NZGROWER®

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HORTICULTURE NEW ZEALAND

PASSION, PRIDE AND PAIN

PAGE 25

CLIMATE MITIGATION & ADAPTATION SPECIAL

IN THIS ISSUE


Horticulture™
New Zealand
Ahumāra Kai Aotearoa
Stronger
by working together
Horticulture New Zealand works to create an enduring environment where growers thrive.
Find out about our upcoming levy referendum in the commodity levy section of our website **hortnz.co.nz** – vote to grow together.

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ON THE COVER:

Potatoes NZ Seed and Research Administrator Paula Lleras at a Canterbury farm last month. Photo courtesy of Potatoes NZ. Read more on page 58.

Horticulture™ New Zealand
Ahumāra Kai Aotearoa

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

ENVIRONMENT BEFORE THE ECONOMY?

Barry O'Neil : HortNZ president

Over the Christmas break I read a few books, as one does, and one of these was written by a couple of former veterinary colleagues about their lifetime in country veterinary practice.

Lots of good humorous stories and yarns as expected, but one thing that confronted me somewhat was the final chapter where they reflected on their long and fruitful careers and one made the statement:

> **"I FEEL STRONGLY THE NEED TO LEAVE OUR WORLD AS GOOD AS WE FOUND IT, IN SOUND ENVIRONMENTAL AND ECONOMIC HEALTH, BUT IN THAT ORDER, FOR FUTURE GENERATIONS."**

"But in that order" has been a contentious position since I have been in growing, and while many of us might want this to be the case, unfortunately we do not always understand what we can and should be doing to achieve this. What are the acceptable trade-offs between environmental health and economic health and how should we be achieving balance in these?

This month's magazine looks at climate change, and without doubt how we leave our land in as sound environmental and economic health as when we took it over is not an easy task in this context; but it's a challenge that we need to face and not kick the can further down the proverbial road.

There are two aspects to this:

- Mitigating the impacts of our economic activities on the atmosphere, climate, water and environment to reduce degradation.
- Adapting to climate change by changing how and what we do to minimise risk to the environment, economy and people from future extreme weather events.

How much can we afford to change; versus how much can we afford not to change is the dilemma!

The problem seems to boil down to this conundrum: If we change what we are doing now as we are being asked, then we will lose productivity and then we won't be economically viable. Another catch is that some are suggesting we should embrace a new definition of economic viability, meaning a future that is potentially very different from today's world.

Not surprisingly, the European Union has just wound back its climate change goals as they apply to farming, as a result of huge protests from Europe's farmers forcing the politicians to reconsider what farming can actually manage if they are still going to survive and be able to produce enough food to feed Europe's people. And in New Zealand when input costs have gone through the roof while productivity has been impacted by weather events, yet prices for our products have stayed static or reduced, there are similar concerns and frustrations.

It's no wonder that farmers and growers have really struggled with what they need to do. Even those who fully understand and accept that the climate is changing due to mankind's activities, do not yet understand what can be changed that won't seriously impact on productivity and therefore profitability.

> **"...we need to seek and invest in research efforts to help us find solutions...**

This is a dilemma that currently we each must resolve. We must each make our own decision about what we can and will change, and for now what we won't be able to change until new tools come along, in order to remain economically viable. I am encouraged to see many growers changing what they are doing, little steps in some cases, but it is the start of the journey we all must make. We are practical people, and there are lots of things that can be done once we put our minds to it and our efforts towards it.

Riparian and gully plantings, monitoring soil nitrogen to only use what is needed, and using more sophisticated slower release fertilisers, moving away from hard chemicals to softer options including biologicals, covered cropping, better soil management, more efficient use of machinery reducing diesel use,

moving to solar power for packhouses and introducing electric vehicles are just some of the initiatives that are happening increasingly with growers, and that are making a difference.

Growers are researching and trialling new and better ways of growing, such as in my industry where a group of progressive kiwifruit growers have only been using 30kg of nitrogen, and without any significant impact on productivity. They are trying this because they know we have to change, and importantly they are sharing their findings and knowledge so others can understand and hopefully follow.

We know that technology will advance and give us more tools 'tomorrow' but that shouldn't stop us acting on what we can do today. Where He Waka Eke Noa will go now with this new government we still don't know, but what we do know is that we as growers can get on and achieve what HWEN was trying to achieve anyway, without the need for a one-size-fits-all regulatory approach.

We also need to look at the strong interconnection of people and nature fundamental to the Māori world view and the view of many other cultures around the world. *Ko au Te Taiao, ko Te Taiao ko au* (I am nature, and nature is me). We all share this connection with nature (*te Taiao*) each in our own way, and know that when nature thrives, we all thrive.

Another very important part of our response to a changing climate is adaptation, as we can't just mitigate with the extreme weather events we are already experiencing which are making growing very difficult now, let alone tomorrow!

We are strongly advocating for adaptation measures that will enable growing on flood plains, where much of our growing happens. I will leave to others the argument whether people should be able to live in these areas, but one thing that I am certain of is that we need to be able to still use these areas for growing.

I AM ENCOURAGED TO SEE MANY GROWERS CHANGING WHAT THEY ARE DOING, LITTLE STEPS IN SOME CASES, BUT IT IS THE START OF THE JOURNEY WE ALL MUST MAKE

But to do this we need flood protection systems that work. These systems need to be dedicated for flood protection, not also for other uses such as conservation, so that a bulldozer can clean out the buildup of silt and gravel regularly, so the banks can be reinforced and if needed made higher. And the win-win to me is water storage at the start of the river in order to control water volumes in high rainfall situations, but also provide water in times of drought. But more on water storage in next month's magazines!

Finally all this needs to be underpinned by science, so we need to seek and invest in research efforts to help us find solutions to how we can reduce our emissions to meet climate change goals. This includes our plant breeders being supported to breed plants more resilient to changes in climate, and to the pests and pathogens that go with a changing climate.

Horticulture New Zealand is actively lobbying and advocating for policy settings that support sensible climate change mitigation, along with robust approaches to provide for climate adaptation. The two must go together, and in doing so we can achieve sound environmental outcomes with the land being able to economically support future generations of growers.

Kia kaha

NZGROWER

Acting Editor:
John Gauldie
Email: editor@hortnz.co.nz

Advertising Manager:
Debbie Pascoe
Ph: 027 485 8562
Email: debbie.pascoe@hortnz.co.nz

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

Subscriptions:
Email: info@hortnz.co.nz

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STRONGER BY WORKING TOGETHER

Nadine Tunley : HortNZ chief executive

The Horticulture New Zealand team has been on the road over the last few weeks meeting growers as part of a national roadshow.

Engaging with growers is always a real highlight of my job. As the leader of an organisation dedicated to advocating for and representing the interests of over 4200 commercial fruit and vegetable growers, I see examples every day of the hard work shown by the thousands of people working in the horticulture sector.

Every grower I encounter demonstrates a profound commitment to stewardship of the land and doing the best under what is often really trying circumstances.

We all know New Zealand is fortunate to possess ideal growing conditions and fertile soil, but it takes real perseverance and resilience for growers to cultivate nutritious and sustainable food for our nation and the world.

> “The next six years will be an important period for New Zealand’s growers and the country as a whole

Among the regions we have visited so far has been Northland, which has a significant horticulture presence. Horticulture and fruit growing accounted for 12.5 percent of the overall value of Northland’s exports in 2022. The HortNZ team up at Northland Field Days said it was great to see growers out in force – hopefully some of you were able to drop by our stand.

Northland was just one of the areas hit hard by Cyclone Gabrielle, which also wreaked a path of devastation in Hawke’s Bay, Tairāwhiti Gisborne, Bay of Plenty, Wairarapa and northern Manawatū.

For some growers, the rebuild and renewal process will take many years and the investment required to enable these regions to once again thrive will be significant.

Scientists tell us that climate change will increase the frequency and severity of these adverse weather events so we need to take steps to mitigate or reduce the damage.

This means taking a whole of catchment approach to flood protection and water use. It’s also critical highly productive land is protected for primary production and that growing fruit and vegetables is the first priority for land-use in these valuable areas.

This approach would also see more bush on hill country, fewer houses in flood prone valleys, and more water storage.

New Zealand needs to ensure a resilient supply of fruit and vegetables through permissive planning that allows geographic variation in growing areas.

We also require policy and planning support for climate adaptative growing, including covered cropping.

The nation needs to maintain effective flood protection systems in food producing areas. Flood-protection infrastructure must be continuously strengthened, and silt and shingle debris removed from flood channels.

During the various meetings with growers, we have been sharing HortNZ’s priorities for the next few years, hearing their views and ideas and providing an update on our various programmes such as A Lighter Touch, Growing Change and the horticulture sector Aotearoa Horticulture Action Plan.

We along with some product groups have also been providing information on our upcoming levy referendum where growers will get the chance to have their say on the future of HortNZ. If you haven’t been able to attend a grower meeting, we would still like your feedback. Growers can do this by submitting written comments on our Growing Together feedback form which you can find on our website www.hortnz.co.nz, by calling us on 0508 467 869 or emailing us at info@hortnz.co.nz.

In March 2025, HortNZ’s Commodity Levy Order, which funds the work we do, will expire. We will be seeking grower support for the continued funding of the organisation.

HortNZ supports growers to make more informed decisions, providing them with tools and services to enhance their productivity and profitability.

We advocate on growers' behalf to try and achieve sound and sensible policy settings including around climate change and freshwater so growers can provide a reliable and resilient supply of fresh vegetables and fruit for all New Zealanders.

I believe the horticulture sector is certainly stronger by working together. Collective investment by growers provides the size and scale needed to achieve things that no individual grower can achieve alone.

HortNZ is proud of our achievements for growers over the past six years – notably the strong advocacy during the various COVID-19 lockdowns that enabled growers to continue to harvest crops and supply domestic and export markets and quarantine-free travel for RSE workers, leading the cyclone recovery and securing policy gains for the sector.

The next six years will be an important period for New Zealand's growers and the country as a whole.

Grower Roslyn Norrie spoke with HortNZ's Arjune Dahya at Northland Field Days

If growers vote to continue funding HortNZ, we will be pushing the case with government in key areas including water storage and allocation, ensuring the reliable supply of nutritious locally grown fresh vegetables and fruit, streamlining assurance processes, employment flexibility, removing current legislative barriers to businesses and providing certainty for Pacific workers and employers.

The sector is also poised to take advantage of some encouraging tailwinds in its favour.

In December, the Ministry for Primary Industries' *Situation and Outlook for Primary Industries* report revealed a strong future for New Zealand horticulture with forecast export revenue rising to $8.19 billion by 2025.

The report showed the horticulture industry overtaking forestry to be the third largest earner of export revenue in the food and fibre sector by 2025.

Increased export prices are forecast over the coming years, supported by strong global demand and constrained global supply. Recovering crop yields in 2024 are expected to offset lower volumes for some crops, largely resulting from the tail end of weather-affected 2023 harvests.

In a positive development, the sector is also looking forward to New Zealand ratifying the free trade agreement with the European Union, particularly good news for our onion and kiwifruit sectors.

We want New Zealand to prosper by exporting our world-leading fruit and vegetables to millions of customers all over the world.

We are confident we can double farmgate revenue by 2035 in line with the Aotearoa Horticulture Action Plan.

But we can't do it alone.

We need the government to recognise and understand the importance of horticulture and create and maintain the conditions for our industry to thrive, and in doing so, lift the overall health, wellbeing and economy of New Zealand.

ADVOCATING FOR GROWER-FRIENDLY CLIMATE SETTINGS

Michelle Sands : HortNZ general manager strategy and policy

Strengthening our domestic food production is a form of climate change adaptation – ensuring we have a strong local food system that will feed New Zealanders when changing weather and extreme events disrupt horticulture in other parts of the world.

The Horticulture New Zealand Environment Team has used this argument throughout our submissions in 2023 to stress that bolstering New Zealand horticulture is essential to preparing the country for climate change.

We argued for regional resilience – geographic variation in growing operations, so if a severe weather event hits one region, there will still be fruit and vegetable production in other parts of the country to lessen the national impact.

Strong central government direction is needed to direct regional and district councils to seek the same outcome.

In 2023, we first made this argument in our submission on the Natural and Built Environment Act, which, because of our advocacy, included a clause requiring the national planning framework to provide direction on "enabling supply of fresh fruit and vegetables". Although this Act was recently repealed in December, we will seek similar direction in replacement legislation.

After Cyclone Gabrielle struck, the importance of horticulture for national climate adaptation came into stark relief. In our submission on the Ministerial Inquiry into Land Use in Gisborne and Wairoa, we called for climate adaptation to be at the heart of the rebuild conversation, as well as how to reduce the risk to food production from future flooding events.

We highlighted the vulnerability of horticultural lands on the fertile soils of floodplains to the large weather events predicted to become more frequent. A full-catchment approach to risk management should be used, so that the ability to produce food on these lowlands is not compromised by the erosion from hill country.

In May, we wrote that increasing resilience should be a high priority in New Zealand's approach to international climate negotiations, particularly for our Pacific neighbours who are invaluable partners in our food system. We called for adaptation measures to protect and enhance global food supply, including protecting elite soils and rehabilitating degraded ones to grow more food and sequester carbon.

