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HORTICULTURE NEW ZEALAND

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Connings Food Market adapts and thrives despite challenging Covid-times, see page 42.

WHAT'S NEW

A regular advertorial section of new products and services. This publication does not endorse the products or services featured here.

DÉJÀ VU

Words by Barry O'Neil : HortNZ president

We were extremely lucky to be able to hold a successful HortNZ conference at Mystery Creek at the end of August, with over 700 people attending.

The conference was a fantastic opportunity to engage on key policy changes that are being rolled out, with some great speakers and interactive sessions highlighting this. The focus on well-being and mental fitness was a timely reminder of how important it is to be looking after ourselves and supporting each other given the challenging times. Not only with Covid-19 lockdowns, but with the environmental pressures, regulations and the government's change-agenda – which can feel difficult and overwhelming.

It wasn't long after that we were reminded of the importance of well-being and resilience once again, as the government announced that the country would plunge into yet another Level 4 lockdown.

While lockdowns are now too familiar territory, it felt different this time. We knew exactly what we were facing, especially with the more contagious Delta variant.

While we can all grumble and politic about the time it has taken to get our vaccine programme happening at pace, it is now full on and as a country, in the interim, we have managed to continue to live a relatively normal life since our first lockdown.

Importantly, let's not forget that only 27 people have died of Covid-19 in New Zealand, compared to Ireland, a similar size country, where 5,160 people have tragically passed away.

I absolutely have no time for the blatant rule breakers, for the anti-vaxxers and their whoopy conspiracy theories and even with the people who refuse to wear a mask with no justification. People that fit this category to me are not dissimilar to the Donald Trumps, the Jair Bolsonaros, or the Alexander Lukashenkos of the world and their looney ideas.

To me the one matter that should be at the top of people's – and growers' – minds is vaccinations, for themselves, their family, their workers and their communities. Those who are unvaccinated are 30 times more likely to be hospitalised with Covid-19.

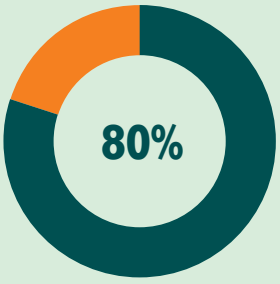
And it's encouraging to see countries around the world, such as Denmark, which has over 80% of its eligible population vaccinated, removing restrictions with life returning to normal.

> "Those who are unvaccinated are 30 times more likely to be hospitalised with Covid-19

In New Zealand, less than 45% of the population is fully vaccinated and we still have 25% that are unvaccinated. Rural regions in particular continue to have poor vaccination rates.

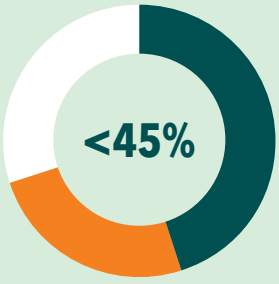
PERCENTAGE OF POPULATIONS FULLY VACCINATED AGAINST COVID-19

DENMARK



80% OF THE DENMARK'S ELIGIBLE POPULATION IS VACCINATED

NEW ZEALAND



25%
ARE STILL UNVACCINATED

Lockdowns come at huge costs to our well-being, to our whānau, to our connectedness and to our livelihoods and businesses. I don't ever want to see another Level 4 lockdown in New Zealand and it's up to us to make sure this doesn't happen.

> **"The focus on well-being and mental fitness was a timely reminder of how important it is to be looking after ourselves and supporting each other given the challenging times**

The vaccine is here and freely available so we must do better than this if we are going to get out of this déjà vu.

It has been fantastic to see our growers stepping up, operating throughout alert levels and continuing to be the backbone of our nation – supplying communities with fresh fruit and vegetables, even in challenging times like these.

Product groups have been working hard, collaborating with Nadine and the rest of HortNZ to support our growers through the lockdowns, particularly with the new challenges that a Level 4/2 border created. While we didn't get everything we argued for, we did a heck of a lot better than if we had gone our own ways. The Ministry for Primary Industries (MPI) really lifted its game as well, so many thanks to Ray, Penny and the MPI team for their continued support.

Please look after yourselves and each other during these difficult times and a big shout out to our Auckland colleagues who have done it really hard over the last month, making big sacrifices so the rest of New Zealand was able to get back to business sooner.

Kia kaha ●

NZGROWER

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THE CASE FOR FUNDAMENTAL CHANGE

Words by Nadine Tunley : HortNZ chief executive

As I reflect on the past seven weeks, it has become obvious to me that as an industry, if we try to return to pre-Covid days, we will no longer lead the world in sustainable, fruit and vegetable production.

In mid-September, I joined a Zoom call with counterparts in the United Kingdom's horticulture industry. They are facing the same issues as us – labour, labour and labour – but on a far bigger scale. Over there, they need 70,000 to 80,000 seasonal workers but only have access to 30,000, albeit from more than 30 different countries. The size of this labour shortfall is escalating wages. For example, growers are having to pay up to £30 an hour to the workers harvesting broccoli.

Packhouses are also in intense competition for staff, being 20% to 35% down in staff numbers. That's seeing employers standing outside the gates of other companies, offering their staff incentives of up to a pound an hour if they swap employers.

I share this brief outline of what is happening in the United Kingdom because I believe our industry has the chance to make sure the worst of what I have just described does not happen in New Zealand and have a long term, negative impact. But to do that, we need to be serious about not returning to the good ol', pre-Covid days – if we ever could. We must come together to find truly innovative ways to meet our challenges head on.

In our favour, we have our industry's track record of innovation. Indeed, I believe horticulture is the most innovative part of the food and fibre sector. This is because we've never been able to hide from consumer demands – not that we've ever wanted to – because our product goes from tree, vine or the ground straight into consumers' mouths.

> "I believe horticulture is the most innovative part of the food and fibre sector

OVERVIEW OF UK INDUSTRY ISSUES

THE UK NEEDS
70–80,000
SEASONAL WORKERS BUT ONLY HAS ACCESS TO 30,000

UK GROWERS ARE PAYING UP TO
£30 PER HOUR
FOR WORKERS HARVESTING PRODUCE SUCH AS BROCCOLI

PACKHOUSES ARE
20–35% DOWN
IN STAFF NUMBERS

MONETARY INCENTIVES OF UP TO
A POUND MORE PER HOUR
ARE BEING OFFERED TO STAFF IF THEY SWAP EMPLOYERS

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It is our reputation for great taste, quality, health and food safety that has also earned us the price premiums and outright demand which New Zealand fruit and vegetables command in overseas markets. I also personally have no desire to eat imported produce and do not believe that tomorrow's, let alone today's, New Zealand consumer really wants to either, even if it was a viable option like it is in the United Kingdom.

Definition of insanity

Albert Einstein is famous for saying: 'the definition of insanity is doing the same thing over and over and expecting different results'. I feel that is where the world is getting to with Covid. I also feel that New Zealand – and particularly, our industry – has a real opportunity right now to develop competitive advantage and solve issues like labour that have plagued us for some time. But only if we put the past behind us and think about the future in completely new ways.

“It is our reputation for great taste, quality, health and food safety that has also earned us the price premiums and outright demand which New Zealand fruit and vegetables command in overseas markets

As an industry, we are resilient but need to focus that resilience on trailblazing a bold, new future. While Robert Muldoon's Think Big has been much maligned, at the time, it represented a call for New Zealand to get serious about recharting its future and thinking differently.

As an industry, we need our best and brightest to come together to chart the future, while at the same time, finding ways to solve current and future challenges, particularly around labour, freight, cost and compliance. But I am not suggesting another group or an endless series of Zoom meetings.

What I am envisaging is a ground up movement, where district associations and product groups play a role in harvesting their members best ideas and bringing them to the table, so they can be packaged into a cohesive approach and plan, that's all about our industry charting its own future and success.

If this is of interest, please drop us an email via Covid@hortnz.co.nz, and HortNZ and I will work with you to make it happen. If you don't think this is a good idea, please also drop us an email and tell me why it isn't, while at the same time telling me what you think would be better.

Staying the same is not an option, Covid has changed the world forever. We can either use this opportunity to take our industry to the next level or go "insane".

I really look forward to hearing from you. ●

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YOUR LEVY AT WORK

INDUSTRY WIDE ISSUES FOR INDUSTRY GOOD

NATURAL RESOURCES AND ENVIRONMENT

Words by Michelle Sands : HortNZ environment manager

Selwyn District Plan

Selwyn District Council publicly notified the Proposed Selwyn District Plan on 5 October 2020.

HortNZ worked with growers to develop a submission. HortNZ is currently participating in the hearing process. Key issues raised in the HortNZ submission included:

- Greater recognition (and protection) of the soil resource.
- Provisions for activities and buildings/structures that are an inherent part of horticulture – including seasonal workers' accommodation, artificial crop protection structures, and packing and processing facilities.
- Strengthening of the reverse sensitivity management methods.
- Rules that enable a rapid biosecurity response should the need arise.

Otago Regional Policy Statement

The Proposed Otago Regional Policy Statement 2021 sets the direction for future management of Otago's natural and physical resources. The proposed Regional Policy Statement provides high-level guidance by way of policies and objectives and establishes the framework for Otago's regional and district plans in which resource management policies, objectives and rules will sit.

HortNZ has worked with growers to develop a submission on behalf of all Otago growers. Key issues raised in the HortNZ submission included:

- People are part of the natural environment. Natural environmental limits should account for the essential human health needs of people. The social, economic and cultural well-being of all people must be provided for within natural environmental limits.
- Food security is a nationally important issue which needs to be addressed at a strategic level, it is integral to human health.
- Diversification of horticulture presents an opportunity to reduce greenhouse gas emissions.
- Highly productive land (HPL) should be recognised to promote its use (for primary production), as well as to protect it from inappropriate subdivision.
- Growing fruits and vegetables in all regions of New Zealand, including Otago, is reliant on reliable supplies of fresh water.

> **“Food security is a nationally important issue which needs to be addressed at a strategic level, it is integral to human health**

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Freshwater Farm Plans

The government is consulting on their Fresh Water Farm Plan Discussion document, which responds to the Resource Management Act (RMA) amendment in 2020. The RMA sets out a process for regulated certified and audited Freshwater Farm Plans that would apply nationally.

HortNZ has worked with growers and GAP (Good Agricultural Practice) schemes to develop a submission on behalf of all growers. Key issues raised in the HortNZ submission included:

- The horticulture sector in New Zealand has had farm level assurance systems (GAP) for over 20 years.
- HortNZ supports Integrated Farm Planning. Critical to the success of Integrated Farm Planning is a common assurance framework. GAP is a working example of an integrated farm planning framework.
- The submission seeks an approval system in the regulations to enable Industry Assurance Programmes (such as GAP) to support the delivery of certified Freshwater Farm Plans.
- The submission seeks to enable an alternative pathway for certification and audit via approved Industry Assurance Programmes (such as GAP), including recognition of certification against a standard and the group model of certification.

ON-FARM BIOSECURITY SERIES: PEOPLE

Words by Anna Rathé : HortNZ biosecurity manager

People come and go regularly from horticultural farms and orchards and have likely visited a range of different places before arriving at your operation.

Precautionary actions can be taken to minimise any biosecurity risk associated with people coming onto your property. The movement of people and the actions required of them 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 HortNZ template that is available online. Some of the common risk areas associated with people are explored below, along with risk reduction actions for you to consider.

SOME OF THE COMMON RISK AREAS ASSOCIATED WITH PEOPLE INCLUDE CLOTHING, KNOWLEDGE, TRAINING, AND REPORTING

Staff and visitors

Consider who visits your property – likely a wide range of people such as staff, suppliers, advisors, crop scouts, contractors, transport providers, guests and possibly also people living on the property. Anyone coming onto your property can inadvertently carry pests, pathogens or weed seeds with them on their clothing, footwear, vehicles or even skin.

Consider the risk posed by each visitor before you decide whether to let them onto your site or not – ask them what type of properties they have recently been on and whether they can provide assurance that their clothing, hands, shoes, vehicles and equipment are clean. Provide cleaning facilities, including footbaths containing an appropriate sanitising product to prevent the spread of pathogens that may be on footwear. You may also wish to provide clean clothing and footwear for visitor use on site.

It's useful to limit access and parking to a single point on your property so people's movements are contained to one part of the site. Limit visitor access to crops and production areas unless essential. Be sure to keep a visitor log so that you have a record of who has been on the property. This is invaluable if a biosecurity event occurs and forwards or backwards tracing is required.

Visitors sanitising their footwear before entering a site to reduce biosecurity risks

Cleaning footwear before entering a site may help prevent the spread of pathogens

Communicating your requirements and expectations

Make sure your biosecurity expectations are clear to all visitors and staff.

Don't assume that they already know good biosecurity practices. Use clear signage to convey key instructions. As contractors, advisors and crop scouts often move straight from farm to farm or orchard to orchard, there is a higher risk that they will transfer pests, pathogens and weeds if biosecurity risk management practices are not followed. Take extra care to discuss your expectations with these types of visitors, focusing on the following points:

- The biosecurity practises you want them to implement.
- How you can check that they are undertaking these practises.
- Contractors who follow good biosecurity practises generally take more time – what level of risk are you prepared to accept?
- Whether biosecurity requirements can be included in contractual arrangements.

Training

Staff are likely to spend a lot of time on site, and providing training ensures they have a good level of biosecurity awareness and understand what is required of them. Training could include:

- Expected day-to-day biosecurity practises. You can put posters up in common areas to keep good biosecurity practises front of mind for staff.
- Knowing what to look for (what is normal and what is unusual). Many product groups provide information on the highest risk exotic pests for the crop, information which is useful to have on display.
- How to keep good records of your farm inputs and outputs to allow trace-back and trace-forward if a biosecurity event occurs.

Reporting

Early detection of any new exotic organisms is essential if we are to maximise the chances of successful eradication. Encourage a culture of reporting suspect pest, pathogen or weed detections via the Ministry for Primary Industries pest and disease hotline 0800 80 99 66 and ensure all staff are familiar with the signs and symptoms of pests and diseases of concern.

> **"Early detection of any new exotic organisms is essential if we are to maximise the chances of successful eradication**

In conclusion

The above is not an exhaustive list. You should identify any additional people movements and actions that take place on your property and think about how to minimise any potential biosecurity risk that they may pose. ●

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WOMEN IN HORTICULTURE

Words by Elaine Fisher

Deb Francis, principal of AgRecruit

Those employed in New Zealand's agriculture and horticulture sectors will never have to worry about jobs, so long as they keep up with industry innovations, says Deb Francis, principal of AgRecruit.

"Technology is changing the sector quickly but so long as people, no matter their age, are keeping up their learning and understanding, they will always have work," says Deb who founded the recruitment company AgRecruit 14 years ago. She is also a member of Women in Horticulture.

Thanks to technology, future jobs may be more specialised, pay more and involve less hours worked. "For example, someone who has been picking apples may be trained to operate a machine which does that role instead. They will become highly skilled, possibly work 30 hours a week and earn more.

"Or they might learn to be a drone pilot, which takes almost as much skill as flying a helicopter.

"Even now, there are so many options that young people completing an appropriate degree can decide which direction to point their career based on their skills and interests and the sustainability of that career path."

Deb says agriculture and horticulture has again proved its sustainability and significance to national and local economies with most sectors continuing to perform well despite the impacts of Covid-19.

> "Deb's own career path is evidence of the diverse opportunities the primary sector offers those willing to take them up

"The future is bright as New Zealand has the fabulous advantage of producing the kind of food consumers want to eat. We have to produce high value food because we are at the other end of the world. We are doing that by meeting new compliance standards and using technology, including precision farming techniques for the application of inputs and irrigation."

Deb's own career path is evidence of the diverse opportunities the primary sector offers those willing to take them up. She grew up on a Southland sheep and beef farm, attended boarding school, followed by university in Dunedin before buying a sheep and beef farm with her "townie" husband Brent.

It was then that Deb began from scratch, founding what was to become New Zealand's largest peony rose exporting company at the time, MagnaFlora.

"I employed up to 30 staff at times and had two 60m^2 tunnel houses

DEB EMPLOYED UP TO
30 STAFF
AND HAD
TWO 60M² TUNNEL HOUSES
GROWING FRENCH TULIPS

growing French tulips as well. We also grew Dutch iris. That was my business, and Brent ran the farm."

Eventually the couple leased out the farm and moved to Christchurch where Deb discovered, almost by accident, her talent for recruiting.

> "New Zealand has the fabulous advantage of producing the kind of food consumers want to eat

"I attended a job interview with a recruitment agency for a different role and was asked to join their team. I ended up recruiting engineers. Then I fell into agribusiness recruiting almost by accident, because I had an agricultural background and had learned about agribusiness from starting my own flower growing and exporting business."

Deb later went on to found AgRecruit in 2007 with business partner Alwyn Coll. Today its focus is still across the primary sector, recruiting graduates and staff at senior levels.

"We do it quite differently. We have just a few clients who we work very closely with to understand their business, so we know who will be a good fit for their teams.

We talk to people at very senior levels, often including their boards and develop a high level of mutual trust.

"When it comes to recruiting staff, we spend between two to six hours with a potential recruit to be sure they are the best match. I am risk adverse because the biggest disaster can be placing the wrong person in a role. That can wreck their career, cost the company a fortune, and damage its reputation; so, I'm passionate about getting it right for everyone every single time."

> "Agribusiness has been male dominated but that is changing with women increasingly appointed to senior roles

Deb doesn't believe there is widespread disparity in remuneration between men and women working in primary industries.

"Agribusiness has been male dominated but that is changing with women increasingly appointed to senior roles. Women who approach their career path correctly will be paid as much as men. I see that regularly."

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

YOUR INDUSTRY

ACROSS THE SECTOR – ACROSS THE COUNTRY

CONFERENCE SPECIAL

Pages 17-24

WORLD-LEADING ROLE IN CLIMATE CHANGE

Words by Glenys Christian

The 2021 Horticulture Conference: Resilience and Recovery, was held on 5-6 August at Mystery Creek, Hamilton

New Zealand has been urged to step up and lead the world when it comes to climate change.

Lord Deben, a keynote speaker at the annual Horticulture conference, told growers this country could "show Australia how it's done".

