

Tackling labour limitations

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Year greeted by Covid again!

As we begin 2022, the world focus, including that of New Zealand, is unfortunately once again on Covid-19, with the pandemic's health realities, and also the impact of significant labour constraints and supply chain challenges.

Barry O'Neil : HortNZ president

Omicron is here and measures are being put in place to minimise its effect on the health of our communities, businesses and the economy.

Horticulture New Zealand is working with product groups to do everything possible to mitigate these impacts. However, the unfortunate reality is that Covid-19 is already disrupting our season yet again. Cherries are currently experiencing this disruption, and no doubt apples and kiwifruit will shortly follow.

With New Zealand's population so highly vaccinated, I think it's time we accept the need to join the world again. Personally, I would sooner catch Omicron in summer when I am healthier, rather than in winter when that season's flus and ills are also circulating.

Potentially with its more infectious but less severe nature, Omicron is going to infect many if not most people in New Zealand. This is the international experience, but hopefully as a result, it will enable New Zealand to reconnect with the world and begin the process of establishing some sense of normality!

But rather than depressingly speculate further about Covid-19, I want to start the year looking at a significant opportunity for New Zealand.

Climate change is starting to have an exponential impact on how we grow, with some breathtaking records being broken. Last year was New Zealand's warmest year on record, and the last decade was the world's warmest in history. And with the incredible hot days being experienced in New Zealand this year, I wouldn't be surprised if 2022 will be another record year.

The last decade was one degree hotter than pre-industrial times. Experts say with climate change that we can expect temperatures to increase by at least 0.5 degrees every decade. That's why we can only hope that the world will finally get serious about making a real effort to stop the inevitable outcome if little is done to reverse the trend.

One area in which we have an opportunity to be more resilient – while providing for our sector's future growth – is water security.

Water storage is critical for our country. However, over recent years, there has been political push-back on water storage dams due to the perception of too many cows at the end of the irrigation pipes. But thankfully, the debate is starting to get real again due to a scientific review that the Ministry for Primary Industries (MPI) has recently undertaken. Water is something New Zealand has a real competitive advantage in, yet it's something we haven't been leveraging and utilising, and that must change.

New Zealand has just under one million hectares irrigated, but the potential is for this figure to double or triple, if water is available. Our challenge is not having enough suitable land – we have that. Our challenge is water availability, and we can achieve that by capturing and storing water in high rainfall periods, rather than have more than 90 percent wasted and running into the oceans.



“

Climate change is starting to have an exponential impact on how we grow, with some breathtaking records being broken

Only 8.5 percent of land used for food production is currently irrigated. Canterbury is an exception – with 60 percent of its farm area irrigated – but most other regions only have one to three percent of their productive land area irrigated.

MPI's review shows our average rainfall is dropping. For the last five years, New Zealand had three percent

less rainfall than the previous five-year average, and 10 percent less than the five-year average starting in 1996. Northland had an even worse record with a massive 17 percent drop in average rainfall over the last five years.

Along with this situation, droughts are becoming more serious for New Zealand and they bring very significant economic impacts. The 2013 drought - the worst drought in decades - was evaluated by New Zealand Treasury economists to have cost \$1.5 billion. According to the National Institute of Water and Atmospheric Research (NIWA), drought in some parts of the country in 2020 rivalled that of 2013. For example, the Waikato District saw 61 continuous days of drought in 2020 compared to 63 days in 2013.

With the huge debt New Zealand is generating due to Covid-19, additional macro financial impacts are something we just cannot afford. We will be doing a great disservice to future generations and the country's prosperity if we don't act now to reverse the growing water deficit situation.

Unlike recent adversarial experience, since the government devolved irrigation schemes to industry in 1988, we now as a sector, community and country need to work constructively together to deliver on the opportunity we have with new storage systems for freshwater. Water storage will also fulfil the aspirations of Te Mana O Te Wai.

“

We need to have a mature and sensible conversation on water storage and security and as a country, reach a logical solution ... let's work together to realise what is needed for our country's future

This will require New Zealand to embrace the small and medium scale schemes that seem to be in political favour at the moment, as well as large scale water storage schemes, which no doubt will serve many purposes, including urban water supply.

We cannot afford to argue any longer about whether there is a need for new water storage schemes, nor over Māori rights and aspirations related to Treaty issues, or over how these schemes will be funded.

We need to have a mature and sensible conversation on water storage and security and as a country, reach a logical solution. Let's not fiddle here while Rome burns. Rather, let's work together to realise what is needed for our country's future and the future of horticulture.

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The year's realities already bite

This year is already shaping up as a tough one for growers, New Zealand and the rest of the world.

Nadine Tunley : HortNZ chief executive

Labour is short, inflation is high and supply chain disruption is having an impact. On top of that, January has brought the tsunami in Tonga and the anxiety that creates for Tongan Recognised Seasonal Employer (RSE) scheme workers and their employers; and New Zealand moving to red on 23 January, under the traffic light Covid-19 management regime.

Our industry was already predicting shortages of leafy greens in February, due to heavy rain disrupting planting for several weeks in December in the key areas of Pukekohe and Horowhenua.

Now also, there will be the impact of Omicron on getting fresh produce harvested and transported around the country, as well as Omicron's impact on the export fruit and vegetable harvest.

As growers you are now well-versed in managing with Covid. For those that aren't, this is the time to really come up to speed now that Omicron is in the community. Have you got a plan? Who will manage the orchard or market

garden if you have to self-isolate? Have you got enough masks and other Personal Protection Equipment (PPE)? And what about your support network? Who can you reach out to as frustrations and emotions mount?

There is a lot of information about the management of Covid and wellbeing out there – the Horticulture New Zealand website Covid pages are a good place to start.

Over the coming weeks, HortNZ and your respective product groups will continue to lobby government around labour and supply chain challenges.

The government has stated that its priority is to support critical workers in the food supply and infrastructure sectors. New Zealand's domestic food supply is the priority. HortNZ and product groups are working with the Ministry for Primary Industries to ensure the government understands what it needs to do, to make sure that our sector can continue to operate to provide New Zealanders with fresh, healthy vegetables and fruit, now and over the coming months.



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Labour

Labour availability was always going to be a challenge, despite best efforts to attract and retain New Zealanders. This situation is due mainly to the minuscule number of backpackers that remain in our country. Pre-Covid, there were more than 45,000 backpackers in New Zealand at the peak of summer, whereas this year, that figure is less than 5000.

Competition for available New Zealanders is fierce too with industries across the food and fibre sector, and most parts of the New Zealand economy competing for available workers.

This competition means that employers need to plan ahead and make sure what they offer reflects the market.

Our advocacy and seat at the government's table meant that we were able to have workers from the Pacific return to our orchards and market gardens a lot sooner than other industries have been able to get much needed overseas workers in.

Indeed, the first impact of Omicron on the border and MIQ (Managed Isolation and Quarantine) was felt immediately by our rural contractor colleagues. The government granted them 200 skilled machinery operators in mid-December but they were unable to bring those workers

in as MIQ conditions changed once more due to the risk posed by Omicron.

Insight from our Pacific neighbours is that they too are struggling, with their ability to process all of the administration work, and ensure workers' vaccination status. Trying to do this when many workers are coming from outer islands has added to the complexities. Labour unit organisations in the Pacific are working very long hours with limited resources such as adequate numbers of passports for issuing.

At an operational level, everyone is working incredibly hard to assist with the movement and provision of Pacific workers for our horticulture sector.

My focus for 2022

My focus as HortNZ chief executive remains firmly on unity and positivity. This will be another challenging year and our resilience as an industry will be further tested. However, I believe through unity and positivity, we will continue to find ways to provide our markets with the world's best fruit and vegetables.

By working together, we can create pathways to return to prosperity, as our industry adapts to a world that will never be the same again. But that, in itself, offers our industry an incredible number of new opportunities. ●



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INDUSTRY WIDE ISSUES FOR INDUSTRY GOOD

Career
opportunities
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Natural resources and environment

Ailsa Robertson : HortNZ team lead environment policy

Freshwater Farm Plans at a glance

A Farm Environment Plan (FEP) is a tool that can help growers identify environmental risks and take action where required to demonstrate progress on environmental objectives.

FEPs are property-specific and consider a range of factors including local climate and soils, type of growing system, and current management practices.

A Freshwater Farm Plan (FWFP) is similar in that growers need to assess property-specific risks to freshwater, such as risk of sediment and nutrient losses to groundwater and surface water and evidence of actions to appropriately manage those risks over time. Like an FEP, a FWFP is a living document that needs to be updated as actions are completed, and if your growing footprint changes, for example, with changing leased land arrangements.

A key difference between FEPs and FWFPs is that a FWFP will be tailored to the nature and circumstances of the farming activity, and the context of the catchment i.e., the vulnerability of the freshwater receiving environments. For example, if you grow in a catchment with an aquifer or river with excess levels of nitrates and/or phosphates, your FWFP would need to prioritise best practice for nutrient management. Or, if you grow on sloped or rolling landscape or in a catchment with freshwater impacted by high sediment loads, your FWFP would need to prioritise best practice for erosion and sediment control.

The requirement for FWFPs is written into legislation – as a new Part 9A of the Resource Management Amendment Act 2020 – **requiring all horticultural land that is five or more hectares to have an audited and certified FWFP.**

Freshwater farm plan regulations are expected to take effect in 2022. The requirement for certified freshwater farm plans will be phased in from mid-2022.

The government is currently drafting new regulations to give effect to Part 9A. This means there will be national standards for all FWFPs across the country, and regional

standards or requirements including catchment values and regional plan rules and limits that need to be reflected in FWFPs.

The regulations will include other details, for example, who can audit and certify FWFPs, and the timing of FWFP implementation across the country. Horticulture New Zealand is advocating for a recognition pathway for the GAP (Good Agricultural Practice) programmes to deliver FWFPs for horticulture. The GAP programmes provide an integrated farm planning pathway, whereby a grower can meet a range of market access and regulatory standards using one system and with one auditor up the drive.

“

A key difference between FEPs and FWFPs is that a FWFP will be tailored to the nature and circumstances of the farming activity, and the context of the catchment

For growers with an existing FEP using the GAP Environment Management System (EMS) add-on, you are most of the way there. NZGAP is planning a review and update of the EMS to meet the new regulations. HortNZ is currently working with fruit and vegetable growers in the Waimea Plains to develop FWFPs using the existing GAP EMS and test a prototype Part 9A GAP FWFP for horticulture. ●

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On-farm biosecurity series: Harvest and production practices



While we often think of biosecurity risk in terms of what crosses the boundaries of a site, what happens on-site is also important from a biosecurity perspective.

Anna Rathé : HortNZ biosecurity manager

Conducting your everyday production practices in ways that reduce the chance of spreading undetected (or established) pests, pathogens and weeds is worthwhile. This is especially important during busy times such as harvest when increased site activity can cause people to cut corners with biosecurity risk management.

Protocols for production practices should be included in your on-farm biosecurity plan. Contact your industry body to see if they have a crop-specific template that you can use. If not, you can use the Horticulture New Zealand template available online. Some of the common risk areas associated with production practices are explored below,

along with risk reduction actions for you to consider.

Crop surveillance

Keeping a close eye on your crop gives you the best chance of spotting anything unusual that might be a biosecurity threat. Make sure you have a regular monitoring programme in place and keep records, including when you don't find anything. It can be very useful to know that regular monitoring has been undertaken but not picked anything up. Ensure your staff are familiar with what is 'normal' and are aware of the key biosecurity threats for your crop, so they know what is unusual and needs to be reported.

Propagation

Undertaking propagation in designated areas away from crops and practising good hygiene will minimise the likelihood of pests and pathogens spreading via plants that have been grown on-site. Regular use of disinfectant for hands, potting benches and tools is important, particularly before and after handling plant material or soil.

Water sources

Site water sources contaminated with pests or pathogens have the potential to spread the organism across the whole property via irrigation water. Water sources should be inspected for weeds or pests and, if in doubt, test water supplies for pathogens that may be harder to detect visually.

Weeds and volunteer plants

Some weed species and volunteer plants (self-seeded crop plants growing in riparian areas) can provide a refuge for pests or pathogens during or between growing seasons. Control weeds and volunteer plants on your property to reduce the chance of them harbouring unwanted pests or pathogens that might later move into your crop. Pest, disease and weed issues often spill over property boundaries, so it can be helpful to consult with neighbours on any pest issues that you are facing.

Use of equipment and tools

Equipment and tools used for production and harvest should be subject to appropriate use, hygiene, and storage practices. If possible, assign tools or equipment exclusively to a property and don't share equipment with other growers. When working in a row or block, wash tools regularly and disinfect with an appropriate product.

When undertaking activities in high-risk areas from a biosecurity perspective, assign dedicated equipment,

including tools, clothing and footwear. If working in an orchard or on a farm where any disease is present, always move from the least diseased area to the most diseased area. Tools used in parts of the crop that are known to be infested should not be used elsewhere.

Ensure equipment used during harvest such as bins, crates and pallets, are appropriately cleaned or disinfected before use. They should also be as free as possible of any plant debris or soil acquired in the field before moving to the packhouse.

Agrichemicals

Careful use of agrichemicals is important to avoid the development of pest resistance. Ensure your staff are well trained in proper use of agrichemicals. Apply chemicals following their label instructions for rate, method and expiry date and keep appropriate records of their use.