We echoed the caution of the Paris Agreement which recognised the "fundamental priority of safeguarding food security" and noted the need to adapt, foster resilience and lower emissions in a manner that does not threaten food production. We also called for investment in science to support climate adaptive growing strategies and new resilient crop cultivars.

In November, we submitted on both the Environment Select Committee's Inquiry into Climate Adaptation and Managed Retreat, which was created to inform the potential Climate Adaptation Act, and the proposed National Policy Statement for Natural Hazard Decision-making. In both of these submissions, we cautioned that urban risk assessment methodologies should not be applied to horticulture. Horticultural buildings and structures have a different design-life than urban buildings, and since people do not sleep in them, they carry less risk. Including horticulture in managed retreat requirements would be a risk to food security and lead to an inefficient use of highly productive land.

> "

We pointed out the importance of rural road networks

In these, and earlier submissions, we pointed out the importance of rural road networks to ensure fresh produce can still make it to people who need it in times of crisis. We also called for flood mitigations to prioritise protecting fruit and vegetable production.

We've called for an integrated approach to climate change mitigation and adaptation that recognises the importance of food production and protecting highly productive land from floods. In 2024, we will carry these arguments forward with the new government and in local plans to ensure climate risks to horticulture are recognised and mitigated without compromising the supply of fruits and vegetables.

YOUR INDUSTRY

ACROSS THE SECTOR – ACROSS THE COUNTRY

9 NEW POTATOES NZ BOARD MEMBER

BACK TO THE FAMILY ROOTS

Glenys Christian

Bhupen Master spent 20 years working in global finance markets before returning to his roots in horticulture

Bhupen Master thinks he was probably one of the few Kiwis "doing the trade the other way" in moving home from Australia last year to rejoin the family business.

"I always wanted to come back" he says.

And the time was right last year to integrate back into the family business with a generational shift. Masters Produce owns and crops a notable amount of land south of Auckland. Half is taken up with potatoes, with onions making up a good part of the remaining area and the rest is in greens, such as lettuce and broccoli and cover crops. Over 120 workers are employed during the busy summer harvesting months.

The origins of the business go back to his grandfather, Haribhai, who signed up to serve in the New Zealand army during the Second World War. As a strict vegetarian he was told he could better serve the war effort by growing vegetables for the troops. He was given a plot of land in Pukekohe and after the war finished was able to sell that and buy more land in Bombay.

His sons, Narandra, who still works in the business, and his late brother, Pravin, both left school early and grew the business.

Later their sons, Jayant and Mahesh, joined and have been working there for over 30 years, now managing the business. A fruit shop was opened on Great South Road in the 1960s before the motorway over the Bombay Hills made access to and from Auckland easier.

> "There's a lot of pressure to meet climate goals but this is a balancing act between all stakeholders

"They started selling off the back of a truck and it evolved into a larger business," Bhupen says. "Migrant families are not big spenders; they squirrel their money away. As kids we worked there, and it taught us work ethic and discipline."

Over the years they specialised in growing potatoes and onions, generally buying land rather than leasing it. Managing and protecting the soil has always been important to the family. As it became difficult to expand operations in Bombay they moved to land around Pukekawa in the 1970s.

Masters Produce has gradually moved most of its operations from its former Bombay base to Pukekawa

"We were constrained at Bombay because there wasn't a lot of land available for cropping and it's difficult to expand," Bhupen says.

Suitable Pukekawa land had either been growing vegetables or grazed, and there were advantages being away from higher population density and where water was available for irrigation.

> **"Whilst the industry needs to adapt, regulations must be practical, workable and make economic sense**

Bhupen attended Auckland Grammar then studied finance and economics at Auckland University before going to London to complete his master's degree in finance and property at Cass Business School, University of London. He was part of Deutsche Bank's graduate programme in 2000. As an equities analyst he specialised in listed real estate stocks which led to him being approached by Merrill Lynch, later Bank of America, where he worked for five years back in London.

"I saw both the good and bad sides of the Global Financial Crisis (GFC)," he says.

"It was very interesting covering numerous listed companies across the United Kingdom and Europe, including Eastern Europe and Russia and spending time there. When the GFC hit it turned nasty and you learned to manage risk fast."

More recently he was a director at Goldman Sachs in Sydney with their Global Markets team. He and his wife, Elizabeth, an Australian who he met in the UK, have two young children and made the decision to move back home a year ago.

"I spent 20 plus years in financial markets, but I wanted a new challenge and to be closer to family. It's important to keep learning and pushing yourself."

Bhupen has also joined the board of Savor, a listed hospitality group. But mostly he's been re-familiarising himself with the vegetable growing business. One of key observations he makes is the amount of compliance, the increased use of technology and how the cost curve has changed.

"It's all very time consuming and costly but the technological aspect is exciting," he says.

When he was approached about joining the Potatoes NZ board, he saw it as an opportunity to be part of an industry body that is endorsing and supporting growers, and he hopes to bring a different perspective to the board table.

While concerns of growers from different areas of the country might not be the same, there needs to be commonality as challenges can be better navigated by strong industry bodies, he believes.

When it comes to research and development into best practice, he says there's a lot of work going on domestically and internationally and New Zealand needs to be at the forefront.

With environmental issues he says growers are aware of a changing climate, but they have been adapting for years through experience, adopting new technology, planting different varieties and through crop and soil management techniques.

"There's a lot of pressure to meet climate goals but this is a balancing act between all stakeholders. Whilst the industry needs to adapt, regulations must be practical, workable and make economic sense."

Masters Produce has spent a lot of time putting in silt traps on their farms using external consultants to do the planning then their own equipment to carry out the work required. This paid off during the Auckland Anniversary weekend flooding last year, along with other tools such as cross-planting headlands and the use of bunds to reduce soil loss.

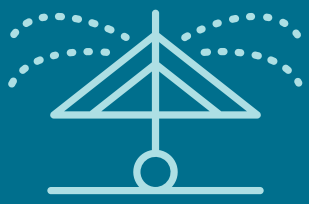
Another focus for the business has been irrigation with a high percentage of their land able to be watered, most recently by large pivot irrigators.

An ongoing issue is attracting young people into vegetable growing, even with increases in the science and technology involved.

Labour issues of a year to 18 months ago have eased and he's hopeful that with the Australian government's tightening of immigration more may opt to come to New Zealand.

When it comes to promotion of potatoes, he believes there's always more that can be done to showcase their versatility and affordability.

ANOTHER FOCUS FOR THE BUSINESS HAS BEEN IRRIGATION WITH A HIGH PERCENTAGE OF THEIR LAND ABLE TO BE WATERED, MOST RECENTLY BY LARGE PIVOT IRRIGATORS



"They're a staple, but outside a few varieties promotions drop away quickly."

Asked about the future of potato growing in New Zealand Bhupen is very positive.

"It's an industry which confronts continual challenges, and is overlooked for what it delivers, a household staple which provides nutrition," he says.

"There'll be more alignment, costings will be important and there'll be less room for error. The compliance side will continue to be a challenge but growers want less paperwork so they can focus on growing, which is what they love. They're very passionate people which is something I admire but I don't think the complexities are well understood by those outside the industry."

1

PREMIER TURNS 20

Celebrating two decades of growth and innovation, Premier Seeds proudly marks its 20th anniversary and reflects on the people and the partnerships critical to its success.

ANNIVERSARY
20
YEARS
CELEBRATIONS

Established in early 2004, Premier Seeds embarked on a journey that shaped its identity as a prominent player in vegetable seed supply. Careful consideration was given to the company name, reflecting a commitment to delivering premium benefits to its valued customers.

Recognising the need for a fresh approach, Wally Dalgleish, the founding Managing Director of the business, aptly captured the sentiment: "I knew 'cherry picking' was not going to be the way in the future to try to obtain the silver bullet varieties; you need to throw your hand in with a few non-conflicting suppliers and then build sales up to earn respect." This strategic insight set the tone for Premier Seeds' approach.

The collaboration with Bejo Zaden, a third-generation Dutch seed company with a global presence in over 30 countries, proved transformative. Recognising the opportunity in New Zealand, Bejo Zaden seized the prospect to grow its presence in the region. Premier Seeds, in turn, secured exclusive distribution rights for the indoor range of De Ruiter seeds. The initial attraction of working exclusively with Bejo Zaden varieties was simply stated in the Bejo motto of the time: "a name that stands for quality." Premier Seeds continues to adapt to market changes to offer a comprehensive quality range to its customers. While the exclusivity around the full range of De Ruiter genetics that helped start the business has long gone, Premier Seeds still maintains exclusivity on certain varieties in the range and has complimented its covered crop offer through working with well-known Dutch breeders Totam and Westland, and Spanish breeder Fito Semillas. Many of the other founding suppliers are still partners today.

Premier Seeds' collaboration with Bejo has not only fostered a strong reputation for breeding excellence but has also been marked by innovative seed solutions. Bejo's envied status for advancements, such as seed-borne pathogen control, seed germination enhancement treatments like B-Mox® seed priming, and a burgeoning chemical-free and organic seed range, positions Premier Seeds at the forefront of industry innovation.

An enduring principle at the business is that quality is at the forefront of everything the company does. On Premier Seeds' approach to this, Product Development specialist Michael Rawnsley, reflects, "A key differentiation from its competitors was a strategy to provide precision-graded seeds across its entire range, and selling seeds by count rather than weight, as was the tradition. This resulted in more accurate

1. Steve Dickson, Wally Dalgleish, Michael Rawnsley – *Building brand awareness at one of the early HortNZ conferences, circa 2005*
2. Wally Dalgleish, Bejo Australia Colleagues Chris Pertile and John Pardew – *Whatever the weather, crop inspections continue, Ohakune, 2009*
3. Steve Dickson, Ger Beemsterboer, Michael Rawnsley, Mike Jury, Benjamin Carrell, Jolanda Duineveld – *Premier Seeds and Bejo Netherlands Colleagues inspecting onion trial varieties, 2011*
4. Chris Bone, Imke Blackett, Steve Dickson and the Fito team – *On tour visiting partner company Fito Semillas in Almeria, 2018*

seed procurement and purchasing by growers, along with improved uniformity of crop emergence and establishment with overall improved crop performance."

Bejo's mantra of 'exploring nature never stops' shines through Premier Seeds' market development. Says Michael, "The development of onion varieties suitable for New Zealand conditions remains a key focus. In recent years, this work has led to the commercialization of our first ELK variety 'Pinnaroo' which has performed well throughout the country; having improved vigour, skin quality and pack-out rates over existing ELK varieties. The same trial program in long-day material has led to a greater understanding of day-length and GDD requirements of varieties such as Cartier and Redwing, resulting in production improvements in New Zealand."

In 2023, Bejo reinforced its commitment to the New Zealand market by taking full ownership of the Premier Seeds business, ensuring that the founding principles of quality and innovation continue. Full integration into global business systems has resulted in back-end developments around planning, seed forecasting, and production efficiencies that ensure customers get the best quality seed at the right time and in the best condition.

Throughout the 20-year journey, Premier Seeds has tirelessly worked to cultivate a brand name synonymous with trust and respect among New Zealand's vegetable growers. While some of those founding members have since retired, a pivotal factor in the company's ongoing success lies in the dedication, stability, and industry knowledge of its long-standing personnel. A flat structure rather than a traditional 'top down' company management structure has seen the sales role re-imagined as highly valued product development specialists able to provide expert advice on grower crop variety queries unique to their own situations.

As Premier Seeds reflects on the past, it embraces the future with a commitment to excellence, innovation, and an enduring focus on meeting the evolving needs of growers.

Premier SEEDS LIMITED

09 275 6800
www.premierseeds.co.nz
office@premierseeds.co.nz

DECARBONISING WITH ELECTRIC MACHINERY

NZGrower staff

Reducing emissions, fuel and oil as well as finding new ways to farm sustainably and with new technology is an important focus at LeaderBrand

Electric options are beginning to make their way into the country – often accompanied by labour-saving automation capability. According to EECA, New Zealand's off-road petrol and diesel powered vehicles, as well as other machinery such as frost fans and generators, contribute 3.89MT of CO_2-e emissions each year, using 1.1 billion litres of fossil fuels.

Horticulture is just a part of that, but with the help of EECA's Technology Demonstration our sector has already invested in electric options for dehumidification units, high-temperature heat pumps, electric frost fans, vacuum cooling units, electric harvest platforms and an autonomous electric tractor.

"Technology will make a marked difference for the sector in both energy and emissions savings – in many cases it has already been proven and more will become available," says EECA general manager business, Nicki Sutherland. "Electrifying vital equipment is a key opportunity."

EECA's Technology Demonstration offers up to 50 percent co-funding to support energy and carbon savings through the early adoption of proven technology or an innovative process improvement opportunity. The fund targets projects that reduce energy intensity or greenhouse gas emissions and businesses need to commit to having their project independently monitored and to promoting the project and outcomes.