"You could be the central nation to help the world with climate change," he said. "If you don't, problems will overwhelm us and that we cannot allow."

Lord Deben is chairman of the United Kingdom Committee on Climate Change and a former Secretary of State for the Environment and Minister for Agriculture, Fisheries and Food. He visited New Zealand last year, congratulating the horticulture industry for rising to the range of challenges it is facing.

The message of 'climate change is real and is going to continue' permeated Deben's address.

"It will get worse and if we don't take steps now, the world will become increasingly difficult to live in," he said.

Deben believes New Zealand is in a unique position to be able to help the rest of the world.

"It has all the stability without the baggage of western countries," he said. "You can lead for countries in your corner of the world which soon won't exist due to climate change."

However, such a global problem will require a global effort to overcome it, he emphasised. Populations around the world will increasingly demand to know why more isn't being done in the climate change space. He said the New Zealand government needs to stick with its climate change policies, not be pushed off course, and to recognise that if it fails to act, it will be blamed.

> "Such a global problem will require a global effort to overcome it ... Populations around the world will increasingly demand to know why more isn't being done in the climate change space

New Zealand is responsible for some of the best products in the world but is not always making the right choices – importing bottled water, for example.

"Make the most of the qualities you have such as the almost zero cost of energy," he said. "You've got to maximise your advantages."

The horticulture industry will have to deal with too much water and heat in the future due to climate change, and even if New Zealand growers are proactive and take action now to minimise their impact, the world is still set to change.

Deben sees a simultaneous return to animal and arable farming to maintain biodiversity and to properly utilise resources such as soils.

"It's a very traditional system but it's one we need to go back to."

Dr Rod Carr, chair of the Climate Change Commission, said current policy settings will not get New Zealand to the targets set in its report released in May.

"But there are a range of pathways New Zealand could follow which are technically feasible, economically affordable and socially acceptable," he said. "We need to get on with it now."

New Zealand is an outlier because half its greenhouse gas emissions are biogenic gases, of which 90% comes from ruminant animals. The closest comparison which could be made is Ireland, where 35% of greenhouse gas emissions come from this source. There are not widely-known technologies to reduce these emissions, although land use change and better animal breeding could mean biogenic gases could be reduced by up to10% over a decade.

"We're unlikely to hit our targets without new technology, so the government must step up its support for research," Rod said.

This doesn't guarantee answers, "but we shouldn't stint in our efforts to find them."

Of the remaining 50% of greenhouse gas emissions, Rod said the main contributor is ground transport.

New Zealanders need to abandon buying old, dirty, secondhand cars and there needs to be higher emission standards for new cars. Motorists should be driving electric vehicles. Cycling and walking are to be encouraged. Freight should be moved off roads to rail and sea transport.

"Market prices need to play a part so barriers to choices are removed," he said. "But it's factually wrong and mischievous to say we want to outlaw non-electric vehicles."

There are alternatives when it comes to process heat such as biomass too.

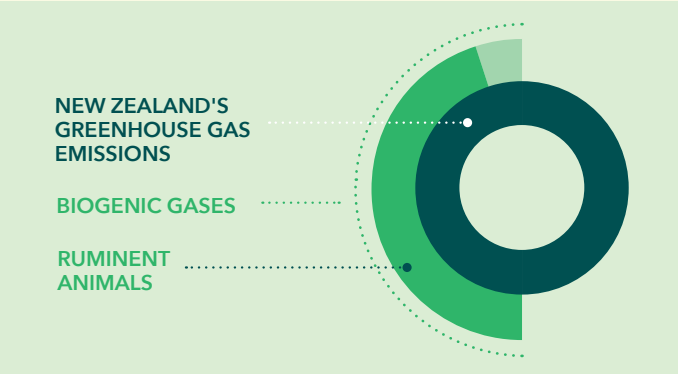
"We don't recommend ripping out gas pipelines but there are affordable solutions."

"If we start now, they will be able to be replaced in an orderly way. Around 40% of our energy comes from renewable sources, which we need to relentlessly drive to 60% over the years to come."

"The challenge for New Zealand is that there is no single source of emissions where a reduction will be enough," he said.

> **"The horticulture industry will have to deal with too much water and heat in the future due to climate change**

"It's unhelpful to have a contest between rural and urban New Zealand." We all have to move forward together and have an understanding of supply change.



With only half of the country's greenhouse gas emissions currently covered by the emissions trading scheme (ETS), the programme is incomplete, he said.

"It's poorly regulated and subject to the limits any market has."

Markets are myopic. They discount the future too much and could never profess to deal with costs and benefits, because winners are unwilling to give up their wins in order to compensate losers.

New Zealand needs to do much more than reduce its emissions from 2005 levels by 30% by 2030 as agreed to.

"We are talking about the world holding New Zealand to account for the promises it's made," he said.

"We have signed and we will need to deliver under trade agreements."

Plans to reduce the emission profile will be drawn up in early November and by the end of the year, the government is expected to sign up to budgets running through to 2035.

"Have no doubt your world is changing now."

Asked where New Zealand ranks in global emissions per capita per annum, Rod said even if all agricultural emissions were taken out, levels are still twice those of China and India where emissions from all sources are included. This is mostly due to the high proportion of this country's emissions coming from transport sources. The world sees New Zealand as a wealthy country which has profited from over a century of use of non-renewable energy sources.

> **"The world sees New Zealand as a wealthy country which has profited from over a century of use of non-renewable energy sources**

"We can choose not to use nuclear power or genetic modification but what we can't do is choose not to reduce our emissions."

Decarbonisation pathway project

At the Covered Crop Conference workshop on the decarbonisation pathway project, growers heard of progress so far. And they were urged to design any new facilities to be net carbon zero today rather than in 2050 when many of the government climate change mitigation measures will be in effect.

Jonathan Pooch, managing director of DETA Consulting, said a 98% reduction in energy usage is possible using technology available to covered crop growers at present. But it is a timing question when it comes to making commercial decisions.

"We don't want to be too early or too late," Jonathan said.

DETA will be producing a series of 'cheat sheets' to be distributed through TomatoesNZ and Vegetables New Zealand in the coming months, giving growers ideas on how they could best get started.

"The goal we're shooting for is net zero. It won't be easy, but we have to start planning for it now," he said.

"We are trying to think broadly ahead because we can't do it tomorrow, no one can. It's a step-by-step process."

DETA Consulting, based in offices around New Zealand and in Australia, develops carbon strategies and medium to long-term road maps from 10 to 30 years in duration to identify the lowest cost of operating in a future carbon market. Jonathan has looked at covered crop sites all over this country which use different ways of reducing energy demand.

> "The solution for a large Pukekohe grower will be different to those for a small South Island one ... We don't know what we don't know yet

"A 15% to 20% reduction is possible by doing simple things such as turning things off when they're not needed," he said. "We have to get the basics right."

The decarbonisation project which tomato and vegetable growers are working on with the Energy Efficiency and Conservation Authority (EECA), aims to identify feasible options to reduce energy use and then switch to sustainable fuel sources. Case studies and resources along with information generated by the project will help growers make technically and economically viable decisions and investments. Work has so far been carried out in the field looking at different operations, technology changes and member engagement. Now it is at the stage of proving different technologies work by drawing on overseas research and trials.

"We are validating and getting that out and will work with individual growers," Glenn Wellington, EECA sector programme manager said.

The advice given to growers as to their alternatives is different for different sub-sector levels.

One possibility could be that growers in a particular area get together to use waste heat from an industrial process.

"The solution for a large Pukekohe grower will be different to those for a small South Island one," he said. "We don't know what we don't know yet. We have to get the information first, then have a discussion."

A 15% TO 20% REDUCTION
IS POSSIBLE BY DOING SIMPLE THINGS SUCH AS TURNING THINGS OFF WHEN THEY'RE NOT NEEDED

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RESIDUE FREE BY 2050?

Words by Geoff Lewis. Photos by Trefor Ward

Plant & Food senior scientist, Dave Rogers, discussed developing new Integrated Pest Management Strategies (IPM) for both conventional and organic production systems as part of the Residue Free by 2050 session

Consumers and regulators, both domestically and in export markets, are increasingly demanding food that is free from chemicals, is grown sustainably and is ethically produced. They are often willing to pay a premium for this food too. This makes the production of high-quality produce more challenging.

Many chemicals used to protect crops against horticultural pests, weeds and fungi, have been phased out in recent years in an effort to produce food that has minimal chemical residues or is free from residues.

However, New Zealand's horticultural crop producers realised this was a problem in 2015, when many of the crop protection products they relied on had not been replaced with readily available product substitutes.

An initiative called *A Lighter Touch* was developed – a seven-year, $27 million programme led by representatives from the Ministry for Primary Industries (MPI), The Foundation for Arable Research (FAR), HortNZ and Zespri. The programme looks to find ways ahead in the identification and development of new crop protection methods, techniques and products.

On a global scale, the New Zealand market for crop protection products is small, and many fruit and vegetable crops grown in New Zealand are produced in small volumes. In many situations, the business case for registering products for use on these 'minor crops' didn't stack up.

There were also concerns a limited selection of crop protection products were increasing the risk that pests and diseases might develop resistance to available products. Many crop groups were proactive in funding research and working with crop protection companies, but there didn't appear to be a long-term solution to the lack of 'minor use' registrations.

A step-change in the industry's approach to crop production is needed for the horticulture sector to capitalise on this opportunity.

Integrated Pest Management (IPM) philosophy of pest control is founded on the principles of ecology. In practice, it involves using several control tactics based on a knowledge of the crop, pests and associated natural enemies to avoid crop loss and minimise harmful effects on the environment.

Plant & Food Research Ltd says that the world is changing and with that comes increasing pressure on the world's resources. Ensuring the resilience of our food production system will be vital.

Plant & Food Research aims to develop production systems that use fewer resources and produce more food that is safe to eat, and is presented to consumers in the best possible condition. Plant & Food Research scientists are utilising the principles of IPM in their research to keep pests and diseases under control via natural methods – using the right amount of water and chemicals in horticultural production while ensuring minimal effects on the environment wherever possible.

Plant & Food Research senior scientist Dr Dave Rogers spoke at the 2021 Horticulture Conference in August on the topic 'Residue Free by 2050 – a bridge too far?'

He said IPM is "challenging" and requires new tools and drivers which need to be sustainable economically, environmentally and ecologically.

"IPM is not about the use of broad-spectrum pesticides that can interrupt biological control and not about calendar spraying. IPM is not a complete science programme or a checklist of rules. It is pragmatic, real and practical."

Dave said there needs to be a reason for the use of sprays and IPM features careful monitoring and the use of selected pesticides which do not disrupt 'beneficials' – biological control agents, which can help to achieve the same outcome without the use, or with far more limited use, of chemicals.

"New food safety legislation in Europe means we are about to lose quite a few pesticides in the next few years," said Dave. "Integrated Fruit Production requires a deep re-design. We are aiming for the maximum in biological control. It needs to be smart and sustainable. Looking at being spray free by 2050 we will be a long way towards being residue free, more so than anyone else in the world."

> **"Many chemicals used to protect crops against horticultural pests, weeds and fungi, have been phased out in recent years in an effort to produce food that has minimal chemical residues or is free from residues**

He also said the big thing now is that there is "much more alive in the orchard" due to the use of new and selected pesticides, biological controls and parasitoids.

"Not long ago we'd lose 30% of our (apple) crop to leaf roller, but now we're off the toxic pesticide treadmill and thanks to biological control that's down to only about 1% damage.

"Between 1995 and 2015 the total use of pesticides dropped hugely and this resulted in improved market access."

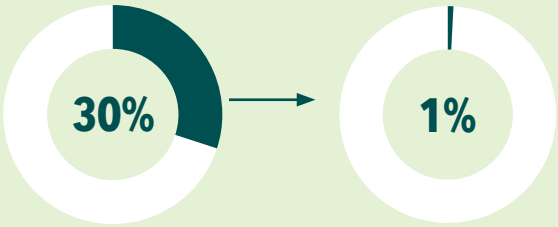
Dave said disease-resistant varieties of apples were about to be released. "We're turning a threat into an opportunity."

Also speaking at the conference, Dr Mette Nielsen warned that seven common pesticides have been banned by the European Union and 39 more are under review by the Environmental Protection Authority (EPA).

"Consumers are concerned and the supermarkets are clamping down. IPM does a lot of things about reducing the use of chemicals due to environmental factors and human health factors. Some supermarkets don't want produce with any residue at all. The majority of consumers are willing to pay more for products that protect the environment and are perceived to be 'healthy'."

Multinational agrichemical developers and marketers are on the front-line in the battle between chemical crop protection products, insecticides, herbicides and fungicides and nature's fight-back in the form of natural resistance.

Paul Hassan is New Zealand technical services lead for one of these multinational agrichemical developers, Syngenta. He outlined the need for the industry to develop management principles for the control of natural resistance.



NOT LONG AGO WE'D LOSE 30% OF OUR (APPLE) CROP TO LEAF ROLLER, BUT NOW WE'RE OFF THE TOXIC PESTICIDE TREADMILL AND THANKS TO BIOLOGICAL CONTROL THAT'S DOWN TO ONLY ABOUT 1% DAMAGE

SEVEN COMMON PESTICIDES HAVE BEEN BANNED BY THE EUROPEAN UNION AND 39 MORE ARE UNDER REVIEW BY THE ENVIRONMENTAL PROTECTION AUTHORITY (EPA)

"Why do we need crop protection products? Because we are in competition on the macro level with creatures like birds. But our real concern is smaller insects and pathogens which are everywhere in the environment."

Traditionally bio-legacy companies would 'tweak' chemicals to target particular fungi, weeds and insect pests – but this was inefficient as the biota involved can quickly evolve to become resistant.

"We are in the business of developing and bringing modern agrichemicals to market. Crop protection compounds need a big investment to get to market. The average time is 11 years to get a product to market and the cost can be up to $US 300 million. Costs have doubled in the past 25 years.

"There has been a declining number of agrichemicals coming to market since the 1990s, fewer discoveries and more regulatory pressure," Paul said. "Some new products, multicides and fungicides, can create resistance.

> **"Once we get resistance it can lead to the loss of control in the field and then it's lost forever. It is critical to employ good resistance management strategies**

"The programme *A Lighter Touch* will be the innovator in New Zealand. The rise in 'biologicals' or biological controls, as opposed to conventional controls, has created big interest from the multinationals and takes the residue pressure off traditional chemistry. They can also be used to enhance 'at-risk' chemistry."

Paul said while many low-risk products are also under regulatory pressure, genetic mutation is amplifying resistance and further emphasises the importance of resistance management.

"Once we get resistance it can lead to the loss of control in the field and then it's lost forever. It is critical to employ good resistance management strategies. In Australia for example, wheat growers have lost a lot of options and are facing rising costs in finding new protections.

"In New Zealand, we are using the programme *A Lighter Touch* as a vehicle and working to develop beneficial fungi which can colonise plants."

The bio-control market is growing at three to four times the rate of the traditional control market.

The plant-based food sector, incorporating horticulture, arable cropping and viticulture, generates more than $8 billion annually. New Zealand's annual horticultural production is valued at $6.73 billion including $3.4 billion in exports, produced by 6,000 commercial fruit and vegetable growers.

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ECOLOGICAL BALANCE AT THE HEART OF IPM

Words by Geoff Lewis

Mike Parker with folder showing 'beneficials'

Mike Parker has been in the growing business for more than 40 years and is currently a member of the Vegetables Research and Innovation (VR&I) board and a director of Vegetables New Zealand Inc.

Over 20 years ago he was also one of the leaders in the development of Integrated Pest Management (IPM).

IPM is a strategy designed to manage the natural tendency of horticultural pests – insects, weeds and fungi – to develop resistance to commonly used agricultural pesticides.

These days, Mike grows sweet corn, maize, rockmelon and watermelons on his property near Hamilton.

It wasn't long ago when he was growing significant quantities of brassicas – cabbages, cauliflower, broccoli, brussels sprouts and forage brassicas – supplying major supermarket outlets with fresh produce alongside LeaderBrand and fellow grower, Mike Arnold, until it became unprofitable to do so.

Mike's interest in IPM began in the 1990s when he and Mike Arnold discovered a then new chemistry on the market, *methamidiphos*, an organophosphate that was useful in combatting the diamondback moth problem.

These creatures would chew holes in his brassicas and render them unsaleable.

"We started to see the development of resistance," Mike says. "Being an organophosphate, it also killed the beneficials – insects like hoverflies, spiders and ladybirds which would normally prey on the moths and white butterflies (*lepidoptera*).

"We sat down with the Crop and Food people, now Plant & Food Research Ltd, and worked out how to retain the effectiveness of the products.

"Together, we came up with a process of rotating different products and chemicals that didn't affect the beneficials and to apply chemicals only at various thresholds.

"The Crop and Food guys would take us into the field and train us as 'crop scouts' determining the level of pest damage in brassicas and lettuce and working out the thresholds for applying insecticides. After doing this for about six months we started getting lacewings everywhere – a beneficial scientifically known as *Chrysoperla rufilabris* that is widely used to control many different pests.

"We also learned about the use of BT – *Bacillus Thuringiensis* – a bacterial toxin effective in the control of white butterfly."

IPM has come a long way since and is now tailored to the specific community of pests and beneficials which come with different crops.

IPM also means dividing the year into heat units or periods of time in which the pests are likely to come in numbers, and rotating the chemistry through these windows so as not to promote resistance.

> **IPM is an integration of cultural factors including soft chemistry, timing and scouting. Using nature itself to provide more beneficials and fewer chemicals**

"In the old days I'd spray once a week. Now, by using IPM, I only apply sprays once or twice in the life-cycle of the crop and not at all in winter."

"IPM is an integration of cultural factors including soft chemistry, timing and scouting. Using nature itself to provide more beneficials and fewer chemicals. I don't think you'd get away with not using chemicals at all and we can't use BTs too much or we'll get resistance to them too," Mike says.

Mike is a member of the Reassessment sub-committee of Vegetables NZ and vice-chair until recently.

"We did a reassessment of (the herbicide) Paraquat and had to justify why it was so important and why we had to continue using it. The sub-committee included clover seed producers, lucerne growers and some kumara growers.

"We are doing the same thing with glyphosate (commonly marketed as Roundup) which is also an organophosphate. Some are quite useful against threats like the brown marmorated stink bug and fall army worm."

