industry holds the key to so many things that this country wants to achieve, foremost of which is reducing environmental impact while increasing food production as well as grower and farmer returns and margins.

Need to get on same page

The aim for this action plan is that it focuses on a few key critical areas which are important to everybody, growers, product groups, research and development agencies, and central and local government. An important message is that the action plan cannot be all things to all people, but I believe that it can facilitate unification through the agreed focus areas and a staged plan that will guide priorities and investment over the next eight years.

Most people know the riddle, 'How do you eat an elephant? One bite at a time.' A lot of what our industry has to contend with at the moment seems like an elephant – just too big to know where to start to make progress. Reflecting on the current season stresses and strains makes me all the more determined to start making more progress in key areas such as labour, climate change, new varieties and better market access, so we have a more prosperous future outlook.

> **“ The diversity of our sector is one of its strengths but it is also one of its weaknesses**

We are some of the best producers of fruit and vegetables in the world, therefore now is not the time to rest on our laurels. Our competitors are hungry for some of the reputation and market share that New Zealand has – domestically as well as internationally.

Covid-19 has sharpened the knives and many countries have far more money to spend on research and development than New Zealand does.

That is why we must focus and plan, and look at ways to work together so what we have goes further.

In a workshop earlier this month, one of the governance group members suggested that the horticulture sector needs to look at its culture and through leadership and communications, find ways to become a high performing team. Because, if we were to become a high performing team, we would find that we had all the answers.

The diversity of our sector is one of its strengths but it is also one of its weaknesses. In the post-Covid world – whatever that looks like and we do not know what it looks like yet – those high performing teams, sectors and countries will have a distinct advantage.

As a country, our overall productivity is low. Horticulture – already highly productive – can help reverse that trend, but only if we come together and speak as one, so that those that make policy and investment decisions understand us and as a result, make the right decisions for our sector and the country.

Get involved

So get involved! Have your say, so we can agree on our priorities and a logical course of action. For 2030 is not very far away at all.

Look out for opportunities to have your say over the coming weeks. KPMG will be organising a series of Zoom meetings due to uncertainty around Covid-19 and the busy time of the year. ●

To take part, please email Justine Fitzmaurice on **jfitzmaurice@kpmg.co.nz**. You can also email Justine your views directly.

The ORCHARDIST

Editors:
Emily Pope, Ph: 027 617 6200
Email: emily.pope@hortnz.co.nz

Andrew Bristol, Ph: 021 021 62 021
Email: andrew.bristol@hortnz.co.nz

Advertising Manager:
Jackie Enright, Ph: 04 494 9986
Mobile: 0274 489 913
Email: jackie.enright@hortnz.co.nz

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

Subscriptions:
Email: info@hortnz.co.nz

The Orchardist is produced by Horticulture New Zealand and is free for all levy payers. *The Orchardist* magazine is partially funded by a grant from the NZ Fruitgrowers' Charitable Trust to ensure all fruit growers in New Zealand receive a copy each month.

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

ISSN 1173-3802 (Print)
ISSN 2744-5992 (Online)

Your Levy AT WORK

MPA Associate Member (NZ)

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

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

This magazine is posted in an EcoPure plastic sleeve. EcoPure accelerates the biodegradation of treated plastics in microbe-rich environments. Plastics made with EcoPure are biodegradable in aerobic and anaerobic environments.

Horticulture New Zealand
Ahumāra Kai Aotearoa

Horticulture New Zealand Notice of the 17th Annual General Meeting

Tuesday 2 August 2022 at 10.00am in Wellington and by Zoom

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 Tuesday, 14 June 2022 at 10.00am. Notices should include the wording of the motion to be voted on and up to one A4 page of explanatory notes. Notices of motions will be listed on HortNZ's website **www.hortnz.co.nz** on 21 June 2022 and will feature in the HortNZ magazines (July issue).

YOUR LEVY AT WORK

INDUSTRY WIDE ISSUES FOR INDUSTRY GOOD

Natural resources and environment

Michelle Sands : HortNZ strategy and policy manager

Hawke's Bay Outstanding Water Bodies – Mediation

Hawke's Bay Regional Council Plan Change 7: Outstanding Water Bodies proposes to change the Regional Resource Management Plan (RRMP) to include a list of the region's outstanding water bodies, together with a framework that prescribes a high level of protection for these water bodies in future plans.

The water bodies identified in the proposed plan change are the 'best of the best', featuring exceptional cultural, spiritual, recreational, natural character, landscape, geological, or ecological values which are remarkable in Hawke's Bay.

The decision on the plan change was appealed by parties wanting to add more water bodies and more criteria. Horticulture New Zealand has joined the appeal and is participating in the mediation.

HortNZ's involvement in the mediation is to help make the plan provisions clear and easy to understand for future plan users. We want to ensure that the identification of outstanding water bodies and their significant values is related to the purpose of the National Policy Statement for Freshwater, and that only those water bodies that are truly outstanding are captured by the plan change.

HortNZ and its independent planning participated in the mediation in April. Our mediation team has drawn on ecological and recreational experts to assist with developing outstanding criteria.

National Policy Statement for Highly Productive land

The Ministry for the Environment developed a discussion document on a proposed National Policy Statement for Highly Productive Land (NPSHPL) in 2019.

HortNZ and other grower organisations submitted on the discussion document. HortNZ was supportive of the proposed statement as it recognises the importance of highly productive land for domestic food supply and low emissions food production.

We highlighted the tensions between highly productive land and urban development that result in the loss of productive soils and the reduction in the productive capacity of land due to reverse sensitivity.

HortNZ also highlighted tensions between the use of productive soils and freshwater policy. This issue has been further emphasised with the recently proposed National Environmental Standard for Drinking Water. HortNZ has sought national direction that supports decision making where local trade-offs are required to achieve national outcomes, recognising that a resilient domestic food supply and lower emissions food production are nationally important outcomes.

Horticulture™ New Zealand
Ahumāra Kai Aotearoa

CONTACT US
Freephone: 0508 467 869
Web: www.hortnz.co.nz
Phone: 04 472 3795
Email: info@hortnz.co.nz
Horticulture New Zealand
PO Box 10232
Wellington 6140
Level 4, Kiwi Wealth House, 20 Ballance St,
Wellington 6011

The government's work on the NPSHPL was delayed due to Covid-19. The government intends to adopt a policy for highly productive land this year.

The Ministry for Primary Industries has been undertaking very targeted consultation on the draft NPSHPL. It has spoken to HortNZ and growers, as well as other primary sector organisations, Local Government New Zealand and Te Mana Whakahaere.

National Policy Statement for Freshwater – Regional Value Setting Work

The National Policy Statement for Freshwater requires regional councils to develop Freshwater Plan Changes by 2024 to implement the National Policy Statement for Freshwater (NPSFM). The NPSFM includes a process for communities to have input which requires freshwater vision, values and outcomes to be set along with a planning process that implements freshwater limits to achieve the outcomes over time.

Regional councils are starting conversations with their communities on vision and values for freshwater. HortNZ is having discussions with several regional councils and is in the process of establishing regional grower reference groups to ensure that growers' voices are heard.

One of the issues we are highlighting to regional councils is that the NPSFM vision is about freshwater pressures and future catchment uses. Councils must give effect to Te Mana o Te Wai and apply the hierarchy of obligations when setting a freshwater vision. The vision for freshwater should speak to freshwater outcomes and limits and therefore needs to reflect the hierarchy of values associated with the use of water in particular catchments.

A guide to New Zealand's biosecurity system

***Part 1:** All layers of the system are required to provide maximum protection*

Eve Pleydell : HortNZ risk policy advisor

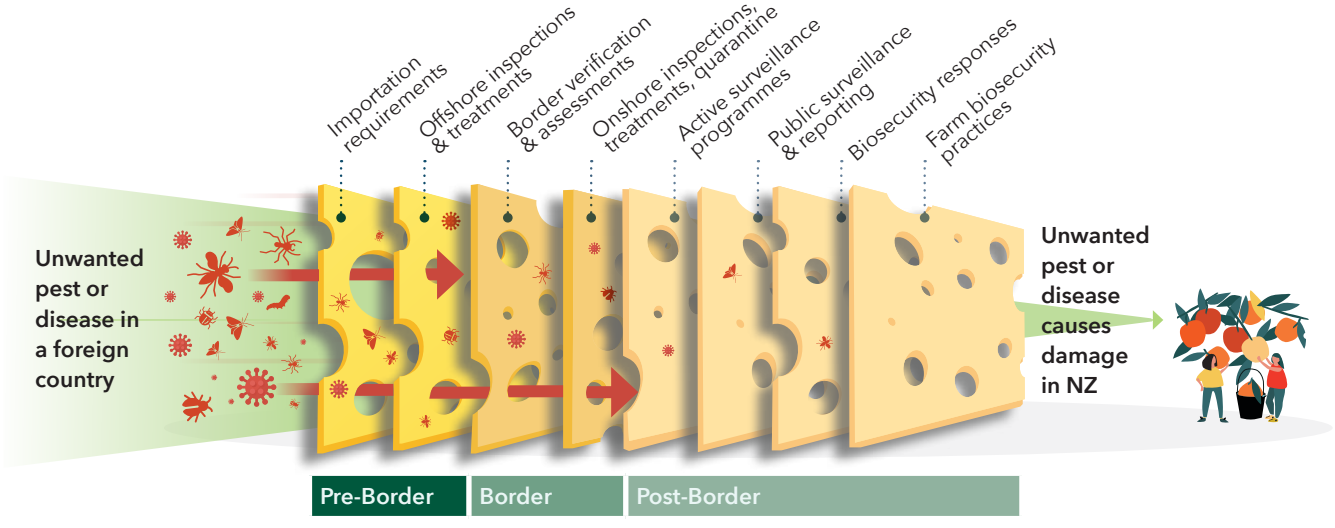
During a recent biosecurity presentation, a speaker suggested that the Swiss cheese model could be used to illustrate how the different layers of the biosecurity system work together to provide protection. In this article I'm taking that idea and exploring it further.

The Swiss cheese model was developed in the 1990s by the psychologist James Reason to illustrate how accidents may happen. In this model, each layer of defence against an accident is illustrated as a piece of Swiss cheese with random holes. The slices of cheese are arranged in a line one after another and accidents happen when the holes line up from one end of the line to the other. While this model has been applied and maybe even misapplied to many different situations, it can be used to provide a simplistic, but helpful overview of the biosecurity system.

It is tempting to think of the biosecurity system as being the things that the Ministry for Primary Industries (MPI) does at the border to protect New Zealand from being

A Swiss Cheese Model of NZ's Biosecurity System

All layers of the system are required to provide maximum protection



Each layer of the system has imperfections or vulnerabilities (holes). If each layer is functioning well, it is harder for multiple holes to line-up
Credits: Original source – James Reason, adapted from Ian Mackay's interpretation

invaded by unwanted pests and diseases. That is certainly one of the most public facing aspects of the biosecurity system, but equally important things happen offshore (commonly referred to as "pre-border") and onshore here in New Zealand (commonly referred to as "post-border"). In a series of short articles, we'll take a closer look at each of these parts of the system, but for now let's consider some of the holes in the biosecurity cheeses.

In his original model, James Reason described two types of holes, which he termed "active failures" and "latent conditions." Thinking about how this applies to biosecurity, a system failure could be considered an active failure. This could be something arriving in New Zealand that the system as a whole was not expecting and was unprepared for. The importation regulations did not cover it, it was not detected at the border, there was no active surveillance to detect it, normal farming practices did not stop it from spreading, and no one in New Zealand spotted it or reported it before it started to cause damage.

Another type of active failure could be human errors such as treatment failures, inadequate inspections, or people in New Zealand not reporting something unusual. Illegal activities and non-compliance with biosecurity regulations could also be viewed as an active failure. These can be deliberate actions of people, like attempting to smuggle plants or plant material into New Zealand from other countries. But non-compliance can also be non-deliberate, think of the exhausted parent travelling with a child who at some point in the journey has put a piece of fruit into the child's bag and forgotten that it's still there.

Latent conditions are circumstances and things that put pressure on the system. There are many of these and they are often happening at the same time. Examples are things like increasing volumes of imported goods, a global increase in online shopping, or increasing numbers of passengers as our borders reopen. Circumstances changing in other countries may also alter the risk posed to New Zealand by pests and diseases in that country. A major flooding event in Japan, as an example, may cause parked vehicles waiting to be exported to New Zealand to be moved to a different site where they are unexpectedly exposed to an invasive pest such as brown marmorated stink bug. An outbreak of a pest or disease in another country may also result in contamination of imported goods.

> **"Changes in the biology of a pest or disease may also mean it becomes capable of avoiding the protection measures in place; consider an insect that has developed resistance to the commonly used pesticide**

On a longer-term scale, changes in climate enable some pests and diseases to spread to countries that they were not in previously. Changes in the biology of a pest or disease may also mean it becomes capable of avoiding the protection measures in place; consider an insect that has developed resistance to the commonly used pesticide. Domestic issues here in New Zealand can also influence the biosecurity system, economic or other pressures may drive up the rate of non-compliance as people look for opportunities to relieve the pressure they are under. Remember the deliberate smuggling in and release of a lethal rabbit virus in the late 1990s.

To keep New Zealand protected within this complex web of challenges is a big job that no single organisation can manage on its own. Over this series of articles, we'll take a look at the different parts of the system and how they are adapting to meet some of these challenges. We'll also look at the ways that primary producers can contribute to the overall resilience of the system, from knowing the importation requirements, to demonstrating good biosecurity practice at the border, reporting the unusual, and keeping their own farms bio-secure. ●

MPI's *Ko Tātou This Is Us* website is also a good resource: Ko Tātou This Is Us | Biosecurity – Keep NZ safe from pests and diseases, **www.thisisus.nz**

Environment Canterbury decision provides consenting pathway

Rachel McClung : HortNZ environmental policy advisor

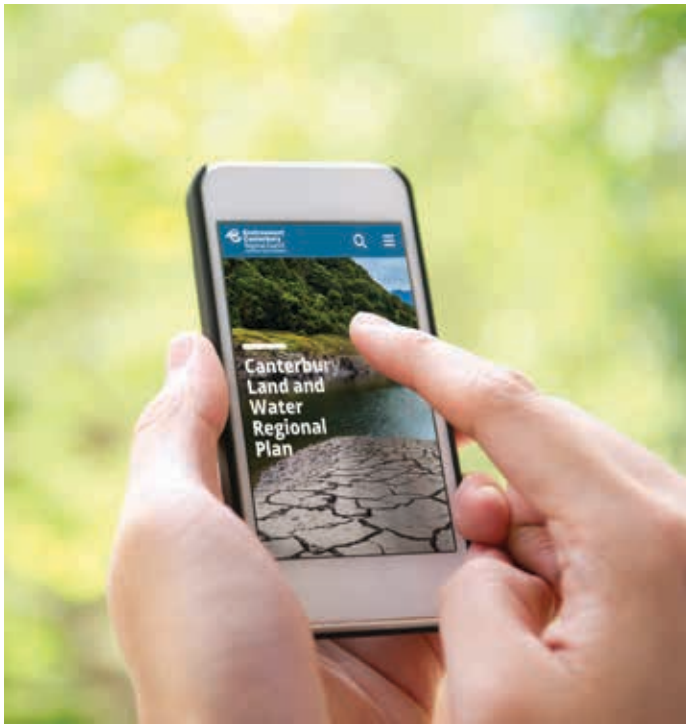
With ever increasing pressure on land available for horticulture, rotating soils to avoid soil-borne disease becomes harder and harder. In Canterbury, adding to this was an operative region-wide nutrient management framework within the Canterbury Land and Water Regional Plan (CLWRP) with significant limitations for commercial vegetable production.

While other farming activities were securing farming land use consents, vegetable growers found themselves unable to do so. Farming land use consent could only be issued for specified land parcels. However, commercial vegetable production needs flexibility to access fresh land to enable soil rotation. This tends to be achieved through rotation across both owned and leased land, and leasing could be either long or short term.

Therefore, part of the problem was that a land use consent is attached to specific land parcels, but also the CLWRP assigns nitrogen loss rates to land, not to the activity. This means that when looking for fresh land there was the associated challenge to find land with a sufficient nitrogen limit to accommodate commercial vegetable production. Both factors were problematic for vegetable growers when rotating and presented significant complications for consenting.

In addition, there were limitations in the ability of OVERSEER® to reliably estimate nitrogen losses from commercial vegetable growing, complexities and costs associated with the preparation of nutrient budgets.

Furthermore, the complex framework of the CLWRP means that no single set of provisions applies to



The Canterbury Land and Water Regional Plan (CLWRP) has significant limitations for commercial vegetable production

commercial vegetable production due to a range of sub-region-specific rules, as many growers grow vegetables in and across multiple sub-regions.

All this has added to the complexity of obtaining a farming land use consent for commercial vegetable production. For these reasons, Horticulture New Zealand approached Environment Canterbury (ECan) to address the issue in late 2017.

Through discussions with ECan staff, it was determined that a plan change was needed to ensure a consenting pathway for commercial vegetable production. As a first step and to assist ECan in better understanding the issue, a series of grower workshops was held in 2018.

One key outcome from the workshops was the clear understanding that a land use consent was not going to work for commercial vegetable growing, as any consent needed to allow a degree of flexibility for location. It was established that a discharge permit would be more enabling for commercial vegetable production across Canterbury.

In July 2019, ECan notified Plan Change 7 (PC7) to the CLWRP. Part A of PC7 proposed a new consenting framework for commercial vegetable production.

HortNZ lodged a submission in general support but seeking amendments to ensure the new rules would be workable for our industry into the future. The process was then delayed due to Covid-19, however HortNZ then presented at the hearing in December 2020. Five growers attended with the HortNZ team to present case studies

to the hearing panel to demonstrate key points. These included Scottfresh, Hewson Farms (NZ) Ltd, Lovett Family Farms Ltd, Pye Produce Ltd and Peelview Orchard.

The decision was released by ECan in November 2021. Overall, we are pleased with the decision, as the Canterbury Land and Water Plan will now recognise the importance of commercial vegetable production (CVP) and provide a workable consent pathway.

The following are areas of the decision that have moved from the notified version of the plan change in response to the HortNZ submissions and hearing attendance:

- Recognition within the policy of the importance of CVP for domestic food supply.
- Three consenting pathways open to CVP – irrigation scheme permit, farming land use consent or CVP permit.
- Exclusion of a nutrient budget in the body of the rule (thereby not triggering a non-complying activity status if not provided).
- A move in the permitted activity status threshold from 0.5ha to 5ha.
- Existing CVP provided for as a restricted discretionary activity and movement not limited to a sub-catchment or nutrient allocation zone. Existing CVP can move across the region.
- New or expanded CVP provided for as a discretionary activity, subject to having a Farm Environment Plan (FEP) and meeting lawful nitrogen loss rate.
- Any CVP that does not meet the discretionary activity is a non-complying activity. The notified PC7 provisions sought a prohibited activity status, rather than non-complying. A resource consent cannot be sought for a prohibited activity. A Council legally cannot receive an application for a prohibited activity. This would have been a significant deterrent to growing in Canterbury and potentially set a precedent for Land and Water Plans across the rest of New Zealand.