Orchard electrification makes economic sense

Decarbonising orchard production is achievable right now, says Mike Casey. With his fully electric cherry orchard, Forest Lodge in Cromwell, Mike is a well-known leader of electrification. He is now also the chief executive of an independent charity called Rewiring Aotearoa, dedicated to making sure electrification is accelerated in New Zealand while ensuring New Zealanders enjoy the huge savings potential from a fair transition.

Achieving the world's first electric orchard has been a long journey, he says, essentially sourcing 20 electric machines instead of buying the off-the-shelf diesel equivalents – everything from irrigation to frost fans. However, Mike encourages every orchardist to have a close look at the economics of electrification.

The MK-V Monarch electric autonomous orchard tractor during an open day at the fully electric Forest Lodge orchard in Cromwell. Forest Lodge and 3 Kings Cherries are competing in the Otago regional Ballance Farm Environment Awards in April. Horticulture New Zealand is a proud national partner of the awards

"When your orchard machinery needs replacing, you're almost always better off buying an electric option," he says.

With the already high price of diesel in New Zealand likely to increase, the economics stack up over the lifetime of your machinery, but access to upfront capital is the difficulty. Electric machinery is still expensive and can require upgrades to infrastructure such as switchboards and transformers.

Last year Mike imported a MK-V Monarch electric autonomous orchard tractor at a cost of $142,000 including shipping. While there has been support from the government in the form of EECA Technology Demonstration Funds, financing and insuring electric machinery is not always straightforward.

The price of electricity on the grid is already lower than burning diesel on the farm – particularly with off-peak spot rates for charging batteries. "We're consuming 900% more electricity than the previous owners of the property, but half of that we generate ourselves and the other half we pull from the grid when it is cheap."

The best value comes from using your own energy, for example through solar panels, he says. "You're locking in your energy prices at 6 cents per kW/h for 25 years. Energy ownership is very liberating and offers huge resilience benefits to boot."

Global farm machinery manufacturers see demand for electric

Demand from growers was behind the development of the Electric GUSS, a fully electric version of John Deere and GUSS Automation's autonomous herbicide orchard sprayer, which was unveiled last month in California. The Electric GUSS utilises Kriesel batteries that can run and spray for a full shift when fully charged. John Deere says the machinery is now available for order in New Zealand.

> "Energy ownership is very liberating and offers huge resilience benefits to boot

"We've been asked countless times about making GUSS electric," GUSS Automation Chief Operating Officer, Gary Thompson says. "An electric herbicide sprayer made the most sense to us, given that the battery life can last an entire shift while performing this critical orchard task. Combining the battery's electric benefits of low operating costs and zero tailpipe emissions with spot spraying weed detection technology makes Electric GUSS a winner."

LeaderBrand's new Hortech eco-slide electric harvester and Hortech cargo platform are both a first of their kind to New Zealand

Using a combination of GPS, Light Detection and Ranging (LiDAR) and proprietary technology for accurate coverage, a single employee can operate and monitor up to eight GUSS machines from the safety of their vehicle using a laptop computer, reducing the opportunity for operator exposure.

Vegetable grower trials electric harvester and cargo platforms

Technology and innovation continue to advance in the electric space, particularly in controlled environments, says Leaderbrand. But there is still a lot of research needed around scenarios involving work in the open field situation with variable workloads and potential to be far away from charging stations.

General manager of farming Gordon McPhail says that reducing emissions, fuel and oil as well as finding new ways to farm sustainably and with new technology is an important focus for LeaderBrand.

The new Hortech eco-slide electric harvester and Hortech cargo platform are both a first of their kind to New Zealand and specifically designed to suit LeaderBrand's indoor environment and cropping system with quality, accuracy and harvesting widths.

"We're always looking for different ways we can be more climate friendly, and this is another step in the right direction. It's also great for the safety of our team as the electric harvester is less noisy than our diesel engines, which is helping to improve communication and safety for our teams in the greenhouse.

"The greenhouse is the right environment for us to trial and test if electric equipment will work in our business. In fact, we designed the front packhouse of the facility with electric harvesters in mind getting the wiring and outlets built into the greenhouse before we'd commissioned the equipment," he says.

> **"The greenhouse is the right environment for us to trial and test if electric equipment will work in our business**

"With overnight charging we can get a solid 12-hour run time on the harvester which is more than enough power to get us through the day which suits our busy team perfectly," he says.

LeaderBrand was awarded an EECA grant which has helped with some of the cost of investing in an electric harvester.

Say hello to low carbon crops

Its time to make the transition, tap into the benefits of decarbonisation and prepare your business for the future.

The Covered Cropping Decarbonisation Pathway will give growers access to:

- International expertise
- Best practice guidance
- Bespoke tools and resources.

Discover more at eeca.govt.nz/coveredcropping

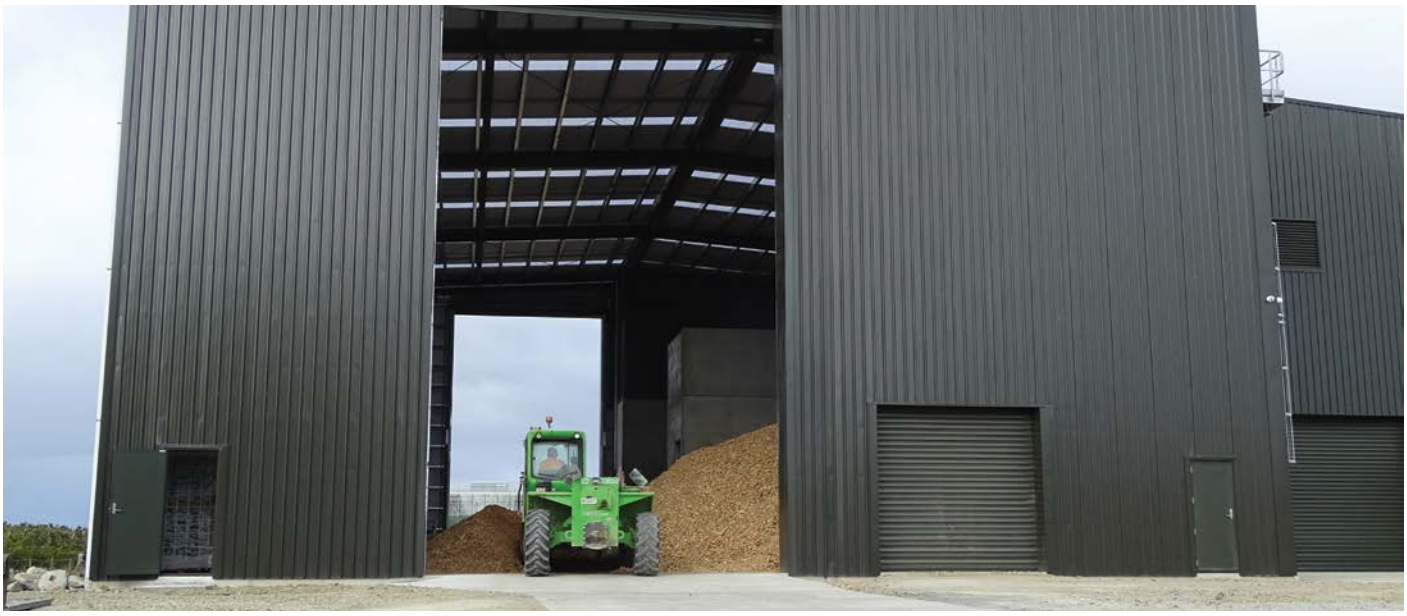
EECA

Vegetables NEW ZEALAND Inc

TomatoesNZ

DECARBONISING COVERED CROPS

Anne Hardie



The new biomass facility at JS Ewers replaces coal with woodchip

Thinking outside the square led Leanne Roberts' family to switch from coal to nutshells to heat their hydroponic greenhouses near Blenheim.

The shells from pinenuts and hazelnuts are not the typical solution for decarbonising a business, but it made sense to Leanne's family who identified a local waste product destined for landfill that was a good fit with their kaupapa or principles.

Lettuce and herbs are grown year-round inside 5500m^2 of tunnelhouse near Blenheim, and with temperatures dipping to minus five degrees Celsius in winter, they rely on their boiler for heating.

Decarbonising can be overwhelming for small to medium horticulture businesses, but she says growers know their business best and it can be a matter of looking outside the square to find an affordable solution.

"We had been actively looking for ways to convert for years by finding something that was economically viable. A lot of the time, they're just financially out of reach."

In their own case, they have a couple of local nut growers who dry the nuts through the year and now Leanne's family collect the shells, store them and use them as fuel – after converting their system to handle nutshells instead of coal.

The actual conversion cost between $20,000 and $25,000 to modify the auger, engineering work and installing safety mechanisms which are different for nutshells than coal. On top of that were infrastructure costs including a new shed because nutshells have less energy than coal and hence a greater volume is needed and more storage is required. By the time a raised concrete platform was laid to keep the shells dry, the total cost was closer to $50,000.

Funding from the Energy Efficiency & Conservation Authority's (EECA) Technology Demonstration Fund helped, though Leanne says it took a year to receive it. They initially sought funding at the beginning of the project because it was hard to know how much it would eventually cost as it was a new concept. In the end, the project cost less than they had anticipated and they were well down the track of the conversion before they received the funding.

Now they are into their second year using nutshells to heat the greenhouses, no longer pay carbon tax and are relieved they no longer rely on coal.

For them, converting away from coal was a no-brainer, mainly because Leanne says they were paying "more carbon tax than we were comfortable with" and knew it would continue to increase.

"We just wanted to get off this mouse wheel and that uncertainty and just have a bit more control back."

Leanne says decarbonisation will be different for all growers, and while some are going down the heat pump path or converting to biomass, others have opted to change the structure of their operation so they no longer offer year-round supply by not running their boilers. She says that is definitely happening in the South Island. Others are increasing efficiencies in their existing infrastructure, but still paying carbon tax. Some growers are also opting to shut the door because of the "state of flux" since Covid-19 and the raft of changes.

The hardest part for small to medium-sized horticulture operations is wading into the decarbonisation process, because she says it can be very overwhelming when you are already busy as an employer in charge of health and safety through to marketing. In their family situation, it helped that she had a background in policy to work with EECA and the Marlborough District Council – which she says were very supportive with the consent work – as well as having her father manage the project methodically and become a bit of an engineer through the process.

"

TO HEAT THEIR HYDROPONIC GREENHOUSES AT THYMEBANK NEAR BLENHEIM, **THE ROBERTS FAMILY HAS SWITCHED FROM COAL TO NUTSHELLS** – A LOCAL WASTE PRODUCT

LEANNE ROBERTS

Forest waste turned into woodchip is now heating JS Ewers' boilers

She suggests growers struggling with the process should reach out to the cover crops community because other growers can help solve problems in a practical way. In her experience, consultants and even EECA can be quite single focused on a particular technology that may not necessarily be right for the business. Consultants constantly pointed her family in the direction of heat pumps, which was not an economical option. She advises growers to look for a consultant that understands their business, and in their case they eventually worked with a resource management consultant.

Successive governments have been changing the playing field, which is one of the concerns for growers spending money to decarbonise. She says government departments do not have a great understanding of especially small-to-medium grower operations and growers who want certainty. More planning across government ministries and departments would be a simple step to create a cohesive and long-term plan to follow, she says.

"You want to do it once and do it right. You don't want to find out that you have to go through that whole pain and expense again because it wasn't enough. I know there have been people who converted to waste oil a few years ago and were in that exact position. That leaves them very frustrated and disheartened."

Leanne's family have a contingency plan should the local nut businesses change crops or close. The alternative would be using woodchip from local arborists that could be dried and used as fuel for the boiler.

At this stage, they are fine-tuning the nutshell-heated boiler operation and Leanne is confident it is a good change that will produce good results.

"Someone else will have their own version of nutshells. Every area will be different and it's taking something from the waste stream that can be used as biomass.

"Growers have quite a bit of knowledge and you have to make decisions that are right for your situation."

A state-of-the-art biomass solution

Over the hills on the Waimea Plains near Richmond, large-scale market gardener JS Ewers has switched from coal to a state-of-the-art biomass boiler system as part of its plan to reduce on-farm emissions.

The MG Group subsidiary formalised a plan in 2017 to reduce on-farm emissions by 98 percent and general manager Pierre Gargiulo says the key driver was a comprehensive energy assessment audit. That helped identify a series of workstreams which led to a systematic delivery of energy and emission-reducing projects.

The first major phase of the project was the completion of a ring-main system and introduction of a buffer tank which centralised heat distribution, enabling five of eight boilers to be retired and lowering energy consumption.

The latest technology at work at JS Ewers

Pierre says it was a huge undertaking with years of planning and construction, requiring fifteen 40-foot shipping containers full of materials to be assembled onsite according to the master design. Heat-flow meters were also added to measure flow rates and heat use across the site.

Further reductions were made following the installation of thermal screens which created an extra barrier, allowing the heat collected during the day to be retained. Two remote sites were then converted and boilers modified to enable the transition from coal to renewable fuel.

The latest and most significant project has been the commissioning of a state-of-the-art biomass boiler system.

Pierre says the switch away from coal was challenging and a number of options were considered including electrification. However, the complexities related to the regional power network meant that was not a viable option. One of the key reasons for opting for a biomass solution was the availability of fuel locally and the ability to secure a long-term supply agreement. The final choice was forest waste which is in good supply locally.