These damaging horticultural pests are currently chewing and burrowing their way through Australia.

All horticulture representative groups are part of the *A Lighter Touch* programme which endeavours to reduce chemical treatments. However, those people who are trained and experienced in recognising pests and beneficial predators are ageing and becoming fewer, says Mike.

"There will soon be the need to train a new cohort of crop scouts."

According to the European Commission, glyphosate is currently approved for use in the European Union until December 2022. Austria became the first EU country to ban glyphosate in July 2019. Germany announced it will also phase out the controversial weedkiller by 2023.

PLANNING AGRICHEMICAL PURCHASES FOR THE COMING SEASON

Words by Mark Ross : Agcarm chief executive

The supply of crop protection solutions for the 2021–22 season will be challenging. Manufacturers and suppliers are factoring in a lead time of more than six months to acquire agrichemicals. This advance planning is crucial to support the availability of the products in the face of shipping delays, congestion and ongoing disruptions caused by the Covid-19 pandemic.

The agrichemical industry encourages farmers and growers to prepare orders for the upcoming season in advance and talk to their merchant reps who can support them with their purchasing. Providing a good lead time is sensible as it allows suppliers to effectively manage the continuity of supply – as manufacturing companies now need double the lead time to get products into the country.

To assist with supply, it is recommended that orders for agrichemicals and other inputs be placed three to six months ahead of when you would normally order them. Careful planning is recommended to avoid over-ordering and any storage issues or charges incurred as a result. Retailers are unlikely to get stock well in advance and are generally not able to hold stock for farmers and growers. In addition, sites can only hold limited volumes of certain agrichemicals, depending on their hazard classes.

Growers can talk to their merchant rep who will have options available to solve any pest problems in case any preferred brand is temporarily in short supply. If this happens, it's useful to discuss the substitute product's fit with the crop programme to ensure a positive outcome. Reps have a broad knowledge of the suite of alternatives and can recommend products to tackle options for all pests and diseases. Growers should also ensure that the alternatives meet processor, exporter and importing country requirements.

> "Careful planning is recommended to avoid over-ordering and any storage issues or charges incurred as a result

Following these requirements will allow growers to manage pests and diseases for the 2021–22 season. It is uncertain when shipping delays and congestion at domestic and international ports will ease. However, you can rest assured that agrichemical manufacturers and suppliers will be working overtime to ensure that you can continue to grow high-quality, healthy and pest-free crops.

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RESTRICTIONS ON FARMERS' MARKETS "UNREASONABLE AND UNECONOMIC"

Words by Elaine Fisher

The Hamilton Farmers' Market operated with social distancing, mask wearing and 100 people limits on Saturday September 12

Classifying Farmers' Markets as events under 'Delta Level 2' restrictions and capping shoppers at 100 is unreasonable for customers and uneconomic for stallholders, says Jono Walker, chair of Farmers' Markets New Zealand (FMNZ).

As Farmers' Markets around the country, except for the five in Auckland, re-opened in early September, Jono says FMNZ struggled to understand why the classification had changed from last lockdown and had written to the Minister of Health to address the issue.

"We feel strongly that Farmers' Markets are not events. Events are concerts or sports matches where people buy tickets and attend for entertainment," Jono says. "Farmers' markets are about selling seasonal, staple, nutritious food such as fruit and vegetables, bread, meat and milk that people take home to cook during the week, returning the next week to buy more.

"During last lockdown Farmers' Markets were classified as a public venue space, more aligned with food retailers like grocers, dairies and supermarkets. We can't understand why this has changed.

"Most markets are in the open air and my understanding is that there are no documented cases of people contracting Covid-19 in an outside environment."

There are 27 markets aligned to FMNZ throughout the country, supported by hundreds of growers and producers who rely on the markets for much or all of their income. It's on their behalf that Jono and other FMNZ committee members have advocated for a change in restrictions, particularly to the 100-person limit.

"I've done the sums, and if a shopper takes 15 minutes to get round a market quickly, that's four people per hour, times the 100 allowed under current rules. Which means 400 people pass through the market each hour, equating to 1,600 over a normal market morning.

"That means stallholders are going to sell much less product, and for some it may not be worth being there; especially as some of the bigger markets attract as many as 5,000 people over the four hours the markets are open. There also won't be time to allow all the customers to do their shopping at some of the larger markets."

Markets which opened on 11 and 12 September employed security guards or volunteers to restrict public entry, adding another cost for stallholders and causing problems for markets with many points of entry.

Jono says in Australia and the United States, authentic Farmers' Markets have been classified as essential services. He doesn't know why the same is not true in New Zealand.

Stallholders accept the need under Delta Level 2, for everyone, including the public, to wear masks and for shoppers not to linger and chat as they would normally do, but are struggling to accept the limits on shopper numbers.

Income for most stallholders has been significantly impacted by the Level 4 and Level 3 restrictions when markets were closed, and those growing fresh seasonal produce have been particularly hard hit.

> **We feel strongly that Farmers' Markets are not events**

"Farmers' Market stallholders have so far been resilient, with many being able to adapt to change and when curve balls are thrown at us. I hope most will come back but some will suffer and some businesses may fail, but so far I haven't heard of any that have failed.

"Those like us, who switched back to online orders and box deliveries as we did in the last lockdown, have coped but not everyone can do that," says Jono, who owns the Soggy Bottom Holdings and butchery with his wife Sarah Walker – a small enterprise raising free-range heritage breed pigs, cows and sheep.

Whangarei Growers' Market

Robert Bradley, co-founder of Australasia's oldest Farmers' Market, the Whangarei Growers' Market, says there is deep resentment among stallholders that the market was shut down under Levels 4 and 3 and then required to operate under strict Delta Level 2 restrictions.

"We are an outdoor market. Unlike many Farmers' Markets we don't sell hot food and drinks, so there is no need for shoppers to take masks off and no reason to hang around. Most take 20 to 25 minutes to shop," says Robert, who with Murray Burns founded the market in 1998.

Farmers' Markets and the Whangarei Growers' Market in particular, are much safer places to shop than indoor supermarkets and shopping malls, Robert believes.

UNDER COVID RESTRICTIONS, ONLY
100 PEOPLE
CAN SHOP AT ONCE

SOME MARKETS ATTRACT AS MANY AS
5,000 PEOPLE
OVER 4 HOURS

Under Level 2 restrictions, queues formed outside the entrance to the Otago Farmers' Market on Saturday 11 September

"The public begins arriving around 6.30am and at this time of year it's often cold, wet and so windy you would have to really try hard to contract Covid-19. My understanding is that in Sydney, where Covid has gone mad, there is not one verified case of outdoor transmission. So, I can't understand why the government is putting restrictions on us."

Those restrictions, he says, are not only hurting producers financially, they are also shaking their confidence in their future as growers and reducing the public's opportunity to choose where to shop.

"We produce fresh, seasonal produce which is often cheaper than supermarkets and tastes so much better. We see more young women bringing their children to the market, encouraging them to choose vegetables like broccoli to buy. By making that choice they buy into eating the vegetables. Many mums say their children won't eat supermarket vegetables because they don't taste as good."

Robert believes government lockdown restrictions have given unfair monopoly to supermarkets, which have in turn increased prices because they have no competition.

"Supermarkets try to nail growers to the floor in terms of price. Murray and I used to supply supermarkets but one of the reasons we started the Whangarei Growers' Market was because supermarkets were so hard to deal with."

At its peak, the market stallholders can sell 30 to 40 pallets of fresh produce to the 3,000 to 5,000 shoppers who turn up between 6.30am and 10.30am.

Robert says he and the other more experienced, older growers have got through the lockdowns because they have a certain amount of financial resilience.

"However, you can't keep on living off reserves if lockdowns are to continue, and it's been very tough on smaller, newer growers," Robert says.

Lockdown from February to April 2020 hit peak production time for Robert's market garden venture which grows a range of summer and winter greens in open ground.

"It cost me an arm and a leg. I had to hoe in $5,000 to $6,000 worth of spring onions alone because we couldn't trade."

Despite the reality that lockdowns will happen again, Robert isn't about to give up growing.

"To do what we do, you have to enjoy growing food. What keeps me going is knowing that our customers will be at the market, whatever the weather, to support us. Even in the pouring rain, we have enough customers to make it worthwhile."

Otago Farmers' Market

Among the growers forced to dump produce are Rodger and Cindy Whitson who grow hydroponic lettuce, herbs and flowers on a 4.4 ha property just outside of Mosgiel. Rodger gained national attention during Level 3 after posting on social media that he had to dump lettuce because the Otago Farmers' Market was closed.

"I got some flack via social media for not giving it away, when in fact I had given a lot to local food banks, but lettuce is a fresh product and they can only handle so much at a time," says Rodger. "At the end of every Farmers' Market, we always give any unsold product to KiwiHarvest which distributes it to where its most needed, so we do our bit.

"We can only keep the lettuce growing for so long in the shade houses as we have to begin planting for the next rotation."

Rodger says the impacts of the past and current lockdowns and the prospect of more to come in future has shaken his confidence a little.

"I'm still planting as normal but in the long term, who knows.

"We need direction from the government of where we are heading. Currently there is so much uncertainty. We are waiting for the weekly announcements and all of a sudden, things change and we have little time to sort ourselves out. Clearer signals about long term plans would be helpful for all businesses."

Although he's pleased the Otago Farmers' Market can operate under Level 2, limiting customer numbers will have a dramatic impact on Rodger's income.

"At our busiest time we can have 400 customers to our stall alone."

The Whitsons do not supply supermarkets and Rodger says under the current restrictions, those who don't have fewer options to earn a living.

"There's some discussion among stallholders that we could put together food boxes with a variety of produce," he says. "It's hard for us to do that on our own as not many people will want to buy a $50 box of lettuce."

Hamilton & Cambridge Farmers' Markets

Shannon Wright of Backyard Jem grows winter and summer vegetables in a large garden on a lifestyle block near Ngaruawahia which she sells at both the Hamilton and Cambridge Farmers' Markets. She also has an online store with a contactless pickup service from her property, and supplies salad greens to supermarkets.

"Even so, lockdown has hurt us financially. Last time we lost three-quarters of our income. At this time of year, coming into spring, produce can stay in the ground a little longer but it's not ideal."

> "Last time we lost three-quarters of our income

Restricting numbers of shoppers at the markets will reduce sales, but Shannon believes markets could operate safely with larger numbers of people.

"We are encouraging people to 'grab and go' and are not providing places to picnic or gather as we normally do. From what I understand, Farmers' Markets overseas are carrying on and I can't see why we can't do the same."

Online sales and home deliveries are not a viable option for many producers or even the public, Shannon says.

"Fresh product which needs to be chilled or kept frozen can't safely be sent by courier. The public can't afford to pay the extra delivery cost for every box of food they order anyway.

"I won't be increasing the footprint I currently grow on but will improve efficiency and yield, along with marketing to increase our local customer base, and to provide more security moving forward for our family and our customers." ●

AWARD RECIPIENT LEFT BIG SHOES TO FILL

Words by Glenys Christian

HortNZ president, Barry O'Neil (left) and TomatoesNZ general manager, Helen Barnes, presented Alasdair MacLeod with the Lifetime Achievement Award in August

The first independent chair of TomatoesNZ, Alasdair MacLeod, received a Lifetime Achievement Award at TomatoesNZ's annual meeting in August. Present chair, Barry O'Neil said he left "big and colourful shoes to fill."

Chair from 2012 to 2018, Alasdair also served as chair of the Port of Napier Limited and the Hawke's Bay branch of Export NZ.

He trained as a civil engineer then completed his Master of Business Administration (MBA). Since then, he has worked in the electricity industry, in information and in business consulting.

When Alasdair joined TomatoesNZ, he had recently retired as a partner of Deloitte NZ, where he had led the HortNZ "10 billion by 2020" horticulture strategy.

TomatoesNZ general manager, Helen Barnes, said with his skills in facilitation and business growth, the organisation was lucky to be able to bring him onto its board as its first ever independent chair.

> "Alasdair ensured strong, lively and focused debate around the board table which resulted in new initiatives for the tomato industry such as new pest biocontrol work

Alasdair ensured strong, lively and focused debate around the board table which resulted in new initiatives for the tomato industry such as new pest biocontrol work. Alasdair is well known for his positive approach to life and can-do attitude. When asked how he was he would often reply, "I'm fabulous, thank you," she said.

Alasdair said getting the opportunity to chair a board was "an absolute revelation." He joked that the real reason the horticulture industry hadn't implemented strategy as it was

being urged to do by growers was that it was much harder than it looked!

"It's been an absolute pleasure and I intend to stay in touch," he said.

Barry O'Neil said it has been a "bizarre and tough year" for tomato growers. Covid-19 effectively stopped the export side of the business, on the biosecurity front there have been three pest incursions and increasing energy costs have made it hard for growers to keep up.

> **Alasdair is well known for his positive approach to life and can-do attitude**

"We've gone from the record lowest to the record highest price for tomatoes in one year," he noted. "If only we'd had the volume at the high price."

As there is one vacancy for an elected member on the TomatoesNZ board he encouraged tomato growers to pass on details of anyone who they felt should be shoulder-tapped.

> **Covid-19 effectively stopped the export side of the business, on the biosecurity front there have been three pest incursions and increasing energy costs have made it hard for growers to keep up**

Members voted for the continuation of the status quo structure for TomatoesNZ following a remit last year that the organisation and Vegetables NZ develop options for combining covered crops under one body. A merger working group was set up, but members' views were split between having a covered vegetable crop growers' body and a separate outdoor vegetable growers' body – or one body incorporating both covered and outdoor crops, including tomatoes. Barry said there will continue to be closer cooperation between the two groups as well as identification of any further areas for closer collaboration.

"In my experience people who want to work together make more difference than structures," he said.

There was no discussion of the remit and it passed without any opposition.

QUALIFICATIONS BRING OPPORTUNITIES FOR WHĀNAU AND WHENUA

Supplied

Noel Rasmussen, an employee at Waimarama Orchards, is now training others in his work thanks to the opportunity he was given to study and upskill

In the far North, Ngāti Kuri iwi operate a 60-hectare avocado orchard, growing over 20,000 avocado trees and a recently developed block of five canopy hectares of blueberries.

Since 2014, Ngāti Kuri have been encouraging orchard kaimahi (workers) to take up study alongside their work. Now, almost all of the orchard's 20 part-time and full-time workers are participating in some form of study through the Primary Industry Training Organisation (ITO).

Mei Petera and Noel Rasmussen, employees at Waimarama Orchards, have been studying the New Zealand Apprenticeship in Fruit Production part-time. Mei recently completed her Level 4 qualification and Noel is studying Level 3.

Mei, a busy mum with four tamariki (children), has been promoted to manage the blueberry operation and now supervises a team. She is also in the process of becoming a workplace assessor and mentor.

Mei says the opportunity to study has changed her life.

"It has shown [me] that you can upskill and get more experience and progress to be a supervisor or manager," she says.

"You can develop to lead others and show them that there are greater opportunities for them. It gives you satisfaction in your job and a feeling of wanting to come to work."

Mei has since been asked by Ngāti Kuri to take on a role with their whenua at Ngātaki, in the same district as the orchard.

Noel, originally from a forestry background, has taken a lead role in the avocado orchard through his study. He is also involved in a seed collection and propagation initiative for a native tree nursery being developed for whenua planting, and in the irrigation work for the blueberry block.

Noel says the opportunity has made him feel good about being Māori and about his work.

"It is definitely a proud feeling working under a Māori organisation that is giving people the opportunity to upskill and a better future direction," he says.

"Now I have the opportunity to transfer my learnings, to establish something for my whanāu," says Noel.

Although schoolwork was never his thing, Noel says homework for his apprenticeship was surprisingly positive.

"I get to sit down with my oldest daughter and we do our study together. We talk over our work and she lifts the bar for me."

Initially nervous about studying while working, Mei and Noel are enjoying using the skills they have developed and encouraging others towards further qualifications.

"I'm training others in my work and basically upskilling them. I love that," says Noel.

> **Mei says the opportunity to study has changed her life**

Orchard Kaiwhakahaera Matua Supervisor, Paul Tolladay says he's proud to work with an iwi encouraging workers to gain qualifications for the work they do.

"To see people who have come into our industry with no expectations of bettering themselves achieving qualifications like this is the ultimate. That beats any crop that you can grow."

For more information on programmes in the horticulture industry, visit: **www.primaryito.ac.nz**

Mei Petera has taken on a new role with whenua at Ngātaki since completing her study through the Primary ITO

WATER CARE A COLLECTIVE EFFORT

Words by Kristine Walsh

Joanna Noble, Gisborne District Council chief of strategy and science, says clean water sustains us. Without it we are all in trouble, let alone the intrinsic value of our waterways and dependent ecosystems

There is tremendous potential for growth in Te Tairawhiti and the use and protection of water is a big part of that, says a Gisborne District Council scientist.

Just six months after taking on the role of the council's chief of strategy and science, Joanna Noble fronted a meeting with some of the biggest users of water on the fertile Poverty Bay Flats.

There, she talked about a range of issues, from the council's work on water security and resilience to updated government directions on freshwater management, a review of the Waipaoa Catchment Plan (including the reallocation of consents) and, the question on many lips, the future of a proposed reinjection project for the crucial Makauri Aquifer.

Also up for discussion was a planned groundwater model for the Flats – due for delivery in March 2022. The model pulls together information from existing bores to build a picture of what is under the ground, how it could be used, and what the impacts could be.

"It was a way of outlining what a more fully-formed water security and resilience plan could look at, in terms of both current supply and future demand," Jo says.

"Our aim is to figure out if any actions are needed in that supply and demand space and what those actions might look like, and considering what role – if any – council would play."

> "There really is tremendous potential here in Tairawhiti and being part of realising that potential is very exciting

The meeting was, she says, an opportunity for great debate and the beginning of ongoing conversations around the issue of freshwater.

"There really is tremendous potential here in Tairawhiti and being part of realising that potential is very exciting," says Jo.

"The region has such rich cultural history, an amazing climate and natural resources, and of course wonderful produce. But like any industry, the production of that produce has to be managed in an appropriate way."

As well as figuring out ways to reduce their environmental footprint, growers should be mindful of the reverse impact, she adds.