No appeals were received on the provisions relating to commercial vegetable growing and they are now operative.

HortNZ will work with ECan consent planners in the early stages of implementing the new provisions to better understand the information requirements for an application and help ensure the new provisions are administered as best intended.

HortNZ encourages Canterbury growers to now obtain permits from ECan.

386

There are approximately 386 horticultural operations in the Canterbury Region.

They grow a wide variety of vegetable and fruit crops including yams, carrots, courgettes, leeks, cabbage, pumpkin, squash, sweetcorn, potatoes, lettuce, broccoli, cauliflower, silverbeet, spring onions, celery, leafy greens, salad greens, herbs, beans, onions, peas, brussels sprouts, tomatoes, capsicum, asparagus, cucumber, apples, pears, nectarines, peaches, apricots, plums, feijoas, blackcurrants, raspberries, strawberries and cherries.

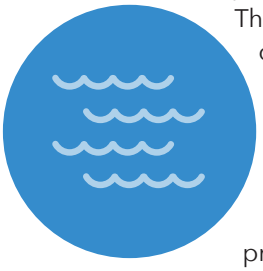
Growing vegetables on a large scale all year round, like growers do in Canterbury, can be challenging. The produce is delicate and susceptible to weather events. Despite this, fruit and vegetables are grown in all ten Canterbury Water Zones.

Freshwater Farm Plans for growers on the Waimea Plains

Growers with five or more hectares will need a Freshwater Farm Plan (FWFP) over the next few years. National regulation being drafted will give more detail, including where and when plans are required across the country, the minimum content, and who can audit and certify them. The government has indicated the regulation will be finalised at the end of the year. Horticulture New Zealand is advocating for the regulation to recognise GAP (Good Agricultural Practice) assurance programmes to deliver audited and certified FWFPs for our industry.

Ailsa Robertson : HortNZ team lead environmental policy

FWFPs will play a role in how Councils manage freshwater resources in their regions. Regional councils must initiate a plan change by the end of 2024 to implement the National Policy Statement for Freshwater (NPSFM) 2020, to set long-term visions for freshwater, new policies and rules, identify limits on resource use, prepare an action plan to achieve the limits within a certain timeframe, and may include conditions on resource consents. Limits on resource use may apply to any activity or land use in that catchment.



Tasman District Council is reviewing their existing Tasman Resource Management Plan and will be creating a new 'Tasman Environment Plan' which will include giving effect to the requirements of the NPSFM 2020 for freshwater management – it is expected to be notified in 2024. On Tasman's Waimea Plains, HortNZ's catchment project brings together science, policy and implementation around FWFPs.

Case studies

Two grower case studies – of vegetables and apples – are being developed to show how the Environment Management System (EMS) add-on to GAP can deliver credible and robust FWFPs for growers. All growers with five or more hectares on the plains are being supported to develop their first FWFP using the GAP EMS in 2022. HortNZ is also collaborating with Council through a Memorandum of Understanding to agree on the freshwater science and the modelling of horticulture systems on the plains. Through this project, HortNZ intends to build robust evidence on sustainable growing practices to support enabling policies for growers in the new regional plan.

The Waimea project also involves testing a new component of FWFPs called the 'catchment context'. This means a growing business will need to consider environmental risks at two scales in their FWFP – property and catchment. As an example, if the priority for a catchment is the management of elevated nitrates in groundwater, growers and farmers will need to show how they are prioritising nitrogen management in their FWFP to best practice standards.

Additional regional council requirements will also need to be reflected in FWFPs. For example, an irrigation management plan or an erosion and sediment control plan. NZGAP has created several regional guides, such as the Tasman Regional Guide, to show how growers meet Council requirements using the GAP EMS add-on.

FWFPs are a regulatory tool, but they are also a credible way for growers to show they are implementing sustainable practices to manage soils, nutrients and irrigation. A nitrogen budget can show how a grower is accounting for inputs and outputs for each crop and yield, and a nutrient management plan shows a grower's decision around fertiliser applications at the right rate, right time and right place for each crop. As an industry, we can tell a powerful story of growers on a journey of continuous improvement, through aggregated and audited FWFP data. ●

To find out more about starting your FWFP now using the GAP EMS add-on, visit NZGAP's website **https://www.nzgap.co.nz**

Horticulture™
New Zealand
Ahumāra Kai Aotearoa

Send us your nominations for the

2022 Horticulture Industry Awards

HortNZ is calling for nominations for its 2022 Awards.
HortNZ will present trophies in each of the following categories.

BLEDISLOE CUP
Awarded for an outstanding and meritorious contribution to the New Zealand horticulture industry.

PRESIDENT'S TROPHY
To celebrate and develop inspiring leadership within the horticulture industry.

ENVIRONMENTAL AWARD
To recognise a person, or organisation, that has developed and implemented a sustainable environmental project, with identifiable benefits.

Full criteria for the above awards are available on the Horticulture New Zealand website or can be requested from the Board Secretary.

Who can make nominations?
- Any grower member of HortNZ, an affiliated Product Group or an affiliated Grower Association can make nominations.

How do I nominate someone?
- Complete a nomination form. These are available on our website **www.hortnz.co.nz** or by contacting HortNZ by calling 04 494 9983 or emailing Board Secretary, Kerry Norman (**Kerry.Norman@hortnz.co.nz**)

When do nominations close?
- Nominations must be sent to the HortNZ Board Secretary, Kerry Norman (**Kerry.Norman@hortnz.co.nz**) or PO Box 10232, The Terrace, Wellington 6140 and must be received by **5.00pm on Tuesday, 7 June 2022.**

Send us your nominations now!

YOUR INDUSTRY

ACROSS THE SECTOR — ACROSS THE COUNTRY

Rain, rain and more rain

Page 38

FEATURE ARTICLE

Gisborne orchardists Tam Jex-Blake (left) and Sam Tietjen (above) hope their trial plantings will not only reduce their own use of insecticides, but will also help develop industry best practice to the benefit of all growers. Pictures by Kristine Walsh

Citrus project aims to lighten spraying impact

Helping citrus growers increase their stock of beneficial insects, therefore decreasing the need to spray, is the focus of one of a range of projects that aim to help achieve a 'lighter touch.' By Kristine Walsh.

As a respected apple grower in the 1980s, Jeff Smith's dad operated his orchard in line with the norms of the day.

"Broad spectrum insecticides were applied on a fortnightly basis, and in terms of pests and disease,it was seen as a good thing to have a 'clean' orchard,"Jeff says.

"But as I came on board in the 1990s we saw the introduction of IFP (Integrated Fruit Production) and that changed everything. Suddenly we saw beneficial insects able to thrive in the orchard, and that meant some secondary pests became less of a problem."

From its introduction in 1995 IFP had a big impact. With a focus on justified – rather than calendar – use of insecticides and fungicides, applications reduced markedly over the next few years.

But 25 years later Jeff believes that, as growers now know they can push this concept further, continual improvement is an integral part of Integrated Pest Management (IPM) and he has put his hand up to be part of the solution.

After spending the last 20 years working in the crop protection industry, Jeff signed up as project manager for the seven-year *A Lighter Touch* initiative, which aims to help growers adopt methods and crop protection measures that are less reliant on chemical use, and can help spur greater production.

While the programme has significant government funding in the form of $11 million from the Ministry for Primary Industries, a larger portion ($17m) comes from industry and the programme as a whole is industry-led.

*Gisborne-based Citrus NZ board member Matthew Carter is overseeing the **A Lighter Touch** project that explores how beneficial insects can be brought into an orchard with strategic planting. Picture supplied*

That crosses product areas from arable farming to kiwifruit, grapes, onions, squash and tomatoes and in Gisborne, not surprisingly, citrus.

Every area has a different focus and the Gisborne fruit crops project looks at how beneficial insects can be brought into an orchard with strategic planting, rather than the established practice of leaving bare earth under trees and intensively mowing the grass strips between rows.

And for an agroecologist like Jeff, that is music to his ears.

On the surface of it, the two-year Gisborne project looks simple: two test growers are planting under and beside the trees with both flowering perennials (such as clovers and alyssum) and annuals (like buckwheat and phacelia).

The aim, says Jeff, is to enhance the agroecosystem and provide resources for beneficial insects to thrive, reducing the need for applications of agrichemicals.

It's not a new idea – many growers have for years been tinkering with initiatives such as understorey planting.

"The advantage is that by doing it in controlled conditions, we have lots of background research to put into play and can record measurable outcomes in New Zealand conditions," Jeff says.

"It's about taking all that theory and putting it into practice in real-world conditions."

Another advantage is that if things go wrong – as they do in real-world conditions – that provides learnings to save other growers time and money.

One such learning in the Gisborne project was all about timing.

Because the first opportunity for planting was in spring and suffered major rain events, followed by the quick onset of dry weather, the first test plantings faced excess competition from undesirable weeds.

"Autumn planting would have been preferable but because our first window of opportunity was spring, we went for it, and the fact that it didn't really work out is an important learning," Jeff says.

"That doesn't mean spring planting is off the table … it is still an opportunity for growers, and this time we're sowing in both spring and autumn to record further results."

Jeff Smith is based in Wairarapa, and having started his *A Lighter Touch* role in June 2020 – just three months after the first Covid-19 related lockdown – has been pretty much confined to base.

"That was hard … I came from jobs that had me travelling for 20 years and all of a sudden that just stopped," he says.

"Zoom meetings have their place but I'm really looking forward to being on site a lot more. It's just great that we have such competent people on the ground in the various regions."

In Gisborne that person is Matthew Carter, himself a grower as well as being technical lead for local company First Fresh, and a Citrus NZ board member with responsibility for research and development.

He says interest was already high when he, Jeff and other key players gave a presentation to Gisborne growers in September of last year.

NO ONE WANTS TO BE SPRAYING IF THEY DON'T HAVE TO

And of the 20-odd who put their hands up to play a part, Sam Tietjen and Tam Jex-Blake were selected to run the pilot programme on their orchards.

With Sam's orchard Braemark based on fertile soil at Bushmere, just inland of Gisborne, and Tam's Iko Orchard at Manutuke, near the coast just south of the city, location was an important consideration.

"Plus, as well as being really innovative growers, they had the facility to lend both test blocks and control blocks to the programme," Matt says.

"It's a shame we've had our setbacks, but Sam and Tam committed to mowing everything down and spraying it off to replant in autumn so it is all systems go.

"And we're optimistic that even in the time we have left we're going to see some good results, which we know the growing community is really keen to see. No one wants to be spraying if they don't have to so if we can reduce that with strategic planting, then it's a win for everyone."

Having taken over his family orchard in 2018 (and being named Gisborne Tairawhiti Young Fruit Grower of the Year just a year later), Sam says his background in mechanical engineering means he's always interested in finding new ways of doing things.

He's already come up with new ways of spreading organic fertiliser and has developed a frame system for tree-skirt trimming, so didn't think twice about becoming involved in the *A Lighter Touch* project.

"I'd actually been thinking about it for a while so when this project came along I was keen keen to get on board and see some measurable results," says Sam, who is using a hectare planted in Afourer mandarins as his trial block.

Meanwhile, Tam – who has her trial block in naval oranges – says that like many growers, she is keen on cover cropping that can help reduce the use of insecticides.

"There seems to be a lot of interest here in alternative methods that are good for our orchards and the environment in general," she says.

"I feel that the results of this trial will give us industry best practice that will be of benefit to all growers in our region, so am really glad to be a part of it."

With First Fresh on board to do the monitoring and another local company, Dragonfly, providing photography and videography services, Jeff says they will be well placed to get data out to growers around the country as the project progresses.

"What we found is that across the product groups growers want to move towards this type of crop protection regime … it is the way of the future," he says.

"So we want to involve growers from the start by sharing how they can use these practices in an actual orchard without having to reinvent the wheel, and by merging them into what they are already doing.

Basically, the aim is to use monitoring and insect counts to deliver a research-based but practical how-to guide so growers can go ahead on their own.

"But the two-year project is really just the beginning. For example, Citrus NZ might like to continue that monitoring to build a data set that shows the long-term outcome of working on the ecology of the orchard. And growers will need to work out how their new biodiversity impacts on their spraying programmes … how much softer they can go."

Back in the 1990s, change was largely driven by market acceptance and Jeff Smith believes that is still an important consideration.

"But these days it's about more than that. As well as looking for a better consumer response, growers want to feel good about how they are running their orchards and that's where projects like ours come in."

The Gisborne strategic planting project is part of *A Lighter Touch*, a $27 million, seven-year programme backed by the horticultural industry ($16 m) and Government ($11 m) through the Ministry for Primary Industries' (MPI) Sustainable Food and Fibre Futures fund. *A Lighter Touch* aims to shift the focus from traditional crop protection by carrying out research, understanding crop protection products, and integrating biological and ecological processes into food production in New Zealand.

In general, '*A Lighter Touch*' projects aim to address environmental issues, at the same time shoring up the brand, reputation and provenance of New Zealand's produce, and therefore our desirability as a preferred supplier. Current initiatives include:

- **In partnership with Citrus NZ** and with the support of the crop product groups and the wine industry's Bragato Research Institute, an exploration of how beneficial insects can be brought into an orchard with strategic planting (Gisborne).
- **In partnership with Zespri**, a new kiwifruit integrated pest management plan for passion vine hopper, *Scolypopa australis* (Tauranga).
- Arable field trials as part of the **Foundation for Arable Research**'s proof-of-concept project to reduce overall agrichemical inputs (Christchurch).
- Soil-borne disease management with the **NZ Buttercup Squash Council** and annual arable and vegetable crops (Hawke's Bay/Gisborne).
- **With Onions NZ**, the validation of agroecological and integrated pest management (IPM) approaches to crop protection (Pukekohe).
- **With TomatoesNZ**, an IPM programme for glasshouse tomatoes incorporating arthropod biological control agents (Waikato).

Recruiting staff early one strategy for summerfruit harvest success

The successful labour recruitment and retention strategies growers used last season will be key to the next harvest says Tracey Mansfield labour coordinator for Summerfruit NZ.

Elaine Fisher

Tracey Mansfield

SUCCESSFUL RECRUITMENT STRATEGIES

"We can't predict accurately what the labour situation will be but despite borders opening, the transient workforce may not be back this year.

"The backpacker workforce, which summerfruit growers once heavily relied on, may never return to pre-Covid-19 numbers. Summerfruit growers have had to look at alternative sources of labour for the past two seasons and those who have had success in securing staff have used various tools to do so.

"For employers, being organised early will again be crucial, especially to attract university students who are key to the workforce.

"In some cases, contracts were signed as early as July or August, for work in December 2021. Having the numbers needed at the beginning of the season was crucial because there was no one looking for work throughout the season as there has been in the past," says Tracey.

Recruitment initiatives including PickNZ and the Opportunity Grows Here campaign (see story on page 34) were also key to attracting workers.

"PickNZ promotes seasonal work in our fruit and vegetable industries. It is a job board that many of our growers used to advertise roles. Opportunity Grows Here was directing traffic to the PickNZ website and our team was also directing job seekers there to find employment," says Tracey.

"Student Job Search was also important in attracting university students to work over the summer. But the traditional job expos targeting university students through one on-one engagements couldn't be held because of Covid, so growers had to reach students in different ways including by emails, paid and free social media."

Clyde Orchards manager Kris Robb says recruiting early paid off for the harvest, as did the company's reputation as a good employer.

"We picked and packed all our fruit so were lucky. We had a great team of staff of all ages including school kids, and a great team of university students, many of whom returned from previous seasons and brought heaps of mates with them.

"Advertising early on about who we are, what we do and the jobs available, paid off. In the end 90 percent of staff were with us the whole season and the cohort who committed as early as August and September saying they would come, came and stayed. We would have been buggered without them.

"All the backpackers we employed this year had worked for us previously. We didn't have any new ones. Those who are here are now keen to return home, so now for us it's about succession planning.

"Word of mouth and reputation are important, so we make sure we treat people well, with good work conditions, good accommodation and good renumeration. If some cannot return, we hope they tell their friends we are good employers."

Kris says the Seasonal Work Scheme of the Ministry of Social Development (MSD) (see story page 35), which incentivised staff to complete the entire season by offering a bonus, was significant in helping Clyde Orchards complete its harvest.

Kris acknowledges the work of Tracey Harrison MSD's southern regional labour market advisor, and Tash Kane, regional seasonal coordinator. "They worked tirelessly round the clock to help and spent a lot of time on the ground understanding our industry. Without their industry knowledge, things would not have been so successful."

Kris would like to see a similar scheme aimed at university students. "We need to get the Scarfies up here, maybe through a special student work scheme which includes help with accommodation. Students are a key part of our workforce and any incentive to get them to come back would be really appreciated."

Rob Nichol, cropping manager at Hawke's Bay's NH Packing & Farming Co Ltd says the company scraped through the harvest, largely thanks to Recognised Seasonal Employer (RSE) scheme workers who were already in the country.

"The packhouse struggled more than in the first year of Covid because there were still some people on working holiday visas in the country then. This year they have all gone.

"We did lose some crop to wet weather. In the past, with plenty of staff we could put 50 percent more people in the orchard to pick after rain, but that's not possible at the moment."

The Handpicked Crew Card, which gave workers in Central Otago access to special offers and discounts for many of the region's tourist attractions, accommodation, restaurants and bars, was popular again this season.

The Central Otago District Council launched the 'Spare Room, Spare Time' campaign calling on locals to invite friends and family to experience a Central Otago summer 'working holiday' by offering them accommodation. Locals who had some spare time were encouraged to help fill seasonal job vacancies.

Many growers, including Maree Denniston, Central Organics, used PICMI online hiring technology. "The biggest thing for me is knowing that they (the staff) have done their induction and signed their contract before they come."

The tool has provision for inductions to be completed before the employee arrives on site. "It's not so bad when you sit down and do an induction with 20 people at once, but that is not always how it works. You get two more come on and then another three come on and every day you are hearing the same induction and hearing my voice over and over again. With PICMI I don't ever have to worry about that again."

Genevieve Griffin-George, PICMI's co-founder says the labour market is changing, and to attract staff, growers need a way to stand out. "PICMI has a template for employment and induction material and some growers have added a welcome video so staff can meet the people in their organisation and learn what to expect from the work."