In conclusion

The above is not an exhaustive list. You should identify any additional production practices that you undertake on your site and think about how to minimise any potential biosecurity risk they may pose. ●



Remember if you see anything unusual, do the right thing and report any suspect exotic pests or diseases via the Ministry for Primary Industries' pest and disease hotline: **0800 80 99 66**.

Disclaimer: While every effort has been made to ensure the information in this publication is accurate, Horticulture New Zealand does not accept any responsibility or liability for error of fact, omission, interpretation or opinion that may be present, nor for the consequences of any decisions based on this information.

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Sofia is part of CentralPac's dedicated team of cherry pickers

Attracting and retaining Kiwi workers key to future of picking



With the border still closed and backpacker numbers dwindling, Central Otago cherry growers had to cast their net far and wide to attract the pickers needed for the 2022 harvest season. HUGH CHESTERMAN speaks to Tim Hope on how CentralPac is future proofing its business through Kiwi workers.

Tim Hope, operations manager at CentralPac in Cromwell, says they have managed to find enough pickers to get through the season, and have even found some hard-working New Zealanders along the way.

"The biggest thing that we notice though is that you always start again every year," says Tim. "We only have five people during the year, and then we have to bring in 15 team leaders -



five of them were returning this year - and then a whole lot of pickers. Getting the return staff is key to making it work."

Abby, one of CentralPac's harvest managers, is one of those returnees. Even though she is in her early 20s, Tim says she's proven to be more than capable of leading her team of 80 pickers.

"It's only her third season. She was team lead for two years and now she's a harvest



“There is beauty in the simplicity of the work and it’s a great lifestyle”

Returning picker Ivan Miller loves his job

manager. Man, she’s got some skills! She’s looking after 80 staff and she’s really good at it.

“Although she’s studying pharmacology, she’s toying with the idea of joining the industry – and that’s one of the really cool things about seasonal work – people discover that they can have a great career in the horticulture industry.”

“

That’s one of the really cool things about seasonal work – people discover that they can have a great career in the horticulture industry



Tim says CentralPac has focused specifically on attracting Kiwis to cherry picking this season.

“We’ve had some really awesome people come out of the woodwork who haven’t done this type of work before,” he says. “We’ve also been successful in bringing back workers from last season, which has been more important than ever.”

With no new backpackers coming into the country, CentralPac has doubled its usual end-of-season bonus that pickers can earn.

“On top of their wages, pickers can take home an extra \$1.50 a bucket, a sum that they receive on the last day of the season, which could end up as a \$500 per week end-

of-season bonus,” says Tim. “This is essentially money in the bank, which we remind them about, and is a great reward at the end of the season for the hard work and commitment they’ve put in. We also have returnee bonuses, and a referral bonus for successfully referring a friend.”

Giving workers a good experience, treating them well and keeping their expectations in check also have a large impact on recruitment success and workers returning the following year, he says.

“When the border was open this wasn’t as much of a concern but it’s hugely important now. Social media is a factor too, as news of good or bad employers gets around quick. There are no secrets now.”

Investing in long-term staff solutions are front of mind for the company.

“We had a Wanaka Youth Group working last year and they’ve come back this year and have been way more productive this season. They’re a long-term investment as they’ll be a core piece of what we do next year.

“Kiwi workers are quite good and they’re realising that they quite enjoy working in the industry. There’s good money to be made too!”

One of these returning pickers is 51-year-old Ivan Miller. Ivan loves his job and says the assistance available to him from Work and Income when he started picking last year made a huge difference.

"Last year, CentralPac helped me to get relocation funding from Work and Income after I had completed a 6000 km hikoi around New Zealand [top to bottom and back to the top again] for mental health. My funds were depleted from the walk and they helped me get a car and good accommodation," Ivan says. "I answered the call to do seasonal work to meet the labour shortages and haven't looked back since."

“

Giving workers a good experience, treating them well and keeping their expectations in check also have a large impact on recruitment success and workers returning the following year

"Last year, I was making more than \$1000 a week and this year, I've been getting more than \$1500 for about 40 hours a week. That's not bad money for an old fella like me, though I know some pickers who have made more than \$2000!"

Ivan is a big advocate for seasonal work and the lifestyle that it provides. He runs a blog where he writes about his experiences and offers advice to others.

"My advice for people considering seasonal work is to just give it a go! Seasonal workers come in all shapes, sizes and ages. You just need a positive mindset, and the rest follows.

"There is beauty in the simplicity of the work and it's a great lifestyle. After I finish the cherry season, I'll move on to other summerfruit picking. There are so many jobs out there!" ●



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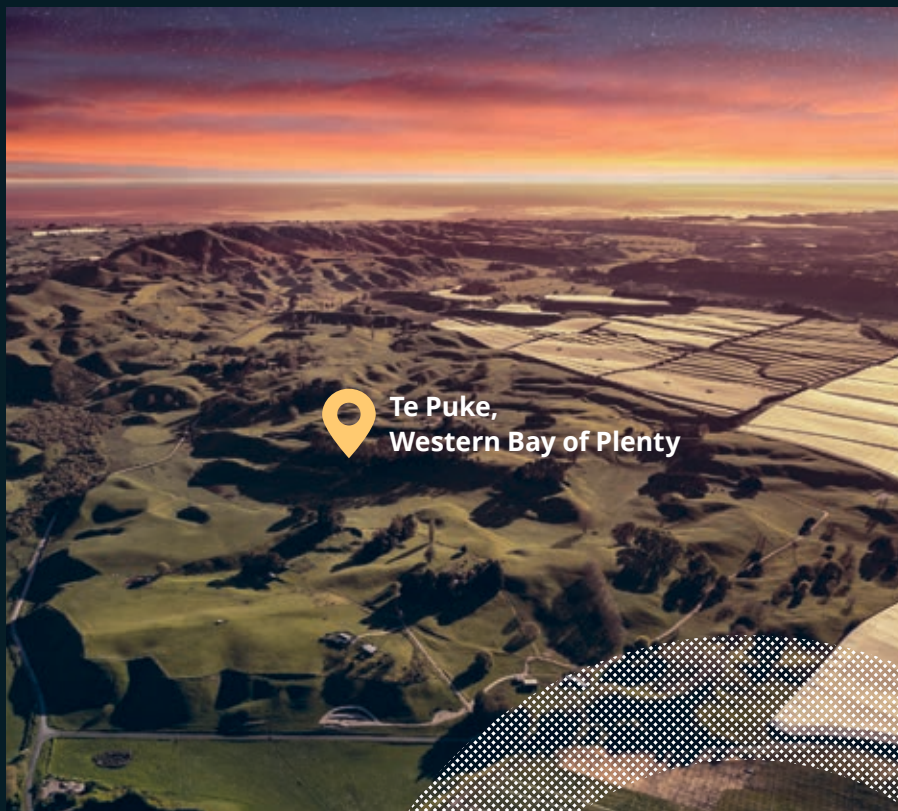
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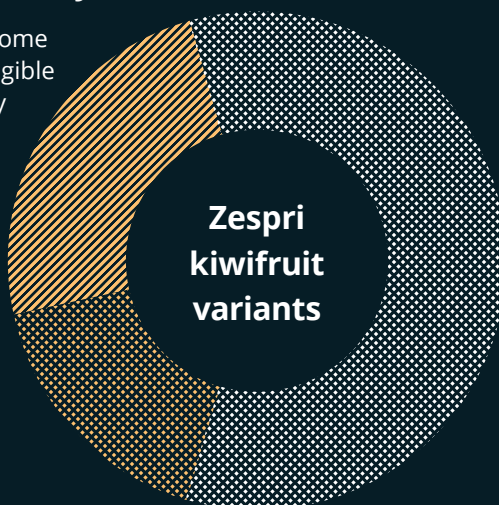
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Next Generation Apples managing director, Evan Heywood, amongst two-year-old Sassy apple trees in the Motueka Valley

Sassy new apple variety packs a punch

Coming up with a short, punchy, easy-to-pronounce name for a new apple variety to trademark has become just as challenging as producing a new apple, but Next Generation Apples has done it with Sassy™.

Anne Hardie

The conical shape of the new apple with its high colour, crunch factor and sweet flavour are its marketable attributes but Next Generation Apples managing director, Evan Heywood, says its early harvest window offers a real opportunity to crack into a market saturated with new varieties.

Next Generation Apples is a joint venture between two multigenerational apple companies – Tasman-based Golden Bay Fruit and Hawke's Bay-based Taylor Corp – which teamed up to get the scale they needed to take on new varieties.

Evan says the joint venture was an opportunity for like-minded, intergenerational growers to work together to take that next step and compete for new varieties they could trademark and take to the world.

In 2019, the company won the Prevar tender to licence the new varieties T093 and T003, with the commitment to put trees in the ground in New Zealand and also offshore.

The result is two-year-old trees in Tasman and Hawke's Bay with their third leaf and a small crop for 2022. Finding the right name that could put the apple on the map has perhaps been the most challenging part of the journey.

"In the past five years the landscape has changed for finding a name. You want to protect intellectual property of both the apple and the trademark so people can't copy it or plant trees illegally.

Evans says the other variety, T003, a Honeycrisp and Sciro cross, is a more elegant and exciting apple but to date, they have had no luck with securing a suitable name.

Whereas Sassy is now at the next step, with a small crop on the trees, a name and plans to send two to three containers to selected retailers in China and Vietnam. Samples will also be sent to interested growers with the aim of ramping up production in the next few years.

Some Sassy apples were sent to China and Vietnam last season for consumer insight work co-funded with AGMARDT. Evan says that produced valuable insights and positive feedback from its potential markets.

Sassy has been bred from the Scifresh, Fuji and Sciros variants, resulting in a crunchy apple with the balance of sweetness and 'zing.' It also has high levels of naturally occurring anthocyanin which comes from the deep red colouring in the skin. This sometimes permeates fine red lines on the flesh of the apple. The apple has almost full colourisation, as well as a long shelf life, says Evan.

"The big thing though is they are seven to ten days earlier than Royal Gala which is the main early variety," he says. "Early season varieties have suffered mainly from not being firm and not having a good shelf life, but this has got firmness and good shelf life. I was eating these in September and they were still crunchy and firm."

For growers, Sassy has the cropping potential similar to that of Royal Gala, with fruit size comparable to both Galaxy

and Royal Gala and a high pack-out rate with soluble solids and acidity similar to that of Galaxy, Fuji Supreme and Royal Gala, once again.

Already, Next Generation Apples has orders in the nursery for growers wanting to grow the variety. Trees are also being tested in Gisborne – an area with apples that are naturally early-season and where Sassy could add another opportunity. The company has also licensed an organisation in South Africa to manage the licence on its behalf there.

Evan says part of the tender requirements for new varieties is to grow them overseas. It is also an advantage to have a variety on the supermarket shelves continuously so there is a market for the New Zealand crop when it is harvested. The company's vision is to have a small and select group of growers in the United States, Europe, United Kingdom, South Africa and Chile, in addition to those in New Zealand. Sassy is already being grown in Australia.

With such a good flavour profile, shelf life and early harvest, Evan holds high hopes for Sassy and its ability to compete for shelf space where retailers are faced with overwhelming choices.

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Sheryl and Barry Wade, of River Estate, at their olive grove at Whitford, Auckland

Organic olives a bit of an art

For more than two decades, Barry and Sheryl Wade have been growing and processing olives at their Whitford property on the banks of the Turanga River near Auckland.

HELENA O'NEILL reports.

A fifth-generation farmer, Barry stopped milking cows on the property in 1986, reverting to dry stock beef farming - which is still managed on some of the farm blocks today - before planting an olive grove in 1997 and operating as River Estate.

The Wades spent many years researching growing olives in New Zealand before planting the grove with 90 olive trees in 1997. Even before the trees were established the venture had its challenges. Overnight, dozens of pukeko pulled out the newly



planted trees until the couple placed plastic sleeves around the trees for protection.

With successive plantings the grove has grown to 1,500 trees on approximately six hectares.

Originally there were nine different varieties of olives planted from Italy, Greece, Spain, Algeria, Israel and France. Through trials and evaluations, the duo have pared this down to six oil varieties, Chemlali, Leccino, Pendolino, Frantoio, Koroneiki, and Picual. Five of these (with the exception of Pendolino) are used to produce



The grove has grown to 1,500 trees on approximately six hectares

The olive grove at River Estate in Whitford, Auckland

single variety extra virgin oils. The estate also produces two table oil varieties, Manzanilla and Kalamata; and one regular 'Tuscan' blend that combines three popular Italian varieties – Leccino, Pendolino and Frantoio.

The Wades aim to follow organic principles as closely as possible with the demands of Auckland's climate. Copper spray is used to prevent peacock spots, along with boron and seaweed treatments, but even then, River Estate keeps spraying to a minimum.

"We minimise the mowing and have no problems with longer grass, especially in the summer as it retains more moisture in the soil, merely by the shade factor," says Barry.

"Everything that comes off the trees that we don't require goes back into the soil. Prunings are mulched and sansa waste [olive pulp and pit waste] plus the mowed grass."

With Whitford having a micro-climate of its own, the area often misses much of the rain that frequents Auckland. River Estate's soils are heavy clay with a high level of rich topsoil, so the grove has been deep ripped to ensure that the olive trees get the nutrients in the soil and excess water drains away.