Added to the challenge, the project was affected by supplier issues, Covid-19 disruptions and its sheer size and scale.

A number of factors drove the energy and emissions-reduction projects, he says, including increasing customer and consumer interest in emissions reduction, plus a strong willingness to demonstrate the MG Group's commitment to reducing emissions. As part of the wider decarbonisation pathway, there were the long-term economic factors with the backdrop of increasing regulations, energy prices and other emission-related costs.

The projects were largely self-funded, though Pierre says JS Ewers has benefited from EECA support and it was a successful applicant in the inaugural round of GIDI (Government Investment in Decarbonising Industry) funding. That enabled them to accelerate the progress of reaching the goal of a 98 percent reduction in emissions.

T&G's partnership with Ecogas will see its Reporoa greenhouses supplied with hot water, biogas and CO_2

TURNING FOOD WASTE INTO RENEWABLES

Food waste from around the North Island is helping T&G reduce greenhouse gas emissions at its tomato operation near Reporoa by providing renewable energy, heat, biofertiliser and renewable CO_2.

General manager for covered crops, Ben Smith, says the partnership with Ecogas is part of T&G's commitment to climate action by reducing emissions relating to the tomato-growing operation.

The first large-scale food-waste-to-bioenergy facility is built on T&G land adjacent to the glasshouses. The organic processing facility is capable of processing 75,000 tonnes of food waste.

Ben says the year-round tomato operation required a consistent supply of heat and CO_2, so in 2019 T&G partnered with Ecogas to decarbonise the heating sources for the glasshouses by capturing those outputs.

"In 2023, hot water was connected to our glasshouse and in the year ahead, the intention is to have biogas and CO_2 connected as well. The hot water is piped into our hot water storage tanks and used year-round for heating and dehumidifying.

"Two additional pipes will deliver biogas which will reduce our natural gas requirements, and CO_2 which we'll use for photosynthesis and enhancing the growth of our tomatoes.

"Once fully installed and operational, we expect to reduce our site emissions significantly due to natural gas usage."

Leading on from its work with Ecogas, T&G then worked with Beca and the Energy Efficiency and Conservation Authority (EECA) in 2022 to determine how to further meet its emissions reduction goals. In an Energy Transition Accelerator Study, the use of thermal screens to retain heat during colder periods was identified as an option that would provide the most savings in the least time.

Last year, T&G began installing retractable thermal screens at its glasshouses on Geraghty Mabel Road, Tuakau in the Waikato and Ben says that once fully operational, they will reduce the site's emissions by 29 percent and overall footprint by 5.2 percent.

RESOURCES TO SUPPORT GROWERS TO REDUCE ENERGY USAGE

Ellery Peters: Vegetables NZ energy engineer project manager

One of the key features in climate adaptation and mitigation is making progress towards an energy efficient business.

Vegetables NZ and TomatoesNZ have been driving this by creating new resources specifically focused on energy in covered cropping. These resources are designed to support growers to become more knowledgeable about how to reduce their energy usage, and what renewable fuel switching options are available.

The energy assessments which have been conducted on site for growers have been continuing for any grower who has asked to for an energy assessment. I have been delivering energy assessments to growers in Auckland and down in the South Island as well. As it stands, eight energy assessments have been delivered free of charge and I encourage any covered crop grower who is interested to reach out to discuss options.

Six energy transition plans (ETPs) were conducted by consultants as part of an initial pilot programme to provide insight to growers. These were focused on what options are available for growers to reduce their energy use and what options there are for shifting away from fossil fuels and towards renewable energy.

The Energy Transition Plan Comparison Report is being written summarising the findings from the six ETPs and the different solutions available.

This report will discuss:

- Energy demand reduction opportunities proposed by consultants and how much energy can be saved by these options.
- The costs of the different energy reduction options considered for the different sites analysed.
- Fuel switching and the different types of alternative fuels and related technology options available and their costs. Technologies discussed include dehumidifiers, thermal screens, biomass boilers and air source or ground source heat pumps.

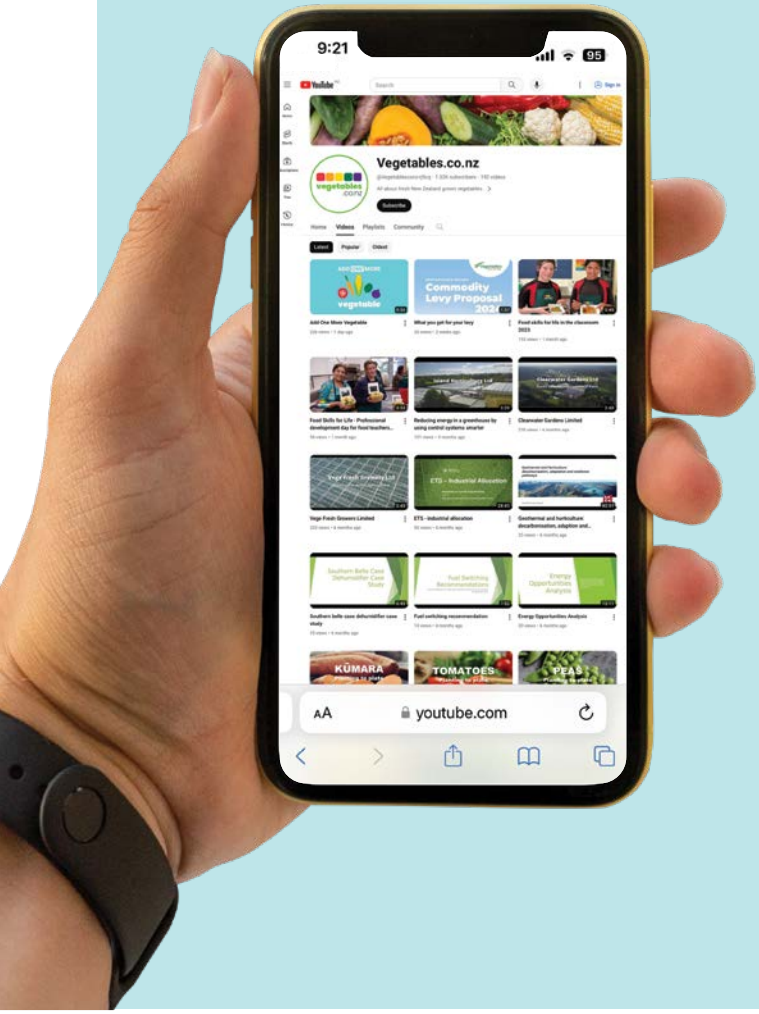
The Energy Transition Plan Comparison Report can be found on the grower resources tab of the Vegetables NZ website, or on the EECA website under the Tools and Resources for covered crop growers section.

Grower Rob Lindsay in one of his greenhouses

If you want to learn more about any of the resources available or want to discuss how to obtain a free energy assessment, reach out to Ellery Peters from Vegetables New Zealand on **027 322 2887** or **Ellery.Peters@HortNZ.co.nz.**

HOW COVERED CROP GROWERS ARE REDUCING THEIR ENERGY BILLS

Vegetables NZ has developed three videos showcasing three different ways to minimise energy costs, following visits to covered crop growers to see how they are reducing their energy demand. Find Vegetables NZ on youtube.com or scan the QR code.



Albert Shih is a tomato grower who installed thermal screens into his Vege Fresh Growers site. While filming with Albert we discussed the 25 percent savings he has obtained from thermal screens, the ease of installation and why other growers should do the same.

Rob Lindsay explains how Island Horticulture reduced their energy consumption by 20 percent by optimising their Priva climate control system and making low-cost improvements to their site.

Robert Cole replaced his diesel boiler with a hot water heat pump for his hydroponic system at Clearwater Gardens. We went through the system with Robert and discussed how he reduced his energy consumption by more than two-thirds.

GOVERNMENT OFFICIALS EXPERIENCE GROWERS' PASSION, PRIDE AND PAIN

NZGrower staff

Thirty-five central and local government officials visited Lewis Farms and Woodhaven Gardens, two major Horowhenua-based, family-run growing businesses, in early February.

The pilot cross-pollination day was part of the Aotearoa Horticulture Action Plan. The aim of the day was to allow officials to hear directly from growers about their operating environment, views, concerns and ideas – recognising that it is difficult for officials to travel to the regions to meet with those whom their policies and regulations affect.

"It's good to get out of the echo chamber of Wellington," said one senior official, while another remarked that they wanted to better understand the roadblocks facing growers and "meet these people, given I make policy for them".

The officials came from the Ministry for Primary Industries, Ministry for the Environment, Ministry for Business, Innovation and Employment, Environmental Protection Authority, and Horizons Regional Council.

Lewis Farms is a fourth-generation family business, famous for its asparagus and now, for its strawberries. Cam Lewis told the group about the workload growers face.

"One of the things I do every Christmas Day is I work out how many days I have worked without a day off and it was 122 days, seven days a week last year, and it's just too hard. But you can't half do growing. You either do it properly or not at all."

Catherine Lewis, a self-confessed 'compliance nerd' who takes care of the businesses' 11 audits, highlighted the duplication and inefficiency she faces, such as being asked by multiple government departments for the same information and at busy harvest times.

Woodhaven Gardens now grows 10 percent of New Zealand's fresh cut greens. Jay Clarke of Woodhaven Gardens didn't hold back, as he sought to ensure officials fully understand the challenges facing vegetable growing in New Zealand, under current regulatory settings.

"I would like you to understand how dangerous the precipice we are sitting on is, in terms of food security for fresh vegetables in this country."

Thirty-five central and local government officials visited Horowhenua to better understand the challenges growers face

Jay says the vegetable industry has played by the rules: reduced its environmental impact and increased its social licence. He is yet to meet a vegetable grower in New Zealand that says the industry shouldn't be held to account and grow in an environmentally sustainable manner.

"Every grower is happy to do that. But we need regulators to understand what is practical in terms of what we can and can't achieve."

The strongest feedback from the group was a realisation of how many stressors growers have to deal with.

"Small-medium scale commercial fresh vegetable production operations in New Zealand are becoming increasingly difficult to sustain," an official noted after the event. "Government and other regulatory agencies need not make things harder than they need to be."

For many of the officials, the experience highlighted the drivers growers have for being part of the horticulture sector, including their moral obligations regarding employment, community development and national food security.

"Businesses face recurrent audits amid thin profit margins, urging efficient processes for sustainable operations. Vegetable growers seek equitable government support for food security crops over exports. I'll prioritise this concern in our research and policy analyses."

Anna Rathé, Aotearoa Horticulture Action Plan programme manager, reflected that "the day was a great success. Listening to the exchange between growers and officials I'm certain that the field trip provided useful exposure to the industry and generated some excellent, robust discussions."

BOTH CHALLENGES AND OPPORTUNITIES AT WOODHAVEN GARDENS

Jay Clarke of Woodhaven Gardens says the new coalition government said in its campaigning that it wants to make vegetable production a permitted activity again, so that growers have a pathway for consent.

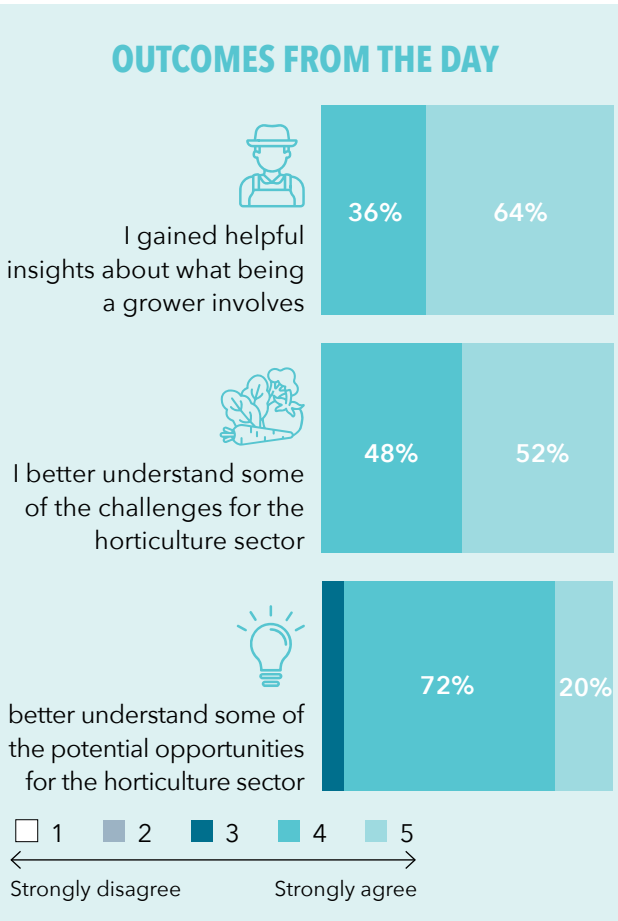
"Now we need to see action because the industry is losing its grower base and the bastion of knowledge held by the people who know how to grow vegetables on a commercial scale. These growers provide the bulk of New Zealand's food security and do it well, in terms of managing environmental impacts."