"In Gisborne/Tairawhiti, that means being prepared for the predicted changes in rainfall patterns and higher prevalence of drought. It's not just about growers' impact on the environment…it is also about the environment's impact on them."

> **"Whatever we do, we can look to central government's policy of Te Mana o Te Wai, which ensures the health and well-being of the water is protected and human health needs are provided for before enabling other uses of water**

The industry of growing is not new to Jo.

Originally from the United Kingdom, she studied science to Master's level before moving to New Zealand some 20 years ago.

These days she is bedded in at the coastal enclave of Mahia, but growing up back in Sussex she lived on her parents' market garden where her dad, "Strawberry George," grew mainly salad crops and soft fruit berries like strawberries.

As for water, they had an on-site reservoir, so Jo has long been aware of the importance of water and the need to look after it.

For Jo Noble, her work around water security and resilience presents some big challenges, but she loves engaging with communities to achieve shared aims for the greater good.

"Whatever we do, we can look to central government's policy of Te Mana o Te Wai, which ensures the health and well-being of the water is protected and human health needs are provided for before enabling other uses of water."

The timing of the recent meeting in Gisborne was significant in that council had just wrapped up the Managed Aquifer Recharge trial at Makauri and district councillors wanted staff to talk with those involved – as well as addressing the many other things happening in the freshwater space.

"It was important in that we all need to work together," she says. "That's the best way for us to work out how to achieve the desired and necessary outcomes."

MORE WORK RECOMMENDED ON AQUIFER TRIAL

With Gisborne's Managed Aquifer Recharge (MAR) trial now complete, the sub-committee run by the Gisborne District Council (GDC) has been disbanded and decisions need to be made around whether a recharge project will go ahead, and who will be responsible for it.

Jointly funded by the Provincial Growth Fund and Trust Tairawhiti, the million-dollar trial was started in 2017 to determine if the aquifer – which supplies nearly a third of water for use on 3,000 hectares of land on the Tūranganui-a-Kiwa / Poverty Bay Flats – can be replenished to counter the decline noted since the 1980s.

The second stage of the trial finished at the end of 2020 and growers have been keenly awaiting the results. While GDC has renewed consents to take water from the aquifer, it cut 75% of the allocation from existing users (which was largely not being used) and had no plans to grant consent to any new users.

2017
THE MILLION-DOLLAR TRIAL WAS STARTED IN 2017

2020
THE SECOND STAGE OF THE TRIAL FINISHED AT THE END OF 2020

The Council also planned to impose a 10% cut in water use at each five-yearly review of consents until the aquifer was stabilised.

Joanna Noble says that now the trial is complete, there is no allowance in the region's long-term plan for a recharge project, so it is up to local government, central government, or private interests to step into that space.

If they do, they will have good science to draw on.

GDC commissioned an independent report which assessed whether the trial – in which water was harvested from the Waipaoa River and injected into the aquifer via a number of bores – should progress toward a full-scale recharge scheme and identified key risks for the project.

According to report author Paul Magarey, any future project would have the dual aim of alleviating declining groundwater levels, while addressing growing salinity within the aquifer.

There is a risk of clogging, which could reduce bore performance, but the author believes this could be mitigated by removing sediment through the aquifer's own natural filtration, or through means like the construction of wetlands or settling ponds.

He also recommended that mechanical means and sampling be used to keep a sharp eye on the presence of any indications of water degradation, ranging from turbidity, salinity and extreme pH levels, to the presence of pesticides, nutrients, bacteria, heavy metals and synthetic perfluoroalkyl or polyfluoroalkyl chemicals (PFAS).

Overall, Paul concluded that the Makauri Aquifer was sufficiently permeable and suited to a recharge scheme, which would work so long as potential clogging from source water could be managed.

In his opinion, the proposed winter injection of some 600,000 m^3 into the aquifer would likely succeed in slowing the decline in groundwater while also improving salinity levels.

However, further work would still be required to evaluate the most appropriate bore field layout for a full-scale scheme, he said.

Paul believes that for any such scheme, its architects should consider the possibility of taking source water from an overlying aquifer, rather than from the Waipaoa River. ●

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CONNINGS FOOD MARKET ADAPTS AND THRIVES DESPITE CHALLENGING TIMES

Words by Anne Hardie

Back in the old days. Cheryl Conning, owner, picking capsciums

Last year's first lockdown was loaded with stress for Connings Food Market near Nelson. But when the government announced that the country would once again enter Alert Level 4 on August 17, Connings had its systems ready to go.

This time, the rules were clearer about opening for business. It took just two hours for the Conning family's operation to switch into lockdown mode, with safety measures put in place for staff and customers, allowing the business to open at Alert Level 4.

Simon Conning is the second generation to be involved in the family's market garden business and is in charge of the shop. He says they were fully stocked for the 2020 lockdown, thinking they would be allowed to open, only to be forced to close as the government worked out who could open to the public at Level 4. They turned to home deliveries to deal with the high stock volume in the shop. While it got existing produce out of the shop to customers, it wasn't efficient or profitable.

Eventually Connings opened at Level 4 with government guidelines in place. That experience guided its plan of action for ensuing lockdowns.

> "About half the usual number of customers were in the shop to buy their fruit and vegetables during lockdown, but interestingly, they spent more

The food market sits on the edge of Richmond and is part of a family business that involves two generations, growing vegetables from seed in its nursery to be planted out on about 130ha of land where it is harvested for both the shop and the wholesale market.

Simon says there was a lot more certainty about the rules this time around when the August 2021 lockdown was announced.

The shop was stocked with the knowledge they could open for business, PayWave was installed for the duration

Simon Conning says clearer rules make it easier preparing for business in lockdown

Lockdown mode

of lockdown and signs and arrows were erected to remind customers of social distancing rules and how to negotiate their way through the shop. Ropes blocked off aisles to encourage customers to follow the arrows and to ensure they weaved their way in one direction through the produce aisles to the checkout.

"We tried to put multiple locations of produce so if people missed something, they didn't try and go back to get it," Simon says. "It was a lot easier because we had done it before. We turned the shop over at night (before lockdown) and were open the next morning."

Staff numbers dropped for lockdown, though there were still about 40 on the roster, with high school students continuing to help out stocking shelves in the morning and packing up at the end of the day.

The bakery behind the shop continued making bread, but the café in the shop stayed closed until Level 3 when it could reopen for contactless purchases.

About half the usual number of customers were in the shop to buy their fruit and vegetables during lockdown, but interestingly, they spent more. Simon puts that down to customers shopping just once a week to limit their outings and buying enough to last a week. In all, he estimates business dropped between 30 and 35% which was mainly attributed to restaurants not buying and the closure of the shop's café through Level 4. The produce side of the business barely changed.

Customers continued to wear their masks and kept their 2m distancing, but as the South Island experienced no

BUSINESS DROPPED BETWEEN
30-35%
WHICH WAS MAINLY ATTRIBUTED TO RESTAURANTS NOT BUYING AND THE CLOSURE OF THE SHOP'S CAFÉ THROUGH LEVEL 4

PRIOR TO OPENING THE SHOP
80%
OF THE PRODUCE WAS HARVESTED AND THE REST PLOUGHED BACK INTO THE SOIL.
NOW THE CUT RATE IS MORE THAN
90%

community cases of Covid-19, Simon says customers appeared far more relaxed than the lockdown of 2020.

He acknowledges it will be a different story if the virus is detected in the community. That will likely mean less staff and shorter hours so there is time to stock shelves and pack up without customers in the mix, he says.

The retail outlet was opened just over two years ago and within the first six months of business had unexpectedly reached its capacity. Business has continued to thrive and Simon says they are now looking at expansion to cater for more storage of produce, dried goods and meat.

One of the reasons the family established a retail outlet was to reduce the massive waste of vegetables that gets dumped from a market garden because it can't be sold through the market.

It has experienced tremendous success. At the end of each day, a couple of crates of produce heads to Kai Rescue and usually just one small crate is considered wastage. Prior to opening the shop, about 80% of the produce was harvested and the rest ploughed back into the soil. Whereas now the cut rate is more than 90%.

"We started it because we were dumping so much, whereas now we're harvesting firsts and seconds and the seconds come here to the shop or go to restaurants."

Broccoli seconds can be sold in the shop at 59c each and sell well, whereas sending them to market would end up costing the business much more. Small celery can be bunched and sold through the shop instead of ending up as waste. Simon says much of the produce in the shop is outside supermarket specifications for reasons such as superficial blemishes, but is still good quality, fresh produce.

So the bulk of the farm's produce continues to be sold via the market. He says the shop cannot be efficient without the market as Connings needs to be able to harvest in bulk to achieve lower costs. For that reason, they are careful not to undercut market prices with produce that can be found at both.

"If we're selling a grade not found elsewhere, we can be very competitive."

> **"Having the nursery and being able to take crops from seed to retail gives us a lot more control**

Besides those vegetables that don't fit market specification, their retail outlet provides the opportunity to produce small crops such as kohlrabi, fancy lettuce and coriander. Or sell Brussels sprout stems which have been a big hit with customers who often photograph themselves with them for their social media posts. So much so, the farm will grow a few more rows next year.

"Having the nursery and being able to take crops from seed to retail gives us a lot more control. We can literally put the seed in the nursery and give it a go," says Simon.

"The beauty of much of the produce grown on the farm, is that it can be harvested and put on the shop shelves the same day. It doesn't get much fresher than that."

KINA GARDENS SPRING ONION OPERATION CAPITALISES ON CHANGE

Words by Anne Hardie

Stu Page with crop manager Peter Watson

It has been 40 years since Mel Page sold his first crop of spring onions from a trailer under a gazebo for a bit of extra cash. His son, Stu, is the next generation of growers now leading the business – harvesting 40,000 bunches per week at peak of season.

Stu grew up amid spring onions, later working for Turners and Growers as their salesperson in Nelson, then manager for its Dunedin base before becoming the key accounts manager for Foodstuffs in Christchurch.

He returned to the family business at a time of increasing compliance and greater environmental awareness to take the reins from his father, Mel, who was ready to step back from the daily workload.

Mel also grew up in the horticulture sector – except back then it was lucrative tobacco. It wasn't until he had forged a career managing the former McKenzies stores that he began to dabble with spring onions on a 3.3ha block of pine trees, blackberries and gorse at Kina near Motueka.

"My father-in-law had onion plants in the garden, so we planted them out and sold them to Turners and Growers in Christchurch and they asked for more," he remembers. "So, I planted some more and then a few more."

Kina Gardens was formed, remaining as a side-line business for several years as it grew. Foodstuffs approached Mel in the mid-1990s, wanting to grow spring onions for its supermarkets. About 80% of the total crop is now sold to Foodstuffs, the bulk of which goes directly to its distribution centre in Christchurch. The remainder of their crop is sold via MG Marketing from Dunedin to Auckland sent as loose product in crates.

The packhouse today employs 22 staff, including 10 on piece rate, while harvest is largely carried out by a contractor who then employs staff to lift plants six days a week to meet orders.

> "About 80% of the total crop is now sold to Foodstuffs, the bulk of which goes directly to its distribution centre in Christchurch

Several leased blocks of land on the Waimea Plains make up the 20ha of spring onions – each at different stages of growth. Spreading the crop over different blocks reduces the risk of damage caused by weather, including frost and flooding.

The new packhouse will recycle all the washing water

Winter storms drenched the crop this year and Stu says they lost a lot of mature spring onions that fell over and couldn't be salvaged.

"The wet season this year was really difficult," he says. "We've certainly had to be ready to pounce when there's a break in the weather."

Stu says they have looked at machinery to harvest the crop because it is hard physical work harvesting spring onions. However, they have found that people still do a better job of plucking the onions out of the soil. Current machinery tends to break the fragile plant, whereas people cause less damage to the plant and the soil, particularly in muddy conditions.

"They can get in and out without making too much mess and we try to keep compaction to a minimum. We keep trucks on the headlands and use the lightest tractors possible."

The winter months harbour more challenges for the Kina Gardens operation. Spring onions typically take 90 to 100 days to reach optimum harvest size which is achievable through the warmer months, but a struggle coming out of winter.

KINA GARDENS HAS GROWN FROM 3.3HA TO 20HA OF SPRING ONIONS IN 40 YEARS

SPRING ONIONS TYPICALLY TAKE 90 TO 100 DAYS TO REACH OPTIMUM HARVEST SIZE

New cultivars are being trialled for a changing climate

THE BUSINESS NOW HARVESTS 40,000 BUNCHES OF SPRING ONIONS A WEEK AT PEAK SEASON

Blocks of spring onions are grown before winter sets in to ensure there is a steady supply for market even through the cooler months – so long as storms and frosts don't destroy large areas.

"We're generally tight around November because you can't plant in winter when it's wet. If we plant in August, we're looking at 90 to 100 days, but it's very weather dependent," says Stu.

During summer, travelling irrigators have the dual purpose of sprinkling water over the crop to keep it hydrated and soil moist so the plants can be pulled out easily without snapping above the roots.

The business now harvests 40,000 bunches of spring onions a week at peak season

Storms and the increased intensity of the sun have prompted Kina Gardens to trial new cultivars that are more resistant to heavy rain events and droughts. They have relied on two cultivars in the past: Paragon and Stiletto; but introducing new cultivars will reduce the risk of losing too many crops.

Each planting is spread over several areas rather than having one large block of plants, to improve quality and reduce the risk of disease, such as black mould, devastating the entire crop.

> "Several leased blocks of land on the Waimea Plains make up the 20ha of spring onions – each at different stages of growth

As the business has grown, the focus has shifted more toward the environment – working to reduce its nitrogen use with the expectation there will be tighter regulations down the track. Stu says the reality with outdoor vegetables is they require more nitrogen through winter to encourage growth in the cooler temperatures. Instead of applying nitrogen to the soil, they apply it to the foliage to minimise the amount entering the soil.

The business is making efforts to reduce its use of plastics too. As part of Foodstuffs' 'Food in the Nude campaign,' elasticised sustainable produce tags are used to package bunches of spring onions instead of plastic sleeves. Initially, Stu thought placing tags on 40,000 bunches of spring onions per week might be an arduous mission, but the team in the packhouse now accomplish the task at speed.



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Stu says they are focused on improving quality and minimising costs

Everything is aimed at improving quality, lightening their footprint and reducing costs.

Mel remembers being paid more for a bunch of spring onions in 1986 in the height of winter than what growers receive now. He says it is more a case of what the public are willing to pay for vegetables these days.

"We are pretty satisfied with our relationship with Foodstuffs and what it is willing to pay growers."

> **"We need to grow the best possible produce. If our spring onions are better quality, they require less labour to pack and prepare for market – which means fewer costs for us and for consumers**

Both Mel and Stu are frustrated by the public's ingrained perception that vegetables are expensive and say little is being done to educate consumers otherwise. In the meantime, the business is focusing on improving quality, which is good for the customer and reduces costs.

"We need to grow the best possible produce. If our spring onions are better quality, they require less labour to pack and prepare for market – which means fewer costs for us and for consumers."

Since Covid-19, Kina Gardens have relied on Kiwi workers. Prior to the pandemic, Stu says they had overseas people who were motivated to earn money for their travels turning up every day looking for work. He says there are huge opportunities for young people in the horticulture industry, but there is a real lack of practical skills among young Kiwis, particularly knowledge on how to operate machinery. He wonders whether industry-run workshops might entice more people to learn.

Izzy Wilcox geared up for winter harvest

In the next 12 months, Kina Gardens will move the packhouse operation closer to the crops which are all grown on the Waimea Plains. Stu says that will not only save time and lessen the wear and tear on vehicles, but also reduce the carbon footprint of the business. The new facility will have the capacity to recycle the washing water used to remove soil from the roots of the plants – in turn, reducing the amount of water used by the business too.

> **Prior to the pandemic, Stu says they had overseas people who were motivated to earn money for their travels turning up every day looking for work**

"The only way we can make the business sustainable is to try and streamline it," he says. "With climate change, if we all want to keep growing, we have to adjust." ●

Freshly washed for market

INDUSTRY REMEMBERS
BLACKCURRANT 'PIONEER', KEITH OWEN

Words by Anne Hardie

Keith showing blackcurrants to representatives of Japanese food company, Meiji

Keith Owen was the driving force behind berryfruit research in New Zealand, striving for the science behind their health benefits to fully capture their potential.

In the blackcurrant industry, Keith was recognised as the 'go to guy' and New Zealand Blackcurrant Co-operative general manager, Mike Callagher, says the industry would not be where it is today without Keith's drive for research.

"He steered the industry in the direction of using the science," he says. "Particularly working closely with Plant & Food Research to examine what was in blackcurrants and steering the health research of those ingredients to back up the marketing around the product. In that respect, he was pioneering.

"The industry has benefited from that to this day and will continue to benefit."

Keith's long career in the food industry began with a first-class honour's degree in industrial chemistry in the United Kingdom that led to a job with the multinational company Unilever. That brought him to New Zealand and ultimately a job with Newman's Export Ltd – a company exporting frozen and processed boysenberries, blackcurrants, blackberries and even sphagnum moss to a wide range of markets throughout the world.

During the 1980s, he was instrumental in the development of both boysenberry and blackcurrant fruit juice concentrates which enabled more opportunities for fruit not suitable for other purposes.

Later, he moved into a consultancy role for the berryfruit industry and was appointed an independent director of the boysenberry co-operative – then known as Berryfruit Export Ltd.

The science of food through advanced plant breeding techniques and high-tech processing was developing rapidly, but the gap between the science and the market was increasing. Keith drew on his background in science and market knowledge to clarify and explain such things as anthocyanins and polyphenolic compounds and their potential applications. The information was then made available to the industry to support marketing.

In Japan, Keith helped to establish the differentiation of New Zealand blackcurrant anthocyanin to competing fruits and spent years supporting this work. It has resulted in ongoing added-value niche sales.

His career covered various commercial and industry body roles which expanded opportunities for the entire berryfruit business.

After his retirement, Keith continued his involvement with the berryfruit industry, including promoting the health benefits of New Zealand fruit in Japan. He also continued to work alongside various companies, assisting with documentation for importing fruit as well as advising on technical interpretation of information.