"The soil is so important," says Barry. "If it's not right, then the tree will never be happy. It has to start with soil nutrition, good worm and mycorrhizal activity."

“

The soil is so important ...
If it's not right, then the tree will never be happy.
It has to start with soil nutrition, good worm and mycorrhizal activity

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Some of the
olive oils produced
by River Estate



"We believe that spraying the grass around the trees does more harm than good, as it causes the soil activity to die. So we have always mowed around our trees and let the grasses, weeds et cetera decompose back into the soil."

Barry and Sheryl do the bulk of the work on the grove throughout the year. Barry's 36-year background in mechanical engineering allows him to carry out any required maintenance on the olive mill, including on other processing and bottling equipment. They hire a contractor to carry out the harvest which usually takes place in May, although in recent times, harvest seasons have crept to as early as the end of March.

“

**Everything that comes
off the trees that we
don't require goes back
into the soil**

Spring has been cooler this year, Barry says, so the buds have been hanging in there, waiting for more warmth to open.

"Ideally we'd like warm weather with gentle breezes as the olives are only wind pollinated. Good hot, dry summers will bring on an earlier ripening.

"Generally, we are talking two to three weeks though, if early.

"One cold year we were still harvesting at the beginning of July. The fruit just wouldn't ripen properly."

This year the olive grove experienced an unusual sequence of two distinct flowering periods on some trees. High humidity meant that two of its olive varieties, experiencing an earlier than usual flowering of its fruit, had significant deterioration in quality, causing all sorts of problems with the oleic acid come harvest time. This impacted the final oil quality, downgrading the grove's 2021 Chemlali and Leccino oils to virgin olive oils.

Grading of the grove's olive oil is completed through an independent laboratory that tests them to ensure they meet the chemical composition required. A specially convened organoleptic sensory tasting panel also look for fruitiness, flavours, complexity, intensity, and defects. (If there is any taste defect, the oil is downgraded from extra virgin olive oil to less premium virgin oil). Then the olives are processed and cold pressed into oil before bottling.

River Estate produces naturally cured olives too. An idea of Barry's, the handpicked olives are soaked in a brine solution until ready to package. The natural fermentation process takes between six and 12 months to complete.

"Brining starts just before harvest," says Barry. "I try to get the Kalamata olives off first because they don't like Auckland's humidity. If you leave it for two weeks, they will sometimes rot. The other two varieties used are Manzanilla and Picual."

Balancing the salt content to safely brine the olives without having an overpowering salty taste has become a bit of an art. After ten years of trying several different traditional brining methods, Barry came up with a tried-and-true

mathematical formula that achieves a perfect brine every time. Just one year after perfecting his technique, River Estate's table olives were named runner up to the supreme award at the Cuisine Artisan Awards.

Housemade dukkah, accompanied by a flavour blend of olive oil the Wades developed 15 years ago, also forms part of River Estate's product repertoire. It has become a favourite at the estate's olive oil tastings and is sold online and at Clevedon Farmers' Market and La Cigale in Parnell too.

"The Clevedon market started in November [2005] and I started as a stallholder the following February," says Barry. "It's a good market. Good quality food and most of the time you get discerning buyers."

Barry says the central city market is a good hub for supplying restaurants and city customers but with the Covid-19 Delta outbreak, sales are down due to restaurant and market closures.

Fortunately, the decision to offer online sales ten years ago has helped River Estate through the outbreak, with a loyal and growing customer base from Kaitia down to Dunedin. Like many other growers, Barry is anxiously waiting for Covid-19 restrictions to ease so he can return to supplying restaurants and markets. ●



Traditionally cured olives and dukkah produced by River Estate olives

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UPL product development and regulatory lead Australia & NZ, George Follas (left), and Plant & Food Research senior commercialisation manager, Greg Pringle, with Aureo®Gold

Award-winning biological organism emerges from archives

The finding of a yeast-like growth on Central Otago apricots, as opposed to the expected brown rot, prompted Plant & Food Research Ltd (PFR) scientist, Phil Elmer, to investigate what it was.

Elaine Fisher

Twenty years on, the organism Phil identified as keeping bacteria responsible for deterioration at bay is now the vital ingredient of Aureo®Gold – a new biocontrol product, developed by PFR and its commercial partner UPL, with the support of Zespri and Kiwifruit Vine Health (KVH).

Its launch by UPL in November 2018 marked an important milestone in the New Zealand kiwifruit industry's ongoing efforts to better manage the kiwifruit disease *Pseudomonas syringae* pv. *actinidiae* ('Psa').



Greg Pringle, senior commercialisation manager at PFR, says at the time Phil isolated the organism, there was no apparent application for it. The organism was subsequently recorded and stored among his team's extensive bank of organisms and held until it may be needed.

That need came in 2010 when the kiwifruit vine disease Psa was discovered in New Zealand, threatening the future of the industry.

"The decision was made to look for a biological control, so we delved into our archive of cultures," says Greg. By 2018, the organism from those apricots was being cultured on a commercial scale and licensed for use in New Zealand as Aureo®Gold.

Now PFR and UPL have begun commercialisation offshore to meet the demands of kiwifruit growers globally, where kiwifruit is grown on more than 250,000 hectares, much of which are affected by the Psa disease.

The success of Aureo®Gold was recognised when it won the KiwiNet Commercial Impact Award late last year. These awards celebrate individuals and organisations whose best practice approach is changing the innovation landscape in New Zealand.

Greg says the Aureo®Gold story is a classic example of the old saying "chance favours the prepared." "Good pathologists and entomologists around the world are constantly observing, identifying and recording organisms in the hope that there will be a need for them in future."

“

It is a more environmentally friendly product that is safe for bees

Developing a commercial product from a live organism isn't easy, but Greg says the German liquid fermentation manufacturer that PFR and UPL work with has refined the process.

"It sounds easy," says Greg. "Grow the organism in 100,000 litre fermentation vats, extract the organism and formulate it into a product to put in a jar to sell to growers, but it is

never that simple. It's been challenging to scale up to the volumes needed for commercial production.

"There have been some issues, but we now have a good formulation and a product which can be sprayed on kiwifruit vines."

Gaining registration for the product's commercial use in New Zealand has also been challenging.

"The regulatory system is set up to handle pesticides, but we need regulation which fosters biological products, which would enable New Zealand to put its hand up to tell the world that we have a system which favours the production and use of biological products, in turn enhancing our reputation on the world market.

"Internationally, the use and development of biological products is growing fast based on the sheer sales, the new tech companies being set up and the mergers and acquisitions by bigger companies. Biologicals are a hot topic at the moment."

As a 'live' product, Aureo®Gold has a defined shelf life and growers need to understand its handling and application for it to be effective.

It is a more environmentally friendly product that is safe for bees. It meets low residue requirements for export kiwifruit and is already providing kiwifruit growers in New Zealand, especially organic growers, with an important tool in their Psa management toolbox. Demand for the product has been consistently high since launch.

UPL is now exploring the expansion of Aureo®Gold to other territories and for other disease targets through complementary trials in several countries, with a commitment to register the product accordingly. ●





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Plant & Food Research chief executive, David Hughes, was named the winner of the inaugural KiwiNet Commercialisation Icon Award

Commercialisation of science makes world a better place

The government's current review of science and its funding is a useful time to think about where commercialisation fits within the science model, says chief executive of Plant & Food Research Ltd (PFR), David Hughes.

Elaine Fisher

"Science can only make a difference when it is taken outside of the lab and used by others," David says. "It is my view that if the 'Future Pathways' review process has a strong focus on just one thing it should be on how to maximise the flow of scientific knowledge to the people to make New Zealand and the world a better place to live."

David was named inaugural KiwiNet Commercialisation Icon late last year – an award which commended him for his visionary leadership in advancing the cause of research commercialisation, fostering a social licence to commercialise research and his role in nurturing entrepreneurial spirit and skills in others.

"I believe it's important that a share of any financial benefits of research are reinvested to allow scientists to keep innovating," he says. "I've been very privileged to work with some great, forward-thinking scientists as well as those on

the business side who can take that science into the world."

David, who was group general manager commercial, prior to being appointed to chief executive in 2018, was recognised for his dedication to finding new ways to commercialise science. In that role, he inspired the culture change required to increase commercialisation of research and championed new business models that provided security and growth for the organisation.

Royalties have subsequently grown from \$13 million in 2009 to \$58 million per annum, and now make up 30 percent of PFR's annual revenue. The organisation has also established new commercialisation models, such as the Pacific Berries joint venture with Northwest Plant Company in the United States and recently established spin out companies Scentian Bio and 2Before. Commercialisation was a key part of David's vision and a technology development business unit

was subsequently formed to identify and invest in research with commercialisation potential.

"Science can and does change the world for the better," David says. "We are all enjoying significantly better lifestyles than previous generations thanks to scientific advances. However, to do so, science needs to be in the hands of orchardists, marketers, the supply chain and commercial companies, not in research labs or academic publications."

The royalties PFR earns enables investment in ongoing and new research, some of which may take decades to reach the commercialisation stage.

David says PFR receives around one-third of its income from royalties. "That's a rare thing in the biological industry and puts PFR among the top one percent of global research organisations funded this way.

"This is enormously valuable because it gives financial flexibility to plan, to maintain capability and to keep areas going on the basis that we are sure they have a long-term future.

"Under the financial grant model, if you don't win and the grant money does not come in, hard decisions have to be made around staff and research projects.

"Commercialisation has allowed PFR to grow, particularly in the past ten years and hold on to key areas of research."

KiwiNet chief executive, Dr James Hutchinson, says research commercialisation has a critical, game-changing role for New Zealand's prosperity.

"New Zealand's universities, Crown Research Institutes and independent research institutes are havens for great scientists with extraordinary ideas, and the capability to create world-changing technologies," James says. "KiwiNet is thrilled to be part of this knowledge-to-market system. We're excited to celebrate the people harnessing these brilliant research discoveries and propelling some of these most promising projects into the world." ●



The 2021 KiwiNet Research Commercialisation Awards winners are:

Momentum Student Entrepreneur

Luke Campbell, University of Canterbury:
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Breakthrough Innovator Award

Dr Shalini Divya, Tasmanlon/ Wellington UniVentures:
A new aluminium-ion battery technology, offering a safer, sustainable, cost-effective alternative for grid storage and portable applications

Researcher Entrepreneur Award

Prof Johan Potgieter, Massey University:
Inspiring entrepreneurial insurgency by creating a technology pipeline

Commercialisation Professional Award

Darja Pavlovic-Nelson, Plant & Food Research:
Sensing opportunities - capturing value from Plant & Food Research IP

Commercial Impact Award

Aureo®Gold - Plant & Food Research, Zespri and UPL: *Aureo®Gold a new biocontrol product combating plant disease*

Commercial Icon Award

David Hughes, chief executive, Plant & Food Research

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Freshmax Exports Asia sales manager, Greg Sutherland, and Mr Apple export sales executive, Naomi Mannering, have been appointed to NZAPI's Associate Director programme for 2022

New Zealand apple industry appoints two new associate directors

New Zealand Apples and Pears Inc. (NZAPI) has announced the two appointments to its 2022 Associate Director programme.

Sarah Cameron

Freshmax Exports Asia sales manager Greg Sutherland and Mr Apple export sales executive Naomi Mannering will join the NZAPI board in 2022 as associate directors.

The Associate Director programme was introduced in 2019 as a way for NZAPI to grow its future governance and representation pool to provide the board's selection committee with a pipeline of aspiring directors who have both the knowledge and training for what is involved in governing such an organisation, and in general, acquaint up-and-coming pipfruit industry managers with the governance of the industry body.

“

The programme offers successful candidates a chance to work alongside the NZAPI board and to be mentored by directors

“The programme offers successful candidates a chance to work alongside the NZAPI board and to be mentored by directors, along with receiving the relevant New Zealand

Institute of Directors' training," says NZAPI board chair Richard Punter.

"The apple industry has faced unprecedented challenges in the past two years and the ensuing labour shortages, and there is significant pressure on the broader New Zealand food industry to innovate to remain competitive both domestically and globally. We need trained directors from all areas of the industry's value chain to be an effective and relevant governance board."

“

The apple industry has faced unprecedented challenges in the past two years

Both Greg and Naomi have extensive experience in the pipfruit industry. Greg has spent 22 years in the industry while Naomi, who grew up on an apple orchard, has spent most of her adult life in industry roles, first with Fern Ridge Fresh and then with Mr Apple.

Now more than ever we need people who have can bring an alternative perspective and who can advocate for the industry



"My favourite part of my role at Freshmax is setting up international programmes for our apples and pears that the orchard team have put 12 months of hard work and energy into, and then seeing the passion that our customers have for what we grow," says Greg. "I'm looking forward to joining the NZAPI Associate Director programme to learn more about governance and industry relations."

Naomi says she would like to improve her commercial and governance nous so she can make a positive impact in the industry.

"Now more than ever we need people who have can bring an alternative perspective and who can advocate for the industry. I would like to increase my ability to think laterally to take on the challenges we face in the ever-changing environment."

The programme's 2021 associate directors, Kurt Livingston and Catherine Wedd, have now completed their board term, with Catherine voted on to the NZAPI board at the Annual General Meeting in August. ●

AMNESTY NOTICE



New Zealand Fruit Tree Company Limited (NZFTC) is responsible for the administration and management in New Zealand of a range of fruit tree varieties and breeding programmes.