FEATURE ARTICLE

Soil moisture sensors have been measuring water levels in Ngai Tukairangi Trust orchards at two depths via RICADO's wireless remote monitoring network. Images supplied by PlantTec

Guidance from above for orchard management

Satellites may soon help kiwifruit growers monitor how well vines in different parts of their orchards are hydrated and whether the plants experience water stress. By Elaine Fisher.

A project to prove the efficacy of the concept is already underway in the Bay of Plenty and PlantTech Research Institute scientist Dr Istvan Hajdu of Tauranga says early results are promising.

Researchers are accessing data from two satellites regularly orbiting over New Zealand which contain microwave technology that can sense the water content of plants from above. The project uses Synthetic Aperture Radar (SAR), a form of microwave sensing, to provide spatial maps of kiwifruit canopy water status to help optimise irrigation strategies.

The project is funded by Our Land and Water (Toitū te Whenua, Toiora te Wai), one of the National Science Challenges. PlantTech won funding for the project under the Rural Professionals Fund programme, with partner RICADO Remote Data Systems Group of Te Puke, working alongside Ngai Tukairangi Trust, one of the leading Māori-owned kiwifruit growers at Matapihi near Tauranga.

The Rural Professionals Fund tests innovative ideas that could lead to significant improvements in farming systems while preserving the most fundamental resources, land, water and associated ecosystems. It allows researchers, farmers and rural professionals to empower and build deeper relationships with Māori agribusiness.

Istvan says two satellites began providing data from the Ngai Tukairangi Trust orchards in October last year. "These satellites have their own energy source and do not need sunlight to capture useful data making them operational 24/7. They are able to see through cloud cover, which means the images we receive are mostly independent of weather conditions in Aotearoa New Zealand. Indications are that the signal can also penetrate through hail nets, which is quite a benefit.

"The satellites transmit down microwave signal pulses which interact with the canopy. Some portion of the signal

is scattered away or absorbed, and some goes back towards the satellite's antenna which provides the data we use."

To verify the accuracy of the information satellites are gathering, researchers have been 'ground truthing' the findings, using data from the nearby Tauranga Airport weather station and information from RICADO soil moisture meters and the results of laboratory leaf testing.

To date the correlation between the satellite and 'ground truth' data is pleasing, which is giving researchers confidence that eventually applications can be developed allowing growers to use satellites to remotely sense how well their vines respond to rainfall events and irrigation management.

Istvan says the data was not homogenous over the entire orchard. "From the images you can see that green and gold kiwifruit store different amounts of water in their leaves."

Images recorded at the end of January showed that a green block within the Ngai Tukairangi Trust orchard was drying out while other gold blocks remained well hydrated due to frequent irrigation.

> **"If the research could be translated to technology which growers could use daily as an early warning system of the water stress levels of individual orchard blocks, it would be extremely useful**

In March Istvan presented his findings to date via an online forum to Andrew Wood (Ngai Tukairangi Trust), Scott Whitwell (RICADO general manager), John Huntingdon (RICADO hardware technician), fellow researcher Professor Ian Yule (PlantTech), Dr Mark Begbie (PlantTech chief executive), and Rob Bensley (PlantTech commercial director).

He displayed the complex data from the satellites in 2D and 3D image form using different colours to denote differences in plant hydration. The images are similar to what growers may see if a commercial 'dashboard' programme is developed for their use.

Andrew Wood said he was excited about the possibilities the research was opening up. If it could be translated to technology which growers could use daily as an early warning system of the water stress levels of individual orchard blocks, it would be extremely useful.

Istvan joined PlantTech in 2020 after arriving in New Zealand in 2015 and completing his PhD at Massey University, Palmerston North. His scientific career started in Hungary where he achieved master's degrees in geography and earth science engineering at the University of Miskolc.

"There are great scientists in our PlantTech group. I consider myself a geospatial data scientist but collectively, we're combining all our different skills and experiences to create something new that has never been done before in New Zealand, especially in horticulture."

In scientific circles, geospatial data is called the 'golden thread' that links many datasets together. The work involving artificial intelligence (AI) technology and machine learning that is carried out by PlantTech enables the institute to process complex datasets that many other organisations cannot manage. By adding a geospatial component to the analyses, Istvan says PlantTech is able to see new patterns of information and answer questions that haven't yet been asked.

"It's about understanding all the connections and modelling those virtually. I really enjoy translating all the outputs from these complex models into something that is understandable by a client or someone who is not an expert in data science.

> **"From the images you can see that green and gold kiwifruit store different amounts of water in their leaves**

"Nowadays, we have a large selection of tools to visualise data interactively, such as GIS (Geographic Information Systems) assisted dashboards, 3D models, or we can use animation to tell a story over time."

Orchards are examples of places where geospatial data can be applied in new and revealing ways. "Production blocks are often viewed as isolated entities, but we can use geospatial data to view them as part of a wider catchment, and view and compare all the different regions to see how they react to various management practices. Using this data, we have the capability to build up a big picture that is meaningful for growers, packhouses and other clients, but it's just the tip of the iceberg.

"This sort of approach will have a huge impact on the horticultural industry and PlantTech is aiming to be a pioneer in this field." ●

"THE DAM IS STILL THE BEST LONG-TERM SOLUTION FOR THE REGION'S URBAN AND IRRIGATOR NEEDS"

Waimea Dam update

The Waimea Community Dam has been plagued by continual cost blowouts, but the chairman of Waimea Irrigators Ltd (WIL) says it is an intergenerational project that will enable horticulture to develop on the Waimea Plains.

Anne Hardie

Murray King says the proponents of the dam in the Lee Valley have been working on the project for 20 years and though the increasing cost of the dam is disappointing, the benefits will still be significant.

> The biggest hurdle for the dam construction work and the cause of increased costs was the discovery of highly fractured rock on the site

When the project was first put to the public in 2017, it had a price tag of $75.9 million. By the time it was commissioned in 2019 it was $105 million, and since then the project has been besieged with problems, with everything from geological issues to Covid-19. The latest increase takes the project to $185 million and there is a risk it will go higher as the remaining 30 percent of the build is completed.

The biggest hurdle for the dam construction work and the cause of increased costs was the discovery of highly fractured rock on the site, with multiple large shear zones (areas of ground rock and clay) bisecting the top of the spillway, plus weak rock under the plunge pool. Added to the geological problems has been high inflation adding to the cost of materials and global supply chain disruptions, materials being in short supply and the ongoing impact of Covid-19 on staff and productivity. The mechanical and electrical works alone are now expected to cost $19 million more than the original 2018 budget.

The irrigators who bought shares in Waimea Irrigators own 49 percent of the dam, with some of the larger irrigators paying hundreds of thousands of dollars each to secure water for the future, and buying surplus shares to get the dam over the starting line. Tasman District Council owns 51 percent and will fund that percentage of the operating costs, with just over half of those costs attributed to insurance, rates and consent compliance. The remaining costs cover ongoing dam operations, maintenance, engineering, staff and company costs. The council needs the dam to service its existing communities and future residential and commercial growth.

Waimea Water which is the council-controlled organisation responsible for managing the construction, operation and maintenance of the dam, expects it to be completed by early spring, which means it could begin filling and be commissioned by early 2023.

Initially, irrigators were looking at paying annual operating costs of about $500 per hectare or just over, but that could double and Murray admits it is an unknown at this stage until extra funding is sorted out and costs shared. Council has stated it proposes to use income from its enterprise activities to cover interest related to the irrigators' share for 2022–23 as other funding options are investigated. A targeted rate on irrigators will not come into effect until the 2023–24 year.

> **"We've got a partner and don't know what it is and what the terms and conditions are going to be and how it will operate**

If the government's Three Waters Reform goes ahead, the council's interests and debt in the dam project are tipped to transfer to a proposed new entity. For irrigators, Murray says there are concerns under Three Waters' management.

"We've got a partner and don't know what it is and what the terms and conditions are going to be and how it will operate."

Despite the costs of the project and concerns about Three Waters, he says the dam is still the best long-term solution for the region's urban and irrigator needs. About 3,000ha of the Waimea Plains are subscribed to be irrigated by the dam, and up to 5,000ha of land has the contour to be potentially irrigated once there is available water.

Kiwifruit industry updates biosecurity plan

The new Pathway Management Plan for biosecurity in the kiwifruit industry developed by Kiwifruit Vine Health (KVH) has been welcomed by growers.

Elaine Fisher

The Kiwifruit Growers Biosecurity Guidelines booklet is available in web or hard copy versions

"The plan has been well received since it became active on 1 April. We are thrilled that it went through the parliamentary process successfully and is now in place to help protect our industry and build resilience among growers and other stakeholders," says Leanne Stewart, KVH chief executive.

"The aim of the plan is that we can detect anything new quickly enough to stop its spread, limit impacts, and aim for eradication."

Bay of Plenty orchardist, Peter Ombler, who was a foundation member of KVH and its second chairman, is pleased that the plan is in place. "There is recognition that due to climate change, the landscape for orcharding is changing all the time in terms of biosecurity risks.

"Our industry may have recovered in stunningly good fashion from Psa but it won't be the last threat. Everybody knows the risks are changing each and every day, and that our industry needs effective ways to deal with those risks."

Steve Thomas of Thomas Brothers Riwaka says it is the right time for a new plan. "Biosecurity incursions won't wait for anyone. There is too much value to lose to an incursion by not doing the things we could have done. This new plan is a key tool to ensure we are in a good place in case of an outbreak."

Central to the new Pathway Management Plan is on-orchard biosecurity planning, which consolidates for growers all requirements and expectations around managing risks across pathways into orchards.

Te Puke orchardist and consultant Lynda Hawes is impressed with the hard copy version of the *Kiwifruit Growers Biosecurity Guidelines* booklet which she has filled out. "It is clearly laid out, straightforward with good pictures and is easy to use. It talks about what we need to do to manage risk and it's pretty brief.

"I like that KVH has thought about the physical production of the guidelines because lots of people still don't handle electronic copy well. The hard copy is something growers can keep in their GAP (Good Agricultural Practice) folder. It's got a solid cover so it's going to last."

For those who prefer to work online, KVH has recently released a new web version of the booklet as an extra resource to help growers better identify and understand their orchard-specific risks, and is also developing an online traceability tool.

Leanne says the new plan will enable better management of biosecurity risk for all in the kiwifruit industry.

"It is an achievement that reflects the efforts of all who have contributed to development, planning, and several consultation stages since we first announced the proposal in November 2019. KVH is grateful to all who supported the process and provided valued input."

Established in December 2010 to lead the industry response to the incursion of the vine disease Psa, KVH is a dedicated biosecurity organisation and a leader in its field in New Zealand. Its new National Pathway Management Plan, implemented under the Biosecurity Act, is the first national plan of its kind.

"It demonstrates the continued biosecurity proactiveness of our industry and is an important step forward in the way we manage the risk of unwanted threats."

Leanne says the plan is equivalent to the National Psa-V Pest Management Plan (NPMP) but moves away from focus on a single threat to a much broader scope encompassing a wide range of pests and diseases, both those which are currently identified and those which may arise in future.

> **“It talks about what we need to do to manage risk and it’s pretty brief**

Following wide ranging consultation across all stakeholders within the industry, best practice guidelines and templates have been developed for all sectors of the industry to follow.

Leanne says that under the previous plan growers were required to have an orchard plan in place to manage Psa so there is nothing dramatically new in the new one, and it means for most growers they are already doing most of the things needed. “We have developed tools and systems to help growers implement the small changes introduced in the new plan so as not to burden growers but to make sure everyone is following best practice.”

The plan is industry wide and includes growers, contractors, technical organisations supporting growers, nurseries supplying budwood and plants, pollen mills, suppliers of compost, post-harvest companies, Zespri and Kiwifruit New Zealand.

Kiwifruit is grown across several regions in both the North and South Islands, and young kiwifruit vines are produced by nurseries in parts of the South Island remote from kiwifruit growing regions, Leanne says.

“While individual and group actions in specific areas can help manage risk, the coordinated and consistent national approach provided by the plan means we all have a united goal and set of objectives and measures that manage pathway risks across the country.”

The plan replaces the current NPMP as it retains the important elements needed for Psa protection (e.g., controlling movements associated with high-risk pathways to the South Island) and provides much wider benefits, including streamlining and simplifying rules and regulations so they are more pragmatic, and deliver greater value for money.

KVH will provide regular updates on new resources and longer-term projects underway, such as the traceability project mentioned, that will make it increasingly easy and pragmatic to undertake best biosecurity practice and ensure a resilient kiwifruit industry. ●

You can read more detail about the Pathway Management Plan on the KVH website.

Labour-saving robotic packer's timely arrival

Elaine Fisher

The launch of Aporo II, a New Zealand invented intelligent robotic fruit packing machine, may seem timely given today's tight labour market, but its arrival is no coincidence, says Cameron McInness of Jenkins Group.

"The reality is that this type of commercially proven technology doesn't appear overnight or even in a few years. This was about foresight and early investment to have the right solution ready when the crunch came. Covid-19 has certainly exasperated the labour issue, however it was building quickly prior to this."

Developed and manufactured in Tauranga by Robotics Plus (RPL), the Aporo II builds on the proven technology of the original Aporo I Produce Packer, first developed in 2018. The latest model has twice the throughput, packing 240 fruit per minute, saving between two and four labour units per double packing belt.

"The team at Robotics Plus acknowledged an emerging challenge around labour long before anyone was talking about it, and once the issue had built to a crescendo there was a decade of development completed and a commercial product on the market," says Cameron who is a director of Jenkins Group – a New Zealand-based company which co-founded Global Pac Technologies (GPT) with United States-based Van Doren Sales Inc as a joint venture to sell the technology to the global market.

"We have been rolling out this new machine with some key customers globally and the results have been dramatic. One of our Australian customers built a new packhouse and installed three of our Aporo IIs. That increased their packhouse production by 30 to 40 percent and reduced their labour by 50 percent."

Cameron says the key benefit of any labour-saving technology to a post-harvest facility is the redeployment of labour into higher value roles and tasks instead of menial ones. "This obviously is a win-win with employees getting a more engaging role in the facility and operators getting better value out of their scarce labour pool."

The touch screen interface for the Aporo II robotic fruit packing machine is very intuitive and easy to use

The technology is now being used in France, the United Kingdom, Sweden, Belgium, the United States, Australia and New Zealand – primarily to pack apples, and now stonefruit like peaches and nectarines.

Steve Saunders, chief executive and founder of Robotics Plus says development of Aporo I began in 2014 and the first pre-production machines were released in 2016.

"In 2018, production machines were released and we formed our distribution partnership with GPT. In 2018 we began work on Aporo II and shipped the first six pre-production machines in late December 2020. Since then we have shipped a number of production machines globally and have been fine-tuning the technology leading up to the official release (in April 2022).

"The machine uses suction to pick up the fruit after it has been through its orientation and blush-side-up process which uses advanced algorithms and vision systems. The technology handles the fruit very gently, if not more so than humans."

With minimal alterations, Aporo has the ability to pack other fruit too. "This past year we have developed stonefruit packing capability on the Aporos and packing-tray-in-box capability for both apples and stonefruit. We are now exploring further opportunities such as avocados."

Steve says the company was pleased that GPT used this year's Fruit Logistica expo in Berlin to showcase the Aporo II. "Fruit Logistica is one of the global premier events for the fruit trade and showcasing of current packing technologies. The benefits of being there for New Zealand are many. The Aporos are manufactured in New Zealand creating opportunities for our outsourced manufacturing partners,

creating higher skilled and paid jobs, and putting New Zealand on the global agritech stage.

"At RPL we have taken on a number of university graduates over the years across many disciplines such as mechatronics, engineering, electrical and software."

Cameron says New Zealand has long been looked at as an incubator for clever solutions to industry problems and the Aporo machines are world leading. "Other options from overseas for automating the placement of fruit into trays are less mature and still proving their reliability and return on investment. This Kiwi invention is well ahead of the pack and has the world's attention.

"Aporo II can be retrofitted across two packing belts instead of one, so it has effectively doubled the throughput and the labour saving that Aporo I could deliver.

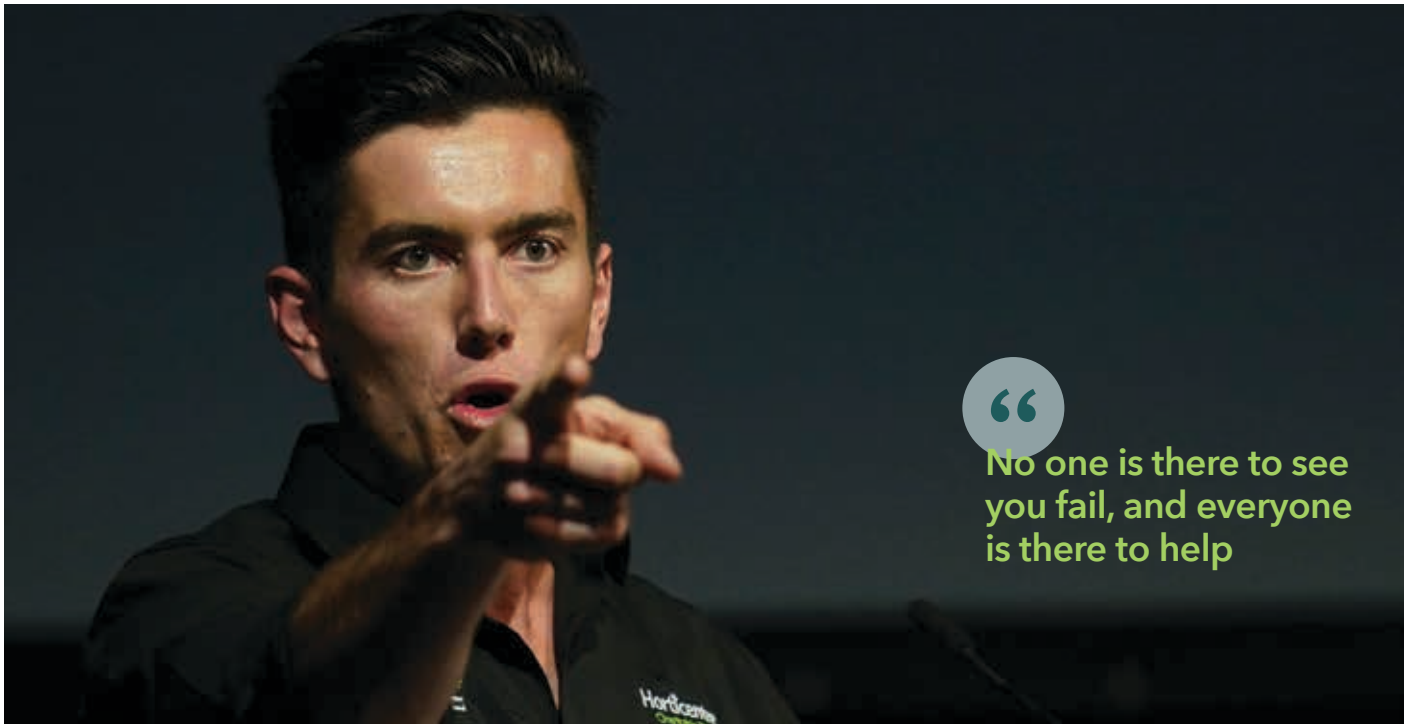
"What's unique about Aporo I and Aporo II is they are designed for really simple autonomous packing. The machine is very intelligent. It looks at the fruit, orientates the fruit and doesn't need to be told what type of trays you're using – it just looks and finds the pockets. It's really powerful technology.