Jay says he is a fan of the freshwater farm plan model, which looks at the practical mitigations growers should have on their farms to deal with major environmental risk factors, for example, sediment or phosphate loss.

"This approach is fantastic because what it is doing is tying producing the food to the lowest environmental impact possible, through practice and things that growers can pick up and look at and go, 'I can implement this'."

Jay Clarke of Woodhaven Gardens sought to ensure that officials fully understand the challenges facing vegetable growing in New Zealand

OUTCOMES FROM THE DAY



Cam Lewis from Lewis Farms told officials about the workloads that growers face

SHARING A PASSION FOR GROWING AT LEWIS FARMS

Cam and Catherine Lewis and Cam's father, asparagus and Recognised Seasonal Employer (RSE) scheme pioneer Geoff Lewis, make up the trio who run Lewis Farms today. "I'm a great believer in family farms," Geoff says, "However, because the remaining family farms have got bigger, it is only the corporates that can afford to buy them, if they come up for sale.

"As a result, unless we have kids like my grandchildren who are passionate about what we do coming through, family farms will just not last, and I think that's a bad thing.

Cam says Lewis Farms is excited about continuing to build the business to a point where they can employ more high-level people so one day, they can step back a little bit.

"We're conscious that we need to be role modelling to our kids – six, eight and ten – that growing is fun, so they might want to have careers in horticulture, like us.

"We choose to grow. Both Catherine and I could go back to our respective policy and banking careers, and Dad could go to the beach. But we grow because we love it."

AOTEAROA HORTICULTURE ACTION PLAN

The pilot cross-pollination day is the start of an action agreed in the Aotearoa Horticulture Action Plan, to "set up a programme to increase knowledge of the horticulture sector and policy between government officials and the sector." Feedback from the participants indicates the cross-pollination day proved successful in building officials' understanding of the horticulture industry.

Launched in 2023, the Aotearoa Horticulture Action Plan provides a guiding compass to achieve the ambitious goal of *doubling the farmgate value of horticultural production from $6 to $12 billion by 2035, in a way that improves prosperity for our people and protects our environment*. The plan was developed collectively, with input from Industry, government, Māori and the science community. It creates efficiencies by allowing the partners to align efforts and investment towards common actions.

ADAPTATION KEY FOR NORTHLAND'S HORTICULTURE

Photos by Trefor Ward

Kathryn de Bruin is one of three trustees of Te Tai Tokerau Water Trust, which has three reservoir projects primarily being developed to encourage the transition to higher value horticultural land use

Regions like Northland have been hit hard by many adverse weather events, but growers are determined to adapt. HELENA O'NEILL talks with Kathryn de Bruin and Anna Curnow about the work underway to secure the future of communities and horticulture in Northland.

Kathryn de Bruin is an accountant, Horticulture New Zealand board member, and kūmara grower with her husband Andre near Dargaville.

"Our whole farm got flooded during Cyclone Gabrielle and we lost about 80 percent of our crop. It wasn't unique, the whole industry had people who were affected. The biggest damage that happened to us happened when the Northern Wairoa River flooded over its banks after the cyclone. It was that flooding that was the nail in the coffin for us," Kathryn says.

Floodwaters were up to chest height on parts of the property.

The De Bruins received the Cyclone relief funding from the Ministry of Primary Industries which was used to fix up the riverbank damaged during the cyclone. This was supplemented with some of their own money, to ensure their property has a riverbank that is high enough to protect it from flooding during king tides.

"There has been no planning at a local level around that sort of event … there's no comprehensive management around this."

One way Northland can adapt is through land use change and implementing projects supporting potential conversions to horticulture.

> "The trust is building the reservoirs, and when they're completed, they will be 'sold' into co-operative type companies to be owned by the people who are using the water

Suitable land for horticultural development is increasing in value across the country and a consistent supply of water is key to unlocking this potential. With access to water, landowners can consider more diverse and profitable land uses. Te Tai Tokerau Water Trust says that reliable water means consistent production for existing growers and reduced risk for those looking to switch to a new, higher-value crop.

Once completed Te Waihekeora reservoir at Redhill on the Northern Pouto peninsula will hold sufficient water to support around 1100ha of new horticultural development

Kathryn is also one of three trustees of Te Tai Tokerau Water Trust.

"It's not profitable to have a small block running animals, whereas it might be possible to be profitable with a small block with some sort of horticulture on it," Kathryn says.

The trust has three reservoir projects: Matawii near Kaikohe, Te Waihekeora in Kaipara, and Otawere at Waimate North. The scheme is primarily being developed to encourage the transition to higher value horticultural land use, as well as to supplement local town water supplies.

The trust received $68m from the government's Provincial Growth Fund to complete the first stage of the project – of this $8.5m is in the form of a grant, the rest is a loan. The next stage of development, which will see the schemes in both regions enlarged, will be funded by the successful implementation of stage one.

"The trust is building the reservoirs, and when they're completed, they will be 'sold' into co-operative type companies to be owned by the people who are using the water."

The project also aims to address disparities in Māori access to water for land development. Development of the scheme is expected to lift employment by 12 percent in the Mid-North and five percent in the Kaipara per annum.

"Northland in some respects is a poor cousin when it comes to infrastructure. There hasn't been any major infrastructure put into Northland for such a long time. This is one of the first big projects that has happened on a community scale."

The Matawii and Otawere reservoirs make up the Mid North Water Scheme around the Kaikohe region with a combined estimated storage of five million cubic metres to service up to approximately 1700 hectares of new horticultural land in the area.

> PUBLIC ADAPTATION PLANNING IS **A PROCESS OF BRINGING REPRESENTATIVES OF COMMUNITIES TOGETHER** TO UNDERSTAND THE RISK – UNDERSTANDING THE SCIENCE OF THE RISK AND THE CONSEQUENCES OF THOSE RISKS ON THOSE COMMUNITIES
>
> **ANNA CURNOW**

The Kaipara Water Scheme consists of the Te Waihekeora reservoir at Redhill on the Northern Pouto peninsula. Situated in a natural basin 75 metres above sea level, on top of rolling sand dunes, the reservoir is being constructed in two stages, and once completed will hold sufficient water to support around 1100ha of new horticultural development.

Kathryn says that the water scheme around Kerikeri offers a wider range of land use coupled with economic benefits through the development of horticulture operations. She hopes that the success of Kerikeri's water scheme will be seen in the Mid-North and Kaipara areas of Northland once the three reservoirs are completed.

"As the climate gets warmer, it's only going to become more important for people and animals, let alone horticulture."

> **Development of the scheme is expected to lift employment by 12 percent in the Mid-North and five percent in the Kaipara per annum**

Anna Curnow is passionate about the need for regions to embark on climate adaptation work to future-proof their communities. The former Kaipara District Council deputy mayor and climate adaptation specialist is a key member of a pilot programme based in Ruawai near the Northern Wairoa River and Kaipara Harbour.

Set up in 2021, the Ruawai Adaptive Pathways (RAP) pilot project aims to prepare for and respond to coastal hazards, flood hazards and sea level rise in the Ruawai area, land lying mostly at or below sea level.

Ruawai was chosen by Northland's four councils as the region's first pilot location, to provide information and modelling for the region and other councils around the rest of New Zealand.

"Public adaptation planning is a process of bringing representatives of communities together to understand the risk – understanding the science of the risk and the consequences of those risks on those communities. Each community is different, and each has different tolerances to risks," Anna says.

She says once risks are identified, a community decides what actions they want to take, with each council's job to "give life" to those solutions.

Anna says that insufficient funding and a lack of political will can be major barriers to local planning. Communities must have ownership of their climate adaptation actions, making informed decisions without the central government telling communities what to do.

"It's not a cheap process. We've had a lot of that engineering and scientific work done already. It needs resourcing and that's where councils were useful, as they were providing that resourcing. When I was deputy mayor, we did assign funding in the Long Term Plan dedicated to that pilot."

Late last year the Kaipara District Council (KDC) halted the community pilot for the rest of this financial year, much to Anna's disappointment. The programme was about halfway through its projected two or two-and-a-half-year duration. KDC's formal consultation on Ruawai Adaptive Pathways is planned to take place this month (March) as part of its Long Term Plan 2024–2027 discussions.

Find out more about the Ruawai Adaptive Pathways here: **www.kaipara.govt.nz/adaptive-pathways**

Vegetable Research Roadshow

Vegetables NZ – with support from Vegetable Research & Innovation (VR&I) – is hosting several grower workshops across the country, to highlight the research that is taking place in the vegetable industry.

This is a chance for growers to hear about recent research results as well as provide feedback to help direct future research work.

Each workshop will be tailored to the region in which it is taking place. The workshops will cover the Sustainable Vegetable Systems (SVS) project, the Nitrogen Decision Support Tool that's under development, A Lighter Touch (ALT) projects, integrated pest management and resistance management.

The crops focused on will include fresh vegetables, process vegetables, onions, potatoes, buttercup squash and tomatoes.

Roadshow schedule:

		starting at
Dargaville	Wednesday 21 February	4pm
Richmond	Tuesday 19 March	3pm
Pukekohe	Wednesday 10 April	3pm
Hawke's Bay	Thursday 11 April	4pm
Ashburton	Tuesday 16 April	3pm
Invercargill	Wednesday 17 April	4pm
Ohakune	Tuesday 30 April	4pm
Palmerston North	Wednesday 1 May	4pm
Gisborne	Thursday 9 May	4pm

Please follow the QR code here to register your attendance and notify us of any catering requirements.

Alternatively, you can register through https://www.freshvegetables.co.nz/news-and-events/

A Tasmanian brown lacewing adult, which is a key beneficial insect in integrated pest management, photographed as part of the A Lighter Touch biodiversity project.

Photo by Gail Stent Photography

Lettuce integrated pest management workshop, held by Vegetables NZ and A Lighter Touch in Pukekohe in late 2023.

Photo supplied by Plant & Food Research

Register now!

If you have any questions, please contact:
Daniel Sutton, Vegetables NZ research, development and extension manager.
M: 027 473 2381, E: daniel.sutton@freshvegetables.co.nz

GOOD CROPS CRUCIAL FOR KŪMARA GROWERS

Helena O'Neill

Kathryn and Andre de Bruin's kūmara fields near Dargaville in February. Photo by Trefor Ward

Twelve months on from Cyclone Gabrielle kūmara growers are quietly hopeful for a good harvest season.

When the cyclone hit the Northland region last February, kūmara crops were just days away from harvesting. Doug Nilsson lost almost his entire crop to the subsequent flooding at his property near Dargaville.

Doug, who is also the chairman of the Northern Wairoa Vegetable Growers Association, says this year's kūmara crops are looking "pretty good" and are of reasonably good quality and around average yields.

"Acreage-wise we're back to normal levels, or slightly above. Last year we were considerably down as an industry due to the wet spring and early summer – we just couldn't get them planted. And then the impact of the cyclones that decimated what we did get in. The positive thing is that we have no lingering effect of the cyclone on our soils."

In response to Cyclone Gabrielle, Northland Rural Support Trust coordinated more than a dozen collaboration dinners across Northland and sent facilitators to provide one-on-one support. Facilitators visited and delivered care packages to all kūmara growers in the greater Dargaville area, sharing information about resources from the Ministry of Social Development and the Ministry for Primary Industries (MPI).

MPI funded a kūmara seed contingency scheme with the aim of providing at least 77 percent of the required seed for the planting season.

> **"With the kūmara season only just underway, Doug hopes to have a good supply of quality kūmara for the consumer this year at a fair price to both growers and consumers**

Doug estimates the seed programme provided around 70 percent of what growers needed to seed crops.

"I think the MPI programme was well received by many growers. I was a big part of getting that because we lost nearly 99 percent of our kūmara, and that was all our seed lines as well. Financially that was a big help to me, but the downside is that I'm bringing kūmara in that could potentially have somebody else's scurf or black rot into my operation. They're not my seed line, but somebody else's so I'll have to build that back up again."

Doug says it was a late start to get plants in the ground due to a wet and cold start to the season.

"It was quite wet and cold early on, some of that was a carry-on from a really wet summer and wet winter. Growers were struggling to get on the ground early."

He's expecting to start harvesting in early March.

"Consumers have had a [tough time] with high pricing and probably some inferior product on the shelves because we couldn't tell if they would have that hard centre – you would cook them up and they were hard. That wasn't something you could pick up or visibly tell. That was a result of the flooding."

A good yield is crucial for the majority of kūmara growers. Cyclone Gabrielle's devastation came on the back of several difficult kūmara seasons meaning poor returns for many growers.

"At the moment many growers haven't seen much income for a long time. For some, this season will make or break their business.

"The cost of production is quite expensive for kūmara. You have to grow and run a seed scheme, and that takes a couple of years. You have to grow that crop of plants which is expensive, and then harvest it. Then you have to hand plant it, then when you've got rid of most of the weeds, you have to hand weed. It's very labour intensive. And labour is getting more expensive and harder to get."

Doug Nilsson, pictured during a previous season

With the kūmara season only just underway, Doug hopes to have a good supply of quality kūmara for the consumer this year at a fair price to both growers and consumers.