NZFTC has become aware of a number of instances where trees of these varieties have been reworked or propagated by its licensed growers without authorisation from NZFTC.

As a result, NZFTC intends over the next few months to increase its auditing and inspection activities over the properties of its authorised growers, to ensure that those growers are complying with the licences granted to them by NZFTC for these varieties. Any grower who is found to have reworked or propagated trees of these varieties without authorisation may be subject to a range of consequences. These may include termination of the rights granted to that grower, the destruction of trees of all licensed varieties, damages, and the requirement to pay additional fees.

Before taking these steps, NZFTC is offering its authorised growers a limited opportunity to notify NZFTC of any unauthorised reworking or propagation by them of any trees of these varieties. Accordingly, if you have engaged in such unauthorised reworking or propagation, and if you:

- provide full written details of such unauthorised reworking or propagation to NZFTC before 5:00 pm on 31 March 2022;
- take such steps as NZFTC reasonably requires to enable NZFTC to verify any such written details provided by you;
- pay the applicable fees that you would have paid had your reworking or propagation been authorised, within 7 days of receipt of an invoice from NZFTC for such fees; and
- continue to comply with all your other obligations under all agreements between you and NZFTC,

then NZFTC will regard your unauthorised reworking or propagation as having been authorised at the time, and will take no enforcement steps in relation to your unauthorised working or propagation.

This amnesty offer will expire at 5:00 pm on 31 March 2022. NZFTC reserves all of its rights and remedies in relation to any unauthorised reworking or propagation notified to NZFTC or discovered by NZFTC after that time.

If you wish to take advantage of this amnesty, or if you have any questions about this amnesty, please contact NZFTC at: john@johnmortonltd.co.nz - 021 423 489 or julie@freshnz.co.nz - 021 458 590



Plenty of variety and career opportunities on an orchard

Former professional chef, Leif Hancox, moved his career outdoors in 2019, establishing a new direction for himself in the horticulture industry.

Supplied

Operating in kitchens as a civilian contractor to the New Zealand Air Force, Leif had no time for anything else. Then things changed.

"I love being outside and I enjoy the change of speed," he said of the less frantic pace within the orchard.

Many people in the industry would laugh to hear Leif say that, given how demanding horticulture work can be at times – but not compared to working 20 hours in a hot kitchen, he says.



"It's no way near as high pressured as cheffing."

Starting with Fortune Fruit in November 2019, he is currently studying Horticulture Level 4 through the Otago Polytechnic.

The staff were all so friendly on the orchard and always willing to pass on information that was needed, he says.

He couldn't believe how many varieties of cherries there are – as well as the variety of people he worked with.

"My boss is great," says Leif. "He doesn't expect me to work weekends but doesn't say no when I do. It's a great life."

Down in the Teviot Valley, Zayd Stanley has been working on an orchard in Roxburgh since his late teens and hasn't looked back. It was thanks to his friend who introduced him to the world of fruit-growing, where the opportunities are endless.

His boss, Hayden Taylor, says Zayd's stickability to keep coming back day after day and to be reliable and always on time is impressive.

"He's just kept at it," says Hayden. "Zayd has already built up a set of personal and time management skills that are just unreal."

“

My boss is great, he doesn't expect me to work weekends but doesn't say no when I do. It's a great life

The Roseburn Orchard in Roxburgh East is owned by CAJ Apples, a family-owned pipfruit grower, packer and exporter utilising cutting edge technology in the packhouse for postharvest. There are opportunities

to learn all aspects of orcharding at Roseburn, which presents 20-year-old Zayd with plenty of variety in his job every day.

Having officially completed his first full season and transitioning from a seasonal based role to a full-time one, Zayd has now undertaken study or a Level 2 Certificate in Primary Industries.

“

The seasons in the orchard lead themselves to an ever-changing work variety

"The seasons in the orchard lead themselves to an ever-changing work variety," Hayden says. ●



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The New Zealand Fruitgrowers' Charitable Trust is offering a \$5,000 scholarship in 2022. The scholarship is available to New Zealand residents who are working in, or intend working in, the New Zealand fruit growing industry undertaking their first year of study towards a Diploma in Horticulture or a Diploma in Horticultural Management at Lincoln University.

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

Application process

Applications for this scholarship close on 30 April 2022.

Further information and application forms are available from the Lincoln University website: www.lincoln.ac.nz/scholarships

Please note that the Selection Teams for both scholarships will be looking for:

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



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Finger limes contain caviar-like pearls with an intense, lime flavour

High hopes for prickly Aussie native

Growing them is a case of trial and error and they'll fight to the thorny death to protect their fruit, but finger limes could have a bright future for orchardists in New Zealand. KRISTINE WALSH reports.

With their fruit hidden deep in a canopy of long thorns, finger limes can be hazardous to harvest, but growers say the potential rewards in growing them are great.

"They are not easy plants and we have a lot more to learn about them," says Cath Carter of Gisborne's Hill Road Orchard. "But they are a really interesting product so that's why we're going with them."

It was, in fact, Cath's husband Matthew who first got intrigued with the spiky citrus, which produces small, gherkin-shaped fruit, bursting with caviar-like pearls of intense lime flavour with a hint of lemon.

Matt came across the fruit on a research trip to Australia a few years ago and thought they had potential for growing in New Zealand.



"So about five years ago, he started trying to source them off Trade Me or wherever he could," says Cath. "I was thinking 'why would you spend 150 bucks on a prickly weed?', but he just thought they were really cool."

Established growers of mainly citrus – which they sell either as whole fruit or unpasteurised juice – the Carters have always been supportive of each other's projects and Cath has her own planting experiments on the go.



Even with the thorn-protection of leather gloves and canvas arm guards finger limes can be fiendishly difficult to harvest, but grower Matthew Carter believes they're an exciting crop that are worth the effort

The finger limes, though, have brought their own challenges.

"We deal with a lot of chefs who are always looking for something exciting and new so we knew there would be interest, but there's not really a lot known about things like varieties and optimum growing conditions," Cath says.

“

From day one it's been a process of experimentation and elimination as far as plant selection goes

"From day one it's been a process of experimentation and elimination as far as plant selection goes. With the support of a wonderful local nursery, Matt is working to develop the best plants in order to produce a high-quality, consistent-quality fruit for customers."

These plants originate from the five Matt has been growing in recent years. Elsewhere on the orchard, he has 70 trees nearing production age and he hopes the 400 he has being raised in a nursery will be ready for planting by early spring.

Finger lime trees take up to five years to fruit and, in New Zealand, will grow to a height of around three metres.

While they fruit all year round – heavier in the hot months from January to March – an annual production of just five kilograms per tree would be considered a successful yield.



Finger limes contain caviar-like pearls with an intense, lime flavour

Finger lime facts

-  A member of the Rutaceae family, the finger lime (*Citrus australasica*) is an Australian native that has for thousands of years been used as both food and medicine by indigenous Australians, who call them 'rainforest pearls.'
-  While there are limited commercial varieties available in Australia, the industry in New Zealand is in its infancy.
-  The trees have small leaves and deadly spikes, and produce small, gherkin-shaped fruit bursting with pearls of intense lime flavour with a hint of lemon ... characteristics that have seen it dubbed the 'caviar' of the citrus world.
-  The fruit is especially coveted by chefs and mixologists for use in food and drinks, but also has (untested) applications in medicine and beauty and there is high demand in the export market.
-  Though challenging to grow, disease-resistant finger limes are being tipped as a potential game-saver in regions like Florida in the United States, where the industry has been decimated by citrus greening, or huanglongbing (HLB).



While Harry enjoys time on the tractor, the Carters' beloved tractor shed will soon make way for a purpose-built orchard shop so they can better serve their loyal customers

However, in New Zealand, changeable weather around Christmastime puts fruiting into slow-mode – a real shame given these zesty flavour bombs pair particularly well with a festive glass of champagne.

“

... but the important thing is that the climate is changing and, like everybody else, if we are going to cope with that we need to diversify

The Carters' existing trees currently produce enough fruit for Hill Road Orchard to market in 100-gram containers. The product is quickly snapped up by customers as soon as it hits the market.

And while it is a developing crop, the Carters' fruit has already won gold at the Outstanding NZ Food Producer Awards (2021). The judges described the caviar-like fruit as "a unique and fascinating new product ... gorgeous to look at and to eat".

At around \$170 a kilogram, finger limes sell for about three times the cost of standard limes – similar to the returns seen in Australia.

"They go all around the country to both domestic and restaurant buyers and when we have enough we take them

to the Farmers' Market too," Cath says. "But we really want to see good, consistent supply so we've teamed up with a few other local growers to share information and develop plants and we'll join forces on supplying the finger limes while still catering for our own markets."

Hill Road Orchard is a seven-hectare, decade-long labour of love which the Carters restored to health after it had been neglected for years, and where the finger limes are just part of an increasingly eclectic planting programme.

Cath puts its success to date down to orchard management that is low on chemical intervention and high on diversity and well-thought-out pruning strategies.

The Carters have mature plantings of both navel and Valencia oranges, to which they have added crops including blueberries, blood oranges and pink-striped Eureka lemons.

"We are always keen on new varieties and ideas, so if one of us is intrigued by something, we just go for it," says Cath. "That is interesting and fun, but the important thing is that the climate is changing and, like everybody else, if we are going to cope with that we need to diversify."

"The same applies for doing business, which is why we're building the orchard and web-based farm shop, focusing on local, small producers. The Covid-19 pandemic shone a really bright light on the reality that the world we are operating in is in constant change and if we want to survive we have to develop and evolve."

In the short term, a lot of their energy continues to go into developing their finger lime crop.

For example, as Australian desert plants, how will the trees with their tiny leaves and deadly spikes do in a less temperate climate? How much water will they need? Do they prefer to be fed or starved? What is the best way to prune them? Is it worth experimenting with varieties that produce different fruit colours?

"At the moment there are no rules, everything is pretty much trial and error, so we're learning as we go," says Cath. "What we do know is that we'll have to work out a better way to harvest so our pickers don't lose an eye!"

“

I still think they're a prickly weed, but they're a weed with a future

It's still early days as the couple work through the development stage. From genetics and rootstock to growing methods, pruning, storage and even developing the market.

"The reality is that finger limes will be a small-volume product for a long time as they are so costly to produce ... they're expensive to pick, process and look after," Cath says.

While there are challenges ahead, the Carters both love their new crop and have high hopes for its place in the market.

"I still think they're a prickly weed," says Cath, "but they're a weed with a future." ●



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Online employment tool reduces paperwork for seasonal staff

Hoddys Fruit Company near Nelson has saved up to two hours on paperwork for each seasonal worker this year by using the online recruitment tool, PICMI.

Anne Hardie

Hoddys general manager, Jos Bell, says the company used to write all the details on paper for the 120 seasonal staff they employ each season. Then there were the applicants that didn't turn up which still took time.

Now it takes just minutes to get a signed contract from each seasonal employee and collect all their details for employment.

Employers send an invite to prospective employees through PICMI and a link to a job where the employer can hold online inductions, outline health and safety requirements, post videos and anything they think will help the prospective employee decide whether they want that job or not. If they decide they want the job, they fill in the contract and all their details, including availability dates for work and accommodation requirements if that is applicable.

Jos says PICMI has not only made the sign-up job easier and saved a huge amount of time, but has helped to collect employment data that can be used more effectively.

"It means we can get the data feeds straight from the site, which shows how many people we have employed and for how long. In the past that was a couple of days' work to sort out who those people were and how long they were employed."

"It's already saving us time and those boxes of paper."

In Central Otago, Kris Robb at Clyde Orchards employs about 150 staff to pick his summerfruit crops and has signed up close to 250 contracts via PICMI, saving him up to 500 hours this season. Once prospective employees have gone through the information on the PICMI site, filled in their information and signed a contract, they tend to turn up for work, he says.



Jos Bell used to deal with boxes and files of employee information, but no longer

"In the past we might have had a list of 150 and maybe 100 would turn up, but now we know where they are at through the process of induction."

Rob is also using the data for better planning. Before the season started, he was able to organise seasonal workers into cohorts, drag their information into another spreadsheet to work out who needed accommodation and upload data into their payroll system, ready to go.

“

Before we were manually inputting that data and sometimes two to three times

"Before we were manually inputting that data and sometimes two to three times. Now we have all that data and are able to manipulate it how we want."

PICMI has been working with different groups within the horticulture industry to develop the application further and now has different templates for summerfruit, kiwifruit, hops and general horticulture.

The next step is mini trials with other industries to link up more work for seasonal workers so they can 'live locally and work regionally.' ●



Constrained by Covid: North Island growers grapple with crate shortages

North Island vegetable growers are hoping the worst is over after dealing with crate and pallet supply shortages in the run-up to Christmas.

Glenys Christian

Growers were well aware that shortage might occur due to a change to collapsible crates, and also having to deal exclusively with crate suppliers, to send produce to North Island Foodstuffs from 1 April last year.

As well as there being fewer crates in circulation some growers had concerns about the crates being returned to them not being hygienically cleaned.

"It's all fine now but the damage has been done," says one grower.