"Its internal vision system or 'neural network' is continuously learning to adapt to different fruit varieties and improve performance over time. It features automatic tray pocket recognition for any tray type and the touch screen interface is very intuitive and easy to use. Not only will it orientate and place fruit the right way on the tray, you can also ask it to find the best colour on the apple and spin that side up. It's very clever."

The Aporo machines can be retrofitted to existing packhouse infrastructure within a matter of hours in some cases. It straddles existing conveyors and is available in configurations for both single and double packing belt layouts.

Since Aporo I's initial launch in 2018, over 100 packing belts have had the technology deployed on them around the world, and a strong pipeline of orders have already been received for Aporo II. "We have a couple of big growth opportunities in California right now.

"We are the market leaders in this space and our customers are having real success. The global apple market is worth approximately US$80 billion, and automation is key to over-coming the worldwide labour shortage that all post-harvest operators are experiencing. The beauty of Aporo I and Aporo II is they can be installed on both new and existing packing lines, making this technology accessible to everyone." ●



Hawke's Bay Young Fruit Grower of the Year Liam Sykes

Motivated young grower takes every opportunity to drive his career forward

Orcharding is in the blood for Liam Sykes, but the Young Grower platform has cemented his passion and motivation to carve a long-term future in horticulture.

With his horticulture roots extending back 100 years in the Bay, it was natural progression for Liam to follow in his family's footsteps. His 'hands-on' orcharding career started in 2013 and last year he was runner-up at the 2021 Hawke's Bay Young Fruit Grower of the Year competition. No small feat.

"It may sound cliché, but the competition is such a great platform to showcase your knowledge, but also find out where you may need some improvement. All the eight stations were interactive, and provided me with a realistic approach to how to conduct business in a day-to-day orchard scenario. One of the things I won't forget is how extremely helpful everyone was throughout the day. No one is there to see you fail, and everyone is there to help," Liam says.

The Young Grower of the Year platform has a rich and long history in Hawke's Bay. The inaugural competition was held in 2005, developed by industry steward Leon Stallard. The concept originated from a need to support and encourage young horticulturists to progress a career in the industry. Seventeen years on, the competition is going from strength to strength and now spans six regions.

The annual competition is coordinated by Hawke's Bay Fruitgrowers' Association as part of its mission to acknowledge, develop and retain young people employed in the fruit

sector in Hawke's Bay. It does this by showcasing competitors' horticultural skills through a series of theoretical and practical events.

Brydon Nisbet, Hawke's Bay Fruitgrowers' Association (HBFA) President, believes the competition is critical to ensure the industry is nurturing a talent pool of skilled horticulturists for the future.

> **"I love working with such a diverse range of people, each with their own unique story, keeping the cogs turning in this industry**

"The competition develops a pathway for these motivated young growers to progress their career. We need to be thinking about who will be driving the industry forward in ten to 20 years' time and the competition is an exceptional platform to develop skills and foster leadership.

Our competitors are a great example of young people who are passionate about the industry's future and their role in it."

In addition to winning a number of the station prizes, Liam also won the inaugural Kaimahi Award, presented by Ngai Tukairangi Trust Chairman Ratahi Cross.

> **"A platform for like-minded young orchardists to catch up regularly, to get off our own orchards and to learn and see various orchard management practises undertaken elsewhere**

"I was lucky enough to win a few station awards, but the Kaimahi award meant the most to me. The award is presented to the finalist who shows professionalism, integrity and leadership qualities throughout the competition. These are core values I believe in. I hope to pass this award on to the next deserving candidate at the 2022 competition."

Encouraging the next wave of young horticulturists

Being involved in horticulture from a young age, Liam is eager to encourage other young people to get involved.

"I am also a part of the Hawke's Bay Young Orchardists group. It is a platform for like-minded young orchardists to catch up regularly, to get off our own orchards and to learn and see various orchard management practises undertaken elsewhere. It gives everyone a voice, and also gives people a different perspective on how other orchardists conduct business.

I've made some great friends, but also solidified myself in the horticulture industry. I love working with such a diverse range of people, each with their own unique story, keeping the cogs turning in this industry.

I have also been fortunate enough to accept a new role at Ngai Tukairangi Trust as apple manager for their recently acquired apple business, and look forward to being part of the team as they begin their journey in the pipfruit sector."

Liam urges everyone to give the competition a go. "It's an incredible journey. The professional development opportunities and the network of connections built during (and after) the competition are something you can't otherwise create overnight."

"I have grown a great respect for the primary industries; what it takes to earn a living off the land.

Our industry is dynamic and I'm looking forward to my next chapter in horticulture!" ●

FEATURE ARTICLE

Alison Haslip (right) and her daughter Nicole pick feijoas at Pinewater Orchard near Auckland

Unlikely crop keeps orchard afloat

What started as a plan for an easy retirement turned into more of a baptism by fire for organic orchardists Alison and Brian Haslip. HELENA O'NEILL talks to Alison about the highs and lows of growing feijoa and limes organically, and how an unlikely crop is keeping the orchard profitable.

The Haslips run Pinewater Orchard, a 6.25ha property in Waiau Pa, south of Auckland, with a stunning view over the Taihiki Estuary on the upper reaches of the Manukau Harbour.

Alison says the fertile soils of the Franklin region help provide the perfect location for an organic orchard. Pinewater's beach is typical of the Manukau Harbour foreshore, being tidal and complete with mangroves. There are pleasant sandy spots, and the water is safe for swimming and boating.

"We decided to have a nice, easy retirement income. We decided to plant trees and it was going to be really nice and easy," she laughs.

The development of the orchard began in 2000 using organic principles and by June 2006 it had reached full organic status. For three years the couple planted trees, and each year they planted 400 feijoa trees. The orchard now has 1,200 feijoa trees (Unique, Apollo, and Den's Choice) and 100 Bearss lime trees.

"This year the trees haven't got much fruit on them, but then I was talking to friends of ours in Tuakau and all around them there is no fruit on the trees."

The past three years have been difficult for the Haslips with the arrival of the guava moth in 2018, followed by the Covid-19 pandemic, and a decline in Brian's health.

Their last proper harvest was back in 2018, with about 16 tonnes of fruit that year.

"Then guava moth came along and then Covid-19, so the orchard has gradually moved on and we do what we can."

This year only about 300 feijoa trees will be harvested with most of the Unique variety fruit being too small to be worth picking.

Grading feijoas

....AND NOW WE'VE GOT AN ORDER IN FOR 300KG OF RIBWORT

"We're not doing the Uniques and there are a couple of blocks where the cows have been in so there won't be many trees picked there."

Despite the poor harvests over the past few years, Alison has no regrets about being an orchardist.

"I enjoy the orchard, I love the orchard. I enjoy being out there picking and pruning, just working with the trees.

"I had no horticultural background, I thought what's the best you can do? We wanted to produce organic fruit that looked as good as conventional fruit. I didn't have any preconceived ideas of what I needed to do to get it to that stage.

"We started completely from scratch, doing it organically. I was just so pleased our first fruiting year when we got such lovely fruit that tasted beautiful while looking good. And they were organic."

Alison says growing organically can mean more wastage due to caterpillar and beetle damage to the fruit.

"We joined the Feijoa Growers Association right from the start so we had their support right at the beginning, and later served on the executive."

While less active members now, the Haslips still host the odd field day, with the most recent one held in February. Members talked about the guava moth study carried out by Plant & Food Research, led by entomologist Asha Chhagan.

Management options include pheromone traps for males, mating disruption, insecticides and good orchard hygiene practices including removing fallen fruit and debris from around trees. Funding for the research is coming to an end but both growers and Asha hope more funding can be secured for the research to continue.

While the Australian moth seems set to continue creeping south of the Bombay Hills, their damage on the Haslip's orchard seems to be limited this season.

"We still get about 200 moths in the traps every week, but it's not as bad as last year and it just doesn't seem to be the amount of fruit dropping off the trees with the larvae holes," Alison says.

"Citrus is one of the types of fruits that they will winter over in. So if you've got citrus fruits as well as feijoa then you have a double-whammy. This year I've only seen one or two fruit with evidence of guava moth in it in the lime tree lines. The limes were all fairly small until we got that nice lot of rain in February."

The Bearss is a Tahitian lime that is slightly smaller but very similar to the Tahitian Persian lime. It is greenish-yellow when ripe but is harvested to be sold when it is still green because the acidity level is higher, which provides a better flavour.

"The lime trees have got quite big, so this year I've had a major chainsaw pruning of them so there's not so many of them but they're in better condition with not so many marks on them. We're picking less, but better quality."

With smaller fruit harvests, picking is usually carried out by Alison and her daughter Nicole with other family members also pitching in.

"We pick limes on a Friday and feijoas on a Saturday before taking them into Fresh Direct on Sunday afternoon.

"If we were just doing feijoas and limes then we wouldn't continue. It wouldn't be worth the money or the 'problems' with being organic. The difficulties with being organic for the rest of the property, well it wouldn't be worth it if it wasn't for the ribwort. Because we sell that to a pharmaceutical company then it needs to be organic. So we're doing that and it's earning more than the feijoas and limes."

The Haslips were approached by a representative from Phytomed about whether they were growing any ribwort because they had heard organic orchards often had the herb.

"So we scratched around and yes, there it was. And now we've got an order in for 300kg of ribwort."

Alison and Nicole handpick the ribwort in batches of between 50kg and 60kg, with spring and autumn the best times for picking.

"It's just starting to come away again now after looking a bit wilted. It's also linked to the orchard not being as pristine because we need to keep the ribwort growing."

Known to many as a common weed, ribwort has a variety of medicinal uses. The leaves contain a slippery substance called mucilage which has soothing properties, as well as astringent tannins.

When used internally, it is thought that this combination of astringency and soothing also makes ribwort ideal for healing irritated linings of the digestive and respiratory tracts. It is also considered useful in conditions where there is excess mucous such as runny noses and chest complaints.

Phytomed Medicinal Herbs Ltd manufactures herbal extracts for the New Zealand market as well as Australia and other international markets. It also produces and markets herbal health products under its Kiwiherb brand, which includes ribwort in two products to help relieve symptoms of mild upper respiratory tract infections – Organic De-Stuff and Organic De-Stuff For Kids.

December Deadline for Free Trades Training Applications

At Primary ITO we recognise that the most valuable thing you can invest in your people is your time – and Free Trades Training can make doing that a bit easier. If you're a learner starting one of our programmes or an employer who pays for your staff's training, the government may cover some of your fees through the Free Trades Training Fund, however, this is only for a limited time.

Did you know there are over 200 New Zealand Apprenticeship, Certificate and Micro-credential programmes currently under the Free Trades Training Fund managed by Primary ITO?

If you're still training in the programme after 31 December 2022, you will need to pay fees for that part of the training.

The best thing is that you do not need to apply for this funding. If you're enrolled in an eligible programme, the fund will automatically cover your fees costs for training that occurs between 1 July 2020 and 31 December 2022.

And for employers who enrol apprentices, the government's Apprenticeship Boost offers financial support through until 4 August 2022.

Adam Fleck, sector advisor horticulture, says "For a long time, our industries have been crying out for skilled people. This is a once in a lifetime opportunity to bring in those people and train them with the most up-to-the-minute skills, with subsidised fees. At a time when we all want to see people transitioning from other industries to primary sector careers, this should be an enormous incentive."

How Free Trades Training works is that when you or your staff are enrolled in one of our programmes, the government will pay any training and assessment fees that you would previously have had to pay Primary ITO, up until December 2022.

There will never be a better time to train, given the support on offer this year

If you're an employer, we are strongly encouraging you to take advantage of Free Trades Training and look into how you can access support through the Apprenticeship Boost. Unlike the Free Trades Training, employers do need to register to receive this support. You can do so through Work and Income New Zealand so please contact them directly. Adam is encouraging employers to take a closer look at this sooner rather than later.

> **"This is a once in a lifetime opportunity to bring in those people and train them with the most up-to-the-minute skills, with subsidised fees**

"From what we understand from employers who have registered for the Apprenticeship Boost, it has been a relatively easy process to gain the support, however, time is running out as the fund finishes this December." ●

To learn more, get in touch with the team at Primary ITO. Call us on 0800 20 80 20 or email **info@primaryito.ac.nz** or check out **www.primaryito.ac.nz**

MAKE THE MOST OF

FREE*

Trades Training in 2022

New Zealand Apprenticeships, Certificates and Micro-credentials across Horticulture and related industries are currently subsidised – ***don't miss out, get in touch today.***

Contact your local Training Adviser on **0800 20 80 20**, email **info@primaryito.ac.nz** to learn more.

* Free training only available up until Dec 2022 for eligible programmes. If the programme duration goes longer, some fees will apply. Learn more at www.primaryito.ac.nz

PrimaryITO
Rōpū Whakangungu Ahuwhenua Ahumahi

Billboard advertising directed job seekers to the PickNZ website

Campaigns and schemes increase appeal of work in horticulture

The Opportunity Grows Here (OGH) workforce attraction campaign has helped more than 10,000 people find jobs in the food and fibre sector.

Elaine Fisher

"The campaign was established by the Ministry for Primary Industries (MPI) in July 2020 in response to Covid-19. It was developed in close collaboration with other government agencies and with sector groups hard-hit by Covid and border closures," says Cheyne Gillooly, MPI's director investment skills and performance.

"While not physically placing people in jobs, OGH has increased the visibility and desirability of working in our food and fibre sector, helping New Zealanders to find work in areas they might not have otherwise considered."

To help fill immediate and seasonal job vacancies, OGH provides support by directing potential employees to the most relevant job website. "For example, this season, we have worked across the horticulture and viticulture sectors to help drive traffic to the newly established PickNZ job website," says Cheyne.

> "In December 2021 forecast export revenue for the Primary sector would exceed $50 billion for the first time, hitting a record $50.8 billion in the year to 30 June 2022

PickNZ.co.nz was launched in September 2021. Since then, horticulture and viticulture advertising via OGH ads has delivered more than 40,000 clicks to the site. The Summerfruit NZ campaign led people directly to the PickNZ website as opposed to the OGH website.

Cheyne says the highly social aspect of many horticulture roles gives people the opportunity to build new friendships, support networks and deepen their connections into communities.

"Our primary industries have long been recognised as the backbone of New Zealand's economy. In fact, one in seven jobs in the country is currently based in our food and fibre sector."

MPI's Situation and Outlook for Primary Industries report in December 2021 forecast export revenue for the Primary sector would exceed $50 billion for the first time, hitting a record $50.8 billion in the year to 30 June 2022.

"Continued growth in key sectors such as horticulture are key to achieving this goal," says Cheyne.

"Despite growers and exporters having to adjust their operations because of seasonal labour supply shortages, horticultural export revenue is forecast to rise nearly five percent to $6.9 billion for the year to 30 June 2022."

Research conducted in August 2021 showed the OGH campaign had made a marked improvement in building the visibility of food and fibre sector jobs and increasing the appeal of working in the sector.

"Twenty-six percent of the non-primary industry workforce had definitely seen or heard the campaign. Of those who saw the messages, 90 percent had 'thought' or 'done something different' as a result of seeing the advertising.

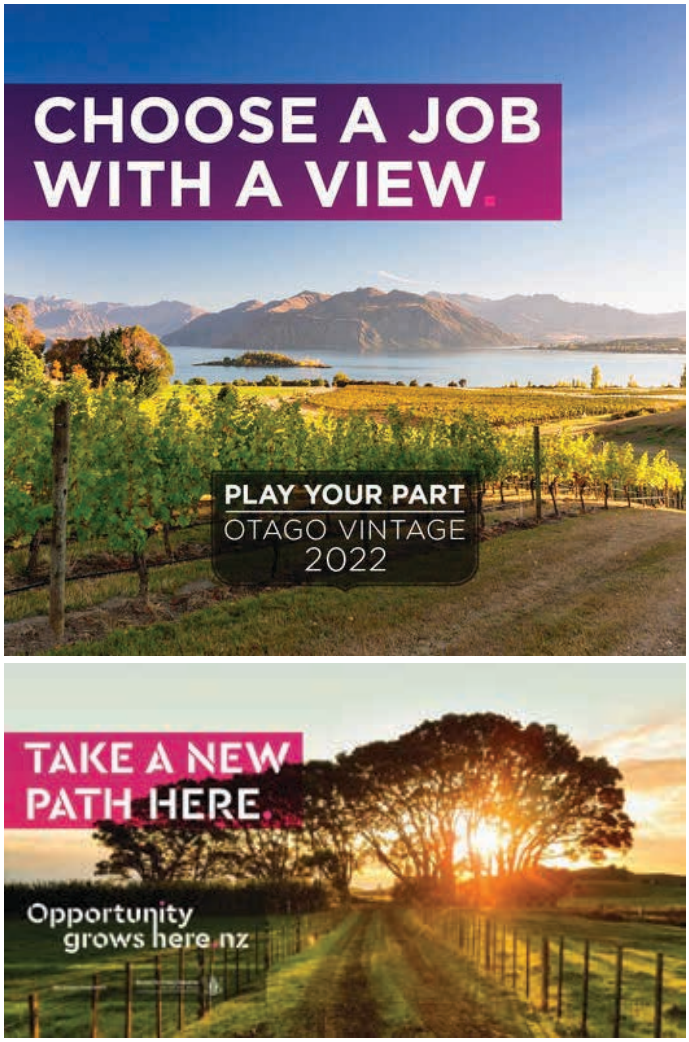
"People found the campaign appealing to look at, quoting words like 'encouraging, motivating, informative, and thought provoking'," says Cheyne.

Seasonal Work Scheme helps attract and retain staff

The New Zealand Seasonal Work Scheme (NZSWS) has helped approximately 1,250 people into seasonal work since its re-launch in 2020.

"The scheme's main focus is to provide additional support to enable more New Zealanders to take up seasonal work opportunities, and a person doesn't need to be receiving a benefit to qualify," says Hugh Miller, group general manager employment with the Ministry of Social Development (MSD).

Summerfruit growers whose staff took up the support offered, say its financial incentives contributed to improved staff retention with more people staying until the end of the season.