> "In the blackcurrant industry, Keith was recognised as the 'go to guy'

Always generous with his time, Keith mentored many people in both exporting and importing and empowered many people in their careers. His tireless efforts over the years and friendly manner earned him the Personality of the Year award in the New Zealand berryfruit industry.

Keith passed away in August and is survived by his two sons, Stuart and Douglas and daughter-in-law, Karyn.

He will be sorely missed by all.

WSP: Supporting Growers to Stay Ahead of the Game

Growers in Aotearoa New Zealand are feeling the heat and it's not just our climate emergency to blame.

Over the last year the government has unveiled new freshwater and greenhouse gas regulations with biodiversity regulation expected within the next twelve months. This is in addition to mounting environmental and societal pressures: labour shortages, severe weather events, water availability, and the loss of prime horticultural land to housing development.

This can feel overwhelming. Conversations often end without discussing the most important topic of all: what are the opportunities for our food producers in this fast-changing landscape and how can they come out on top?

Let's start with some low hanging fruit.

To stay ahead of the game, we need to look beyond the regulation. We need to answer the call of our consumers, tell our story and ensure that councils hear our voice and recognise existing accreditation to meet new environmental requirements.

Now is not the time to be humble. Growers in Aotearoa New Zealand are creating high-quality, globally renowned products and we need to shout about it. Instead of reinventing the farm, let's reinvent how we communicate what we already do well – our good growing practices, innovative products and community connections.

Secondly, meaningful change doesn't begin at the regulatory level, it starts with the consumer voice. Families and individuals of all ages are seeking a healthy environment and healthy food for future generations. There is crossover between our growers' priorities, local consumer trends and global consumer trends: minimising waste, offsetting carbon emissions and reducing harmful chemical residue on our land and in our food. Telling our stories and empowering consumers with the right information allows them to support growers that align with their values.

Another clear opportunity is to streamline new regulatory requirements within our existing accreditation standards. An excellent example of this is the NZGAP Environmental Management System add-on, which allows growers in some regions to manage their regional council's environmental requirements alongside their usual GAP audit. This reduces costs and allows growers to get on with what they do best – growing premium fruit and vegetables.

The Covid-19 pandemic has cemented the importance of providing healthy produce to Aotearoa New Zealand, the globe, and its vital role in society's wellbeing. By using environmental and social certi ication schemes such as GAP, GRASP, carbon zero and organic, growers are able to verifiably communicate to consumers that their food has been produced sustainably, acting in the best interests of the land and future generations. WSP is here to help growers with their certification and regulatory needs, supporting our primary sector as we create a healthier, more sustainable world.

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

Lisa Arnold

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TECHNICAL

THE LATEST INNOVATIONS AND IMPROVEMENTS

CLIMATE SCREENS FOR ENERGY SAVING AND MORE

Words by Elly Nederhoff : Crophouse Ltd

Two Luxous screens

Climate screens

Retractable climate screens are a key tool for glasshouse climate control in many parts of the world. The first screens were developed for energy saving after the energy crisis in the 1970s. Today, there are many types of screen materials, designed for energy saving, shading, light diffusion, blackout or insect control. Some screens serve several purposes in different seasons. Using a suitable climate screen greatly reduces the peak heating demand and can also alleviate problems in summer.

Economics

Return time on energy saving investments depends on many factors. For instance: How cold is it? How many cold nights, or days, will there be in a year? Is enough peak energy available? How much damage is caused by not meeting the target temperature?

Other important parts of the equation include the investment and maintenance costs, as well as energy prices and product prices in the future. The economics are different for each situation. Screens that are purely meant for energy saving are only useful when it is cold, but a suitable screen can be used for other purposes too – such as improving growing conditions, even in summer.

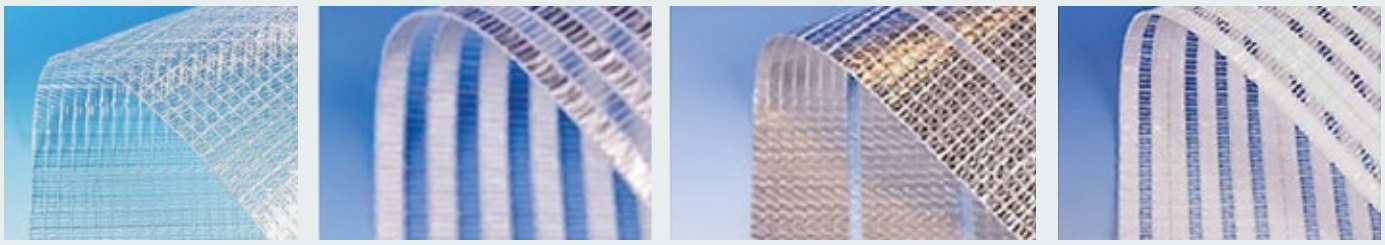
Screens for different purposes

Retractable energy screens were first introduced some 40 years ago by pioneering manufacturer, Ludvig Svensson, in Sweden. Svensson now produces more than 100 types of climate screen materials, each with a particular combination of qualities, for instance a certain percentage of energy saving (up to 70%), combined with a certain percentage light transmission (up to 89%), plus certain percentages of light diffusion, humidity transfer, and more. The screen materials are divided into six product families:

1. Luxous: Energy saving combined with maximum light transmission
2. Tempa: Energy saving in winter (especially at night) and light reduction in summer
3. Harmony: Light diffusion
4. Obscura: Light restriction and total blackout
5. Solaro: Ultimate solar protection
6. Xsect: Insect control while allowing ventilation.

RETRACTABLE ENERGY SCREENS WERE FIRST INTRODUCED SOME 40 YEARS AGO

CLIMATE SCREENS ARE ABLE TO SAVE UP TO 70% OF ENERGY



Screen material from Svensson. The first number is percentage of light reduction. The second number represents percentage of energy saved

Energy saving

An energy saving screen not only saves money, but it also keeps the temperature up throughout cold nights, even with a significantly lower heating capacity. Screens save energy in three ways: By separating the warm air in the plant zone from the cold air in the top zone (reducing convection); preventing the air in the plant zone from flowing along the cold roof (reducing conduction); and blocking the heat emission from the plant (reducing heat radiation).

> **“Without an energy saving screen, plants radiate their warmth to the cold glass roof and the sky**

When and how long the screens are closed for is also important for energy saving. Transparent screens can be closed several hours before sunset to lock in the heat collected throughout the day. After being closed at night, the screens can be opened several hours after sunrise. The opening and closing of an energy saving screen is often based on the air humidity inside the greenhouse, the outside temperature and radiation (or light).

Warmer plant heads

Without an energy saving screen, plants radiate their warmth to the cold glass roof and the sky. A screen prevents this energy loss, so the plants stay warmer. One effect is that warm plants attract less condensation (dew), meaning the plants stay drier, experience less mould and fungal infections and require less spraying. The growing point in the top of the plant stays warmer too. This increases the development rate, meaning that the growing point produces more new leaves (and in tomatoes more new trusses) per week, compared to plants grown without screens. While this latter effect is not easy to see, it is there, and has a significant, positive impact on the plant's balance.

Previous humidity problems

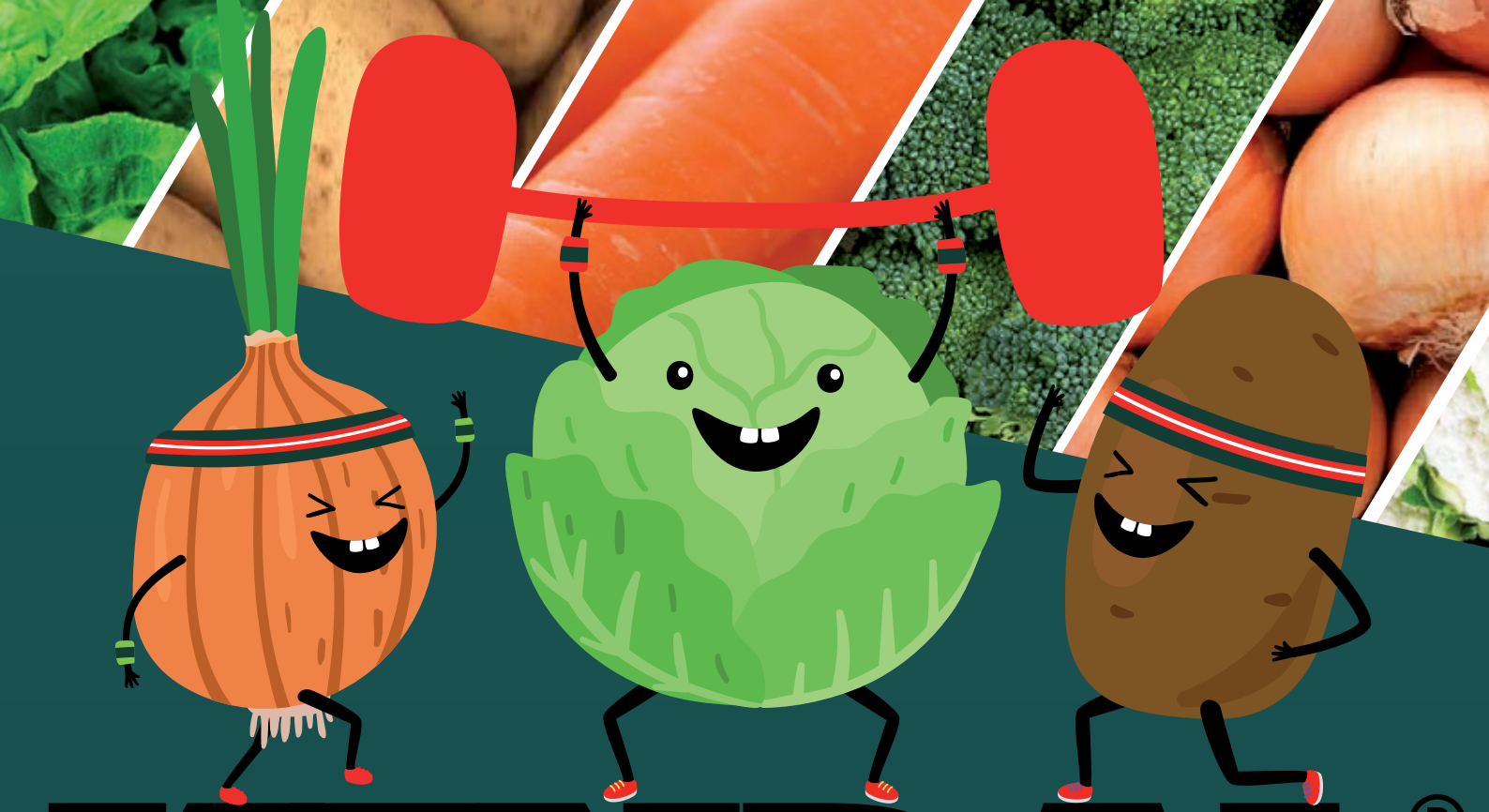
Energy screens were often associated with problems with high humidity, condensation, water dripping and light loss due to wetness – especially when outside conditions were dull and damp. To combat this, many growers left screens partially open during the night to allow moisture to escape. By doing so, they greatly reduced their energy saving results.

Modern day climate screens incorporate new designs, new technology and use more innovative materials that overcome these problems. Woven screens are warmer on the underside and attract less condensation. The Svensson climate screens are designed to allow moisture through by capillary action, so that it disappears up into the top compartment of the greenhouse. The most effective remedy, however, is the use of mechanical or forced ventilation that replaces humid greenhouse air with drier outside air. A 'screen gap' is no longer needed or can be small (just 1%). Remember, it always depends on the conditions (e.g., outside temperature and inside humidity) as to whether it is useful and effective to close a screen.

> **“Modern day climate screens incorporate new designs, new technology and use more innovative materials**

Climate improvements in winter

Climate screens have an impact on the air humidity, air and leaf temperature and light conditions. In winter, screens can improve growing conditions by equalising humidity. A problem occurs when there are small plants in the greenhouse and the weather gets cold or frosty. The absolute humidity will be low and the relative humidity can get dangerously low due to heating. These are stressful growing conditions for young plants. Screens help to increase the humidity and make the conditions milder. Note that this scenario contrasts with the high humidity problems experienced by mature plants under a screen on a damp day. Screening during the day requires a screen with good light transmission.



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Luxous screen used for shading. Photos; Svensson

Many benefits in summer

Using a transparent screen during a summer's day has many potential benefits, when done correctly: A transparent screen reduces plant temperature and plant stress; avoids sunburn and similar damage; prevents wilting; improves radiation diffusion, in turn increasing photosynthesis; reduces peak water uptake and improves working conditions for greenhouse staff. It is very important to install a screen that is suitable for the key purposes, either energy saving in winter or improving the conditions in summer, or perhaps both.

In colder countries, growers now install two screens. A transparent screen is used in summer, while both screens can be closed for energy saving in cold winter conditions.

> **Using a transparent screen during a summer's day has many potential benefits, when done correctly**

Energy saving and light transmission percentages

Swedish company, Svensson, have over 130 years of experience in engineering textile-based solutions for climate control and energy efficiency. Svensson's Luxuous screens can save up to 47% energy when closed. Made of transparent polyester strips, they have high light transmission of up to 89%, making them suitable for energy saving during the day too. When the screens are retracted, they are packed tightly to minimise the shade. Luxous screens can also be used to soften the sunshine in summer.

TEMPA SCREENS SAVE
52% TO 70% ENERGY

LUXOUS SCREENS SAVE
UP TO 47% ENERGY

HARMONY SCREENS SAVE
UP TO 47% ENERGY

Screens from their Tempa product group are made of 4mm wide strips, alternating aluminium and polyester, ranging from a third aluminium to full aluminium. Energy saving ranges from 52% to 70% and light reduction from 50% to 95%. In winter, Tempa screens are perfect for energy saving at night, but less suited for energy saving during the daytime due to poor light transmission. In summer, Tempa screens can be closed partially or fully for moderating the incoming solar radiation during the day.

Harmony screens also provide up to 47% energy saving, but they are primarily meant for scattering sunlight. Scattered or diffused light is better for plants than strong direct light. The diffusing harmony screens block 30 to 40% of the light.

Visit **https://www.ludvigsvensson.com/en/climate-screens/** for more information.

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PRECISION AGRICULTURE FOR PLANT NUTRITION

opinion

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

Precision Agriculture is a term used to describe fine-tuning of land management with the use of the Global Positioning System (GPS) where growers can mark and measure crop harvest variances within a particular field and try and determine the cause of these variations.

The United States National Research Council defined Precision Agriculture as: *the application of modern information technologies to provide, process and analyse multisource data of high spatial and temporal resolution for decision making and operations in the management of crop production*.

In the past it has mainly been used in large, broad acre cropping farms in North America and Australia for grain and oil seed crops where a field can often be hundreds of hectares in size and the harvester records yield variations via GPS. Growers, agronomists and other rural professionals can then GPS map soil tests from the better and poorer areas and compare them.

> "Through intensive soil testing, parts of a field that are low or high in phosphorus can be identified

Sometimes the yield differences may have nothing to do with soil chemistry and may be related to soil physics, drainage or some other factor. But more often than not, the differences are fertility related. Historically the field would have had the same fertiliser inputs blanket applied at the same rate. All too often, all the fields on large farms are treated with the same fertiliser mix and rate. Precision agriculture refines the nutrient inputs to specific areas to address known deficiencies, and ensures that nutrients are not applied to those areas within a field that do not require them. For instance, there may be a certain section that requires lime, whereas other parts of a field may have good pH (acidity/alkalinity) and calcium levels. Applying lime to these areas would not only be a waste of money and effort but could do more harm than good, as too high pH levels can impact on the soil's ability to retain other elements such as magnesium and potassium; and micro-nutrients – boron, iron, manganese, copper, cobalt and zinc – become less available from liming. Through intensive soil testing, parts of a field that are low or high in phosphorus can be identified. Excessive phosphorus applications are not only a waste of money but can cause run-off, leaching phosphorus into New Zealand's waterways causing eutrophication and toxic algal blooms.

> "In recent years, a number of farmers have done all-paddock testing on their properties and made considerable savings in fertiliser input costs

I have always advocated for a much broader soil audit than those done by most fertiliser reps. Normally, these reps only test for six elements, yet plants need 16 elements and animals need 17 to grow and function properly. Micro-nutrients play important enzymatic roles in plant nutrition, assist with defence against diseases and act as catalysts for the absorption and uptake of macro-elements.

Under some forms of intensive horticulture, copper sprays have been and still are liberally used. High copper levels have been found under some kiwifruit vines where copper has been the go-to solution for controlling *Pseudomonas syringae pv actinidiae* (PSA). Excessive copper can impact on the availability of other micro-nutrients such as iron and zinc and will also negatively affect phosphorus availability. It also impacts on soil biology, not only controlling undesirable fungi and bacteria, but also inhibiting the positive soil micro-organisms too.

For high value fruit and vegetable crops, where yield differences exist even within small areas, it is worth separately testing the high and low yielding areas to ascertain what is missing – or conversely what is phytotoxic to the plants. With the current high shipping costs of macro-nutrients being one of the drivers for fertiliser price increases, some of the essential micro-nutrients which are not required in large amounts are likely to remain relatively cheap compared to the macro-nutrients nitrogen, phosphorus and potassium.

TOO HIGH PH LEVELS CAN IMPACT THE SOIL'S ABILITY TO RETAIN OTHER ELEMENTS SUCH AS MAGNESIUM AND POTASSIUM

EXCESSIVE PHOSPHORUS APPLICATIONS CAN CAUSE RUN-OFF, LEACHING PHOSPHORUS INTO NEW ZEALAND'S WATERWAYS

MICRO-NUTRIENTS PLAY IMPORTANT ENZYMATIC ROLES IN PLANT NUTRITION AND ASSIST WITH DEFENCE AGAINST DISEASES

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EXCESSIVE COPPER CAN IMPACT ON THE AVAILABILITY OF OTHER MICRO-NUTRIENTS SUCH AS IRON AND ZINC

Elements such as boron, iron and manganese can make big yield differences if they are low in certain crops.

In recent years, a number of farmers have done all-paddock testing on their properties and made considerable savings in fertiliser input costs as they target specific elements to be applied only on those paddocks that need them. Over a couple of years they have been able to even out these differences so the entire farm can be treated with the same fertiliser mix once again.