The plan was to make the changeover coming into winter with the lower levels of produce supply, but Covid-19 intervened, causing manufacturing delays and shipping congestion. That meant new crates that had been ordered and were expected to arrive from China in spring were only delivered in December 2021 and January 2022.

To make matter worse, some growers held onto crates out of concern they might not have enough to transport their produce, meaning other growers were left short. Some were forced to use crates which North Island Foodstuffs said they wouldn't accept, others were able to use cardboard packaging and some ran out of other options altogether.

"We got by but we sailed close to the wind," says NZ Hothouse managing director, Simon Watson.

It worked out in NZ Hothouse's favour, after a fashion, that tomato production was reduced due to bad weather, a closing of export markets and a shortage of labour to harvest the crop, meaning the shortage of crates was more manageable.

Head of growing at T&G Global, Ben Smith, says T&G Global worked closely with crate supply company, Viscount FCC to get through.

"We've passed the worst," he says.



Regan Hill, who took over as general manager of Viscount FCC at the end of November, says there have always been crate supply and demand imbalances.

To combat that, the company has made several large investments in its business assets of crates and pallets, as well as in the operation of its three wash plants.

A total of 112,000 new crates arrived in New Zealand between December 2021 and January 2022, resulting in a ten percent increase in the company's total pool. There had been an increase of 32,000 H39-litre crates mainly used by tomato growers, 57,000 H47 crates and 22,000 extra H61 crates.

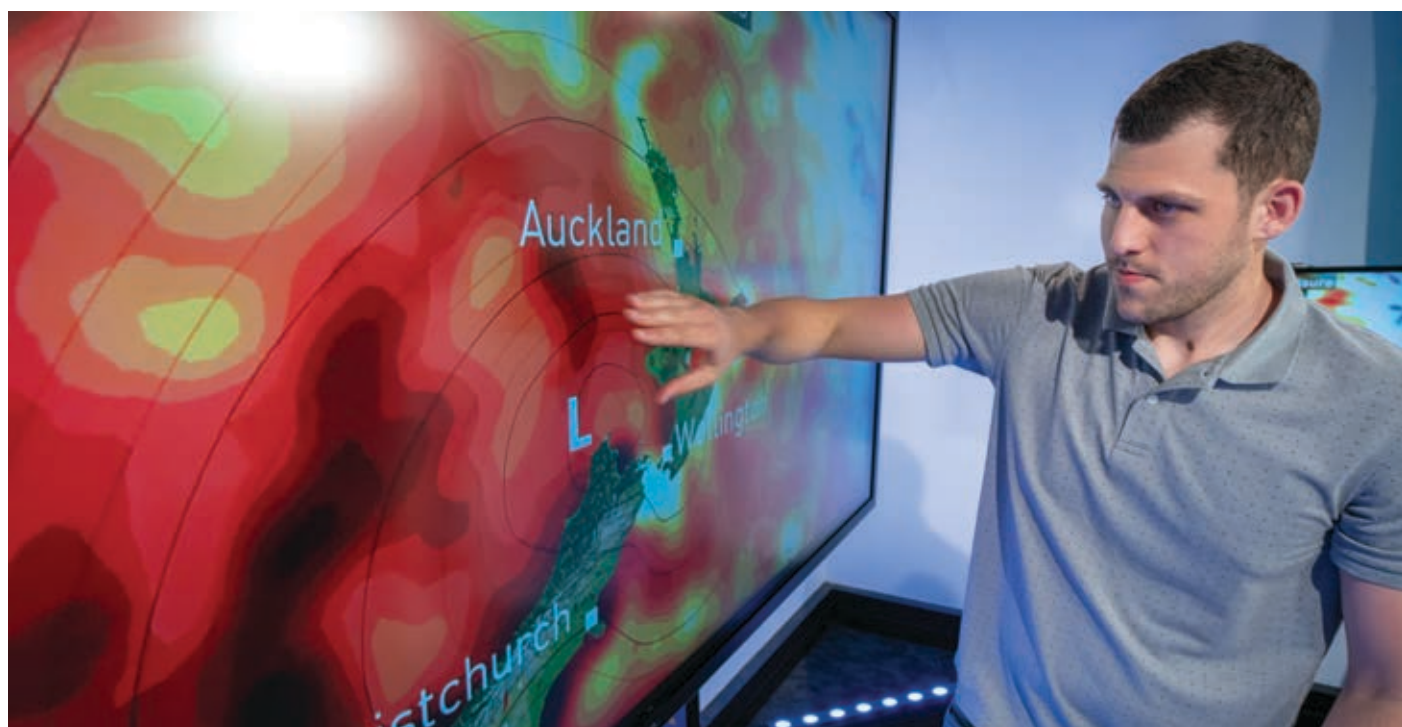
"It's made a difference," Regan says. "And we'll continue to keep purchasing more crates."

The company is confident its orders of 65,000 new crates split between H39 and H47 sizes will arrive, as expected, in April and May as its Chinese manufacturer has already completed the order. There are enough of the H61-litre crates, used for pumpkins and watermelon, already in circulation he says.

Regan anticipates making further crate purchases through 2022 in order to get a better balance between supply and demand.

Viscount FCC has also made operational efficiencies and investment at its three wash plants in Mount Wellington, Auckland, Palmerston North and Christchurch to increase their capacity by ten percent.

More gains are planned for throughout 2022 by bringing in weekend overtime for workers at its Auckland plant – which usually runs 24 hours a day, five days a week. Part of that plan is to have dirty crates washed within 48 hours for growers to come and pick up. ●



NIWA Meteorologist Ben Noll

New weather tool could be a game-change for drought-struck growers

A new tool being developed by the National Institute of Water and Atmospheric Research (NIWA) to forecast drought and dry conditions could help growers and farmers be better prepared.

Anne Hardie


NIWA meteorologist, Ben Noll, says scientists will use a weather model released in the United States in 2020 and refine it for New Zealand's complex terrain. It will involve some "data science and deep learning" to understand the New Zealand context.

Initially it will be developed to forecast 35 days ahead and then it will be extended to three and later, six months, as researchers try to push predictions further out.



"We are trying to determine if a drought is likely," Ben says. "Whether or not drought has a higher probability in the next two seasons."

The new forecast tool will sit alongside the New Zealand Drought Index which was developed and launched in 2017. It measures the current status of drought across the country and measures the duration and intensity of recent dryness. In other words, it is an observation of drought once it has happened.



The new
forecasting tool
will be available on
the NIWA website at
the end of 2023

Image; Alan Blacklock, NIWA

NIWA also provides seasonal climate outlooks each month that look to as many as three months ahead, but they are not drought specific. The new tool will try and foresee the potential for dryness and drought and therefore limit the risk of being caught out by drought.

Until now, New Zealand meteorology has been using a climate model with a 100km resolution which describes the distance between nodes on a grid. That will move progressively toward a resolution of five kilometres, providing more detail for locations around New Zealand.

“

Past models looked at weather patterns such as El Niño and La Niña to predict seasons, whereas this new model will take that information plus more data and techniques to better predict what lies ahead

Ben says New Zealand has many regions where mountains closely border productive land – such as Tasman – where current forecasting struggles to predict weather. Increasing the resolution will increase the ability to forecast within a region.

“

The goal is to push the science as far as we can with current meteorology

Ben says there is huge potential to improve the accuracy of the modelling and then push it out to the broader public through the web.

“The goal is to push the science as far as we can with current meteorology.”

The new forecasting tool will be available on the NIWA website at the end of 2023 and will supplement other tools used by growers and farmers. Ben hopes it will add more certainty to their planning, such as timing for crop harvests.

“There is going to be another summer like the one in 2019-20 and there will be more weather events with increasing frequency,” says Ben. “So, to have all our ducks in a row now will set New Zealand up as a nation to cope with those events.” ●

Development of the new tool will cost \$200,000 and is being jointly funded through the Ministry for Primary Industries and NIWA.



Working her fledgling avocado orchard just out of Gisborne was an opportunity to immerse herself in healing after the death of her son, says grower, Chris Fraser

Gisborne grower puts her heart into it

Chris and Daniel Fraser knew they could grow great avocados, they just didn't know how fast that would happen – or that it would help heal their heart break. KRISTINE WALSH reports.

Chris Fraser was not alone in having produced a bumper 2021 haul of avocados, but her crop was more unexpected than most.

"We had only planted the trees in 2018 and just three years in, I didn't expect to see anywhere near this much," she says. "Then again, there's been a lot of heart go into this orchard."

The orchard is on Willows Road, less than ten kilometres from the centre of Gisborne.

Chris and husband Dan had bought the four-hectare site in 2016 and together created avocado-friendly

hollows and humps on the flat land around their home.

After waiting for two years for their order of 1000 Hass-on-Bounty trees, by winter of 2018 they were ready to get planting, planning to run the orchard while maintaining full-time jobs in town.

But life, as it does, took a turn.

In July of 2018 Chris's mother died, followed by her uncle then, devastatingly, her father.

Then, a year to the month after burying her mother, Chris and Dan's "charming, gorgeous" 21-year-old son, Toby, died by suicide.

Having survived those early chaotic, catastrophic months after losing Toby, Chris's response was to step outside into the orchard.

"Life became a bit of a blur, like living in a fog, so I just pushed through and did what I could on my good days," Chris says. "But I simply can't talk about the orchard without talking about Toby. He was such a wonderful son and friend and he has been with me every second of every day spent working my grief out in the soil."

Before those awful years, Chris and Dan brought a wealth of experience to their budding venture.



The Frasers' late 21-year-old son, Toby, pictured here during a family trip to Vietnam

Both from Te Puke, Dan's family grew kiwifruit and avocados and Chris had worked in packhouses and on orchards from a young age.

Having got together in their teens, the couple have great memories of climbing large avocado trees on Dan's father's orchard to help carry out the harvest.

"Dan's father was one of the earlier growers in New Zealand and back then, in the mid-1980s, avocados were so exotic," Chris says.

"Those early experiences sowed the seed of our continued life of growing and managing crops on the land."

In the late 1980s, the young couple married and immersed themselves in a life of work, study and raising their growing family.

Their three children were still young when they moved to Gisborne, where they established an avocado orchard on their two-hectare property at Ormond, just a few kilometres from where they are now.

"We only had about 150 trees but avocados are such a cool crop to

have... lovely trees that produce a great product," Chris says. "We all pitched in on doing things like growing watermelons between the trees, which we'd sell at the gate or the Farmers' Market. For about five years we managed to pay for family holidays with our 'watermelon money'."

“

I simply can't talk about the orchard without talking about Toby

By the time they bought the Willows Road Orchard in 2016, their eldest daughter Samantha was in the army; son Jacob was a builder and the youngest, Toby, was working in civil construction.

"To start with, the new orchard was really Dan's baby... he planned all the surveyed hump and hollow earthworks, the hedgerow planting, the lot," says Chris. "But after losing Toby I found it too hard to go back to my job as an orthodontic auxiliary



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so I guess I kind of took it over. I'll be out there all day, weeding with a hoe or doing whatever needs to be done, just occupying my own space."

“

We need to gather the strength to ask blunt questions of our men, and ensure we take the time for uninterrupted listening

Chris has also invested those "good days" in professionalising her approach, studying everything from health and safety to Avogreen monitoring and Growsafe certification to take her into the years ahead.

And she's been working with specialist avocado consultant, Jerome Hardy, to help deepen her understanding, gaining greater confidence in her on-orchard decisions.

"I've been trying to learn everything while operating in this strange, strange space – a space without Toby – so all through this, the orchard and I have grown together."

Even with all that work, all that enriched knowledge, this year's bumper crop took Chris and Dan by surprise.

"We always knew we could grow great fruit... We're on rich Matawhero silt loam soil and invested a lot in planning and planting to make sure the trees got the best start and remain healthy," Chris says.

"After a fruit count earlier in the year we knew there was going to be a reasonable output, but even if we were ready to export, the pandemic would have made it tough so I thought 'right, I'll deal with the crop myself'."

For Chris, that meant picking and packing nearly 40,000 fruit – huge for such young trees – and selling them wherever she could.

"That did mean putting on a happy face and getting out into the community but it was actually really great," she says. "And the feedback we got about the quality was amazing, so that's a good sign for the future."

But the orchard hasn't been the only thing to have grown out of the Frasers' grief.

At the time of Toby's death in July 2019, sister Samantha had left the army to go travelling while brother Jacob was studying in the South Island.

"With what we've been through, I wouldn't describe us as lucky, but we've certainly been fortunate in that Sam and Jacob were able to come straight back home to live in Gisborne," Chris says. "There have been days when they've needed support, days when Dan or I have needed support and we've been able to be there for each other."



After Toby's funeral, the family was visited by local, Krissy Mackintosh, who had offered to dry some of the swathes of flower bouquets to create memorial wreaths.

"The house was full of people and Krissy said she was so moved by what she saw, what she felt, that she had to do something about it," Chris says.

"That was the start of the #Hear4U movement to raise awareness around men's mental health and it's turned into a really powerful tool in our community.

"#Hear4U doesn't discriminate and is there for everyone, but the fact is four times more men are dying from suicide than women and these are often our wonderful rural men."

And despite what she has been through, Chris will talk to anyone about suicide. Her message is that too many great men are dying.

"This is not just a male problem, this is a community problem," she says. "Women are more likely to talk about their feelings whereas men are often less comfortable."