VEGETABLE CROPS FOCUS OF CYCLONE GABRIELLE RECOVERY PROJECT

Contributed by Plant & Food Research

Crop eco-physiologist, Dr Eduardo Dias de Oliveira, is leading the Promoting Crop Resilience in Silt-Affected Landscapes project

Scientists from Plant & Food Research are running trials in Hawke's Bay to gain a better understanding of how key vegetable crops respond when being grown in silt affected areas.

Flooding during Cyclone Gabrielle resulted in several million cubic metres of silt being dumped on orchards, farms, roads and properties. These extensive layers of silt, or alluvium, have adversely affected soil conditions, posing challenges to cultivation. In Hawke's Bay, some vegetable growers have retired plots of land while they weigh up the viability of resuming farming in these areas.

The Promoting Crop Resilience in Silt-Affected Landscapes project got underway in October 2023 and is designed to help address these challenges faced by growers and industry. The work is being funded by Plant & Food Research, with the first stage of the project expected to be completed by June.

"Cyclone Gabrielle has had a significant impact on horticulture, arable, and vegetable crop farmers in affected areas, resulting in extensive damage to cropping lands and significant financial losses," says project leader, crop eco-physiologist, Dr Eduardo Dias de Oliveira.

The research is being conducted on a commercial farm in Hawke's Bay that was impacted by alluvium in the 2023 cyclone event. One hectare of land with varying silt depths has been planted in four different vegetable crops – carrot (small seeds), peas (medium seeds), maize (large seeds), and transplanted broccoli. These crops are economically significant in the region and have diverse seed sizes and root structures.

> **"The ultimate goal is to develop industry-specific resources that not only aid decision-making and facilitate a swift recovery from the aftermath of Cyclone Gabrielle but also contribute to future recovery efforts**

"Silt has no defined structure, and we know very little about the dynamics of water and nutrients in the silt. Also, despite varying texture, silt is usually extremely fine, and that may reduce soil oxygen, and reduce root ability to grow and reach the original soil below the silt. That's why we are doing this work, to understand how varying silt depths affect the performance of these crops."

Plant & Food Research organised a field day at the Hawke's Bay site to share findings with growers

The trial site is being regularly monitored to evaluate growth and yield and test the interactions of plant roots with the silt. Alongside this work, trials are also being undertaken in a greenhouse at Plant & Food Research's Hawke's Bay research centre, using different ratios of alluvium-to-soil to better understand how crops perform in these different conditions.

"Our initial findings indicate that small-seed crops may struggle to establish in the silt as their roots may have less vigorous growth early on. This may reduce their ability to explore the silt, absorb nutrients in the silt or reach the original fertile soil beneath," says Eduardo.

Moving forward, the research project will aim at understanding how different management practices could enhance the resilience of the farms.

Some of the questions Eduardo says he hopes to answer through the project include:

- Should silt be stripped off immediately?
- Can crops grow into silt?
- Can the silt be incorporated into the original soil?
- What is the optimal depth for silt incorporation?
- And, depending on the chosen practice, what is the timeline for full farm recovery?

"These questions will guide our investigation into enhancing the overall performance and adaptability of these crops."

> **"Silt has no defined structure, and we know very little about the dynamics of water and nutrients in the silt**

The ultimate goal is to develop industry-specific resources that not only aid decision-making and facilitate a swift recovery from the aftermath of Cyclone Gabrielle but also contribute to future recovery efforts in the face of similar events. This approach involves providing insights and strategies for the industry, ensuring resilience and adaptability to unforeseen challenges in the future. Some of these strategies could include improved landscape design, approved selection of crops, and management practices that improve soil health.

"The past 12 months have been exceptionally challenging for affected growers, but we've witnessed the industry coming together in response to the cyclone, and this project is just a small contribution to supporting the ongoing recovery efforts."

CRATES: AN UNSUNG SUCCESS STORY

Glenys Christian

A new facility in East Tamaki will increase crate washing and drying capacity by 250 percent

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

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

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

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

"No news is good news," she says.

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

> "In an average peak period day 37,000 crates can go through the new plant

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

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

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

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

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

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

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

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

THE PCRS CAN LAST FOR 10 TO 15 YEARS, OR AROUND 140 USES

WHAT'S YOUR VIEW OF GMOS AND NEW BREEDING TECHNIQUES IN HORTICULTURE?

NZGrower staff

After 30 years of little change, 2024 might usher in a big change in New Zealand's genetically modified organism (GMO) regulations. The government coalition agreements to liberalise the GMO regulations have reinvigorated debate about the technology. Horticulture New Zealand encourages all growers to join the conversation as the industry engages with the government on how New Zealand regulates GMOs and new breeding techniques.

WHAT IS A GENE EDITED PLANT AND IS IT DIFFERENT TO OTHER GMOS?

While there are no agreed definitions, gene editing often refers to new breeding techniques developed in the last decade, including CRISPR-Cas9, which involves making changes at targeted, precise points in the genetic code, often without adding DNA. These new tools are more efficient and less expensive than older genetic modification technologies established in the last century, which tend to make changes and add DNA at uncontrolled, random points in the genetic code.

Many countries have grappled with the definition and decided that organisms developed with new breeding techniques should be regulated differently than those developed with older technology. Some countries have updated regulations in a narrower way – regulating organisms modified without any insertion of external DNA differently from those organisms modified with added DNA or genetic material.

However, many people see the distinction between the technologies as unnecessary, arguing that any modification that does not occur naturally will result in a GMO (as is currently the case under New Zealand regulations).

WHAT DOES GENETIC ENGINEERING HAVE TO DO WITH CLIMATE ADAPTATION?

Many researchers, lawmakers and investors believe that new breeding techniques could address the looming threat of climate change by developing plant varieties that are climate resilient, pest resistant, produce higher yields or require fewer fertilisers and pesticides, and potentially at a faster pace than through traditional breeding.

Conversely, genetic engineering has also been used to create herbicide-tolerant crops, which could lead to increased use of weed sprays and increased risk of herbicide resistance in weeds.

There are also scientists who argue that agroecology and traditional breeding techniques have already delivered far better solutions for climate adaptation than decades of GMO development. They suggest that there are likely more promising traditional breeding or agroecological solutions to climate change that have not been fully explored.

WHAT IMPACTS COULD GLOBAL REGULATORY CHANGES HAVE ON GROWING IN NEW ZEALAND?

In the 50 years since the introduction of genetic engineering, New Zealand horticulture has proven very competitive on global markets without it. New Zealand's current regulations do not in theory prevent such developments, however in countries with liberalised regulatory regimes, the efficiency of new breeding techniques is enabling researchers to develop products on a larger scale.

As these become commercialised, this produce grown overseas could compete with New Zealand horticulture. As an example, gene edited fresh produce such as non-browning apples could become a consumer preference. New Zealand growers may not be able to produce a competing product through traditional methods or grow the gene edited variety because of our current GMO regulations.

WHAT COULD BE THE BENEFITS OF NEW BREEDING TECHNIQUES FOR VARIETY DEVELOPMENT?

Professor Richard Newcomb, chief scientist at Plant & Food Research, says New Zealand cannot keep up with the pace of climate change without new breeding techniques

New Zealand already has an impressive track record of developing new varieties to cater to changing consumer preferences around the globe, says Professor Richard Newcomb, chief scientist at Plant & Food Research. He has spoken with several industry boards and growers about the demand for new genetic engineering technology to supplement traditional selective breeding techniques.

"Consumer demand and time to market is really speeding up. The wellness trend is really ramping up. At the same time, the input traits we need to consider are changing fast. Climate change, temperature, pests and diseases – for example, could we develop plant resistance to Brown Marmorated Stink Bug before it gets here? Horticultural crops require winter chilling, and that will be a problem for just about all our perennial crops. We need to be ahead of the game, but with the traditional approach we cannot keep up with the pace of climate change."

New breeding techniques have developed quickly. Emerging technologies, such as CRISPR-Cas9 which resulted in a 2020 Nobel Prize for its developers, allow precise modification of genomes. "The increase in precision is shifting thinking about genetic engineering – the perceived risks are decreasing. Overseas, only benefits have been observed."

Richard says that New Zealand is reasonably well-prepared to catch up with global biotechnology. "We'll need some infrastructure, such as containment greenhouses, but we're not expecting an avalanche of GMO technology in New Zealand. We have to have those conversations first with partners, put a plan together, make sure we are aligning with our target markets. We have to balance a whole range of factors – not just economic but also environmental and consumer perception."

HOW WILL GENETIC ENGINEERING AFFECT YOUR MARKETS?
SHARE YOUR OPINION IN *NZGROWER*

In the coming months, *NZGrower* will continue our coverage of GMO and new breeding techniques. Note that views expressed do not necessarily reflect Horticulture New Zealand's position. To share your opinion, please email John Gauldie, acting editor: **editor@hortnz.co.nz**.

GMOS: LEARNING FROM THE AMERICAN ORGANIC MARKET

Tiffany Tompkins, chief executive of Organics Aotearoa New Zealand

Organic standards differ around the world, but one thing they all agree on is that genetic engineering and GMOs are prohibited.

"The output is based on natural production and that's why consumers buy organic products," says Tiffany Tompkins, chief executive of Organics Aotearoa New Zealand (OANZ). Now based in Blenheim she is an American who has wide international experience and been an organic supplier to United States retailers like Whole Foods Market.

She has witnessed how the United States has grown into both the world's biggest producer of GMOs, as well as the world's biggest market for organic products.

"That's a fact that I sometimes hear as an argument in favour of genetic engineering, but this has created huge problems for organic and conventional growers in the States. GMO crops contaminating non-GMO crops has led to a lot of lawsuits. We also see growers getting stuck into a cycle of dependency on biotech companies for seeds, herbicide and pesticides and fertilisers, only to grow commodity-level crops that pressure farmers to maximise yields, further perpetuating monoculture farming practices. All the while, the intellectual property is bound up with corporates. The money is not going into grower hands."

The relaxation of regulations on genetic technologies in the United States has eroded consumer confidence in the country's food supply, Tiffany says. This presents an incredible opportunity for New Zealand's exporters.

"New Zealand has a great reputation as an island nation producing guaranteed GE-free food and that's what consumers are increasingly looking for."

With the United States organic market valued at over US$64 billion and 15 percent of all fruits and vegetables sold in the USA now organic, Tiffany says the astounding fact is that 80 percent of organic products are imported to meet this demand.

Market opportunity is only one benefit of the organic sector. For example, in the European Union (EU), she says lawmakers see organics as a key driver to increase sustainable value for growers and communities, both in economic value and environmental value.

OANZ argues for strict regulation and oversight of genetic engineering to prevent unintended consequences. The long-term effects of the technology on human health and the environment are not fully understood.

> "New Zealand has a great reputation as an island nation producing guaranteed GE-free food

"We don't know enough about the soil microbiome already, let alone with genetically engineered plants. Once they are in the ground, in the wild, what will be the effect on biodiversity? What will be the effect on our economy?"

BIOTECHNOLOGY IS PART OF OUR DAILY LIVES

Biologist Revel Drummond is currently on secondment to advise the Prime Minister's chief science advisor. Photo courtesy of Plant & Food Research

In 2003, thousands of New Zealanders marched down Queen Street in Auckland to show their opposition to GMOs. But opinions are shifting, Plant & Food Research biologist Revel Drummond believes. He is currently on secondment to advise the Prime Minister's chief science advisor Juliet Gerrard.

"When people realise how much they already rely on biotechnology in their everyday lives, it makes it a lot less scary. Even here in New Zealand we interact with genetic engineering every day. Almost all cheese in New Zealand, washing machine powder, medicines – they all use enzymes created with genetic engineering."

He says food safety authorities around the world have concluded that there are no new hazards specific to GMOs. Over the last 30 years almost three billion hectares of genetically engineered crops have been planted around the world – mostly arable crops but also apples, potatoes, eggplant, squash, papaya and pineapple. Products from those crops, such as canola oil, are already consumed here in New Zealand; the oil itself contains no modified DNA matter so is not labelled as GMO.

Despite the world's rapidly developing biotechnology, New Zealand is still regulated by the Hazardous Substances and New Organisms Act 1996, modified in 2003 to tightly regulate research into genetic modification.

Last month, parliamentarians in the EU voted in favour of a proposal to relax regulations on new genomic techniques that do not introduce genetic material from species that would not otherwise be able to cross. Until now the EU has had the strictest GMO rules in the world – on a par with New Zealand – requiring exhaustive assessments that have more or less prevented any genetic engineering developments.

> "Even here in New Zealand we interact with genetic engineering every day

"The new rules leapfrog the EU to a much more permissive regime, regulating gene edited plants with a limited number of changes with the same rules as new plant varieties developed with traditional breeding techniques. It's not surprising when you think that traditional breeding can result in enormous changes, such as nashi pears or plumcots, with many thousands of trait changes – and none of which have had any impact on human health."

There are certainly risks, he says, but the risks apply to new varieties created with traditional breeding techniques too. He gives potatoes as an example, which are well known for potential toxins. But food safety is not the only concern, he says. New Zealand should take into account all the social, cultural and ethical considerations.

"We have to decide how we will interact with this biotechnology to manage the risks. Yes, biology is messy. Life is messy. But we should look at how biotechnology can improve our lives."