The Opportunity Grows Here workforce attraction campaign has helped increase the appeal of jobs in the primary sector

"People who need to relocate can get help with transport costs and accommodation costs – where they still have accommodation costs back home," says Hugh. "Support is also available – including for local workers – for daily transport costs, work gear, clothing and training."

If the work lasts longer than six weeks, the participant is also eligible for an incentive payment of $1,000.

The majority of people taking up the scheme (35 percent in 2020–2021 and 34 percent in 2021–2022) were between the ages of 16 and 24. Those aged between 25 and 34 made up 28 percent and 26 percent in the past two seasons respectively.

Hugh says MSD works proactively with the horticulture and viticulture sectors and encourages employers to liaise with them around employment opportunities.

"It is important that employers let us know about seasonal work opportunities as soon as they can. Employers are also encouraged to list vacancies on the PickNZ website." ●

Shayna Ward, compliance and quality manager Te Mata Exports, relaxing at home with her dog Muppet

Flexible working conditions enhance industry's appeal

More flexible working conditions implemented by many in the horticultural industry during the Covid-19 pandemic are helping make the sector even more attractive to women, says Shayna Ward, compliance and quality manager Te Mata Exports.

Elaine Fisher

"Because of labour shortages, many employers are looking at different ways staff can work and that's not always starting and finishing at set times. The focus is how to get the job done. Many post-harvest operators are now offering school working hours for parents, which wasn't the case when my children were young," says Shayna who is a member of the executive of Women in Horticulture.

"Today women have more opportunities to find the right job and right team to fit their values and the needs of their families.

"I think horticulture as a career has been underrated, but it is exciting to see more women in leadership roles in every part of the industry. Often, they are the main cog in a much larger wheel."

Shayna is also pleased to see more young women, and young people in general coming into the industry. "The industry offers a broad variety of opportunities for everyone from all different academic levels. You don't need a degree to succeed in horticulture and there are so many opportunities from research to nursery to orchard and post-harvest, to marketing and logistics. It's a really exciting industry to be part of."

Born in England, Shayna moved to the Hawke's Bay as a four-year-old, attending local schools. Her first job was as a trainee science technician with the Department of Scientific and Industrial Research as part of its fruit physiology and post-harvest team research programme in the Hawke's Bay.

Much of the research was for the New Zealand Apple and Pear Board (which became ENZA) and Shayna's next role was with the board, including time in its London office.

On her return to New Zealand Shayna managed a packhouse for a year before rejoining ENZA as a field rep. "That was a very diverse and enjoyable role as I was looking after growers and packhouses."

After 12 years with ENZA, during which time her three children were born, Shayna returned to Plant and Food Research in the Hawke's Bay, initially working on pipfruit physiology and rootstock trials. "This was the time when work was beginning on the dwarfing gene for rootstock."

> "The industry offers a broad variety of opportunities for everyone from all different academic levels

Shayna switched roles to summerfruit research, still with Plant and Food Research. "I worked with an amazing scientist on the low chill breeding programme for peaches, nectarines, apricots and plums, as well as working on apple rootstock breeding. I loved the role and 80 percent of my work was outside."

It was a 30 hour a week role, which suited Shayna's family life, but keen for wider industry involvement, she took an additional role as executive officer of the New Zealand Pink Lady Growers Association.

For the past five years Shayna has been with Te Mata Exports and it's a job she also loves.

"Maximising returns to growers is what underpins everything that Te Mata Exports does, which is why I consciously chose to work for this company. It is the right fit for my values."

Still based in the Hawke's Bay, Shayna has a grower liaison role, specialising in apples and with a focus on quality compliance. The company has sole export rights in New Zealand for the SnapDragon variety of apples, developed in New York State in the United States, and for the Hawke's Bay bred Bay Queen apple.

A foundation member of the Hawke's Bay Women in Horticulture, Shayna stood for election to the national executive to ensure women in her region had a voice at that level. "And to give back to an industry which has given so much to me."

To keep up to date with Women in Horticulture, its news and activities, and join the membership database, email **info@women-in-hort.nz** Everyone is welcome.

Kaiaponi Farms general manager Scott Wilson says the biggest challenge after the March rain was that not picking and packing early compressed the season and put pressure on post-harvest facilities. Picture by Kristine Walsh

Overloaded orchardists hit by trio of massive rain events

It rained, it rained again, and then it rained some more. Gisborne orchardists are counting the cost of one weather bomb after another. By Kristine Walsh.

Gisborne's famous fertile plains turned into flood plains with March rains that in places exceeded century-old records.

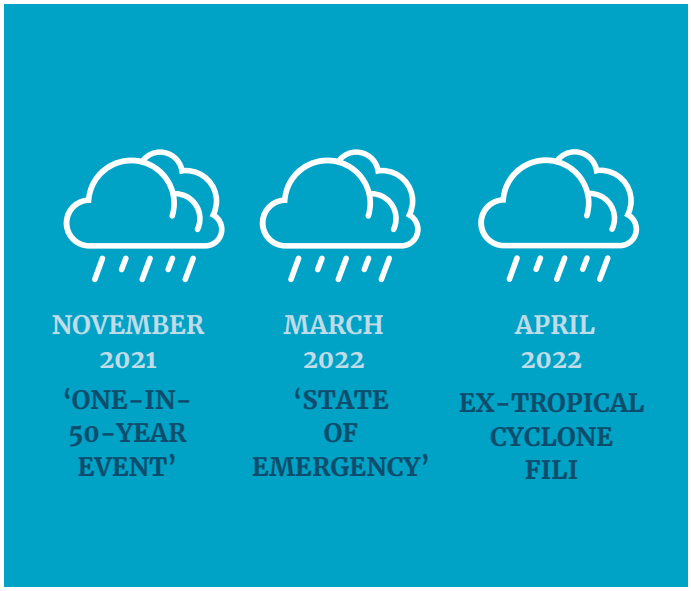
But growers say the downpour can't be seen in isolation: beforehand, they had setbacks due to heavy rain in November 2021, and afterwards – just before Easter – ex-tropical Cyclone Fili dumped a further 200mm on East Cape in the north, 100mm in Wairoa to the south, and 70mm on Gisborne city.

While most of the greatest damage of all three events was seen on the East Coast, north of Gisborne city, much of that land is devoted to forestry and sheep and beef farming.

So while coastal farmers were hit hard, the biggest impact on produce was seen on the western and southern sides of the city, where the highest volume of horticulture is concentrated.

Back in November, Gisborne District Council chief scientist Murry Cave described the rainfall as a "one-in-50-year event", which led to the declaration of a State of Emergency.

In March, it was even worse … from late Tuesday 22 March to late the following night, Gisborne was hit by 250–300ml of rain – around three months' worth.



A State of Emergency was declared and remained in place until 31 March; people were evacuated from their homes, hills slipped, rivers rose, and all roads in and out of Gisborne were closed.

Two days later Minister of Rural Communities, Damien O'Connor, classified the storm as a medium-scale adverse event, unlocking $150,000 of immediate government support for farmers and growers, adding to the $175,000 announced a couple of days before by Emergency Management Minister, Kiritapu Allan.

> **"But what we already know is that it will be a double-whammy for growers with both a percentage of the crop left on trees, and lower pack-outs of the fruit picked as a result of damage caused by being forced to pick in wet, muddy conditions**

There was still more to come. MetService reported rainfall of up to (and in some places exceeding) 400mm between 21 and 23 March, and it continued to rain for another week.

And growers had only a short window to harvest what they could before 13 April and the arrival of ex-tropical Cyclone Fili.

One of those racing before that window closed was Kaiaponi Farms general manager Scott Wilson who, as Fili approached, had Gold kiwifruit ready to come off the vines and was still reeling from the impact of the March downpours.

In Gisborne, the apple harvest generally starts at the beginning of February and goes until mid-April, while kiwifruit is picked from early March.

That meant both harvests were punctuated by the March storm, though many growers had to push through the rain.

"Many apples won't hold on the tree and have to be picked within a specific window of maturity so we had to move forward, even with an already reduced workforce," says Scott who, as well as overseeing a major packhouse, manages the production of apples, Gold kiwifruit, feijoas and citrus.

"Working in a waterlogged orchard is the last thing any grower wants to do, but the rain lasted far longer than we could have held off. It produced some pretty challenging conditions that hit us hard in terms of productivity, and the impact of that is ongoing."

With the bulk of its plantings in apples – 90 out of a total of 200 hectares – the Kaiaponi harvest was in full swing when the rain came, falling on 19 of the 31 days, the stalled subtropical low delivering 300–400mm to the Gisborne flats over the week from 21 March.

"While there was no physical damage to the apple crop, productivity was significantly impacted and growers had to launch into catch-up mode to complete their harvest before the fruit became too mature," Scott says.

He believes the true impact will not be known until the last of the apples are picked and packed.

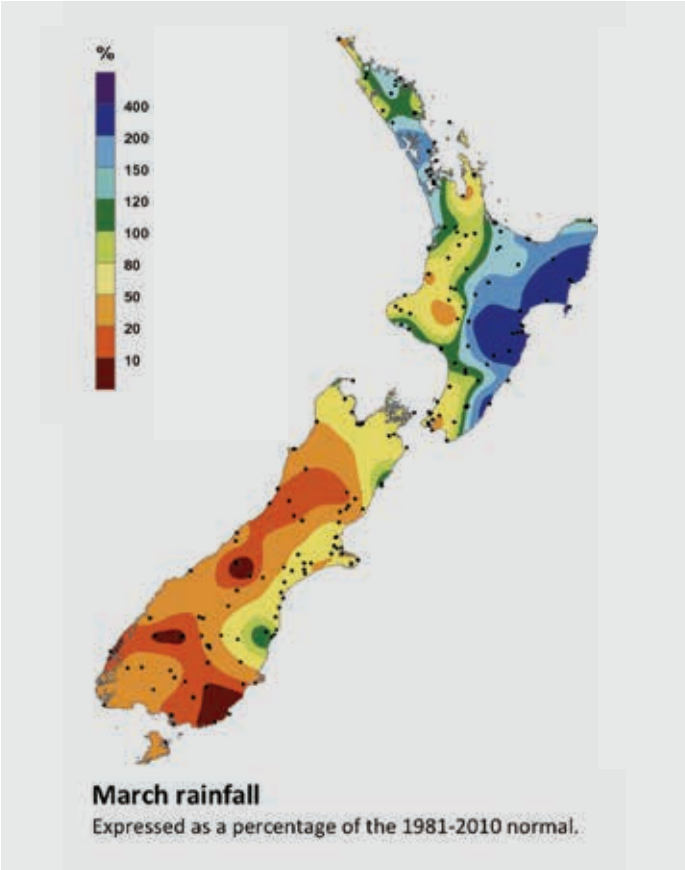
"But what we already know is that it will be a double-whammy for growers with both a percentage of the crop left on trees, and lower pack-outs of the fruit picked as a result of damage caused by being forced to pick in wet, muddy conditions.

"Let's just say 2022 will not be a vintage year for apples in our district."

For kiwifruit growers, picking in the rain was simply not an option, so as Easter approached Kaiaponi still had to pick some of its 37 hectares of Gold kiwifruit, while staring down the barrel of the approaching tropical storm.

Having to delay that harvest meant growers in Gisborne, known for their ability to deliver early SunGold under the Zespri Kiwistart programme, had missed out, Scott says.

> **"It produced some pretty challenging conditions that hit us hard in terms of productivity, and the impact of that is ongoing**



Feeling blue … NIWA's weather map shows just how much March rainfall was experienced in the east of the North Island. Picture supplied

"The result is a loss in early premiums for the region's growers, along with the bigger challenge of a compressed harvest window that was faced by the post-harvest sector."

Kaiaponi also saw losses in its delicate feijoa crop – which was towards the end of harvest – but citrus is holding well, though the team is keeping an eye out for disease.

Scott Wilson says growers are resilient, but it was frustrating for permanent croppers to face such big challenges right at the point of harvest.

> **"The result is a loss in early premiums for the region's growers, along with the bigger challenge of a compressed harvest window that was faced by the post-harvest sector**

"Probably the biggest challenge after the rain was that not picking and packing early compresses the season and puts a whole lot of pressure on post-harvest facilities.

"And, of course, operating under difficult conditions pushes up costs. You've got a drop in productivity combined with extra wear on equipment and damage to orchards where we don't really want to be working.

Those costs are hitting now, or will do in the future, and that's likely to have an impact in the market, he says.

"Overall it was a hell of a month on multiple levels. The great thing was how growers, post-harvest services, transport operators and their teams pulled out all the stops to confront the issues and make things happen."

> **"Operating under difficult conditions pushes up costs. You've got a drop in productivity combined with extra wear on equipment and damage to orchards where we don't really want to be working**

Up the coast at Tolaga Bay, the blueberries at Hauiti Berries came through alright, but still "got bloody wet,"

says operations manager Steve Phelps.

Though under cover, the 300 millilitres of water that swept through the cropping houses last November lapped at the tops of the 30-litre containers in which the more than 20,000 bushes are planted.

"This time it went right over the top," says Steve, "so we'll be drying out for a while."

The saving grace for Hauiti Berries was that harvest had long finished, in December, and is not due to start again until July.

"That the water rises and falls, rather than rushes through the berry houses, means the containers stood up well and the bushes are still looking good with some great flowering coming through," he says.

"In any case, we are pretty resilient. You have to be up here."

And back around the flats it is hoped that citrus too, will emerge relatively unscathed.

As technical lead for First Fresh, Citrus NZ board member Matt Carter says that, in general, while most growers had a lot of standing water, it quickly started draining so he has few concerns around tree health.

"But when the rain hit they were close to starting the harvest for mandarins and then lemons, so we're keeping an eye out for the onset of any brown rot and making sure we keep that under control," he says. "Otherwise, they're all doing pretty well."

Citrus grower Tamsin (Tam) Jex-Blake, however, didn't fare so well at her orchard at Manutuke, just south of Gisborne city.

While her family's sheep and beef farm was worse off – and still inaccessible a week after the rain – her orchard further down on flat land was washed through with silt and damaged by forestry slash.

"We were lucky in that Te Arai River didn't breach its banks or we really would have been in trouble," she says.

> **Frustrated at extensive road closures that completely cut the region off after the heavy rain**

"But we didn't lose any trees and the crop isn't due for harvest until later in the year so it is fine.

"You can't change things. You just have to bring in a digger and get into cleaning it up."

Meanwhile, like his counterparts in the vegetable sector, Scott Wilson was frustrated at extensive road closures that completely cut the region off after the heavy rain.

IT WILL COST MILLIONS & TAKE UP TO 2 YEARS TO ADDRESS DAMAGE TO BRIDGES, ROADS & PROPERTIES

Waka Kotahi/NZ Transport Agency admits that the impacts of the severe weather event in March – the most significant seen since Cyclone Bola in 1988 – will affect the multi-project Connecting Tairāwhiti programme, but director of regional relationships, Linda Stewart, says it remains committed to its construction programme.

For its part, Gisborne District Council say it would cost millions – and take up to two years – to address damage to bridges, roads and properties and it is lobbying the government and Waka Kotahi for 100 percent funding for repairs.

For growers like Kaiaponi Farms that investment can't come soon enough, and Scott says he would like to see more put into the shoring up of infrastructure.

"So many have put a huge amount of investment into this region over the last decade," he says. "But if we aren't able to capture that value it will have a downstream effect on the rest of the economy."

Kings Seeds owners Barbara and Gerard Martin and their new general manager Charlotte Connoley in the company's Katikati warehouse

Plants can help reduce emissions and chemical use

Seeds for flowers to feed beneficial insects, for plants which help regenerate the soil, and for green manure are among those in the thousands of sacks, bags and packets which fill the Katikati warehouse of Kings Seeds.

Elaine Fisher

Better known for its online business supplying seeds to home gardeners, the company also specialises in supplying smaller commercial growers, farmers, and horticulturalists with specific varieties to meet their needs.

Charlotte Connoley, Kings Seeds general manager, says the regenerative agriculture movement is strong right now. "A lot of people see the benefits of using green manure to enhance soils, and plants to help reduce chemical inputs and lower emissions. These are in line with the government's aim for a more sustainable primary economy, as set out in its *Fit for a Better World* plan."

And there is a science to back up the use of plants to help improve the environment, including from research by Lincoln University, says Gerard Martin who, with his wife Barbara, owns Kings Seeds.

"Flowering plants can help with integrated pest management programmes on orchards and vineyards by providing nectar and pollen for beneficial insects," says Gerard.

> "Seeds for flowers to feed beneficial insects

"Integrated pest management means growers monitor pests and use target sprays for specific pests when required. By understanding the lifecycle of pests and beneficial insects they can use nature to encourage the good guys to fight for them.

Thousands upon thousands of seeds in distinct green and white Kings Seeds packets are catalogued and stacked on shelves

"Providing a food source for the beneficial insects is imperative. For instance, if growers know aphids are likely to be a problem at a particular time of year, they can plant seeds, especially of Phacelia, three months early, to be sure to have a food source for the insects which will help control the aphids."

Knowing the feeding habits of beneficial insects is also vital. "Some, like parasitic wasps, have very short 'noses' and can't access nectar from many flowers, which is why alyssum, with its clusters of tiny flowers is an ideal food source. Alyssum is often grown in orchards and vineyards, where it may be driven over by tractors and still recover."

FLOWERING PLANTS CAN HELP WITH INTEGRATED PEST MANAGEMENT PROGRAMMES

> **"If growers know aphids are likely to be a problem at a particular time of year, they can plant seeds, especially of Phacelia, three months early, to be sure to have a food source for the insects which will help control the aphids**

Charlotte, who for 20 years worked for South Pacific Seeds where she was managing director, joined Kings Seeds three months ago. "After 20 years managing Kings Seeds, it is time for Barbara and I to step back and bring in new ideas. With her extensive experience and knowledge of the seed industry, Charlotte was the obvious choice to keep the business going forward," Gerard says.

While many businesses have struggled in the past two years, Kings Seeds has been busier than ever. The Covid-19 pandemic and lockdowns has brought a resurgence of interest in gardening and since lockdowns eased, prompted increased demand from small and large commercial growers, leading the 44-year-old company to employ more staff, including Charlotte who has plans for its further growth.

"The first thing was to focus on people. Getting the right people in place is vital and we have an outstanding team of 15 locals."

Technology will play an increasingly important role in the company's future. Charlotte says it is a point of difference for Kings Seeds that measuring, weighing and filling seed packets is done by hand. However, to meet increased demand, efficiencies are needed.

"We need to become more streamlined, including with our product range to be sure it is attractive for growers. We are looking at our marketing and talking to our customers to find out what is working and what they want, including the 20-to-40-year age group of home gardeners who are quite new to growing."