"We need to gather the strength to ask blunt questions of our men, and ensure we take the time for uninterrupted listening. We need to reframe questions away from asking about feelings and ask 'what is the problem?', or 'are you thinking about suicide?'."

"Listen... don't be scared of silent gaps, don't fill in the answers for them and don't be scared of not having the best advice."

A problem shared is often a problem halved and could make a big difference in someone's wellbeing," Chris says.



Do you, or someone you know, need help?

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- **Rural Support Trust** – 0800-787-254
- **Samaritans** – 0800-726-666
- **Depression Helpline** – 0800-111-757 or free text 4202
- **Suicide Crisis Helpline** – 0508-828-865 (0508 TAUTOKO)

For youth:

- **Youthline** – 0800-376-633, text 234 or e-mail talk@youthline.co.nz
- **thelowdown.co.nz** – Text 5626 or e-mail team@thelowdown.co.nz
- **What's Up (for 5-18 year olds)** – 0800-942-8787 or e-mail whatsup@barnardos.org.nz

"We don't believe Toby wanted to die. He was young, overwhelmed, exhausted, he'd been drinking (which he didn't usually do) and in the past, he'd had head injuries from sporting incidents likely to have caused heightened spontaneity.

"In that moment of problem-solving his brain couldn't see past the present-day problems and he made a plan to die, instead of a plan to live."

Chris urges anybody who has concerns about a person in their lives to take it seriously.

"Professional support is critical but simply taking the day off and going fishing with them might help," she says. "If being open about our experience can make even the smallest difference in terms of suicide and mental health, then that's what we'll continue to do." ●



Chris picked and packed nearly 40,000 avocados this season

Chris Fraser believes good foundations led to the success of her and husband Daniel's flourishing avocado orchard



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The funds raised through the Hepatitis B campaign is helping to train health workers in Vanuatu to recognise signs of the disease

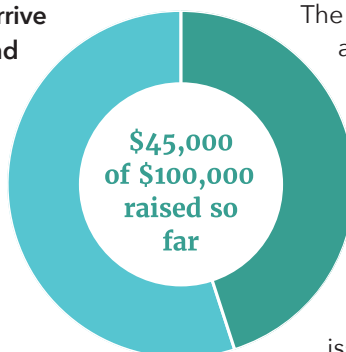
RSE employers give back to the Vanuatu community through Hepatitis B campaign

For over a decade, workers from the Pacific have travelled to New Zealand to assist with harvest and pruning through the horticulture and viticulture industries' world-leading Recognised Seasonal Employer (RSE) scheme.

Mike Chapman

As more and more Ni-Vanuatu RSE workers arrive in New Zealand to support the horticulture and viticulture industries at such a critical time, we are reminded of the huge contribution they make.

These seasonal workers have enabled the growth and increased productivity for many crops and wine grapes here in New Zealand, particularly throughout the Covid-19 pandemic.



The importance of supporting these workers and their Ni-Vanuatu (Ni-Van) communities has been recognised by Ni-Van employers, who are giving back through a campaign aimed at combatting the debilitating disease, Hepatitis B. Known as the 'silent killer', the Hepatitis B virus hides undetected by the immune system, attacking and damaging the liver until it is too late to treat. It is a chronic health issue in Vanuatu, affecting up to 15 percent



Employers of Ni-Van workers are helping to raise funds to address the chronic health condition, Hepatitis B, in the Vanuatu community

of the total population – one of the highest rates in the world.

In little over a year, employers of Ni-Van workers have raised \$45,000 through a *Give A Little* campaign – halfway towards the target of \$100,000.

The money raised will support training of healthcare workers in Vanuatu so that they can recognise this chronic liver disease. Commencing March 2022, an international team of experts will educate the healthcare workers on the clinical aspects of the disease, laboratory testing and provide immunisation training. Building on this baseline of training, the campaign supports the development of education and training materials in partnership with the Vanuatu Ministry of Health.

Rapid antigen testing kits for Hepatitis B will also be supplied as part of the campaign, along with serology testing, training in how to use those kits and mobile testing kits to take out to the outer islands of Vanuatu. With Vanuatu's 80 islands spread out across an area the size of New Zealand, the logistical challenge for expanding testing across the population is massive. Some islands are expensive to reach due to only being accessible by boat and then there is the challenge of transporting the Hepatitis B vaccines at a cool enough temperature to keep the doses viable.

“

The money raised will support training of healthcare workers in Vanuatu so that they can recognise this chronic liver disease

The campaign is targeting mother to child transmission, first by screening women early in pregnancy to check how high Hepatitis B infection levels are and then identifying high-risk patients through antenatal screening and treating mothers three months before the birth. It is important that babies are vaccinated as close to delivery as possible. When available, immunoglobulins (Hepatitis B antibodies) will also be given to babies to reduce the risk of further chronic infection. Treatment is safe for the pregnant mother and the baby, including premature babies. Vaccination of the baby provides protection for life and eliminates the virus before it can take hold.

Your donation can make a real difference to the health and wellbeing of the people in Vanuatu. As a country and as employers of RSE workers, this is an opportunity to give back to the Ni-Van community. ●



To make a donation, visit
<https://givealittle.co.nz/cause/defeating-hepatitis-b-in-vanuatu>

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Highly regarded seaweed researcher, Dr Ruth Falshaw is also editor of the journal *New Zealand Plant Protection*

Seaweed named in honour of ‘accidental scientist’

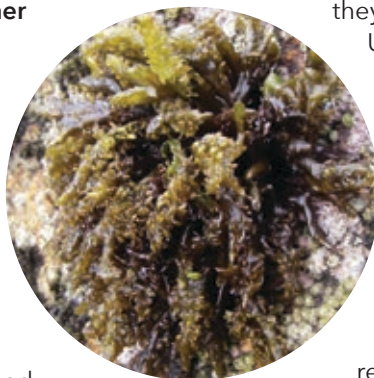
As a young woman, Ruth Falshaw planned to study accountancy but instead became a scientist almost “by accident.”

Elaine Fisher

Four decades on she has a PhD in organic chemistry; is so highly regarded as a seaweed researcher Ruth has a seaweed named after her, and is editor of the journal *New Zealand Plant Protection*.

“I could not have in any way envisaged where my career would take me,” says Ruth, who now lives in Rotorua and is a member of Women in Horticulture.

Ruth credits a series of fortunate coincidences for her varied and stimulating career, which began when a teacher suggested she study chemistry to give her more career options than the accountancy degree she planned to pursue.



Ruth and her husband married the day after they both graduated as chemists from York University and moved to Birmingham where he had secured PhD funding at the university. “A few days later he came home and asked if I wanted to do a PhD,” she says. “I replied ‘not really but what was it in?’ The university had secured private funding for some polysaccharide chemistry research but the graduate who was to carry it out had been injured in a motorcycle accident. If they couldn’t find a replacement, the funding would be lost.” So, Ruth said she would take his place.

Once Ruth completed her PhD, she was employed by a chemical company in Coventry, researching and

developing products from cellulose. Three years later, Ruth came across an employment advertisement which sparked her interest.

"It was for seaweed polysaccharide chemistry research, something you very seldom see advertised. When I read the fine print, I realised it was in New Zealand." Almost on a whim, Ruth posted off her CV figuring it could take six weeks for a reply. "That was in the days before the internet."

When, after six weeks no reply had come, Ruth rang New Zealand to find out if she had the job or not. "It was a big deal to make a phone call half a world away back then." She was told she hadn't got the job because one of her references hadn't arrived. "However, the person they had appointed had turned the position down so if I could supply the reference, they would reconsider me." The reference was faxed and three days later Ruth received a phone call saying the job at the Department of Scientific and Industrial Research (DSIR) in Wellington was hers.

“

I have taken opportunities when they arose and my message to others, women in particular, is to back themselves and do the same

Ruth arrived in 1991 and, during the next two decades, discovered many new seaweed polysaccharide structures, contributed to the discovery of a new species (*Curdiea balthazar*), devised new analytical methods and also led the development of seaweed aquaculture on mussel farms at a pilot scale. Her research results are contained in more than 40 publications and in 2019, Ruth's contribution to seaweed research was recognised by fellow scientists who named a species of seaweed *Gigartina falshawiae* in her honour.

After 18 years, the seaweed research funding ended, and Ruth turned her mind to her next career move. "To prove I could do something other than chemistry I completed a Diploma in Human Resources at Victoria University, partly funded through a scholarship from the New Zealand Federation of Graduate Women."

In 2008, Ruth saw an advertisement for the editor of the *New Zealand Journal of Forestry Science* (NZJFS) published by Scion in Rotorua and decided to apply. "Despite the fact I didn't like English at school, over the years I had written and reviewed many research papers and been on the editorial boards of two international peer-reviewed journals, *Carbohydrate Research* and *Botanica Marina*. Getting the job led to major changes in career, location and employer as well as getting divorced."

Having modernised the NZJFS and increased its scientific impact, Ruth left Scion in 2017 to establish her own freelance

editing business, specialising in scientific documents. She continues to manage the NZJFS on behalf of Scion and is currently editor of *New Zealand Plant Protection*.

"One constant factor in my career has been that I have taken opportunities when they arose and my message to others, women in particular, is to back themselves and do the same. I think women are still often more reluctant to take chances with their careers than men." ●



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.



HortNZ Industry Training 2022 Scholarships

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Applications **close at 11pm 5 March 2022**. Applications will be reviewed in April and announced in May.

Any questions regarding the scholarships can be directed to schols@hortnz.co.nz



Leanne Matsinger checks out the strawberry harvest at the family farm in North Otago. Image; Johanna Matsinger

Hard work bears good fruit for family-run berry farm

As the strawberry season ramps up, it's all go at Matsinger's Berry Farm in the small town of Papakaio. HELENA O'NEILL speaks to Leanne Matsinger about the popular North Otago farm.

Leanne runs the strawberry and raspberry farm about 20km northwest of Oamaru. The longstanding berry growing operation is a favourite amongst locals.

The strawberry season runs from November to May, while the raspberry season began three days before Christmas this year, finishing three weeks later.

A good balance of sunshine and rain has led to "big, beautiful fruit" this season, with keen customers lining up at the farm shop for strawberries and raspberries as well



as the new attraction – real fruit ice cream.

Matsinger's Berry Farm was established in 1955 by Leanne's father-in-law John and his brother Len, who both emigrated from the Netherlands. John's son, Simon, returned to the family's farm when he was 24, to work alongside his parents.

"It was Simon and his parents' dream," Leanne says. "They started the strawberry business and it wasn't my cup of tea. I'd love to go back to my old job at the fashion shop," she laughs.

It hasn't been an easy road for Leanne and her family. In 2010, Simon died suddenly at the age of 45, leaving Leanne with three children to raise and three farms to run.

“

While there was some uncertainty around Covid-19, the business remains in a good place

The day Simon died they had 50,000 strawberry plants needing to be planted. Thankfully, the wider Papakaio community rallied around the family, taking up the job of planting, cooking meals and helping out around both the house and the farm.

"It was just incredible."

The family had three properties – a 202-hectare dryland farm, a 94ha irrigated block and a 15ha berry farm. The two farms are leased out, leaving the berry operation in Leanne's hands, supported by her family and a loyal group of eight or nine employees.

"If we had sold everything it would have been like another death. Keeping things similar to what they knew was very, very important."

For Leanne, it was a baptism of fire into how to run the farm and berry business.

"I couldn't drive a tractor – I had three kids and worked in a fashion shop," Leanne says. "I had to very quickly learn to spray the strawberries, drive the tractor. And then I couldn't buy the chemicals because I didn't have my chemical certificates."

Leanne didn't give up her love of fashion and the colour pink just because she took up a horticulture role instead of retail – she was keen on a pink tractor but had to settle for a more standard orange.

“

I couldn't drive a tractor – I had three kids and worked in a fashion shop

She worked hard to learn the necessary skills needed to run the berry operation and keep things stable for her



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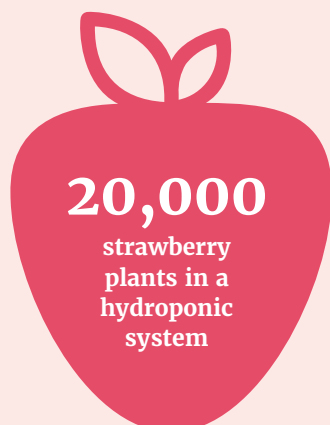
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young children. Eleven years later and her grown-up children continue to pitch in on the farm – and to eat their fair share of fresh berries.

Leanne's son Hann manages operations, while her daughter Johanna runs the packing shed and social media.

The hard slog has paid off and Leanne is proud of what they've achieved.

"Now we're one of the biggest growers in the South Island, it's great," she says. "We've got 20,000 plants in a hydroponic system, which are really, really good. I still like them in the ground – we've got 30,000 new plants and 20,000 established plants in the ground as well as a hectare in raspberries."

The hydroponic tabletop system was added a few years ago, but Leanne is a firm believer in growing strawberries in the ground.

"We like the fruit in the ground. They taste better and seem to last longer. We have the land to shift them around and it's a bit of an insurance policy – you can stuff up so quickly in the hydroponics with your fertiliser and things. Also being this far down the South Island you need to have quite a lot of hot weather which we don't often get. It's a lot warmer in the ground."