CLIMATE CHANGE TRIGGER FOR SUSTAINABLE, RESILIENT LAND USE

Elaine Fisher

Phoebe Scherer is technical laboratory manager at Apata Group Limited

Increases in extreme weather events are highlighting the need for sustainable and resilient forms of land use, says Phoebe Scherer, technical laboratory manager at Apata Group Limited.

"Since I began working in horticulture six years ago, I don't think the North Island has experienced what could be classed as a 'normal' growing season. There have been droughts, floods, cyclones and everything in between.

"Growers have faced so many curve balls that they need resilience built into their businesses. They have got to have sustainable and resilient portfolios of land use. It is likely that climate change will result in changes in land use."

Phoebe joined Apata in January this year, after six years with Fruition Horticulture in Tauranga.

"We worked with growers of kiwifruit and avocado in the Bay of Plenty but also with orchardists from the Far North to Wellington. Some of our work included feasibility studies looking at land use most suited to particular areas, including potential dairy conversions in Taranaki which has similar volcanic soils to the Bay of Plenty.

> "Phoebe's love of science and the natural world was fostered by her parents who encouraged her curiosity

"We used to joke at Fruition that we may be out of a job in the Bay of Plenty and in 20 years, Christchurch would be the best place to grow kiwifruit."

Phoebe started at Fruition Horticulture as a summer student after returning to New Zealand from her OE and was subsequently offered a full-time role as a consultant.

Her new role at Apata involves overseeing the work of the company's laboratories at the Katikati Turntable Hill Road and Te Puke Mends Lane sites. In mid-January the teams were gearing up for the kiwifruit harvest through crop maturity monitoring, crop estimation including fruit size and reject rates, providing data to growers and the harvest and post-harvest teams.

Horticulture is not the career Phoebe planned when she studied for a Bachelor of Science (Hons) Biology and Anthropology at the University of Auckland, but now she thoroughly enjoys the industry. "I'd recommend a career in horticulture to young people – women especially because there is so much variety and so many different jobs from outside in the orchard to management, to business or the technical side.

"This is a growing and evolving industry which will only keep getting better with the move to precision horticulture. It's not a solely male-dominated industry as people may think. There is a really great developing support network (Women in Horticulture) for women coming into the industry. I have a network of friends and mentors I can rely on."

Crop damage from wild animals was one of the challenges during Phoebe's time as a volunteer in Namibia

Born in New Zealand, Phoebe and her family moved to the United Kingdom when she was three, returning to Tauranga around seven years later. "I went to Aquinas College in Tauranga where I was able to pursue a lot of different interests in science.

"I was in the New Zealand Biology Olympiad training group and although I didn't go to competitions I had the chance to experience what it is like to study at a university. I had a trip to a London International Youth Science Forum with lots of lectures and workshops and got to go to CERN (the European Organisation for Nuclear Research) to see the Large Hadron Collider, the most powerful particle accelerator ever built. That was amazing.

"How many 17-year-olds get to see how scientists probe the fundamental structure of particles that make up everything around us?"

Phoebe's love of science and the natural world was fostered by her parents who encouraged her curiosity. "I read a lot and remember watching David Attenborough and National Geographic programmes and decided I wanted to do science."

After finishing university, Phoebe spent four months, on two separate occasions, as a volunteer with the Naankuse Foundation in Namibia, helping with research activities into mitigating human-wildlife conflict.

"Apart from tourism, Namibia's biggest industry is farming and it's pretty hard if there are wild animals which eat your livestock and crops.

> **"I'd recommend a career in horticulture to young people – women especially because there is so much variety and so many different jobs from outside in the orchard to management, to business or the technical side**

"Some of the solutions included putting radio tracking collars on leopards which were being persecuted by farmers who thought they were preying on their livestock. The tracking showed this was generally not the case."

The solution to preventing elephants eating crops was even more innovative. "Elephants have really sensitive taste buds in their trunks so planting chillies around vegetable gardens and crops worked."

To join Women in Horticulture, visit: **www.unitedfresh.co.nz/women-in-horticulture** and follow us on Linkedin.

TECHNICAL

THE LATEST INNOVATIONS AND IMPROVEMENTS

52 NORTHLAND RAINFALL IS HIGHLY VOLATILE

Photo by Trefor Ward

TOMATO INDUSTRY TAKING PROACTIVE APPROACH TO BE PREPARED FOR A *PHTHORIMAEA ABSOLUTA* (*TUTA ABSOLUTA*) INCURSION

Lisa Wong : Market Access Solutionz

What is *Phthorimaea absoluta* and why is it a risk to the tomato industry?

Phthorimaea absoluta is the original name for what is commonly known amongst growers as *Tuta absoluta*. It is a major insect pest in tomato production areas in parts of the world, widespread in Europe, South America, Africa, the Middle East, and western regions of Asia. In some of these production areas, crop losses of 50 to 100 percent and extensive economic damage have been reported.

Tuta absoluta is also commonly called tomato leafminer because the larvae cause leaf mines in the leaves of tomato and other host plants, as shown in Figure 1. They also burrow into the fruit, as seen in Figure 2. Figures 3 and 4 show the adult and larval stages. Impacts overseas have seen an increase in tomatoes being sent for processing, a reduction in value, closure of trade routes, increased insecticide application, and increased production costs.

An incursion of *Tuta absoluta* would threaten New Zealand tomato exports as most of our key export markets are free from this pest. Domestically, there could be a reduction in the availability of fresh tomatoes, l eading to potential price increases.

How do we keep *Tuta absoluta* out of New Zealand?

The first line of defence to keeping *Tuta absoluta* out of New Zealand is at the border where consignments of imported tomatoes and other host crops are inspected for unwanted organisms (pests which are currently not in New Zealand). Countries that export tomatoes to New Zealand are required to meet conditions set out in Import Health Standards which specify any treatments or measures that may be required to manage the risks associated with imported fresh produce. However, despite best efforts an unwanted organism could still unknowingly enter the country, and lead to an incursion.

Figure 1. *Signs of leaf damage and a larva on a tomato leaf. Photo credit: Metin Gulesci, Bugwood.org*

What has TomatoesNZ been doing to prepare for an incursion?

TomatoesNZ has been working with the Ministry for Primary Industries (MPI) to produce guidelines that will be used by response teams if there is a *Tuta absoluta* incursion in New Zealand. These guidelines, called Operational Specifications, are science-based and will inform the operations of a biosecurity response. By working together, MPI and TomatoesNZ can ensure the best outcomes for the tomato industry.

Operational Specifications outline the processes to be used by the response team with vital information to ensure control and eradication plans can be developed and implemented quickly. The more rapidly an incursion can be determined, the more quickly the response can be initiated, and the outcome will be less damage to crops and have less effect on livelihoods. The situation can quickly worsen if it takes longer to respond, making it more difficult to eradicate the organism.

***Figure 2**. Signs of fruit damage.*
Photo credit: Metin Gulesci, Bugwood.org

Figure 3. Tuta absoluta *larvae range from 1 mm long in the first instar stage to 8 mm in the fourth instar.*
Photo credit: Marja van der Straten, EPPO

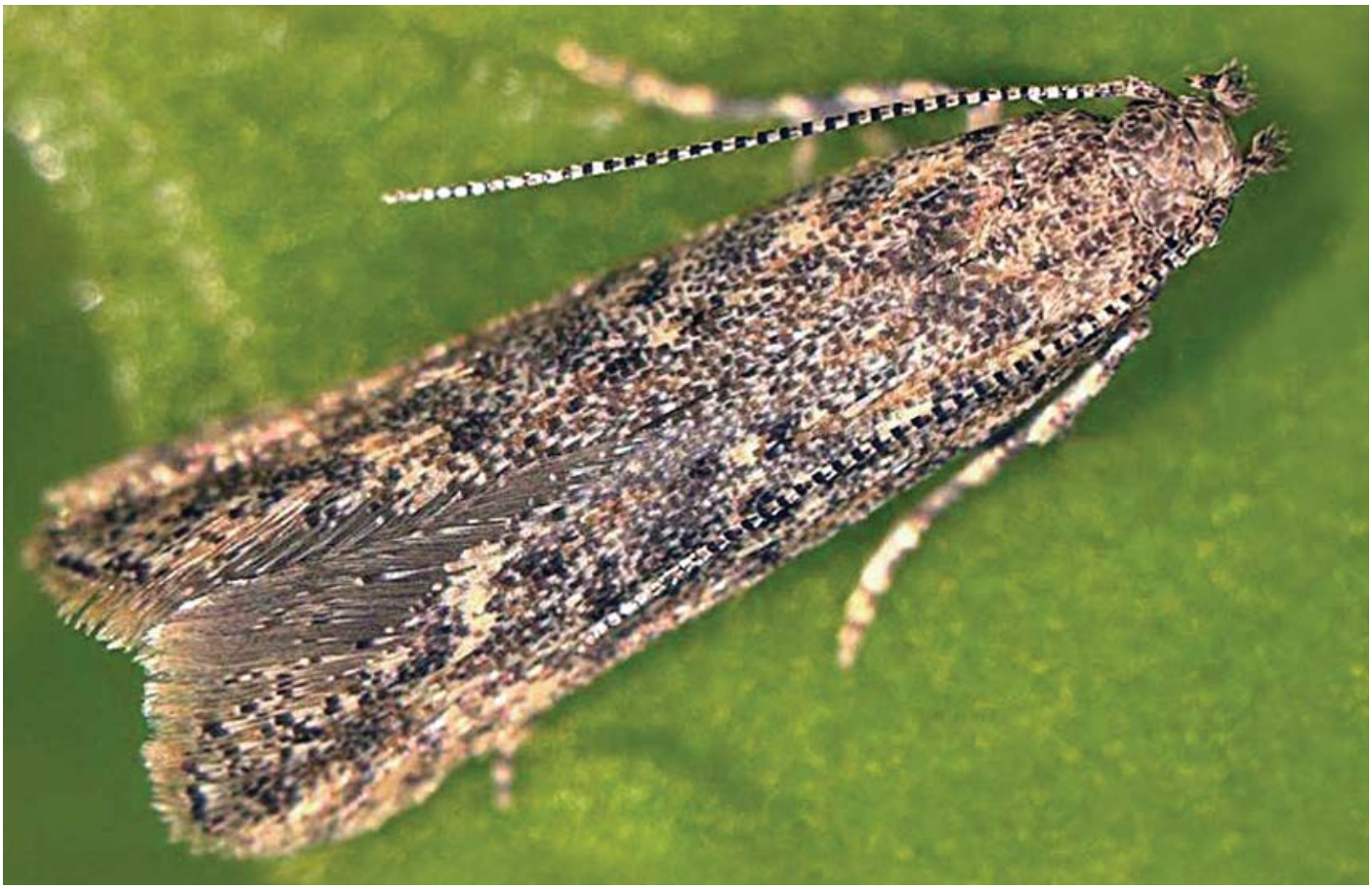


Figure 4. Tuta absoluta *adults are approx. 10 mm long. Photo credit: Marja van der Straten, Bugwood.org*

Acting quickly is key to a successful outcome. It will be easier to control the incursion and eradicate the organism because it has not spread too far, and the response will take less time. A shorter response will also be less expensive because industry and MPI have already agreed how the response should be run. If the response is over sooner, there will also be less disruption to production.

Previous responses have taught us that the sooner a response can begin, the more likely there will be a positive result in terms of the overall impact on the whole industry.

What do growers need to know?

What happens if *Phthorimaea absoluta / Tuta absoluta* is suspected?

If *Tuta absoluta* is suspected in an area, MPI will investigate to confirm the suspected detection and determine the extent of the spread of the insect. Response zones will be set up with an inner zone of approximately one kilometre radius close to the suspected detection, and a wider zone of approximately ten kilometres radius. Response activities will focus on the inner zone where all insects and host material will be removed and destroyed. The wider zone will be subject to surveillance, random testing of host plants, and movement control of host plant material. The response zones can change depending on the surveillance results.

WHAT HAPPENS IF *TUTA ABSOLUTA* IS DETECTED AND CONFIRMED?

1. Response begins & response governance group is established

When a detection of *Tuta absoluta* is confirmed, a response will begin and a governance group will be established to provide oversight for the response. The group includes MPI response team members, technical experts, and industry representatives to ensure that the interests of growers are taken into consideration in any decisions, such as the ability to continue to operate during a response. Response governance is also responsible for setting the objectives of the response, such as to achieve eradication.

2. Movement controls on infested plant material and high-risk goods

Movement controls are a large part of managing a response to help reduce the spread of unwanted organisms from infested areas. Growers will be asked to do their part by limiting the movement of items that pose a significant risk in spreading the organism, including host plant material, fruit for sale or export, machinery, vehicles and other equipment that has been in contact with infested plant material.

Export tomatoes will also be subject to controls if they have been grown within or are moved through response zones. Any restrictions will need to satisfy the requirements of trading partners.

To further reduce the risk of spread, MPI will place signs around the perimeter of the response zone at major exit and entry points to indicate quarantine areas and restricted movement. There will be controlled entry to affected areas and properties, and property owners and residents will be notified there is a response in the area, and their obligations to avoid unintentionally transporting insects out of the response zone.