Price increases on locally manufactured superphosphate-based fertilisers have been less than on the imported, high analysis and compound fertilisers most commonly used in cropping and horticulture. Considerable savings can be made using locally manufactured phosphate fertilisers, urea and potassium chloride/sulphate for NPK elements, compared to the likes of DAP (diammonium phosphate), Nitrophoska and YaraMila. A problem with these compound fertilisers is that they contain a certain ratio of nitrogen, phosphorus and potassium which is usually broadcast everywhere at the same rate. Whereas Precision Agriculture, using GPS and more intensive soil testing data to target the application of specific nutrients only where they are needed, becomes a win-win for the both the bank balance and the environment.

Robin Boom is a member of the Institute of Professional Soil Scientists.

SPRING HAS SPRUNG: TWO RED WARNINGS AND DROUGHT

Words by Georgina Griffiths : MetService meteorologist

Winter of 2021 has had an 'extreme' feel to it – with flooding rains and drought featuring and a highly damaging June tornado thrown in for South Auckland.

MetService is New Zealand's only authorised provider of Severe Weather Watches and Warnings. Since introducing a new colour-coded system of Warnings in May 2019, only four **Red Warnings** have been issued. MetService reserves a Red Warning for only the most extreme weather events, where significant impact and disruption is expected.

This year, three red severe weather warnings were issued in relatively quick succession.

At the end of May, MetService issued its second Red Heavy Rain Warning for the Canterbury region. Dangerous river conditions and flooding were expected.

In mid-July, MetService issued its third Red Heavy Rain Warning, forecasting an extended and extreme heavy rainfall event for Buller and Westland north of Fox Glacier, with significant rainfall also expected for Nelson and Blenheim.

Both of these Red Heavy Rain Warnings were on the money, with each event being highly damaging.

A Red Severe Wind Warning was also issued for the Canterbury High Country on 12 to 13 September, with extreme gusts and significant damage observed in elevated areas.

In contrast, Auckland, Coromandel, Bay of Plenty, Gisborne and Hawke's Bay remained unusually dry through until June, and these were areas that had experienced back-to-back droughts through 2019 and 2020. Soil moisture in these regions remained in deficit considerably longer than usual (Figure 1, showing Napier as an example).

At the time of writing, the year-to-date rainfall for Napier Airport was sitting at 55% of year-to-date normal (Figure 2), while Te Puke had recorded 82% of year-to-date normal rainfall.

In contrast, year-to-date rainfall for Blenheim and Christchurch was 117% and 109% of year-to-date normal, respectively (Figure 3).

Nationally, New Zealand experienced its warmest winter on record in 2021 – breaking the previous record set in 2020.

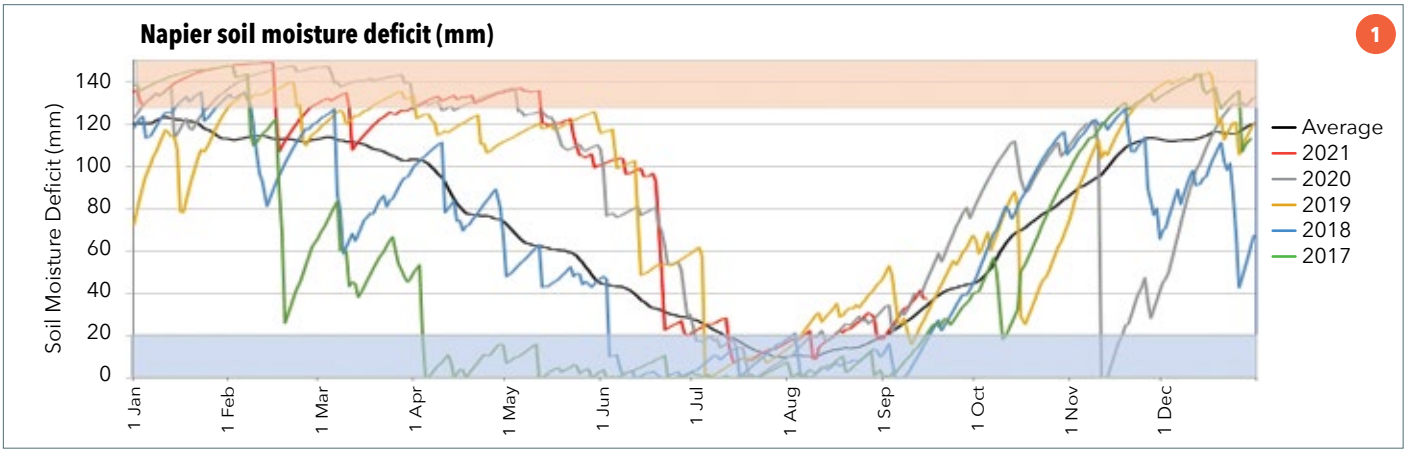
Spring has sprung

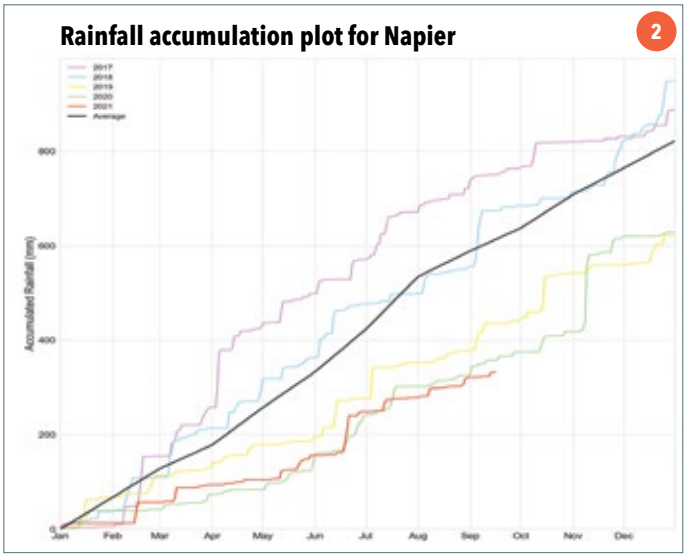
The El Niño–Southern Oscillation (ENSO) remains neutral at the present time. However, there is recent chatter about a resurgent La Niña for summer – in other words, a second-time-around La Niña. If La Niña does return by the end of the year, current modelling suggests it will be on the weaker side.

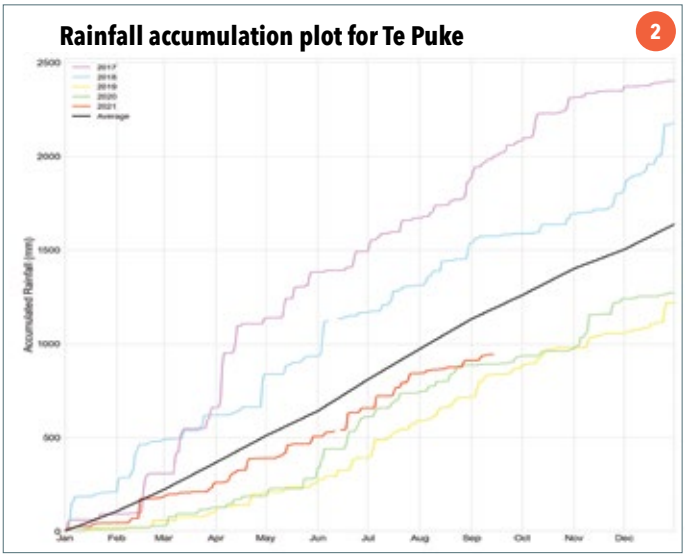
What's likely to be a more important player in New Zealand for spring (September to November), is a sharp change in weather maps. The latest long-range predictions from MetService, based on running a large group ('ensemble') of weather models, signal a quick transition from the active westerlies that have characterised August and early September, towards more Highs than usual lying over the South Island.

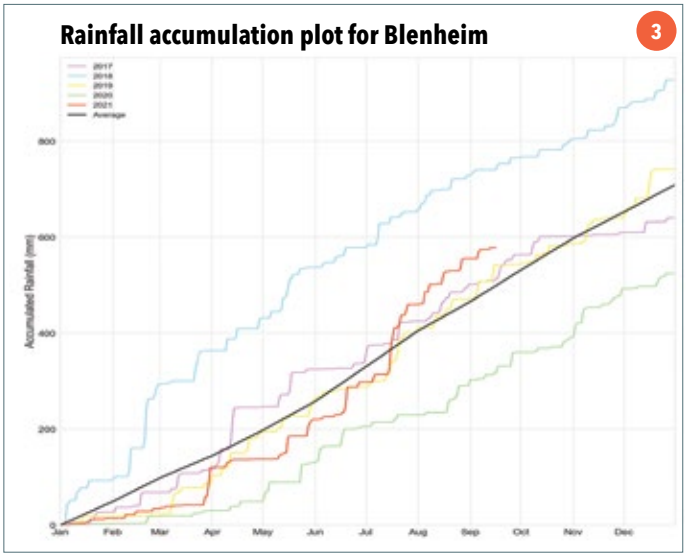
Given the time of year, what this will likely mean, in practice, is a mixture of some good old fashioned spring westerlies and intense but intermittent Highs over the South Island.

Keep up to date with the MetService long-range forecast at: **http://metservice.com/rural/monthly-outlook**









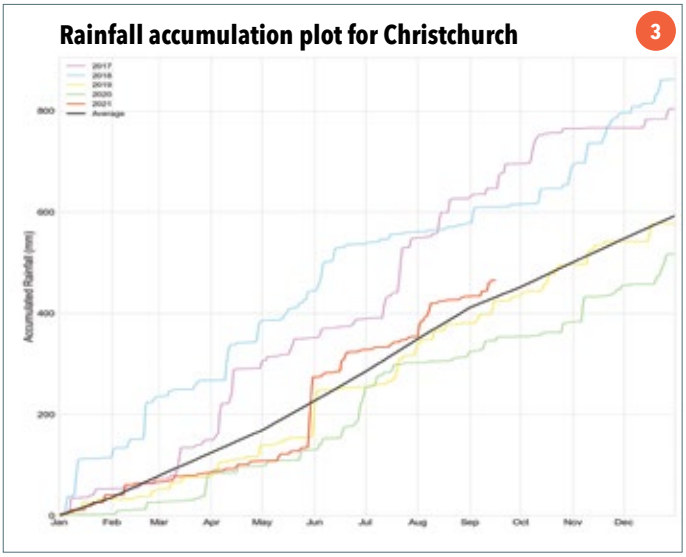


Figure 1: *Napier Airport estimated soil moisture deficit (SMD), shown in mm of deficit for the last five years (2017 to 2021-so-far). SMD is calculated based on ingoing daily rainfall (mm), outgoing daily potential evapotranspiration (PET, mm), and a fixed available water capacity of 150 mm (this is the amount of water in a theoretical soil 'reservoir' that plants could utilise). Soil moisture deficit in Napier in 2021 remained in extreme soil moisture deficit (signalled within the orange band) for most of the summer, and tracked similarly to 2019 and 2020 during autumn. Napier soil moisture only briefly approached field capacity (blue zone) in winter 2021, before drying out again during the first two weeks of spring due to enhanced westerly winds.*

Figure 2: *Napier and Te Puke annual rainfall accumulation (mm) for the last five years (2017 to 2021-so-far). The annual average rainfall accumulation is shown in black.*

Figure 3: *Blenheim and Christchurch annual rainfall accumulation (mm) for the last five years (2017 to 2021-so-far). The annual average rainfall accumulation is shown in black.*

SOIL FERTILITY SAMPLING

LandWISE

Words by Dan Bloomer and Luke Posthuma

Mineral nitrogen (Quick Nitrate Test) sampling cores should be to the whole root depth

If you haven't already, now is the time to collect soil samples prior to planting spring crops.

The term 'soil sampling' refers to the soil collecting process and 'soil testing' to the lab measurement process that determines the soil's nutrient status.

Soil tests ensure growers apply the right rate of the correct fertiliser so that the crops have ideal growing conditions. We want enough to avoid nutrient stress so that we maximise yield and minimise excess to save money and avoid environmental risk.

When should you soil sample, how many soil samples should you collect and from where? Together, these determine your soil sampling strategy. The answer is, of course, "it depends".

The industry best practice guideline, *Nutrient Management for Vegetable Crops in New Zealand* (Reid and Morton), states each paddock should be sampled before each crop, adding that the cost will be regained by fertiliser savings and increased yield. Usually, this annual test includes soil pH (acidity/alkalinity), phosphorus (P), potassium (K), magnesium (Mg), calcium (Ca), cation exchange capacity (CEC), and nitrogen (Available-N or Mineral-N). Every few years, analyse for carbon (organic-C).

On some soils such as very light sandy soils or recently developed blocks, large amounts of nutrients can be lost through leaching or chemical lockup. Regular sampling will let you track soil fertility trends more closely.

If fertiliser recommendations are based on soil fertility and crop removal, your soil test results may become quite predictable, and frequency might be reduced. But continue regular sampling so you can cross check your fertiliser recommendations and make alterations where required.

Where possible, take the samples in the same month of each year (when there is the most constant moisture status). Often this is done in late winter.

Nitrogen, which is very mobile and easily lost, is a special case and warrants more frequent testing. Some intensive vegetable growers are now using this test before any nitrogen fertiliser application and again after harvest to monitor residual levels and fine tune management.

Our *Future Proofing Vegetable Production* research over recent years has proven the value of the do-it-yourself Nitrate Quick Test. In process crops, LandWISE has seen real value in Quick Nitrate testing prior to side-dressing as considerable organic matter mineralisation may have released enough nitrogen to meet some or all of the crop's needs.

Deciding where to sample is quite complex. In simple terms, a separate 'bulked' sample is needed for each management unit – that is, where crop and crop history are the same, the soil type is similar and you have a comparable slope or flatness. Within each unit, we need to get a representative sample, one that fairly measures the whole area. We avoid atypical places like gateways, troughs, and high or low fertility spots.

There will be a lot of variation, so we take a lot of cores and mix them together. In general, a minimum of 15 to 20 cores are taken for any one lab sample. Then a sufficient 'sub-sample' is taken to fill the lab bag.

In intensive cropping, and especially if fertilisers are banded on, we make sure that a fair proportion of cores are taken in and outside the banding zone. If the bands cover a fifth of the bed, a fifth of the cores should be taken there, four fifths away from the band.

Usually in cropping we take a straight line transect or alternatively a 'W' back and forth across the paddock. Mark your sampling transects on a map, and maybe paint fence posts so you can always soil sample along the same transect. If possible, use GPS (global positioning system technology) to locate all the sampling points and return to them each time.

> **When should you soil sample, how many soil samples should you collect and from where? Together, these determine your soil sampling strategy**

For most horticulture tests, we take cores to a depth of 15cm. It is important to keep to this as the lab test results and recommendations are based on decades of research, that in turn is based on 15cm-deep sampling.

Again, nitrogen is a special case. The *Vegetable Guidelines* recommendations for crops including beans, brassicas, lettuce and onions are based on 15cm-deep Available-N (= anaerobically mineralisable N) test results. However, in some cases, such as carrots, squash and potatoes, guidelines also consider results of a mineral-N test to 60cm depth. We found that for deep-rooted crops such as sweetcorn and maize there can be significant amounts of retrievable N between 60 and 90cm, so sampling could take the whole root depth of the crop.

Take multiple cores that fully represent the management unit; within the beds, and across the whole paddock

Summary:

- Take a sample from each management unit for a general soil test every year, unless you have justification to reduce frequency. Compare results across years and aim to keep key nutrients in the target band for the range of crops you expect to grow in that area.
- Take samples at the same time and from the same place each year so you can track trends.
- Take at least 15 to 20 samples to the right soil depth, that are representative across beds and the paddock. Mix well and send a sub-sample to the lab.
- Take regular samples for nitrate testing. The depth sampled should ensure the whole crop root zone is included, as all this nitrate can be accessed and used by the crop.

PRODUCT GROUPS

ALL THE LATEST NEWS FROM YOUR PRODUCT GROUPS

Tūtaekurī grown just out of Matata. Image; Carolyn Chadwick

NGĀ KAITIAKI O NGĀ TAEWA – GUARDIANS OF THE POTATOES

By Gemma Carroll : Potatoes NZ Inc. communications manager

Image; Marion Fumarola

Potatoes New Zealand teamed up with Eat New Zealand this winter, sponsoring the Great Taewa Hunt for the Feast Matariki campaign. We envisaged connecting with local communities and smaller growers who are kaitiaki for the taonga that is Māori potatoes.

Taewa is the name for the potato tuber varieties traditionally cultivated by Māori. Once they've been prepared for eating, potatoes are then referred to as ngā rīwai.

The Great Taewa Hunt was a competition calling for images and story sharing. We wanted to hear where they are growing, who is growing them, and what varieties currently exist.

The competition was an opportunity for all kaitiaki kai (guardians of food), including keen photographers, eaters, growers, iwi, farmers' markets and chefs, to share stories of taewa.

Here is some of the aroha and 'spud-love' we received.

"These tūtaekurī are growing just out of Matata near Whakatane. Louise is a nurse, and she was given them 10 years ago by a patient from Kawerau." – Carolyn Chadwick

"The revival of indigenous and locally adapted seeds is one of the keys to secure food crop diversity.

We need to maintain traditional crops through continued agroecological cultivation coupled with traditional knowledge and keep the seeds in our hands to be passed on to the next generation.