“

Now we're one of the biggest growers in the South Island, it's great ... We've got 20,000 plants in a hydroponic system, which are really, really good

Matsinger's Berry Farm sends their produce across the South Island through MG Marketing and sells from their on-site shop on a part-time basis too.

"The beauty of us is that we can pick today and the strawberries can be in the supermarket tomorrow."

While there was some uncertainty around Covid-19, the business remains in a good place, she says.

"Last April when we went into lockdown, we could have carried on picking, but my beautiful staff needed to be home with their children. So, we just closed down and lived in our little bubble here, got all the raspberries pruned and everything ready for the next year.

"We didn't plant so many new ones not knowing how things were going to pan out with Covid. In the first lockdown, people weren't buying strawberries, they were buying essentials."

Last season was just as busy with Kiwis spending their summer holidays travelling the country.

"We did extremely well," says Leanne. "We put in a real ice cream machine and it was full-on."



**The new
attraction at
Matsinger's Berry
Farm is real fruit
ice cream**

Other than the family, the bulk of the staff are Filipino women here on work visas with their husbands where they work on local dairy farms.

"They start at 8.30am or 9am after dropping their children off at school and we're finished, all cleaned up by 3pm," Leanne says. "Then we go to the depot, load up all the trucks and get the fruit on. We're a family here, I pick with them and they come back year after year."

The biggest challenge facing the business now is the rising costs, Leanne says.

"It's very hard to be a strawberry grower now. The transport, the punnets, the wages, the price of everything is going up. Stickers, you name it, it's gone up."

“

**We're a family here,
I pick with them and
they come back year
after year**



Despite the hard road and missing spending more time in the fashion business, Leanne is happy running the berry farm.

"I get a kick out of producing absolutely beautiful fruit." ●



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Horticulture New Zealand is completing its biennial survey of **The Orchardist** and **NZGROW** magazines. We would be grateful for your feedback.

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AVO UPDATE



Consistent effort expands Avocado exports to Asian markets



Jen Scoular : NZ Avocado chief executive

The wonderful summer weather in New Zealand over the festive season certainly allowed many to take a break, and reflect on what was to most of those in horticulture, a very tough year.

However, fruit and vegetables don't stop growing, therefore many in our sector were also working over the break. We certainly appreciate the consistent effort growers, packers, marketers and stakeholders in the avocado industry continue to put in while the majority of New Zealanders are taking time off. Sales of avocados to those on holiday having long lunches and barbeques, keeps the demand ticking along.

Consumers in New Zealand are still enjoying great value avocados through retail, as good supply volumes continue into most markets. The majority of shipments into Asia are coming to a close, although airfreight will continue for another few weeks. The situation in Australia continues to cause issues, with so many people impacted by Covid-19 which is disrupting supply chains and distribution centres even further.

On a positive note, our exporters have trebled the volume they have shipped and sold in Asia this year. From 555k trays in the 2020-21 season to over 1.5m in 2021-22; from less than 20 percent of export volumes last season and to nearly 40 percent of exports this season.

The industry has a five-year plan to significantly increase volumes into Asia, which we certainly achieved against this season. But no one could have anticipated the underlying reasons for achieving that goal. All power to avocado exporters, shippers and importers for the work done to develop those market channels and move New Zealand avocados in far bigger volumes into eight Asian markets this season.

Korea, Hong Kong, Thailand and China will receive the largest share across Asia of New Zealand's avocados, with volumes also marketed into Taiwan, Singapore, India, Malaysia and Japan. The Australian market ran hot last season, but this season it was oversupplied with Australian grown avocados, and never recovered the value. Supply chain issues, no food service during lockdowns and now Covid impacting workers, have all seriously dampened demand and value in Australia.

“

All power to avocado exporters, shippers and importers for the work done to develop those market channels and move New Zealand avocados in far bigger volumes into eight Asian markets this season

But let's keep it upbeat. The tempo at this year's Katikati Avocado Food and Wine Festival was wonderfully heightened with the appearance of Dave Dobbin on a perfect blue sky day. Festival goers enjoyed delicious avocado treats, a wide range of craft beers and wines and music to swing along to.

Perhaps we all need to make sure we add in some music and dance to get through these tough times. ●



SUMMERFRUIT UPDATE

Growing challenges

Kate Hellstrom : Summerfruit NZ chief executive



Late December and into January was a challenging time for summerfruit growers, as predicted.

The wet start to the season was overcome by much warmer and dryer weather patterns, with fruit quality improving from early January. But this situation increased the pressure on growers, due to the severe labour shortage and low staff turnout rates.

Most growers needed more pickers and packhouse staff. Some said they had a shortfall of up to 50% of their pre-Covid workforce.

The number of drop-in and online applications has been very low because across New Zealand, industries like ours are in fierce competition for the same set of Kiwi workers to address the shortfalls created by Covid-19 and New Zealand's borders effectively still being closed. It is sobering to think that before Covid-19, approximately 45,000 backpackers were in New Zealand during the summer peak whereas this January, that figure was less than 5000.

Summerfruit New Zealand will continue to work tirelessly with other horticulture product groups and key government departments to find ways through, but the situation is extremely tough on growers and there are no immediate solutions.

What's been great to see is how growers have come together to find workable solutions to the labour shortage by sharing staff. Our growers have also ensured that staff are well looked after and incentivised to stay the whole season, consider coming back next season or – what's even more fantastic – join the horticulture workforce on a permanent basis.

It's also great to see many Kiwi workers, particularly students, have returned to the summerfruit harvest this

year, and several have brought their friends. But the issue is that there just aren't enough New Zealanders to cover the lack of backpackers.

Fruit quality and volumes

Fruit quality has generally been good, but volumes for the New Zealand market have been down. Supermarket shelves have tended to look picked over and this, combined with lower volumes and lower pack-outs in late December and early January, has led to lower inventory levels.

Higher prices at retail and farm gate are reflecting the lower fruit volumes, which was particularly evident in plums. In contrast, fruit stalls did well in late December and early January as New Zealanders travelled the country, as is the tradition over the Christmas and New Year period.


Export volumes have tracked slightly higher than last year but it remains to be seen what the rest of the harvest season will look like – labour supply and ongoing logistics issues will play a big part here.

Looking ahead

Even if the New Zealand border re-opens in 2022, it's unlikely that we'll see the numbers of backpackers return to pre-Covid levels for quite some time.

If the summerfruit industry is going to continue to thrive, growers will need to focus on longer-term solutions that reduce the need for seasonal labour. These could include: varietal selections that require harvesting in certain regions at only certain points of the season; investment in different planting systems that require less labour to harvest; and the use of mechanisation such as platforms or in the longer-term, robotics where possible.

Not all these solutions are available yet, but the possibilities for change are exciting. ●




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TECHNICAL

THE LATEST INNOVATIONS AND IMPROVEMENTS

*The importance
of nutrients*
Pages 55-59





Understanding nutrient interactions for high-producing pipfruit orchards

Most growers know the importance of applying the right amount of nutrients to ensure the tree is not lacking any essential macro and trace elements.

Dean Rainham : AgFirst horticultural consultant

However, some deficiencies are not caused by a shortage of the element, but rather, an imbalance with other nutrients.

As we strive for higher yields, these nutrient imbalances tend to show up more. The importance of obtaining the optimum ratio of nutrients in the soil and plant becomes vital to sustaining high marketable yields. This article will introduce some principles to illustrate the importance nutrient interactions play in achieving the optimum nutritional programme for intensive pipfruit production.



Nutrient sufficiency versus nutrient balance

Understanding the relationship between nutrient sufficiency and balance is critical to developing the optimum nutritional programme for a high producing pipfruit orchard. Sufficiency is about addressing individual nutrient status, balance is understanding nutrient interactions.

Nutrient sufficiency

Step one to a balanced nutritional programme is to ensure trees have sufficient amounts of nutrients to complete their vital growth functions. The higher the yields, the more nutrients they will require.

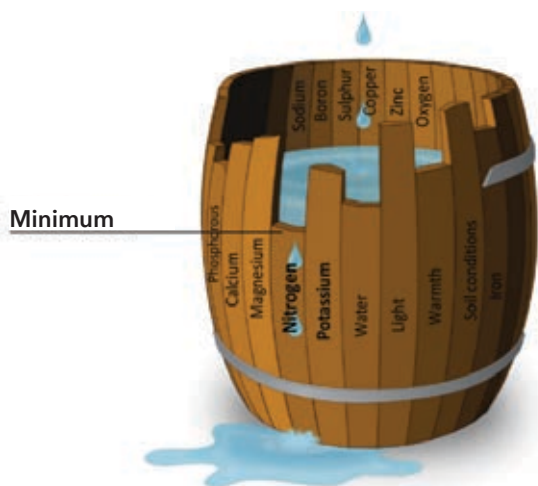


Figure 1 Liebig's Law of Minimum, Justus von Liebig 1873

Liebig's "Law of Minimum" states that crop yield/growth is limited by the nutrient or vital plant growth factor that is most limiting even if all the vital factors or nutrients are adequate. Identifying those nutrient(s) that are most limiting and then applying sufficient amounts to correct this is fundamental to achieving high yields. This is where soil tests and leaf tests are invaluable. Figure 2 shows how targeting the nutrient concentration in the adequate zone maximises yield potential. Leaf testing is an especially useful tool for picking up nutrients in the marginal zone. Also known as "hidden hunger", this is the pre-clinical deficiency stage where yield is being compromised due to the lack of a nutrient, but you cannot yet see the symptoms in the leaf. Potassium is a good example of this.

Nutrient balance

To sustain a high yielding orchard, it is not enough to just look at nutrient sufficiency. Growers must also apply nutrients in the right balance - and this requires an understanding of nutrient interactions. Mulder's chart of nutrient interactions (Figure 3) illustrates how different nutrients interact with each other. Nutrients can have a stimulation effect (dotted lines) whereby an increase in the need for a nutrient by the plant is induced by the increase in the level of another nutrient. Nutrients can also have an antagonistic effect (solid lines) whereby there is a decrease in availability of a nutrient to the plant by the action of another nutrient. An example of a stimulation effect is nitrogen (N) on magnesium (Mg). Increasing the nitrogen level in the plant leads to an increase in demand for magnesium. An example of an antagonistic effect is magnesium on potassium (K). An increase in magnesium supply to the plant will decrease the availability of potassium to the plant. Both examples can have detrimental consequences to crop productivity if not understood and the correct measures taken. For example, applying nitrogen to a plant with a marginal magnesium status is likely to induce a magnesium deficiency if

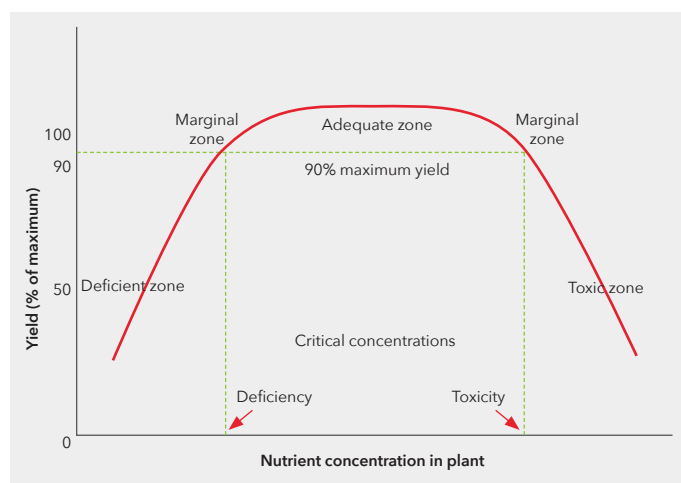


Figure 2 Generalised nutrient response curve

magnesium is not also supplied. Potassium uptake will be suppressed by high soil magnesium levels, thereby inducing a potassium deficiency. As such, additional potassium needs to be supplied to balance out the high magnesium status.

The potassium, magnesium and calcium interaction

These three cations (positively charged ions) are critical in pipfruit production. They do, however, compete on the soil exchange sites, and when in soil solution for plant uptake. Too much of one nutrient will suppress the uptake of the others. A balanced supply of these three nutrients is therefore vital. Table 1 illustrates varying concentrations of potassium in the soil exchange sites and the effect those concentrations have on calcium and magnesium uptake by the plant. As the potassium status in the soil increases, the uptake of calcium and magnesium decreases. Once you have achieved sufficient levels of nutrients in the soil you now need to ensure they are in the right ratios to achieve a balanced uptake by the plant. The soil test is an excellent guide to determine balance. Starting with calcium, this nutrient needs to dominate the soil exchange sites with at least 65% of the sites being occupied. It is important that sufficient calcium is released into the soil solution and is available for plant uptake especially during the critical cell division stage, which is six weeks after fruit set. Calcium is required in the fruit for cell wall integrity, to prevent pit and lenticel breakdown.