Camilla Persson preparing seeds ordered online for dispatch to clients

Gerard says the company has found a niche for itself in supplying home gardeners and smaller commercial growers.

"There are around ten big seed companies in New Zealand supplying commercial growers. We concentrate on growers who supply farmers' markets with vegetables or seedlings or grow gourmet vegetables for restaurants and cafes, who require smaller volumes of seeds than big growers. There is an increasing interest in different cuisines from around the world too. All this is suited to where we are at within the industry because of the range of seeds we offer."

PROVENANCE AND FOOD SAFETY IS INCREASINGLY IMPORTANT FOR CONSUMERS, WHICH IS WHY MANY PEOPLE LIKE TO BUY FOOD FROM FARMERS' MARKETS WHERE THEY CAN TALK DIRECTLY TO THE GROWER

Charlotte says provenance and food safety is increasingly important for consumers, which is why many people like to buy food from farmers' markets where they can talk directly to the growers.

For growers, the fact that Kings Seeds has many heirloom varieties and grows and harvests seeds in New Zealand also appeals.

Part of the reason for growing seeds locally is to ensure they will do well in New Zealand conditions, says Gerard. "We try to ensure things are easier to grow rather than hard to grow, so people can enjoy success instead of being stumped at the first stage by seeds which are hard to germinate, or frost tender or not suitable for their region."

"Provenance and food safety is increasingly important for consumers, which is why many people like to buy food from farmers' markets where they can talk directly to the grower

As well as vegetable seeds, the company has an extensive range of flower seeds popular with home gardeners and small commercial growers. "Flowers, especially wildflowers, are very much on trend and many of our customers grow them for farmers' markets or roadside stalls," says Charlotte.

There's also been increased demand from another sector. "There has been a proliferation of interest in community gardens, gardens at marae, in schools and in early childhood centres which is excellent, because it's helping to teach people about growing their own food, which in today's environment with rising food prices is very important."

While the Covid-19 pandemic has brought growth in demand for its seeds, it has also thrown up issues for the company, exacerbated by the impacts of the war in Ukraine.

"The supply chain is tight and globally there is a lot of demand for seeds of all varieties. Where once we could expect to receive seeds in two to six weeks, it may now take six months. The costs of freight have increased as have fuel costs," says Charlotte.

Like the seeds it specialises in, the company hasn't stopped growing since it was founded in 1978 by Ross and Glenys King, who sold through their first catalogue, 65 herbs and flowers, eight gourmet vegetables and 170 herb plants.

Barbara and Gerard bought the business in 1999, relocating it from Auckland to Katikati. The company now sells around 1000 different varieties of seeds, including many described as 'weird and wonderful' in line with the King's founding philosophy to keep things interesting.

1978
AROUND 250 VARIETIES

2022
AROUND 1,000 VARIETIES

EVERY DAY BOXES AND BOXES OF SEEDS ARE POSTED TO CLIENTS THROUGHOUT NEW ZEALAND

Horticulture Focus in 2022 Agricultural Census

Supplied by Statistics New Zealand

The largest nationwide survey of horticulture and agriculture will take place in July this year. Facts and figures from orchards, fields and farms will be collected in the upcoming Agricultural Production Census to provide essential statistics on production and land use across New Zealand.

Held every five years by New Zealand's official data agency Statistics NZ in partnership with the Ministry for Primary Industries (MPI), the Agricultural Production Census is an important industry survey that requires involvement from every commercial grower and farmer.

> **Participation by growers is crucial to ensure the statistics accurately reflect the reality of what is happening**

Information packs on the Agricultural Production Census will be sent out to around 7,000 horticulture properties in late June to gather data for the year ending 30 June 2022.

The census findings influence rural infrastructure, services, policies and programmes

Obtaining a detailed picture of New Zealand's horticulture operations is essential for the industry's growth and for improved decision-making, says Ana Krpo, Statistics NZ's manager of Agricultural Production Statistics.

"The Agricultural Production Census is the main source of reliable information on production, land use and changes for the industry, government and service providers. Quality data from the field means decision-makers have the best up-to-date information for shaping the future of agriculture, including horticulture. The census findings influence rural infrastructure, services, policies and programmes. That's why participation by growers is crucial to ensure the statistics accurately reflect the reality of what is happening across the horticulture sector."

Growers have the choice of completing the census online or requesting a printed version.

Data provided by growers is combined with others across New Zealand to give a complete picture of the state of horticulture. "The more complete surveys that are returned, the more confident we can be about the state of the industry and the better we can provide accurate, reliable information for growers and the horticulture sector," says Ana.

"For the 2022 census, Statistics NZ is working collaboratively with producers and the horticulture industry to ensure greater participation so that the Agricultural Production Census benefits everyone. We want to provide data that improves lives today and for future generations.

PRODUCTION MEETS POST-HARVEST

AN OPPORTUNITY TO GAIN A QUALIFICATION IN POST-HARVEST IN THE HORTICULTURE SECTOR

Do you want to know more about managing the post-harvest performance of the fruit or vegetables you grow? Are you keen to understand how to better manage the produce you are responsible for in the post-harvest sector? Do you want to gain 20 credits at Level 6? Do you want to complete a paper towards the Fruition Diploma in Horticulture Production?

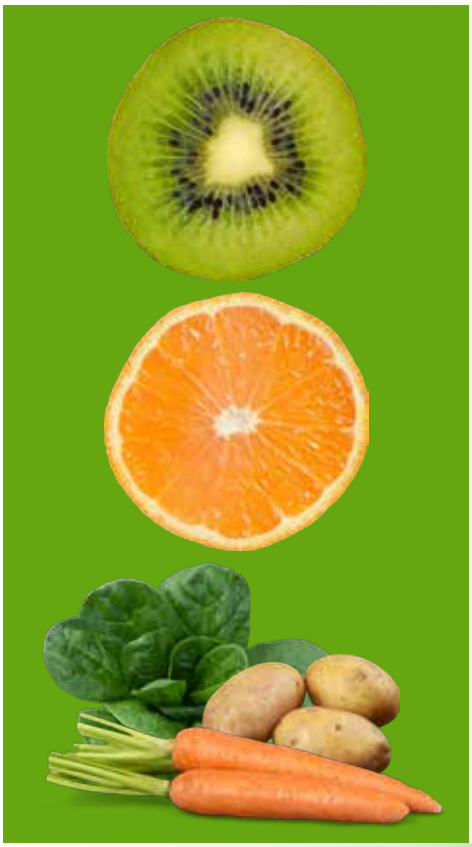
Fruition Horticulture has partnered with a specialist post-harvest research organisation Start AFresh to deliver a course on post harvest technology as a part of their Level 6 Fruition Diploma in Horticulture Production. The paper is an opportunity for people within the post harvest sector, or in the field, to gain in-depth knowledge on the post harvest management of fruit and vegetables. Furthermore, learners will gain an understanding of horticultural production systems and their impact on post harvest performance. Laboratory work, undertaking in the learners home or workplace, will provide real examples of postharvest treatments of fruit and vegetables. Learners will analyse data that they collect from these laboratory trials to understand decisions they make in the workplace.

"The paper is an opportunity for people in the postharvest sector, or in the field, to gain indepth knowledge on postharvest management of fruit and vegetables and also understand horticultural production systems and their impact on postharvest performance," says David Tanner, a principal of Start Afresh.

We are delighted to offer this opportunity to all those working in the industry. Currently the course is completely free to participants. All you need to spend is quality time engaging in class for 12 weeks and preparing your assessments. Fruition has developed this New Zealand Qualifications Authority approved programme to be available for anyone around the country, with opportunities to engage on-line or attend physical classes at their Tauranga base.

This paper is one of six papers being offered in the Fruition Diploma of Horticulture Production Level 6. The paper can be undertaken as a one off or those keen can continue studying to obtain their Diploma by completing in a further five papers over the next few years. Those currently enrolled in the programme have very positive feedback on their experience. "The course has changed me a lot, I think completely differently now. It's really good to see the bigger picture" states Ryan Fong, a fouth generation vegetable grower from Pukekohe. Another student, Kyra Fielden, working in the avocado industry, loves the ability to either attend class or join on line. The flexibility suits their work demands.

For more information on any of the training services offered by Fruition go to their website www.fruition.ac.nz.



FRUITION
DIPLOMA
IN HORTICULTURE PRODUCTION

PRODUCTION MEETS POST-HARVEST

- Understand how actions in the orchard or paddock impact on produce storage.
- Understand how to maximise the post-harvest potential of your produce.
- Access learning through industry experts.

Level 6 NZQA Qualification
Fees Free and TTAF Government Funded
Face-to-face and online classes available
Classes start 1 June 2022

www.fruition.ac.nz

Icon refreshed

Aimee Wilson

Take a closer look when driving through Cromwell over the next few months and you might notice that its iconic fruit sculpture is looking rather shiny and new.

The landmark 1.8m apple, pear, nectarine and apricot fruit have been given a thorough clean and a fresh coat of paint thanks to Southland graffiti artist Danny Owens (aka Deow).

Contracted by Naylor Love Central Otago, project manager Chris Baines says the construction company jumped at the chance to try something new and interesting.

With most of their work in the commercial sector, particularly around Queenstown Lakes, they successfully tendered the project from the Central Otago District Council, who asked them to give the fruit a new lease of life.

"They didn't want anything extravagant, just a refresh."

Using mobile elevated work platforms (MEWPs), Naylor Love provided all of the access equipment to be able to safely reach around all of the different areas of the fruit.

The council had been looking for a specialised painter for over a year now, and finding somebody suitably experienced was proving a hard task.

But Naylor Love tracked down Deow, who has been living and working between Los Angeles and Southland, and he completed the work in just under a week, in mid-April.

Originally built in 1989 as part of a Rotary Club project, the Big Fruit's original designer Otto Muller was a renowned engineer who introduced thermal dynamics to the orchard industry back in the 1960s.

He died in 2020 aged 96 but will always be remembered for introducing the tourist talking point into the town – among other things.

> "He's quite iconic – a personality, and he was a big part of how the industry evolved

Otto once said that if the fruit was big enough, it would provide enough of a distraction to passing motorists on the state highway, and they would put on their left blinker and pull over.

Big Fruit today. Photo Barnaby Lamb (Naylor Love)

For years many have argued that the sculpture is missing grapes and cherries – now two of the largest growth industries in the Cromwell basin.

We asked the nearest orchardist, Simon Webb, what his thoughts were on the Big Fruit, and he believes the iconic landmark is identified with Cromwell in people's minds.

"People have said, does it need a cherry or grapes? But it's not about what is there, it's what it represents for the Cromwell community."

Coincidentally, it was Otto who started the first trials of overhead sprinkler frost fighting on the Webb Orchard as a technical advisor for A M Bisley back in the day.

A revolutionary concept in New Zealand at the time, the Bisley company offered to supply all of the equipment and set up an installation on one part of the orchard.

It was a complete success and J R Webb and Sons went on to become the first Central Otago orchard to use the system.

"He's quite iconic – a personality, and he was a big part of how the industry evolved," Simon says.

But back to the large fruit sculpture; the last time it was painted was in 2016, and before that it hadn't received any attention for 12 years.

The council has now made a commitment to making it look clean and bright every five years. It must collect a lot of dust up there, and Cromwell can be quite a windy place at times.

Someone who couldn't be prouder of the small Central Otago town and its Big Fruit sculpture is the Deputy Mayor Neil Gillespie.

He once said, "New York may be nicknamed the Big Apple, but Cromwell has the real thing."

AVO UPDATE

Celebrating long service

Jen Scoular : NZ Avocado chief executive

The NZ Avocado Growers Association (NZAGA) recently held its 40th Annual General Meeting. This AGM covered the 2020–2021 season and was deferred from August 2021 due to Covid-19.

After an online AGM in 2020, the 2021 AGM was delivered as a hybrid event, well attended both online and in-person. Over the course of the past two years, one of the greatest learnings from the pandemic is the need to be adaptable.

Throughout the AGM, we presented two grower awards in recognition of significant service to the industry. Ian Broadhurst and Roger Barber, both from Northland, have dedicated almost eighty years between them to the avocado industry.

Over the time he has been in the industry, more than 36 years, Ian Broadhurst has had a reputation for always making time for others. Currently the general manager of several large Northland orchards (Mapua, Largus and Tiri), Ian and his wife Bernadette have successfully developed their own 15-hectare orchard. One block reached an impressive 39 tonnes per hectare, which won them the award for highest yield and most consistent production.

During his time managing King Avocado from 2007 to 2017, Ian travelled to Chile and invested significant time into high density planting challenges. This informed his approach to high density orchards in New Zealand and enabled him to transfer that knowledge, benefitting numerous orchards in the Far North. Ian has consistently demonstrated innovation in large scale plantings.

In addition to his passion for the industry, Ian is also renowned for his commitment to and support of his local community. This has included establishing training and employment opportunities with local orchards for youth and unemployed people. Ian also instigated a bus service for local mothers, removing transport obstacles and enabling them to work part-time in the avocado industry while their children were in school.

For more than 40 years, Roger Barber has made a significant scientific contribution to the industry, as a science representative on the NZAGA board, bringing scientific oversight and critique, a valuable and necessary perspective to the avocado industry.

His service has included roles on the Avocado Industry Council and NZ Avocado Growers Association, including ten years as Vice Chair. Following a career as a scientist and advisor with the Ministry of Foreign Affairs, Roger has also served on numerous committees related to research and development.

Throughout his time in the industry, Roger travelled to South Africa to identify new cultivars that would suit the New Zealand environment, including new clonal rootstocks. As a grower representative for 18 years, Roger provided technical advice and governance guidance while being an active member of the cultivator and research community.

We thank both Roger and Ian for giving their all, and for passing on their knowledge to the next generation, leaving this industry in a better place. ●

TECHNICAL

THE LATEST INNOVATIONS AND IMPROVEMENTS

KIWIFRUIT WINTER PRUNING FEATURE

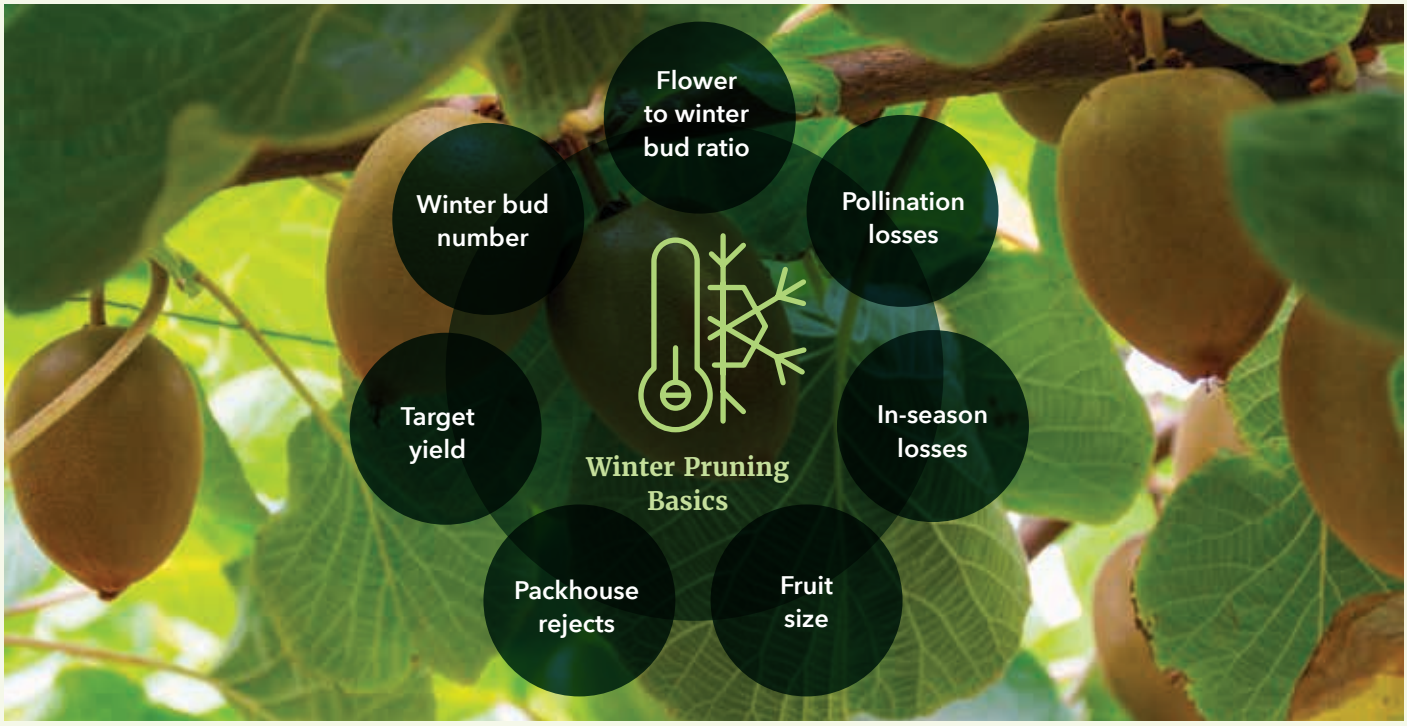
Kiwifruit Winter Pruning

Winter pruning is an important annual activity. It sets the vines up not only for the next growing season but for the next seasons to come.

Sandy Scarrow : Horticultural Consultant, Fruition Horticulture (BOP) Ltd

Get it right and the entire season will flow well, get it wrong and the implications can be severe and long lasting. I refer you back to articles that both Ruth Underwood and I have written over the years on winter pruning for The Orchardist. We try to ensure that each year we cover some different aspects of winter pruning, but some things remain the same.

KIWIFRUIT WINTER PRUNING FEATURE



In this article I cover winter pruning basics with a focus on young vines, as there is a lot of kiwifruit planting occuring and the management of these young vines can impact significantly on the financial returns from the entire development.

Winter Pruning Basics

Simply put, the winter pruning task is a matter of covering the entire canopy, while allowing sufficient space for male vines, with a view to achieving the optimal number of high quality one-year-old buds.