> "The revival of indigenous and locally adapted seeds is one of the keys to secure food crop diversity

Image; Greg Wiechern

Taewa are traditional potato varieties introduced to New Zealand in the late 18th century and became a staple Māori food crop. I am in love of [sic] these treasures and so grateful that our community have protected these seeds and kept them where they belong: in our gardens and on our tables." – Marion Fumarola

> **"Growing taewa is all about love and connection for us; to the land, the seasons, our environment, to our community with whom we are privileged to share these nourishing foods, and to our past whānau that gifted these taonga to us when we first came to Aotearoa**

"From a small bucket of shriveled, root bound, taewa, to a barrow load of beautiful kai." – Greg Wiechern

"I sourced tubers at least 15 years ago from an abandoned garden. The plants were struggling in the overgrowth, at the time they resembled small tūtaekurī (love that name). I have been selectively and organically growing these each year since and will continue to do so as they are a family favourite, especially as a purple mash, which we simply wash and boil without peeling. Also, my 'purple' potato salad always invites discussion. I store them unwashed to maximise their shelf-life. The purple variety are rich in antioxidants and have health benefits for my family, as well as being highly nutritious. One of my pet magpies, Marvin, also likes to eat the small taewa." – Slick Ultra

A special dish of ngā rīwai. Image; Craig Martin

"Growing taewa is all about love and connection for us; to the land, the seasons, our environment, to our community with whom we are privileged to share these nourishing foods, and to our past whānau that gifted these taonga to us when we first came to Aotearoa. Let's spread the love and grow together!" – Phil Varley

"I live with my wife at the foot of the Radiant Range on the West Coast at the top of the South Island. I have been growing taewa for several years after being given the seed from a friend who moved here from Birdlings Flat on the East Coast. We have a wet but mild climate and root crops seem to do quite well here. I grow organically with sheep and chicken manure. Weka fences are a must in our area. These taewa and yams were grown, dug and photographed on the old Little Wanganui riverbed, top of the West Coast, South Island. Freshly dug taewa grown and consumed locally, in our paradise that is the Karamea Bight." – Mark Ibbotson

"Know the whakapapa of your food." – Craig Martin

> **"...my 'purple' potato salad always invites discussion. I store them unwashed to maximise their shelf-life**

It's clear there's a resounding love and protection of ngā taewa and that food sovereignty is treasured in Aotearoa. Potatoes New Zealand is grateful to have had the opportunity to read these stories, see the images, make these connections, and we hope to encourage further community support for growers of these unique varieties.

Slick Ultra's pet magpie, Marvin, also enjoys the taste of taewa

Our understanding is that the following named taewa have been grown or continue to grow in Aotearoa:

- **Rāupī:** Round with yellow and purple speckled skin. Cream coloured flesh, excellent texture and they keep well.
- **Tūtaekurī:** A long, yam-like tuber with dark purple skin and purple flesh, an average keeper.
- **Karuparerā:** Round dark purple skin and deep white eyes. The name likens these tubers to the eyes of a duck, and they keep well.
- **Huakaroro:** Cream coloured skin and flesh, a buttery taste, and they keep well.
- **Moemoe:** Multi-coloured skin with cream coloured and patterned flesh and they keep well.
- **Urenika:** Yam like in shape, purple with white flecks, very floury, ideal for baking, roasting and wedges.
- **Waiporoporo:** Light purple mottled skin. A firm potato with a smooth creamy flesh and a rich and buttery flavour.

These tubers have a rich history throughout Aotearoa but they face various challenges including disease susceptibility and a declining population. There is currently no programme to protect the seed stock, and cultural sensitivity means this may never be an appropriate measure, but we appreciate there are growers and communities caring for this taonga throughout the motu (country).

> **These tubers have a rich history throughout Aotearoa but they face various challenges including disease susceptibility and a declining population**

As part of our sustainability strategy, we work to support community events such as this to maintain social connectivity, cultural learning and respect.

STRAWBERRY GROWERS' CONFERENCE A SUCCESS

Words by Karen Orr : Strawberry Growers New Zealand

There was excellent representation of strawberry growers and industry associates at the 2021 Strawberry Growers NZ (SGNZ) annual conference and AGM in Masterton on 5 and 6 July, with over eighty people at the event.

Attendees heard from a range of speakers, with presentations covering everything from strawberry varieties to getting a fair return for growers. Following a day indoors, delegates got to stretch their legs on a field trip hosted by Haygrove, viewing strawberry growing in polytunnels at Dot and Alan Bissett's farm north of Masterton.

The Bissetts grow 140,000 strawberry plants on tables in the tunnels, achieving excellent results. They have reduced the number of staff they need and are averaging good yields. Growing under cover has enabled them to sell for an extended season and seek more consistent sales returns, with the additional benefit of less damage and easier access to the plants.

Progress in thrips research

One key area of research presented was a three-year Sustainable Farming Fund project on *Future-proofing thrips management in strawberries*.

Currently wrapping up the second year of this project, Dr Mette Nielsen, an Entomologist at Plant & Food Research, provided a brief recap on year two and the research undertaken. The project aims to "increase knowledge and develop and implement new tools and management techniques to manage thrips, transforming the current Integrated Pest Management (IPM) strategy".

Mette provided an update on the research and activities, noting that some of the original plans had to be postponed due to Covid-19 restrictions. This includes an IPM and crop scouting training workshop for growers – now scheduled for October. Paul Horne, a renown IPM specialist based in Australia, will visit to talk at this workshop.

Mette concluded that through the workshops growers will gain knowledge and confidence in thrips identification for crop scouting. Paul will talk on how growers can build their own IPM programme, including introducing a traffic light system for chemical use with biocontrol agents.

Mette presented research data gathered from a demonstration trial on tabletop-grown strawberries in Auckland during the past season. The trial used biological control agents, cultural control strategies and selected soft chemistries. Such controls included simple concepts such as using sticky trap rolls which performed well.

> "...some of the benefits of taking an IPM approach included lower or no residue levels to meet export market requirements, not having to rely on chemistry, and better conditions for staff

Mette said some of the benefits of taking an IPM approach included lower or no residue levels to meet export market requirements, not having to rely on chemistry, and better conditions for staff.

Year three plans will be based on grower feedback for trial and management over the upcoming strawberry season. A suggestion raised during Mette's presentation was to include a trial with tunnel-grown strawberries which there is strong interest in.

SGNZ will keep growers and associate members updated as this project continues to progress.

Copies of the presentations are available on the website **www.strawbsnz.co.nz**

POTASSIUM NITRATE BENEFITS ON TOP DRESSING APPLICATION IN ONION

Prilled potassium nitrate (12% N - 38.2% K) is a potassium source that provides rapidly absorbed nitrate-nitrogen, a plant's preferred nitrogen source, with 2-4 mm prill size.

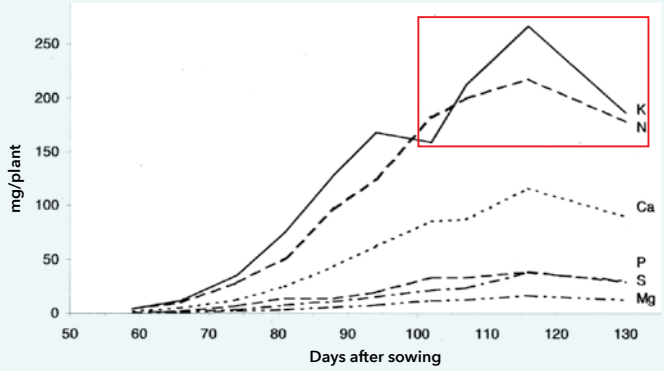
Prilled potassium nitrate (12% N - 38.2% K)

Potassium nitrate provides the ideal N:K ratio during bulb development stage

K and N demand reaches a peak during bulb development stage, when the application of prilled KNO_3 will:

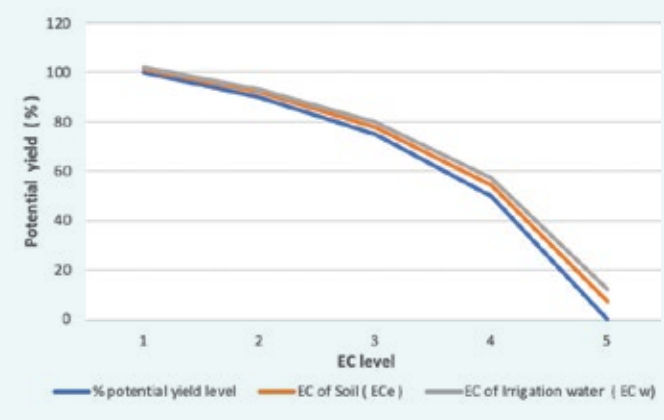
- increase bulb size and weight
- lower the impact on soil salinity (vs SOP or MOP), which affects yield and post-harvest weight losses

Nutrient uptake in onions: high K & N uptake during bulb development stage



Source: Vidigal et al. 2002.

Yield potential at different soil and irrigation water EC (= salinity) levels



Source: Water quality for Agriculture. R.S. Ayers and D.S. Wescot. 1994

Prilled potassium nitrate contains exclusively nitrate nitrogen.

- Fast acting and readily soluble source of nitrogen, directly available for uptake by the roots, independent of the activity of nitrifying bacteria, resulting in faster uptake and greater efficiency for the plant.
- Due its synergistic effect, promotes the uptake of cations: potassium (K), calcium (Ca), magnesium (Mg), copper (Cu), iron (Fe), manganese (Mn) and zinc (Zn).

Prilled potassium nitrate is virtually chloride free.

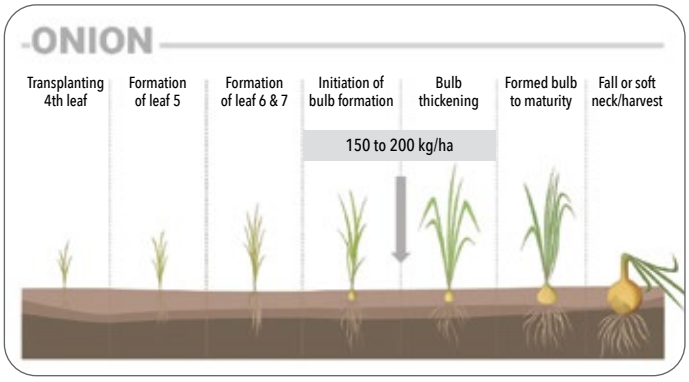
- Yield and quality are negatively affected by chloride. The presence of nitrate nitrogen in potassium nitrate (NO_3^-), acts antagonistically to chloride (Cl^-) uptake if present in soil or water.
- No contribution to soil salinity: both elements, K & N, can be fully taken up by the plant.

Proven benefits of prilled potassium nitrate in onions:

- Increased yield, due to greater weight of bulbs.
- Decreased weight loss during storage and increased shelf life.
- Greater tolerance to diseases such as basal rot and white rot.
- Improved resistance to drought and cold injuries.

Recommendation of use:

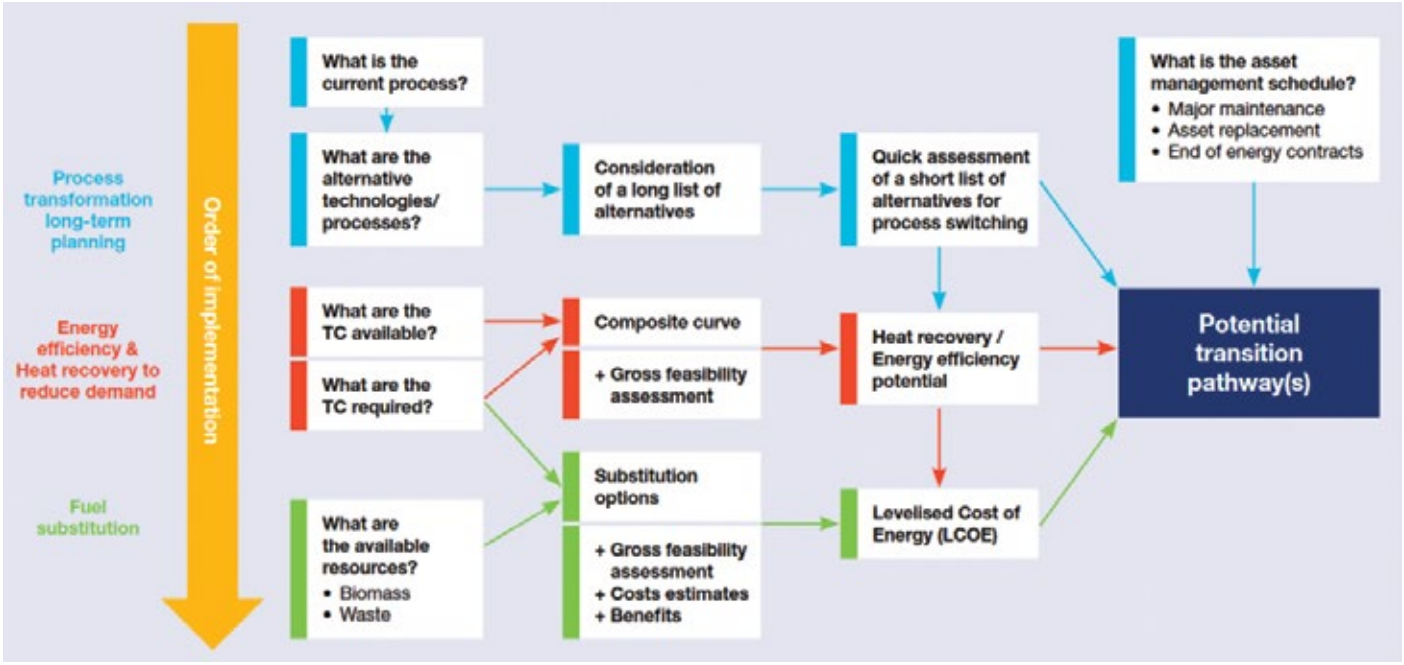
Apply prilled potassium nitrate at **150-200 kg / ha**, as **top dressing**, at the beginning or during bulb development stage:



Prilled potassium nitrate is sold by Yara Fertilizers (New Zealand) Ltd under the brand UNIKA® PLUS. For additional information, please visit: **www.sqmnutrition.com**

TIME IS KEY FOR FUEL ALTERNATIVES

Words by Antony Heywood : Vegetables New Zealand Inc. general manager



Steps of the GHG emissions plan from page 56 of the Phasing out fossil fuels in process heat *consultation document*

The Covid-19 lockdown of 2020 was a sharp reminder that access to food is essential.

At no time did our growers stop harvesting. As essential workers, our industry continued to operate, ensuring that New Zealanders had access to fresh produce throughout.

It is imperative that government policy recognises the essential nature of our food system and its importance in ensuring food security for millions of Kiwis. Growers and farmers are the key players in our regional food systems. They sustain our communities with more than just food. They provide employment, ancillary business support, diversity of business, entrepreneurial and economic sensibility and a multiplicity of perspectives and approaches, as well as ethnic inclusion.

The consultation document *Phasing out fossil fuels in process heat*, informed by the imperative to transition to a low-emissions economy in order to address climate change, threatens growers' ability to sustain that long-term food security unless a collective plan that enables ongoing food production can be agreed upon, and sufficient time allowed to transition to fuel alternatives.

So here is my challenge: Government consulting on the document has an intent to work with businesses to achieve the right outcomes. Growers are already of a 'green' mentality and want to do the right thing for the environment. Let's stop talking about the why and how and work collaboratively to concentrate on the when.

The consultation document raises a number of solid discussion topics. In particular, support around the uptake of best practices and transitioning to low emissions through greenhouse gas (GHG) emissions plans.

The report does not give growers credit for their intent to be part of the solution. The horticulture industry is already targeting GHG reduction through:

1. Best practice guidelines.
2. Current EECA project to improve efficiency and reduce energy use.
3. Current EECA project to reduce carbon with renewable energy.
4. The industry intent to meet the 2050 target on GHG emissions.

The 58-page consultation document states that the main considerations for imposing a GHG emissions plan and best practice requirements through national direction are to determine:

- The information required in the emissions plan.
- The thresholds that would trigger the preparation of a plan.
- The role of regional councils in receiving, reviewing and assessing management plans.
- The level of discretion to adopt best practices where 'technically and economically feasible'.
- Technical support to assess compliance with best practice requirements.
- Monitoring, review and reporting requirements. (See page 39 of the report.)

> **With energy planning and delivery a high cost to business, there is a powerful incentive from industry to get it right**

The next step for industry is to gain the support of government. Growers can be trusted to deliver an industry transition plan. With energy planning and delivery a high cost to business, there is a powerful incentive from industry to get it right.

The investment of capital needs a long payback period. Government can give that assurance by adopting the plan with industry.

A transition plan needs to consider:

1. Best practice independent audit.
2. An energy transition plan.
3. Best practice risk-based action plan framework adoption.
4. National Environment Standard (NES) schedule based on goals of Industry plan.
5. Threshold levels to provide stability for Industry – diminishing with technology transfer.
6. Regional council's adoption of Industry best practice audits.
7. Industry dashboard to monitor and report the metric reduction – giving confidence to goals and targets of the GHG plan.

A grower-led initiative, delivered by industry outcomes and enabled by government, is a plan that has all the elements of success. A transition plan needs the commitment of all parties to get the outcomes needed from stakeholders, including the people of New Zealand.

Read the full consultation document here: **https://consult.environment.govt.nz/climate/phasing-out-fossil-fuels-in-process-heat/supporting_documents/phasingoutfossilfuelsinprocessheat.pdf)**

HIGHLY INFORMATIVE CONFERENCE SESSIONS AVAILABLE ONLINE

Words by Helen Barnes : TomatoesNZ Inc. general manager

Barry O'Neil speaking at the TomatoesNZ AGM

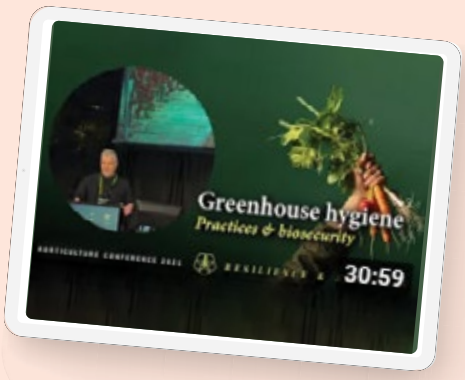
Video recordings of the covered crop sessions now available to watch.

A range of speakers presented on topics of interest to greenhouse growers at this year's Horticulture Conference at Mystery Creek, Hamilton. These sessions were recorded and are now available to view.