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It is important that sufficient calcium is released into the soil solution and is available for plant uptake especially during the critical cell division stage, which is six weeks after fruit set

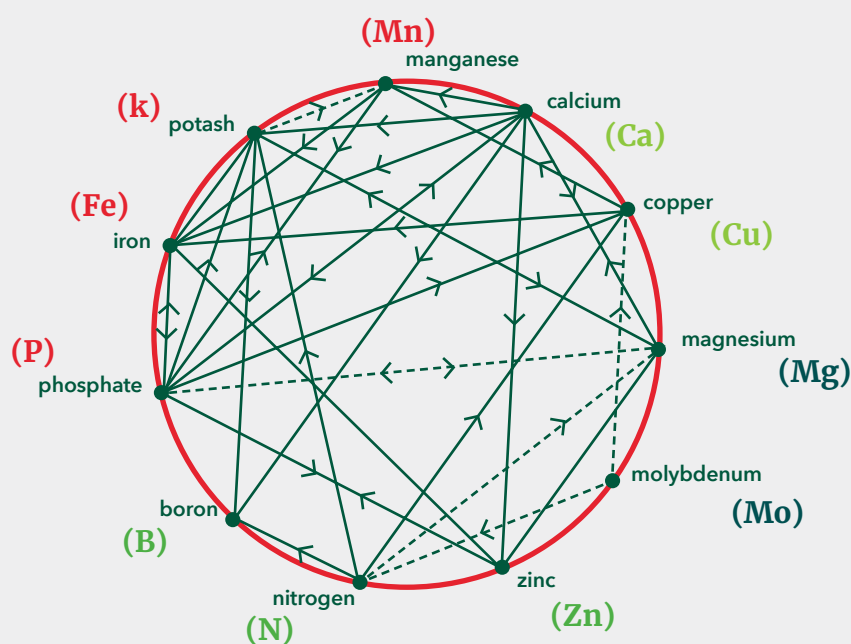


Figure 3 Mulder's chart of nutrient interactions

Table 1. Effect of potassium on availability of calcium & magnesium

K soil saturation	Composition of Leaves		
%	% K	% Ca	% Mg
0	0.4	1.4	1.5
0.5	0.5	1.2	1.1
1.0	0.8	1.1	0.7
2.0	1.0	0.3	0.6
4.0	2.1	0.7	0.4
8.0	2.1	0.6	0.3
12.0	2.2	0.6	0.4
16.0	2.2	0.4	0.4
20.0	3.1	0.3	0.4

Next is to target the potassium/magnesium (K/Mg) ratio in the soil, which needs to be close to 1:2 (K:Mg ration). With a low ratio, more potassium will need to be added, whereas a high ratio will require additional magnesium. Build your fertiliser programme accordingly to ensure a good balance of supply based around these optimum ratios.

Magnesium is the central molecule in chlorophyll. Without magnesium, photosynthesis will not occur. Magnesium is very mobile in the tree, moving to young growth first. The classic magnesium deficiency symptom is the yellowing of the older leaves from the tip, leaving a dark green triangle at the base of the leaf (Figure 4). Magnesium is also needed to transport energy around the tree. A lesser-known function is that magnesium assists with the nutrient uptake process in the roots.

“

The classic magnesium deficiency symptom is the yellowing of the older leaves from the tip, leaving a dark green triangle at the base of the leaf





Figure 4 Magnesium deficiency



Figure 5 Potassium deficiency

Potassium is needed in the largest quantities to achieve good fruit size and colour and is vital for this. It is also important in the water relations in the plant and for maintaining the balance of salts. Deficiency symptoms include marginal necrosis and cupping of the leaf (Figure 5). Potassium is an element that is very mobile in plants so deficiency symptoms will be first seen in older leaves. Beware that yield and quality can be affected by potassium deficiency long before leaf symptoms are seen. So, it is important to monitor this nutrient in the leaf early on and take a proactive management approach.

The nitrogen and potassium partnership

The positive interaction between nitrogen and potassium is well documented in many crops, including apples. Potassium ions act as a carrier for nitrate from root to leaf, where proteins are synthesised and photosynthates are metabolised. Nitrogen is essential for protein and chlorophyll synthesis, however, too much nitrogen promotes excessive vigour, delayed maturity and can lead to soft, poorly coloured fruit that are prone to storage issues. With adequate potassium input and balancing

the nitrogen uptake, the tree is able to more efficiently metabolise the nitrogen to useful components such as amino acids and proteins, so yield potential is optimised and fruit quality maximised.

Leaf nutrient ratios

Leaf testing is an extremely useful way to monitor the health of pipfruit trees and pick up nutritional imbalances before they impact on productivity.

Macro nutrient ratios, especially the N/K and K/Mg balance (Table 2) should be measured early in the season (November and December), so any adjustments to the nutritional programme can be made and will still be effective for the current season's crop. Achieving nutritional balance in the plant will optimise tree health and maximise yield, fruit colour and size, as well as lessen post-harvest storage issues.

Trace elements are also essential nutrients but only needed in very small quantities. Leaf testing will quickly detect any trace element imbalances and in most cases, this can be solved by a single foliar fertiliser application.

Table 2. Leaf test result taken December

Block	Nitrogen (%)	Potassium (%)	Magnesium (%)	Comments
1	2.3%	1.8%	0.29%	Highly coloured, large, firm fruit.
2	2.8%	1.1%	0.36%	Poorly coloured, soft, small fruit.
Optimum	2.1 - 2.6%	1.3 - 2.2%	0.25 - 0.35%	
Block	N : K ratio		K : Mg ratio	
1	1.3		6.2	Optimum ratio
2	2.5		3.1	Need more K to balance
Target	<1.5		>6.0	

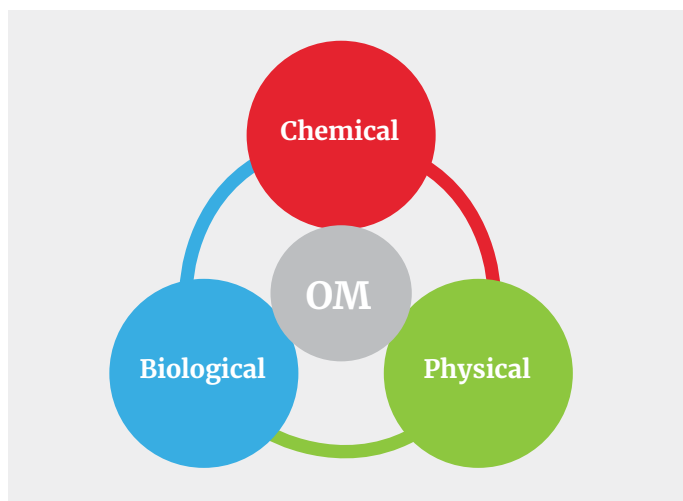


Figure 6 Properties of soil health

Healthy Soils

Healthy soils are an interaction between biological, physical and chemical properties. Organic matter (OM) plays a key role in all aspects (Figure 6).

Biological: Active colonies that mineralise nitrogen, improve soil structure and keep soil pathogens in check.

Physical: Determines water and nutrient holding capacities, oxygen for roots and microbes, and resilience to environmental stressors.

Chemical: Nutrient sufficiency, balance and availability, pH (acidity/alkalinity), CEC (cation exchange capacity), and the presence of any contaminants.

Improving soil health

- 1 **Feed the soil.** A steady application of carbon inputs over time improves the soil's ability to hold and cycle water and nutrients, combat pathogen invaders, and provide a beneficial root environment. Organic matter has a positive impact on all three aspects of soil health.
- 2 **Minimise disturbance and avoid compaction.** This helps to maintain soil structure and fungal networks while minimising oxidation of organic matter.
- 3 **Avoid over-zealous use of pesticides and herbicides.** Choose chemistry with low residual effect in the soil.
- 4 **Drainage.** Ensures adequate oxygen to roots and enables microbes to flourish. Improves water infiltration and minimises run-off. Good drainage will build orchard resilience to the changing climate in the future.
- 5 **Soil pH (acidity/alkalinity).** Influences many chemical and biological processes. Soil pH is a master property and a fundamental to get right in order to maximise productivity and promote healthy soils.
- 6 **Nutrients.** Both sufficiency and balance are necessary. This is key for promoting healthy soils, orchard productivity and sustainability.

Summary

Nutrition plays a critical role in orchard productivity. Understanding nutrient sufficiency in combination with nutrient balance is crucial for delivering the optimum nutritional programme. Using diagnostic tools, such as soil and leaf testing, and then correctly interpreting the results, is fundamental in delivering a balanced nutritional programme that can produce and sustain high yields of quality fruit. Soil nutrition is a dynamic environment so monitoring and analysing trends over time allows you to assess the nutritional status of your orchard and the efficacy of your nutrient programme.

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Soil nutrition is a dynamic environment so monitoring and analysing trends over time allows you to assess the nutritional status of your orchard and the efficacy of your nutrient programme

Considering the interaction of the biological, physical and chemical components of the soil is crucial to nurturing a healthy soil ecosystem. ●

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The acquisition by Keestrack, a major manufacturer in mining, recycling and construction equipment, makes a perfect match for Goldoni, as both are European businesses with the same quality orientation. The two companies are benefiting from the merging of their experience and know-how from different sectors. The shared values and bundled competencies create synergies and result in enhanced scope of action.

Today the Goldoni brand is fully reactivated and promotes the revitalisation of a long-established reputation based on the quality, innovativeness, and the user-friendly orientation of its machines. Goldoni serves more than 64 countries around the world, with a 102,000 sqm production plant in Italy, and is represented by more than 200 distributors.

Here in New Zealand Agtek, also a family-owned business, has represented Goldoni for almost 20 years, and is excited to see Goldoni back again in a family-owned business. Already in the short time that Keestrack has had ownership we are seeing the return of family values already a foundation through its original ownership by the Goldoni family.

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Here in New Zealand Goldoni is renowned for having a 'superlow tractor' well suited for operation under kiwifruit pergolas, with their Star 3080 and Quasar 90.



These tractors stand out at first glance with their compact structure, low centre of gravity, short wheelbase and low bonnet profile. They are easily the most comfortable tractors in the market to operate, with seat heights as low as 730mm, while still on full factory 20" wheel equipment. Their 4-cylinder VM-Detroit direct injection turbocharged engine guarantees optimum performance, low noise emission and low fuel consumption. Designed to provide high performance results thanks to the optimised power/torque ratio, this engine can deliver maximum torque right from an extremely low engine rate.

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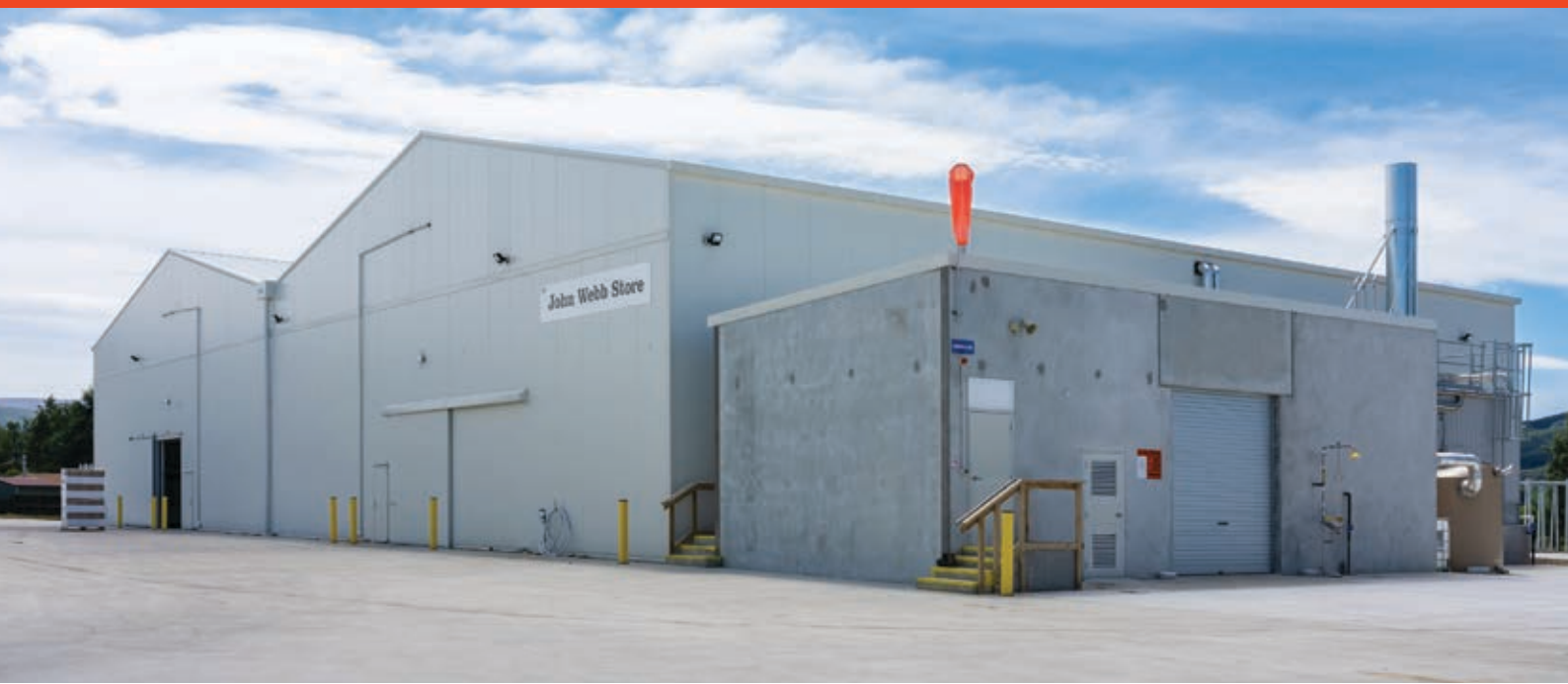
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