The determination of the optimal number is something that is often not given enough consideration. Many growers simply do what they did last season, or are influenced by the views of other growers or industry representatives. It is useful to look back at your records and determine what you have produced over the years, and what have been the components of this production:

- **Target yield** – What are you trying to achieve in terms of target? I tend to think the best approach is to aim for a reasonable yield but not aim too high. Certainly grab any positive seasonal gains if they are there, but setting too high a target can result in pushing the vines too hard and leaving no margin for unfavourable seasonal conditions.
- **Winter bud number** – How many winter buds have you tied down over the years? What has been the impact of tying down too many or too few? What do you think works best for your orchard? Do you even have the data to do this analysis? If not, I recommend that this is your first action for the year, to monitor a random sample of vines so you know the number of winter buds you have tied down.
- **Flower to winter bud ratio** – What is typical for your orchard? The numbers of flower buds you achieve from each winter bud will be impacted by a number of factors. The exposure to sunlight that bud has had, the angle on which the wood the bud is on has grown, winter chilling levels, bud burst enhancing applications and the spring conditions. Consider all of these factors, and depending on your thoughts you may wish to tie down more or less winter buds.
- **Pollination losses** – What are the typical losses you incur during pollination? If you have experienced high losses in the past, you may wish to tie in more buds to cover for those losses. Conversely if your pollination system is well set out, you may ignore these losses, allowing you to tie down fewer buds. Bud rot can result in high losses over pollination. If you have suffered high losses to Psa over the pollination season, you may wish to review your disease management strategy, including a pre-flower girdle.
- **In-season losses** – What do you typically lose during the season from thinning off rejects? These will obviously not convert into export fruit, so your winter buds tied down must allow for these losses.
- **Packhouse rejects** – It is estimated that if you look around the vines and see no obvious rejects, there are still around ten percent of fruit on the vines that will be rejected in the packhouse. These losses must also be accounted for.
- **Fruit size** – What do you expect to achieve in terms of fruit size?

Consideration of all of these factors will allow you to calculate the target number of buds to tie down. Based on this simple calculation, to achieve the 15,000 trays per hectare targeting, the growers would need to tie down 28.58 or around 30 buds per m^2.

Table 1 shows a process for calculating the winter bud numbers to tie down.

> **If you have experienced high losses in the past, you may wish to tie in more buds to cover for those losses**

Factor	Target/assumptions	Mathematical process
Target yield (trays per ha)	15,000	
Convert to yield per m^2	10,000 m^2 in 1 hectare	Divide target by 10,000 = 1.5
Expected fruit size	30 count	Multiply 1.5 by 30 = 45
Expected rejects at packhouse	10%	Multiply 45 by 1.1 = 49.5
Expected in-season losses	10%	Multiply 49.50 by 1.1 = 54.45
Expected pollination losses	5%	Multiply 54.45 by 1.05 = 57.17
Expected flower to winter bud ratio	2.0	Divide 57.17 by 2.1 = **28.58**

KIWIFRUIT WINTER PRUNING FEATURE

The quality of the buds tied down is also a key factor. No two buds are equal. There is little good filling the canopy with poor quality buds, though a poor piece of wood is better than nothing.

Figure 1 shows an example of a vine that has been pruned well. The pruner has covered the entire canopy with well-spaced quality winter buds by using short cane and spurs to cover older wood that will not be fruitful but is being used to carry other fruiting wood out to the (in this case) strip male vine.

Are you sure that all your team know how to identify quality buds? We undertook a training session recently where we used coloured wool to help those new to kiwifruit winter pruning to tag high quality wood that we wanted retained and water shoots, for example, that we could prioritise for removal. A simple training exercise could be set up with your team to refresh or train them on this.

Figure 1 Well pruned vine showing high quality buds on short canes and spurs

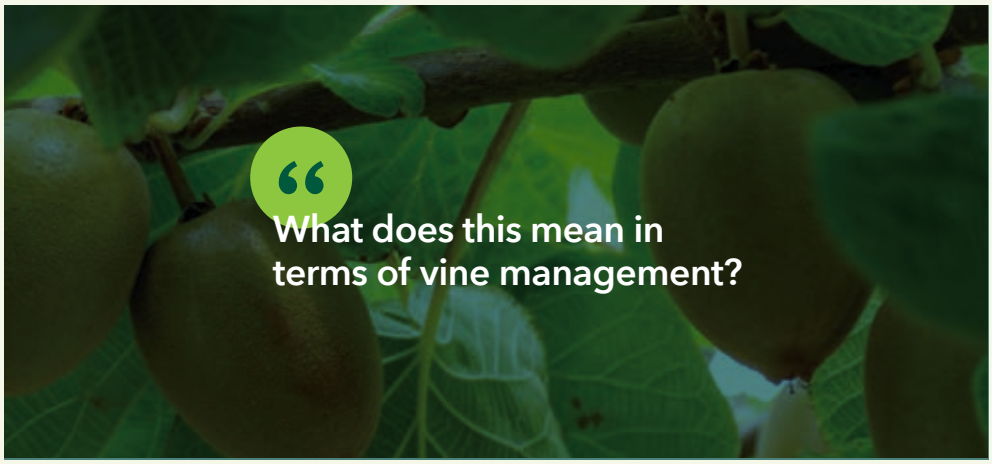
YOUNG VINE TRAINING

Vines, particularly Gold3 vines, can perform extremely well at a very young age. It is important to remember however, that these vines, while they may be growing a very vigorous canopy, may take up to ten years to fully develop their root system.[1]

What does this mean in terms of vine management? It certainly means that if you want to achieve the best from these vines you need to have a good irrigation system to ensure the roots are able to support the canopy growth during dry spells. It also means that if you don't have the irrigation system set-up required, you need to reduce the stress on the vine by optimising canopy growth but limiting crop load.

While Gold3 vines have been able to cope with extremely high yields early on, the same is not so for Hayward or Red19 developments. Think carefully about the structure of the leader and the replacement cane you tie down to ensure you don't push the young vines too hard. The impact of this may take years to recover from.

> **It is important to remember however, that these vines, while they may be growing a very vigorous canopy, may take up to ten years to fully develop their root system**



1 *M J Judd. "Water Requirements of Kiwifruit – a Review", June 2020*

OTHER CONSIDERATIONS

Often winter pruning is seen as unskilled work, but there are numerous decisions to be made prior to making pruning cuts. Each vine needs to be considered individually. The questions the pruner needs to consider include:

- Is there any heavy or diseased wood that needs to be cut out?
- Does the leader need to be renewed?
- Are there gaps in the canopy (maybe in a neighbouring bay) that need to be filled?

Furthermore, in making hard cuts on the leader, are you ensuring that an active growing point remains? This is particularly important on Gold3 vines which can end up with no active growing points due to hard cuts on the leader. Figure 2 shows an example of this. It is unlikely that any growth will come from this cut.

> “It is unlikely that any growth will come from this cut

Figure 2 Hard cut made on the leader

Another thing to consider while planning your winter pruning is to ensure there is some system for dealing with vines that are atypical. All too often the contractor will walk past them as they do not know what to do. Ensure there is a plan – even if this plan is simply to tag that vine and ask the pruning supervisor or the orchard manager to come and discuss it. If this doesn't happen, vines can be left for years untrained. Figure 3 is an example.

SUMMARY

In summary, remember that winter pruning is one of the most important tasks of the season. It needs to be well planned, giving consideration to your targets and your orchard characteristics. Ensure when setting targets you leave some room for the season not dealing up perfect conditions.

Ensure that in managing young vines you give thought to their limited root system that needs to support the canopy you are tying down.

Lastly, ensure you have a system on the orchard for dealing with atypical vines. Too often these are ignored by orchard contractors and will reduce the performance of your orchard.

Figure 3 Poorly trained vine left due to uncertainty

Nitrogen cycling in permanent fruit crops

***Part Two:** Tools available to help nitrogen fertiliser decision making*

Leander Archer : AgFirst Horticultural and environmental consultant

A technician measuring drain flow

Calculation of crop removal

Table 1 summarises current understanding of nitrogen removal ranges from common fruit crops. To get a more accurate picture, you could take some fruit samples to the lab from a range of top quality, well-balanced orchard blocks to find the optimum crop removal level you want to use.

Table 1 Summary of Nitrogen Removal Research from Journeaux et al (2019)

Crop	Removal range/kg	Example calculated crop removal
Pipfruit	0.6 to 1.1 kg N/tonne	65 t/ha = 40 to 70kg N/ha
Peach & Nectarine	1.2 kg N/tonne	20 t/ha = 24 kg N/ha
Kiwifruit	0.93 to 1.63 kg N/tonne	35 t/ha = 32 to 57 kg N/ha
Avocado	1.13 to 2.2 kg N/tonne	12 t/ha = 13 to 26 kg N/ha
Citrus	2.9kg N/tonne, varies	30 t/ha = 87 kg N/ha

Calculation of likely biological fixation

Analyse your orchard floor composition and look for the amount of clover and other legumes. If you talk to an agriculturalist, they will tell you that the optimal clover content in a grazed pasture is around 30 percent, and this potentially can fix 300kg N/ha/year, predominantly into the above ground plant parts. Most pastures have more like 10 percent to 20 percent clover, and on dry hill country it is often below 10 percent. This results in an estimated average of 185kg N/ha/year and a range all the way down to 17kg N/ha/year in dry, unimproved hill country. But this got you thinking didn't it? A lot of orchard swards do have clover in them, and even at 10 percent by dry weight, this potentially could add 100kg N/ha/year. Because it is not eaten by an animal and quickly recycled to the soil as urine, not all of this is necessarily available to plants in the same year. But generally, orchard mowings do decompose before the next pass, and at steady state over multiple years it is likely this will all become available in soil solution. So that immediately more than relieves the need for applications for some, as long as the timing of release couples well with your orchard plants, which is discussed in a later section.

Soil testing

In winter – In addition to this, soil organic matter is also going to decompose and release nitrates. If your soil is high in organic matter, it will decompose in greater quantities and release more. Make sure you add 'potentially available N' and 'organic matter %' to your winter soil test to measure this.

During the season – Use of quick nitrate test strips at key uptake timings could be a great tool to learn how much free nitrate is available in the soil across a season. These test kits are being used in the arable and vegetable industry and give a reading of free nitrogen from the soil at the time, using simple dip strips such as those you use for chlorine in a pool. These are available inexpensively and could be used to measure soil nitrate weekly over each season in blocks which consistently perform with the correct leaf nitrogen levels, and good fruit quality and yield. Any grower could go and do this as long as they have the labour to take the test, mix and sieve the soil, shake it in water, and then take and record the test result. Imagine then being able to go out and confirm at any stage, within an afternoon, if the free nitrate level in the soil is limiting or not. It would be a useful diagnostic tool.

Agfirst has done some work on these strips, and ideally the next step is an industry project to identify the optimum range for a crop type over a season, rather than every grower doing it individually. But there's nothing to stop you getting a head start in understanding these. Find out more here: **www.far.org.nz/articles/1231/quick-test-mass-balance-tool-user-guide**

Leaf testing

Leaf testing is a key management tool which is commonly used in permanent fruit crops, but often minimal tests are taken across a large number of blocks and soil types. Try to make sure you have a test from each block, or when this is impractical break the orchard into 'management units', for example, each soil type and variety is covered, along with any other blocks that cannot be grouped in with these for some reason, for example a different rootstock could have quite an impact.

Leaf testing is the outcome of the nitrogen that has been available to the plant over multiple past years from soil uptake and foliar applications, but also accounts for the root health and uptake ability of the plant too. Leaf testing on its own is not sufficient because there might be enough available nitrogen in the soil, but a drainage issue is killing roots and therefore uptake is not occurring. In this case, putting ground applied nitrogen on is not going to help, and will simply increase nitrogen loss – in this waterlogged case, by denitrification to gaseous forms.

Leaf testing optimums are available for most fruit crops, but optimal nitrogen levels do change over the season. For example in apple crops, the optimal level at harvest for fruit colour is to get close to 2 percent in the leaf. Earlier in the season, in November, the equivalent leaf level would be about 2.6 percent. If this information is not available for your crop (check with your industry body or consultant), take tests regularly across multiple seasons in your best performing blocks that have good levels of nitrogen (not too vigorous, balanced consistent crop loads, consistent good yield and quality). This will enable you to understand the levels in November that relate to optimum levels at harvest.

Measure nitrogen content in drainage losses

This is something that a number of research projects have looked at and are looking at, and some growers are already being required to do this as part of tightening national and therefore regional council rules.

Measurement and modelling work to understand losses should be done at an industry project level, as lab testing water regularly via suction cups in the soil or from the subsurface drainage system exit point is a large added cost when you think of the entire industry having to do this individually. This should be grouped into a key macro level projects which inform key risk factors and management strategies, that can then inform our continually developing best practice guidelines.

Various modelling work has been undertaken to estimate losses from different orchard systems, and some of these also measured drainage loss using suction cups or lysimeters within the soil. The typical ranges are around the 10 to 30kg/ha range, which is comforting. But where there is higher rainfall, well-draining soils and/or higher end application rates those numbers can go up fast.

A current project example being undertaken by AgFirst is a Ministry for Primary Industries (MPI) Sustainable Food and Fibre Futures Fund project, "What is coming out of tile drains?" This project will enable us to understand if subsurface drains (both clay tile and plastic pipe) are impacting our waterways. If there is an impact at certain times of year or in certain types of weather, industry want to know about it so we can adopt relevant management strategies. These types of projects will increasingly create a clearer picture of how we can become more efficient and environmentally sustainable as a sector.

Application Methods

The most efficient method of nitrogen application is **foliar sprays** to the leaf. This can be applied to quickly get nitrogen to the plant parts that need it, at the phenological stage the grower desires. It applies such low total amounts of nitrogen, and additionally skips the need for nitrogen to spend any time dissolved in soil water. It therefore does not present a leaching loss risk.

Figure 1 The Nitrogen Quick Test Strip, image from MPI SFF project ***Nitrogen – Measure it and Manage it***

Fertigation is a method to apply fertiliser through the irrigation system which, if well managed, can be more efficient than ground spreading the normal urea or calcium ammonium nitrate type fertilisers. It allows fertiliser to be applied 'little and often' through the irrigation system, intimately connected with plant nutrient and water needs. In this way it allows the grower a great level of precision for nutrient management. In most orchards with fixed drip or sprinkler systems, this is a practical option that also removes the need for another vehicle pass each application.

Compost has become more and more popular as a regular orchard application to improve soil structure, organic matter, water retention, nutrient availability and general soil biological, chemical and physical health. It makes the most of natural coupling of the biological decomposition of organic matter and timing of root growth and uptake. As we have discussed, biological 'mineralisation' and 'nitrification' processes basically take organic matter and break it down to release nitrate available for plant uptake. These processes importantly occur with access to moisture, oxygen and warmth. So the concept is that in spring, as soil warms up and plants begin actively growing again, nitrogen is also being increasingly made available to them. Additionally, it is slow release over long periods (years). This means in large rainfall events, there is only a limited amount at any one time that can be leached.

Beware the sheer amount of nitrogen being added in compost though. Compost may only be 2 percent nitrogen, but if you apply 10 t/ha this is 200kg/ha of nitrogen added to the orchard system that year. This may be released over multiple years, but if you have this in your annual programme, you will reach a steady state release of 200kg/ha/year, well over most crop removal requirements. That means luxury uptake, over-vigorous trees, and what does not get taken up is lost to ground or surface water.

Compost is a great soil amendment and should be used to improve soils that are struggling to support the orchard. Composts are also great to remove soil variability by applying to lower vigour areas of the orchard identified to be caused by soils with low water and nutrient holding capacity. But they absolutely must be added into the nitrogen balance, and the amount and frequency lowered to avoid substantial over-application of nitrogen in the longer three-to-five-year term.

Ground spread fertiliser is a useful tool that is the basis currently of many fertiliser programmes. It is inefficient in terms of plant recovery but it has its place in many programmes. As long as you apply the amount you need, when the plants need it, to the rootzone, and avoid heavy rain that creates drainage events after application then the risk can be managed. It is advisable to use it in combination with foliar applications at the right times, and also not to apply more than 50kg N/ha in one application.

Regulatory pressure

Taking on the strategies and knowledge outlined in this article will go a long way to cover your needs in relation to nitrogen, for regulatory documents and audits into the future. We are already familiar with GLOBALG.A.P and other market assurance programmes wanting to check that nitrogen inputs are being managed sustainably, and that growers have good decision making processes.

Some other key points to know:

- The details aren't all worked out yet, but the same goes for our home communities, hence local and national government regulations are coming in under which every horticulturalist with over 5ha will need a farm environment plan administered through their regional councils. These will need to have a specific freshwater module, which I am confident to assume will include how to reduce nutrient loss to water.
- Some regional councils have already initiated requirements for Farm Environment Plans, generally on a catchment specific basis. These generally cover:
  - Property maps of key features, soil types and water movements.
  - Soil health and preventing soil loss from the property.
  - Nitrogen management best practice and preventing nitrogen loss to water or nitrous oxide gas.
  - Phosphorus management and preventing loss to water, identifying critical source areas for phosphorus.
  - Biodiversity, and direct management of waterways and wetlands.
  - An action plan of where the grower sees opportunity to improve.
- Under He Waka Eke Noa all farming businesses over 80ha need to know their annual emissions number – which mostly comes from nitrate fertiliser (both the synthesis in factory, delivery and then nitrous oxide emissions on farm from the denitrification process explained earlier). All farms should have a written plan to measure and manage greenhouse gas emissions by January 2025.

Figure 2 A subsurface drainage line exiting a farm property into a waterway

For up-to-date and more detailed information, please see Horticulture New Zealand's website. **www.hortnz.co.nz/environment/**

Conclusion

So there is a bit to consider. But it is worth doing to make sure you are not paying hard earned money to grow algae and kill river invertebrates. Gather the information, because if you don't measure it, you can't manage it. Then apply a low-risk change to the orchard, and try your actual calculated requirement (which might be scarily smaller) on a smaller block area to test whether you can trust the calculations you have made. Give this time to show, as nitrogen excesses will recycle through permanent crops over multiple years.

And if you just can't get your head around it, task it to some enthusiastic graduate and give them a solid chance to work it out, then take their advice seriously once they have done all that thinking for you. In the absence of an enthusiastic graduate, there are always those environmental consultants around, unless they've skived off on their OE!

About Leander

Leander has been with AgFirst in the Hawke's Bay for six years, as a horticultural consultant specialising in environmental management. She was lucky enough to work with John Wilton for five of those. This will be her first and last article for ***The Orchardist***, as she farewells AgFirst this month to take a gap year overseas.

References

- Evert & Eichhorn (2013). *Raven Biology of Plants 8th Ed*. W. H. Freeman and Company.
- Journeaux et al. (2019). The Value of Nitrogen Fertiliser to the New Zealand Economy. Fertiliser Association of New Zealand. https://www.fertiliser.org.nz/Site/research/projects/the-value-of-nitrogen-fertiliser-to-the-new-zealand-economy.aspx
- Lab Supply (2022). *Nitrate Test Kit*. Retrieved from https://www.labsupply.co.nz/nitrate-test-kit
- FAR (2020). Quick Test Mass Balance Tool & User Guide. Retrieved from https://www.far.org.nz/articles/1231/quick-test-mass-balance-tool-user-guide
- BioRich (2022). Compost Hill Lab Test Results. Retrieved from https://www.biorich.co.nz/our-compost
- Horticulture NZ. (2022). Environment (and various sub-pages). Retrieved from https://www.hortnz.co.nz/environment/
- Agronomy Society of New Zealand Special Publication No. 11 /Grassland Research and Practice Series No. 6. (1996). *Overview and vision for white clover*. Retrieved from https://www.agronomysociety.org.nz/11.-white-clover.html
- Germinal (2019). The Clover Effect. Retrieved from https://germinal.co.nz/the-clover-effect/#:~:text=The%20potential%20nitrogen%20fixation%20rates,optimal%20growth%20of%20white%20clover

5+ A DAY CHARITABLE TRUST

Bringing star power to the fruit and vegetable aisle

2022 is set to be one of the busiest years yet for the 5+ A Day Charitable Trust, with a schedule of action-packed promotional work and celebrity partnerships designed to encourage all New Zealanders to eat five or more servings of colourful, fresh vegetables and two servings of fruit every day.