To access the recordings please visit our website and click on the link highlighted on https://www.tomatoesnz.co.nz/latest-news/covered-crop-conference. Alternatively, these recordings can be viewed via HortNZ's YouTube channel: https://www.youtube.com/c/horticulturenewzealand

Sessions available include:

- **Greenhouse hygiene practices** – a panel session hosted by Barry O'Neil, joined by Stefan Vogrincic (Grower2Grower), Simon Watson (NZ Hothouse), Jeremy Thompson (Ministry for Primary Industries), and Jon Harris (Horticentre). The panel provides practical advice on greenhouse hygiene measures.
- **Pest management using biocontrol in your greenhouse** – a journey from investigation to selection, trials, and practice – presented by Emiliano Veronesi (Lincoln University PhD student), Chris Thompson (Bioforce), Chris Cowie and Andrew Hutchinson (T&G Fresh).
- **Covered crop sector decarbonation pathway** – an update presented by the Energy Efficiency & Conservation Authority (EECA) and DETA Consulting.
- **Developing farm environment plans for greenhouse growers** – presented by Andrew Barber, Agrilink.



Reforming industrial allocation in the NZ Emissions Trading Scheme

The Ministry for the Environment (MfE) recently consulted on reforming some aspects of the industrial allocations.

Industrial allocations are the Emissions Trading Scheme (ETS) 'free units' that fresh tomato, capsicum and cucumber growers are eligible to apply for as a result of being moderately Emissions Intensive Trade Exposed (EITE) industries at risk of 'carbon leakage.' EITE industries are those which spend a large portion of their revenue on energy and are at risk of local production being replaced by imports as the ETS unit price rises.

The consultation proposed review of:

- Allocation calculations – how many free units growers would qualify for under the scheme.
- Eligibility criteria – which sectors can get free units.
- How data that determines allocation might need to be reported in the future.
- Whether there are other ways of supporting EITE businesses.

We made a combined submission with Horticulture New Zealand and Vegetables New Zealand Inc. Our points included:

- The role of the industrial allocations in ensuring food security and retaining year-round greenhouse vegetable production in the medium term.
- Information about 'carbon leakage risks.'
- Potential improvements for the design of the industrial allocation to enable investment by growers in their businesses for transition to low-emission fuel sources and energy efficiency improvements.
- The need for realistic timeframes that provide consistency and certainty for growers.

Please contact us if you would like to receive a copy of the submission. MfE will now analyse the submissions received and related policy until the end of 2021. Implementation of any policy changes are not likely to come into effect until 2023 or 2024 if approved by Cabinet.

Agrichemical compliance information poster

A TomatoesNZ poster "*New Zealand residue compliance information for fresh greenhouse tomatoes 2021*" was mailed to members in September. This replaces last year's edition of the same poster.

A spreadsheet (MS Excel) version is available electronically to members. Please get in touch if you would like the files, or for more copies of the poster.

We recommend that growers dispose of the 2020 version of the compliance poster, as some of that information is now out of date. If you have any suggestions for improving the format or information provided please let us know.

> "Implementation of any policy changes are not likely to come into effect until 2023 or 2024 if approved by Cabinet

WHAT DOES THE FUTURE HOLD FOR THE FOOD SYSTEMS OF AOTEAROA?

Words by Sara Collie : Vegetables.co.nz

HortNZ chief executive, Nadine Tunley (right), joined industry leaders: David Neville (chef and consultant) left, Mae Tien (MPI), Jeremy Baker (Beef + Lamb NZ), and Rachel Taulelei (Kono); at this year's NZ Food Writers Conference

Nadine Tunley joined a panel of leaders in the food sector at the annual New Zealand Food Writers Conference in Wellington on 14 August.

The conference was supported by Vegetables.co.nz as part of its long-standing relationship with New Zealand Food Writers. As horticulture is one of the nation's largest food production sectors, it was fitting our chief executive was there to share her views on behalf of the sector.

Nadine was joined by industry leaders Rachel Taulelei (Kono), Jeremy Baker (Beef + Lamb NZ), David Neville (chef and consultant) and Mae Tien (Ministry for Primary Industries).

The question posed to the panel was "*What does the future hold for the food systems of Aotearoa?*"

The panel spoke of the challenges and exciting opportunities they each see for not only their own sectors, but for New Zealand as a whole – as a food producing nation supplying both the international and local markets.

What came through clearly was that the sectors are all encountering similar challenges, especially in relation to labour. And no, automation was not seen as the answer to everything. People are appreciated, people are needed. They are what makes food – and the experience of food – what it is.

As real as labour shortages are, so too is climate change. We need to keep moving – fast. We need to keep collaborating and looking for inspiration.

There was enthusiastic discussion on the topic of New Zealand food. Defining New Zealand cuisine may be more about the natural characteristics of the foods than the foods themselves. Yes, onions grow in many other places in the world, but do they have the taste and texture of a New Zealand-grown onion? We should draw out our unique characteristics that are influenced by our soils, our climate, our systems. This is what makes New Zealand food.

New Zealand produces great food. The world knows that. But do our locals? There is significant investment in telling our New Zealand food story overseas. It is a story we tell with pride. Perhaps it is time we start telling our story at home?

There was a resounding concern for food security at the conference. Everyone in our country should have the opportunity to eat nutritious and healthy food. We are a nation that thrives on exports and it is extremely important that trade is well facilitated to ensure that it prospers and grows. We are also a nation where food is in plentiful supply, yet people still go hungry. We need to look at what we can do to ensure there is equity in New Zealand.

The panel were in agreement that we can't just carry on as we are. We can stop and look at all the challenges facing the New Zealand food landscape, but we should also take stock of the fact that on the world stage, we have something great. Let's keep it that way, continuing to define ourselves as world class food producers – and let our local market know.

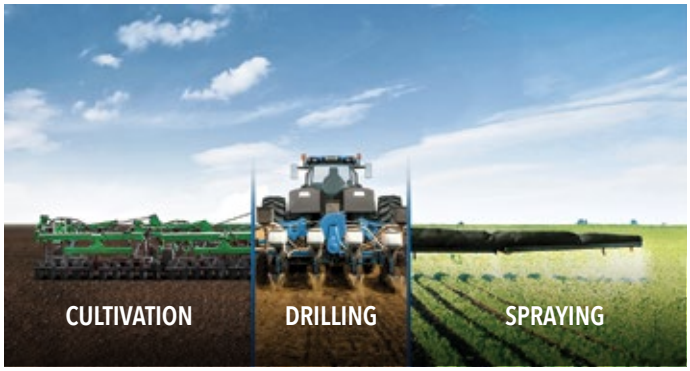
PRECISION NUTRIENT MANAGEMENT AND FIELD-IQ™ ISOBUS

Precision Nutrient Management (PNM) makes managing fertiliser applications simple. The guiding principle is variable rate application, applying only what is needed at the rate that is needed, and in the areas of the paddock that need it. Variable rate application eliminates overlapping and over application, saving on input costs and doing so in an environmentally sustainable manner.

Vantage NZ's PNM process helps growers through this journey every step of the way. We work with you to reduce your soil nutrient variability to improve yield and be as cost-effective as possible. PNM can be done through either grid or zonal soil sampling processes depending on farm history, knowledge and variability.

For the tens of thousands of hectares of PNM we have done across New Zealand, typically farmers pay for their soil testing cost in their lime saving alone, and all other fertiliser savings are an additional benefit. Now like everything, not all farms are equal and some might require a more capital intensive fertiliser programme than others. Until the testing gets done, the variability and savings can't be quantified. It's fine doing the sampling and making the plans, but acting on those plans is where the rubber meets the road.

Even for the most experienced farmers, this can be difficult to execute when your farming systems aren't compatible and don't communicate. That's where the Trimble® Field-IQ™ Crop Input ISOBUS System can help. You can now have control over your inputs with more efficiency and flexibility. ISOBUS technology is an international protocol



Trimble®'s Field-IQ™ ISOBUS system bridges the gap between your existing machinery and implements

Field-IQ™ is Trimble®'s proprietary crop input system for complete control of your inputs

that is used to ensure machinery and implements can communicate and share data regardless of the brand. By having ISOBUS technology, the full potential of your equipment is harnessed, therefore gaining further control of your inputs. Think of ISOBUS as the bridge between your machinery and implements.

Field-IQ™ hardware is Trimble's proprietary crop input system. This gets installed directly on your implement, whether it be your sprayer, fertiliser truck, planter, which then connects to the ISOBUS system. This system and its variable rate application ability means inputs are being applied only where necessary.

At Vantage NZ, as farmers ourselves we understand that some hurdles on farms are just unavoidable. Climate conditions, hills, gullies, soil types, lack of shelter and financial constraints can all make decisions difficult. Take the guesswork out of farming. Stop blanket rate application. Stop overlapping. Start farming efficiently today with the Trimble® Field-IQ™ and ISOBUS system, gain peace of mind knowing you are working with a global reseller network which employs the best in the business. The choice and the savings are yours!

For more information call Vantage on **0800 482 682**

SEASONAL WORKER ACCOMMODATION BEDS

Haven COMMERCIAL

With over 30 years of furniture and homewares product development, design, contract manufacturing and procurement, Haven Distributing's Commercial Division provides the best quality and fully safety compliant bunk and bed options for seasonal worker accommodation.

Haven's products are acknowledged by seasonal accommodation providers, backpackers, holiday parks, council-operated and student accommodation facilities. Haven is the product developer, importer and distributor of commercial furniture and mattresses, and is well known for its consistent high-quality products and service, and full safety standard compliance of products designed for commercial use.

Haven's bunk beds comply with the AS/NZS safety standards, providing a level of safety awareness and minimising risks, and the importance of using only fully compliant and certified bunks in accommodation facilities cannot be understated.

The AS/NZS 4220:2010 bunk safety standard covers Australia and New Zealand, and was further enhanced with the introduction of the accommodation industry Handbook Standard (HB393:2011) in 2011, providing additional specifications and guidance for short-term accommodation providers relating to the purchase, installation, maintenance and the use of bunk beds in facilities.

The standards include many specific and detailed design and manufacturing requirements and approval processes. Haven's products comply and are fully certified to these standards, giving accommodation providers peace of mind.

Haven Commercial offers an extensive range of safety compliant products to the commercial sector, providing a direct-from-source purchase at competitive prices, with nationwide distribution. "We look forward to helping growers and seasonal worker accommodation providers plan their sleep system requirements."

For more information contact Roger or Scott Harris, Haven Distributing Co Ltd Commercial Division on **09 213 3024** or email **sales@havennz.com**

HELPING RURAL NEW ZEALAND THRIVE – INTRODUCING KIM BALLINGER, ASUREQUALITY CEO

Kim Ballinger has been in the chief executive role at AsureQuality since mid-December 2020. She is passionate about Aotearoa and has a vision of helping rural New Zealand thrive – now and in the future.

Kim grew up in Invercargill, entrenched in the farming sector and learnt first-hand how important the primary industries are to New Zealand. "This absolutely defined me as a person" says Kim, "it led me to realise that I love our country and want to work for New Zealand, within industries that are important. I'm at a point in life where I was looking for more than just a role, for me it was about going back to my personal purpose – helping rural New Zealand thrive. AsureQuality is a very broad business which supports Aotearoa's growers, farmers and producers, and it really ticks all the boxes for me."

> "For me it was about going back to my personal purpose – helping rural New Zealand thrive

This past year has presented many challenges for the horticultural sector with Covid-19 related issues, new regulatory requirements, and a world that continues to change. Environmental sustainability has become a core focus and AsureQuality is committed to supporting customers as they move towards this. There is still a lot of confusion when it comes to sustainability because the recommendations are still quite new and it's not yet completely clear what it will all mean in practice. AsureQuality wants to offer support to navigate these changes – and not just from a customer point of view, but also at an industry level and feeding back into government. "We absolutely understand that these changes need to be sustainable for growers, and we want to help make sure that their voices are heard," says Kim.

Kim would also like to see more pre-competitive industry collaboration – with the industry coming together to work on shared challenges and where the whole industry stands to benefit. "I see a clear role for AsureQuality in bringing all of the different parties together. We are

New Zealand government-owned, and our name represents independence of the highest quality. We also don't have any vested interests because we're not selling the goods."

Another focus for AsureQuality is working towards the creation of an integrated assurance platform to accurately and efficiently capture, utilise and share relevant assurance-related data, information and insights to meet current and emerging needs of the food and primary industry sectors. "We'll achieve this by implementing best-in-class systems, technology and processes which will simplify things for growers, farmers, producers, processors and their customers" says Kim. "This will ultimately help producers meet the global demand for supply chain traceability and solidify New Zealand's reputation for an exporter of premium produce."

Consumers around the world are also driving change as they want to have confidence when making food choices. AsureQuality adds value by helping to build and protect that enduring trust in a marketplace that is increasingly filled with unsubstantiated claims. "We can verify this information end-to-end. I feel that AsureQuality is perfectly positioned to help New Zealand's primary industries take that next step: Taking one united NZ Inc to the world. There's a lot of opportunities ahead and I'm excited to be part of this journey."

www.asurequality.com

NEW ACTIVE FOR POWDERY MILDEW AND BOTRYTIS CONTROL IN STRAWBERRIES

Esteem® is a new mode of action fungicide registered for powdery mildew and *Botrytis* control in strawberries. Esteem contains 52g/L polyoxin D zinc salt in a suspension concentrate formulation. This active ingredient is from a new chemistry group not previously available in New Zealand. "Lonza NZ is excited to be providing berry growers with a new option for disease control" says technical services and development manager Stephen McKennie.

"The mode of action of polyoxin D zinc salt (FRAC group 19) stops the production of chitin, which is an essential process for cell wall and membrane development of the disease-causing fungi." "This active targets the disease at a number of different lifecycle stages," Stephen adds. As the only active in this group, Esteem is a valuable resistance management tool that can be utilised as part of the crop protection programme.

Polyoxin D zinc salt has been tested in the field on strawberries (in New Zealand and overseas) and has shown excellent efficacy and crop safety when used in accordance with the label. Application rate for strawberries is 125ml/100L, as a dilute spray to the point of run-off.

It is recommended to apply Esteem with a standard non-ionic surfactant at a rate of 25ml/100L. Applications can commence once flowering has started, using high volume dilute spray-to-run-off application methods, to ensure full coverage of leaves, flowers and fruitlets. Re-application is suggested at weekly intervals, as required.

Stephen recommends that growers use two consecutive applications before using alternative mode of action fungicides, with no more than four applications in total in any single season. Esteem provides control throughout the disease development lifecycle, however the best results are achieved from applications early in the disease development, before symptom expression.

Polyoxin D zinc salt has a 1-day pre-harvest interval (PHI), for good agricultural practice. Esteem is exempt under the maximum residue level (MRL) regulation in New Zealand. Polyoxin D zinc salt is a BioGro certified input.

Polyoxin D zinc salt has a different biochemical pathway to insect and crustacean chitin production, so it has a favourable safety profile for beneficial insects. Beneficial insect testing to date has included bees, ladybirds, lacewings, predatory mites and the parasitoid wasp *Aphelinus mali*.

For more information on Esteem visit **www.lonza.co.nz** to find the details of your local territory manager.

Classified advert rates

	1	3-5	6-10	11
Quarter Page	$435	$420	$395	$355
Eighth Page	$245	$235	$225	$205
Cameo (W40 x H65mm)	$145	$140	$135	$125

Custom $40 per column cm

To book a classified advertisement in our next issue contact:
Debbie Pascoe (09) 2363633, M: 0274 858562
Email: dpascoe@xtra.co.nz

"Wow these capsicums are productive" Peter Schreuder, Grower at Gourmet Waiuku working with Macuba and Louise Millar, Senior Technical Sales Representative, Greenhouse crops, Enza Zaden NZ.

ENZA ZADEN

We love our capsicums.

Discover the quality, production and speed to harvest of Enza Zaden varieties. Louise Millar believes "the wide range of productive new capsicum varieties is unbelievably exciting". As the Senior Technical Sales Representative for heated crops in Oceania she should know, because Louise has regular contact with growers and the breeding team.

For technical advice for glasshouse crops contact Louise Millar 021 711 709.

Call Beverley Vahai direct on 09 963 0122 or 021 193 1008 to request seed from our assortment, let her know which varieties you plan to use, or any other form of customer support. Alternatively send Bev an email: sales@enzazaden.co.nz

For open field crops, contact Aneil Hari 021 367 242. For other enquiries, contact Herman van der Gulik, sales manager: 021 858 939.
www.enzazaden.co.nz

INTRODUCING ENZA ZADEN BLOCKY CAPSICUM

Macuba, red, lower labour plant, high quality blocky, early production, consistent shape, glossy 3-4 lobed fruit, high yield, sets easily, strong and open plant, grow actively. 90-95 mm, Tm2, Tswv, It (Mildew) resistance.

Marando, red, very early production, solid glossy red 3-4 lobed fruit, fast strong and open plant, very fast colouring, medium high setting ability, medium plant height, 70-80 mm, Tm3 resistance.

Maureno, red, very versatile, fast colouring high quality very consistent uniform fruit, easy setting, 3-4 lobed fruit, medium height, 90-95 mm, Tm:0-3 resistance.

Margarethe, red, high yield, very good shelf life, fast to colour, 200-220 gram, open labour friendly plant habit, Tm: 0-3.

Mavera, red, very balanced plant, thick fruit wall, fast colouring solid 3-4 lobed fruit, tolerates high fruit load, strong against blossom end rot and internal fruit rot, needs active climate, medium setting and plant height, 85-90 mm, Tm2, Tswv resistance.

Adelyte, yellow, high production, early production, solid 3-4 lobed fruit, fast glossy lemon yellow all season, needs generative steering for best fruit shape, strong vegetative plant, medium setting, 80-85 mm, Tm2 resistance.

Florate, yellow, fast to produce solid lemon yellow glossy fruit, colour remains all season, larger sized fruit, strong vegetative plant, mostly 4 lobed, easy setting, medium plant height, 90-95 mm, Tm3, Tswv resistance.

Gialte, yellow, flexible variety with exceptional production and fruit quality, fast colouring into production of mostly 4 lobed fruit, strong generative tall plant, 85-90 mm, Tm3 resistance.

Volidano, yellow, early production, produces high quality larger fruit, very easy setting, high production, mostly 4 lobed, strong vegetative but compact plant height, 90-95 mm Tm3 resistance.

Originale, orange, very good quality and shelf life, fast to colour to glossy bright orange tone, high production, strong vegetative and compact plant habit, easy setting, mostly 4 lobed, 90-95 mm, Tm3 resistance.

Enza Zaden is proud to support growers and the Rural Support Trust.
The Rural Support Trust helps rural people when times are tough.
If you need help before issues overwhelm please contact 0800 787 254.

Rural Support