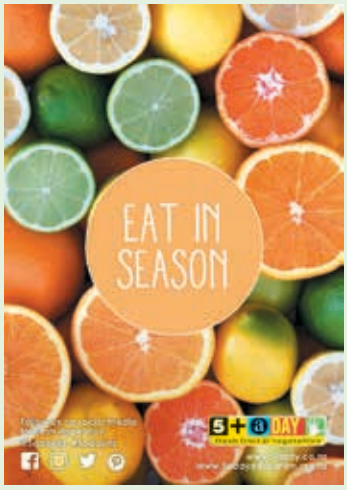
The Trust recently shared the exciting announcement that they have partnered with Olympian, World Champion and Halberg Sportswomen of the Decade, Dame Lisa Carrington, to share the health benefits of a diet high in fresh produce.

5+ A Day Project Manager, Carmel Ireland says Dame Lisa's star power will put a spotlight on seasonal, locally grown produce from amongst the 30+ different fruit and vegetables that the Charitable Trust promotes.

"Dame Lisa is an absolute icon of New Zealand sport. Her passion for healthy living shines through all her work and with her help, we'll be able to share the amazing nutritional benefits of fruit and vegetables with an even larger audience."

The Trust shares its health messages through schools, providing free curriculum-linked resources that promote the importance of eating 5+ A Day. Teachers can access a huge array of these classroom resources via the Trust's education website **5adayeducation.org.nz**, while Kiwi families can find plenty of useful information and great recipes at **www.5aday.co.nz**.

Ireland says that this year, many classrooms will experience the added excitement of a hands-on initiative from the Trust.



"5+ A Day have teamed up with the Life Education Trust to bring Harold the Giraffe and social media stars, the Two Raw Sisters, to schools around the country. They'll be hosting cooking workshops for tamariki to prepare fruit and vegetables, learn how they grow and why they are such an important part of a healthy diet," she says.

The Trust also uses social media channels to promote the health benefits of fresh fruit and vegetables. Dame Lisa will be a regular feature throughout 2022 on the @5adaynz page on Facebook, Instagram, Pinterest and Twitter.

"During the year, our 65,000 social media followers will be treated to over 50 beautiful recipes, created, styled, and photographed to highlight New Zealand's freshest seasonal fruit and vegetables," says Ireland.

"We also encourage everyone to support Kiwi growers by shopping locally and buying what's in season, and we share a range of sustainability tips to reduce waste and make the most of your fresh produce."

The Trust's social channels also feature regular content from other well-known foodies and celebrities such as Mike McRoberts and Niki Bezzant, whose recipe videos reach an even wider audience.

The recipes and meal ideas shared by 5+ A Day are specifically tailored to be easy and fuss-free.

"It's important to demonstrate that getting your 5+ A Day is achievable. Simple changes such as adding a serving of fruit at breakfast then continuing to include fresh fruit and vegetables in every snack and meal throughout the day make a huge contribution to your health and wellbeing," says Ireland.

The activities of the 5+ A Day Charitable Trust also extend to initiatives and partnerships designed to foster a lifelong love for fresh fruit and vegetables.

"Fruit and Vegetables in Schools (FIS) is an important initiative that 5+ A Day supports. FIS sees around 27 million servings of fresh produce delivered to schools each year and we were able to use our networks around the country to divert deliveries to other charities during COVID-19 lockdowns."

For more information visit www.5aday.co.nz, teachers and educators can access free resources on www.5adayeducation.org.nz

Follow @5adaynz on

#5adaynz #supportlocal

Tuatara Structures – Deliver well built. Go well beyond.

Tuatara Structures is a relatively young construction company but is already a leader in the design and construction of industrial, commercial and agri-buildings. Dedicated to providing clients with innovative solutions to their building needs, Tuatara Structures delivers robust, fit-for-purpose buildings across New Zealand.

Their turnkey design and build construction solutions are ideal for coolstores, packhouses, food processing and storage facilities.

Tuatara Structures understands the time constraints of production based businesses. Their experience meeting seasonal deadlines previously means they know that your business operations cannot afford to be affected by construction delays.

The unique swing-leg roof lift technique utilised by Tuatara Structures means their buildings are faster, safer and more cost-effective to construct than the industry standard. While meeting build deadlines is a priority, meeting budgets is just as crucial, and with an experienced and capable team, Tuatara Structures delivers every time.

As part of their commitment to client satisfaction, Tuatara Structures offers clients a complimentary, obligation-free feasibility study, complete with detailed drawings. This process involves meeting to discuss the project needs, budget, unique operations and product flow, and potential location options.

Following this consultation, Tuatara Structures will present clients with a set of concept drawings, a detailed scope, and a fixed-price investment proposal for consideration.

This proposal encompasses all components of the build process – from consenting and other approvals, excavation and site works, and the build itself, through to office fit-outs, racking, refrigeration, and other specialist trades.

The detailed plans and fixed-price investment proposal are essential elements in the Tuatara Structures process, providing clients with absolute budget certainty. These documents can also help secure lending approval and board-level sign off when required.

Tuatara Structures is disrupting the old-school traditional tender and bid delivery where you find out the project cost after it has been drawn. Their strategy and determination to provide clients with a streamlined build process has produced impressive results since entering the market.

They have worked with a wide range of agri-business industry clients, including Turners & Growers, Thomas Bros Orchards, Ohapi Fresh and Stonewall Farm.

Current agri-business builds include a 2,700m^2 coolstore for Hume Pack-N-Cool in Katikati, and an over 3,500m^2 integrated coolstore, packing area and dispatch office for Southern Fruits International, the packing and marketing division of Deep Creek Fruits in Tarras.

Client Sharon Kirk of Deep Creek Fruits said, "Our experience working with Tuatara Structures has been positive from the start. Every person we've had contact with has been knowledgeable, enthusiastic and helpful, making the process to get the Southern Fruits International packhouse designed, signed off and now starting to be built, seamless. We are looking forward to this year's cherry season being completed in the new building." ●

If you have a project you would like to discuss, don't hesitate to get in touch. You can call Ryley Drake on 027 550 3930 or send an email to **ryley.drake@tuatarastructures.com**. Alternatively, check out their website, **tuatarastructures.com** to learn more about how they can help solve your construction challenge.

TUATARA STRUCTURES OUTPERFORM. OUTLAST.

Good decision pays off

In 2021, Billy Singh set a goal to pick 20,000 trays of SunGold™ per hectare, but he was unsure whether the existing trellis structure on his family's Katikati orchard would have the capacity to hold this target weight. The risk of the structure collapsing and the subsequent loss that would be incurred kept him awake at night.

To protect the structure and crop, Billy contacted Mike Posa, key account manager at Ag-Steel. Together, they decided using the Ag-Triposts and Ag-Beam together would solve the problem. Billy ordered 2,000 Ag-Triposts, which were installed between the existing posts and Ag-Beam to reduce the bay size by half, relieving weight from the existing structure.

One year on, Billy says he is delighted with the result.

"I've got a bigger crop this year, heading to 23,000 trays per hectare, and everything is holding very well," he says.

"I've had a couple of end assemblies give way, but the extra support provided by the Triposts and Ag-Beam we installed last year has allowed the canopy to stay up – there's been no movement in the structure at all," he adds.

Billy says it's devastating if an orchard has a structure collapse, and with storms and stronger weather becoming more frequent as a result of climate change, he didn't want to be in that situation.

"We're definitely very happy with our decision to go ahead and invest in Ag-Steel. Recent visitors from the packhouse were stunned with our loading and how well it is holding."

Mike Posa says load capacity is a common concern among kiwifruit growers nationwide.

"We see a lot of partially collapsed orchards, where the weight of the Gold crop is just too great for the existing structures," says Mike.

"These large bays just can't hold the weight produced from a SunGold™ crop. The best solution is the approach Billy has taken; to add an Ag-Tripost between existing posts and run an Ag-Beam which reduces the bay size by half, relieving weight from the existing structure.

"By understanding growers' needs, we can make recommendations that will provide the best support needed," he says.

"You could say our customer service and product expertise is worth its weight in gold!"

Billy commented that when they had the 2000 Ag-Triposts to install, it was a little daunting. However, they found it was incredibly easy and did the work as a team, without any need for external contractors.

"I would have done our second orchard at the same time if I'd realised how easy it was. In fact, that's this year's project – it makes life a lot easier and is well worth the investment" says Billy.

To find out more about what makes Ag-Steel products the leading choice for New Zealand's horticultural industry, contact our team today. Call Mike Posa on **07 282 1538** or visit the website **www.agsteel.co.nz**

Ag-Steel
BY INDUSTRIAL TUBE

Debunking myths around soil fumigants and their impact on soil health

Soil fumigation has been an important tool in New Zealand crop production for decades because it is highly effective at managing soil pests that cause crop disease.

Soil treatment for apples

However, it is often criticised for being detrimental to soil health. There is a persistent myth that soil fumigants harm the microbiological diversity and abundance of beneficial microbes in the soil, despite extensive evidence to the contrary. In light of a global focus on agricultural sustainability, it is essential to understand the real impacts of soil fumigants on soil health, using science-based criteria and the best technology available. Major advances in automated, genetic sequencing technology combined with commercially available services, such as Biome Makers (www.biomemakers.com), can now provide a detailed and comprehensive analysis of the types and relative abundance of microorganisms in the soil.

Dr John Washington, a plant pathologist and microbiologist, is research and development director in the Trical Group, based in Florida in the United States. "I have enthusiastically embraced these new and powerful tools that allow us to study and characterise the soil microbiology genome in soils treated with our soil fumigant products globally," he says. "It's a kind of genetic barcoding: the technology can identify every organism group and their relative amounts. We can compare treated versus non-treated soils, soil fumigants versus fumigant alternatives, and the dynamics of soil microbiology and how it changes over time following any agricultural input.

These tools are key in allowing the scientific and agricultural community to more fully understand the soil biology component of soil health in an objective and scientific manner, looking for positive or negative effects of our inputs and whether or not we can manipulate the soil biome to enhance crop production. Concurrently it allows us to get past the old myths and gross misinterpretation of soil fumigant impacts, for instance, and focus on specific and real effects."

"For example," John says, "microbiome analysis shows that soil-applied chloropicrin and 1,3-dichloropropene alter the soil biology in important but non-destructive ways. Across different crops and locations including apples and blueberry in Michigan, and ornamental and vegetable crops in Florida, our research is clearly showing that Trichoderma, a well-known group of beneficial fungi, increased 20 to 100-fold following soil fumigation. Population benefits lasted the entire season, and even extended into the next season in some settings, where significantly higher populations of Trichoderma persisted over the winter in northern tree crop soils. Additionally, the beneficial root-colonising bacteria Bacillus and Pseudomonas, which produce plant-active hormones, increased dramatically following soil fumigation. This likely explains why we see major increases in healthy root growth in crops where soils were fumigated prior to planting. And one of the most surprising findings is that no evidence was found that diversity or abundance of soil microorganisms suffered when soil samples collected 30 to 90 days after treatment were analysed."

John Washington is now working with Leicesters Soil Solutions in New Zealand, coordinating the soil biome research on melons with Moffett Orchards, and on blueberries with Gourmet Blueberries. "We are initiating these studies with these growers in mid-May and this will provide us with specific and comprehensive data on New Zealand crops, something we plan to present locally when the results are complete," John says.

For more information
Phone 06 843 5330 or visit **www.leicesters.co.nz**

Leicesters Soil Solutions

Being a part of a grower's team

Fruitfed Supplies Technical Horticultural Representative, Steve Wood, feels a great sense of satisfaction when he sees his recommendations having a positive impact on a business. Even more so having built long lasting friendships with his customers.

Based in Te Puke, Steve's customers grow green, red and gold kiwifruit, avocados and blueberries. On-orchard, his technical knowledge assists growers when planning spray programmes as well as offering advice as the crop moves through the various growth stages. "I'm someone the grower can bounce ideas off and I can help solve any issues that arise daily in the orchard."

Taking care of the health of the plants is a focus for Technical Horticultural Representatives as Steve explains, "I complete soil tests, and once analysed, I form a fertiliser recommendation and order the product. For the grower, they can forget about this as they know I'm on top of it. I'll simply tell them to apply the fertiliser at the right time."

Throughout the season Steve will complete a walk-through of an orchard to monitor the crop. He'll look at the leaf colour and check for pest insect pressure. He'll then make a recommendation on how to manage what he's seen.

Unforeseen events, such as bad weather, highlight a Technical Horticultural Representative's product knowledge and how this benefits their customers. As Steve describes, "if there's a big rain event coming, particularly in spring as it is a crucial time for protecting plants from Psa, I'll field calls from customers asking me to rearrange their spray programme. This might mean replacing nutritional sprays with Psa protectant sprays. Once the weather has passed, I'll then reschedule the nutritional sprays back into the programme."

A Technical Horticultural Representative's involvement in growing their customer's businesses begins in the planning phases, organising spray programmes for the coming season, and can also include helping plan an orchard's expansion.

With a number of his customers buying bare land to develop as orchards, Steve says he completes the time-consuming job of securing materials. "I'll visit the property and discuss the layout plan with the customer and calculate the number of posts, strainers and other materials needed for the build. I'll then go to our suppliers and secure the product."

Fruitfed Supplies Technical Horticultural Representative, Steve Wood

Supporting Fruitfed Supplies' Technical Horticultural Representatives are Technical Specialists and the Fruitfed Supplies Research & Development team who regularly conduct product trials. As Steve says, this network provides him with technical knowledge which he passes onto his customers.

"We're lucky to have kiwifruit trials, for example, running in orchards locally. This allows me to get a first-hand look at potential new products. At the end of the trial, when the product is registered for use in New Zealand, I already understand its effectiveness in local conditions and I can share this knowledge with growers." ●

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.

IKE AIO-2400 dehydrator internal view

IKE AIO-600 with drying rack

Waste not want not

Dehydrators manufactured to commercial specifications are now available in a range of sizes to suit processors of artisan foods.

When harvest time arrives, we can end up with a surplus of fresh produce, and with limited shelf life this can lead to substantial waste and missed opportunities for revenue.

Soft fruit and vegetables can be ideal for the dehydration process to create repackaged new and innovative added-value consumer products. Produce suitable for dehydration processing includes but is not limited to apples, pears, peaches, plums, apricots, bananas, kiwifruit, strawberries, blueberries and other berryfruit, carrots, corn, green beans, potatoes and tomatoes.

Auckland company Netropolitan specialises in the importation of a wide range of artisan food equipment including the IKE range of AIO (All in One) dehydrators.

Gerald Hochwimmer of Netropolitan says, "We can supply dehydrators to suit the customer's specific needs, be this a smaller unit capable of drying 100kg of fresh product, right up to the larger AIO-2400 which has a capacity of up to 2500kg of fresh product, all at very competitive prices based on pre-ordered indents for the larger machines."

Gerald encourages interested growers or processors to reach out and organise a trial to see what can be achieved with your surplus produce.

"It is an opportunity to diversify, avoid waste and offer the consumer a solution to incorporate more fruit and vegetables into their diet in a practical way, with products that will store well into the winter months." ●

For more information on the AIO chamber series of dehydrators contact Gerald on (021) 358 380 or email **sales@netropolitan.co.nz**

AdvanceQuip add CASE H Series Rough Terrain Forklifts to range

Due to significant market demand AdvanceQuip, the country's exclusive supplier of CASE Construction machinery, as well as supplier of Astra, ASV Posi-Track and XCMG, has expanded their range with the addition of the CASE H Series of Rough Terrain Forklift Trucks (RTFL).

CASE H series rough terrain forklifts

With two models available, the 586H and 588H, the H Series boasts a speed and smoothness that few other rough terrain forklifts on the market can match. With fast lifting speeds, roading speeds of up to 38.6k km/h, lifting capacities of up to 3629kgs and a slew of unique features that keep loads level and operators comfortable, these high-performance, Tier 4 Final forklifts truly do raise the bar.

AdvanceQuip already supplies a full range of CASE machines that can handle a diverse range of applications, and the H Series expands machine solutions for new applications and industries including the agriculture, horticulture and off-road materials handling sectors. The H series' array of features ensures that both the 586H and 588H models are well-placed to tackle projects of any size.

> **With lifting speeds of ten metres-per-minute and road speeds of 38.6 kph, users are able to raise, haul, and place quicker than ever before**

With a 45° forward tilt and a 15° rear tilt, the H Series offers the greatest mast tilt in the industry, meaning that operators can ensure their loads are kept level on any terrain or slope. The ability to hydraulically adjust fork position allows you to match whatever pallet or material you are working with. The mast also meets height restrictions, ensuring that transport is hassle-free for just about every trailer out there, without the need to remove any components.

Operator comfort and an unhindered view are two further key elements of the new CASE H Series. The maintenance free Tier 4 Final engine sits under a low-profile hood, ensuring a clear view behind the machine, whilst a push-button parking brake, eye-level AIC (Advanced Instrument Cluster) and an optional deluxe suspension seat creates a working environment that remains comfortable for even the toughest, day-long jobs.

The H Series' unrivalled level of comfort and compactness is allied with outstanding speed. With lifting speeds of ten metres-per-minute and road speeds of 38.6 kph, users are able to raise, haul, and place quicker than ever before. Four-wheel drive as standard provides even greater grip, meaning that despite the weather and terrain, there'll be no slowing the job down!

Owners will benefit from not only this extensive range of features but also AdvanceQuip's nationwide network of branches and authorised service centres, ensuring access to an unparalleled level of expertise and a parts service that can provide solutions anywhere in the country.

For further details please visit www.advancequip.co.nz or call 0800 483 739

The ORCHARDIST®

Reaching all levy-paying fruit growers in New Zealand.

If it's fresh produce in New Zealand, we have it covered.

Print

New Zealand resident:
NZ$135 (GST inclusive)

Australia & Pacific:
NZ$230 (airmail delivery)

Rest of the World:
NZ$250 or US equivalent (airmail)

For information about how to subscribe please visit
hortnz.co.nz/news-events-and-media/magazines