Permits, granted by MPI, may be needed to move host plant material and sell produce (fruit and vegetables) from the 'Controlled Area' designated by MPI. The produce may be subject to temporary restrictions which can include:

(i) applying post-harvest treatment and carrying out post-harvest inspection,
(ii) using packaging and transport systems that prevent insect entry,
(iii) extensive labelling on bins, cartons and containers.

These temporary conditions allow for containment and control during the response.

3. Removal, destruction, transport of infested plant material and fruit

In an outdoor or indoor setting, a similar approach can be used to remove host plant material from the risk zone and should take place immediately after official identification. In a greenhouse, the entire plant needs to be removed from the growing system and destroyed in a secure manner. Precautions need to be taken to avoid spreading insects, which may include applying insecticide to all plants, including those not infested.

Infested greenhouses need to be cleaned and sanitised before planting for the next production cycle. Other host plants in the zone around the greenhouse may also need to be treated and removed. It is important to follow the instructions of MPI to ensure that the most appropriate methods are used for plant removal, transport and disposal or destruction.

When a detection of Tuta absoluta *is confirmed, a response will begin and a governance group will be established to provide oversight for the response*

What information will I receive if my property is in the response zone?

MPI will place a 'Restricted Place' notice on the infested property, and this will specify the restrictions placed on the movement of risk goods to and from the property. Information on the 'Controlled Area' and a 'Notice of Direction' will describe the movement controls and the inner and wider response zones. Property owners in the response zone will also be notified of their obligations. Public events, such as farmers' markets, may also be affected, with plant material and fruit prevented from leaving the response zone.

Under the Biosecurity Act 1993, an appointed person will be available to answer questions and provide information. For example, questions could include:

- What help and support is available?
- Where and how can I get help?
- What are my obligations as a grower in the response zone?
- Is there compensation for loss of income?

Asking questions will help people understand whatwill be a stressful situation.

How does growing tomatoes in greenhouses affect a response?

Greenhouses are treated as being part of the outdoor environment as they have vents and are therefore open to the outdoors. The setting of the inner and wider response zones may take the size of the greenhouse into consideration. Because greenhouse grown crops are intensively worked during production, greenhouse workers can be trained to visually identify the early symptoms of *Phthorimaea absoluta* infestation. Visual checking would therefore be carried out on a regular basis.

When does a response end?

A response will end when the response objectives have been met or when a suitable plan is established for controlling the pest. This decision will be based on a scientific assessment of surveillance information and trade requirements. If eradication has been possible, in general, surveillance will continue for a period of time to provide confidence that *Tuta absoluta* are no longer present in the response area. Some actions such as trapping will be scaled down or stopped, and movement controls adjusted to minimise inconvenience.

What can growers do to help to reduce this risk of an incursion?

Maintaining good on-farm biosecurity and hygiene practices will go a long way in reducing the threat of a *Tuta absoluta* incursion. Installing and regularly monitoring insect traps, keeping staff up to date in pest identification and biosecurity practices are all a good way to approach all biosecurity threats.

In an incursion, good record keeping helps MPI trace the movement of potential risk goods, so keep records of visitors, contractors, and farm inputs such as plants, fertiliser, and growing media. These steps will not only reduce the threat of an incursion but will also help keep the threat contained if *Tuta absoluta* is found. Continue to maintain best-practice hygiene procedures to reduce the spread of insects (adults, larvae, pupae, eggs) from the risk zone, and when moving between greenhouse, fields and adjacent properties.

ADAPTING NEW ZEALAND'S BIOSECURITY SYSTEM

Alex Bisson : HortNZ risk policy advisor

Western flower thrips and onion thrips are already in New Zealand

Warmer temperatures provide more favourable conditions for thrips to establish across wider regions

Global climate change is altering regional climates and the frequency of adverse weather events is increasing. Across the globe, this is ramping up pressure from pests and diseases on crop producers.

Prolonged drought conditions cause water stress to plants, and water logging from heavy rains or floods also triggers similar physiological plant responses. Events such as these reduce plant resilience and suppress plant immunity, which leads to poor plant health and inflated damage caused by pest infestations or infectious plant diseases.

Increases in average temperatures and stronger fluctuations in rainfall are furthering the global spread, development, and prevalence of disease-causing organisms such as viruses, bacteria, fungi, and insect pests.

For example, climate warming has already increased the abundance and impact of soil-borne fungal pathogens in areas that were not previously affected.

Andy Richardson, agronomist and managing director at Allium & Brassica Agronomy in the United Kingdom says that "the 10 warmest years recorded since 1884 in the United Kingdom have all occurred from 2003. And 2022 was the warmest year on record."

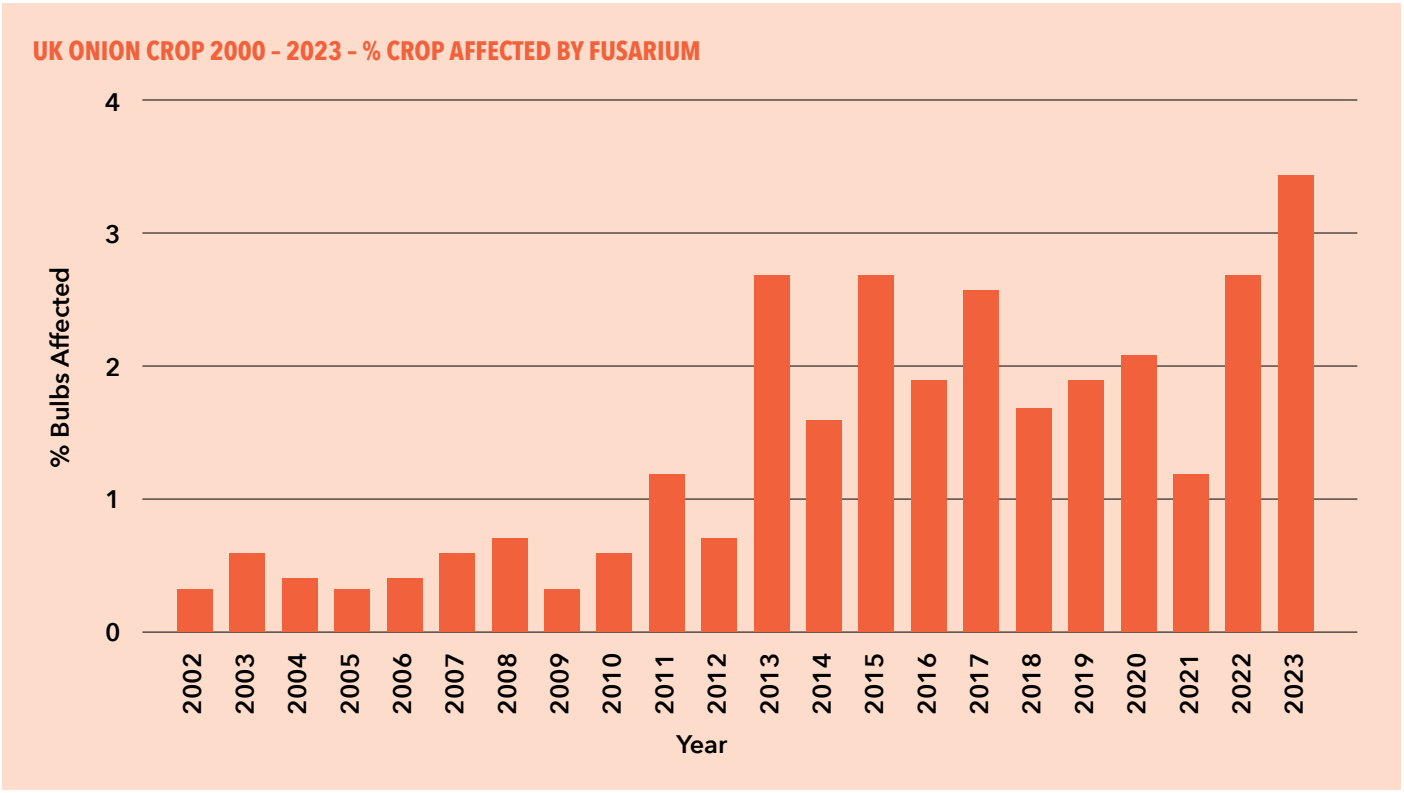
Subsequently, fungal-mediated disease outbreaks in onion and brassica crops have increased significantly.

"Fusarium basal rot, a soil-borne fungal disease, affecting bulb onions, only caused isolated minor issues before 2010," Andy says as an example. "Warming soil temperatures have significantly increased disease incidence, and over the past 12 years Fusarium has become the number one cause of loss in stored onions in the United Kingdom, and other parts of northern Europe."

While Fusarium basal rot has not been observed on New Zealand crops and the causative fungus (*Fusarium oxysporum f. sp. Cepae*) is not known to be present here, this example demonstrates how quickly a minor nuisance can become a major disease issue as the climate changes.

1–1.3MM IN SIZE

WITH THEIR TINY SIZE, THRIPS CAN EASILY HIDE OUT OF REACH OF INSECTICIDES AND OUT OF SIGHT



Warmer average temperatures also provide more favourable conditions for invasive insect pests like thrips to establish and develop across wider geographical regions.

"Thrips enjoy hot, dry weather and the speed of their lifecycle (like most insects) is determined by temperature," Andy says. "Increasing temperatures by as little as 1°C can have a significant effect on insect numbers and overall pest pressure."

> **"Climate warming has already increased the abundance and impact of soil-borne fungal pathogens in areas that were not previously affected**

Some particularly harmful thrips species like the Western flower thrips (*Frankliniella occidentialis*), onion thrips (*Thrips tabaci*) and melon thrips (*Thrips palmi*) are present in many countries, with Western flower thrips and onion thrips already in New Zealand.

Many thrips species have historically had more limited geographical distributions but this is changing as climatic conditions in other places become more favorable for thrips development and establishment. In the future it is likely that more thrips species may be capable of establishing in the New Zealand climate.

Fusarium has become the number one cause of loss in stored onions in the United Kingdom due to warming soil temperatures. Photo courtesy of Allium & Brassica Agronomy LTD., UK

On behalf of New Zealand's growers, Horticulture New Zealand advocates for high biosecurity standards to protect our horticulture industry. We engage with a variety of government departments with the aim to ensure that our biosecurity system is agile and capable of adapting to future challenges such as climate change.

On a weekly basis, HortNZ's Risk Policy team works with Biosecurity New Zealand (part of the Ministry for Primary Industries) on the import requirements for plants, plant products and fresh fruit and vegetables. We try to find a balance between protecting your existing crops from the arrival of new pests and diseases while enabling our sector to bring in the germplasm (seeds, nursery stock etc.) that is required for horticulture to adapt and thrive into the future.

As it is not possible to prevent everything from entering the country, HortNZ is also involved in setting the direction of government-industry agreements for biosecurity responses so that New Zealand is best prepared to control any high-risk pests or diseases that do make it to our shores.

While we engage with the government on pan-sector challenges, we'd like to encourage all growers to play your (very important!) part in New Zealand's biosecurity system. Be vigilant and monitor your crops for unfamiliar pests and disease symptoms. If you spot anything unusual, be sure to report it via the MPI pest and disease hotline or the Find-A-Pest app.

If you spot it, catch it, snap a photo and report it!

- Use the Find-A-Pest app if you find anything suspicious: **www.findapest.nz**.
- Call the Ministry for Primary Industries' pest and disease hotline **0800 80 99 66** or use the online reporting form.

FIND A PEST Download on the App Store GET IT ON Google Play

THERE ARE 7700 SPECIES

ONLY 1% OF THRIPS (ORDER THYSANOPTERA) ARE KNOWN HARMFUL TO CROPS

SHARING THE ONIONS STORY ONLINE

Onions NZ's new website tells the story of New Zealand-grown onions and expands the reach among the public and export markets. It was made possible through SFFF Humble to Hero funding and features media releases, industry updates, recipes, and events. Exporter details allow a direct link from end consumer to business relations.

Explore the website at: **www.newzealandonions.com**

NORTHLAND'S CHANGING CLIMATE

Georgina Griffiths : MetService meteorologist

Northland is warming

Northland has always been tagged as the 'winterless north' due to its mild winters and often benign winter climate, relative to the rest of New Zealand.

Climatologically, Northland sits well north at 35°S, is surrounded by relatively warm seas, and the 'subtropical ridge' (high pressure zone) commonly sits across Northland during winter (June–August). Air frosts are rare for Northland (with many years recording none), while ground frosts remain infrequent.

Against a background of warming (due to climate change), Northland has seen an upward trend in observed temperatures. The mean annual temperature at Whangārei Airport has increased from 15.8°C in the 1970s, to 16.7°C since 2010. Under climate change, annual temperature in Northland is projected to increase further, by up to 1.1°C by 2040 and up to 3.1°C by 2090.[1]

In line with the rest of New Zealand, the tails of the temperature distribution are already showing signs of being disproportionally affected. By that we mean, frosts in Northland are already rare, but climate change modelling expects frosts to vanish almost entirely.

> "The climate system should return to neutral levels during autumn 2024

Northland has always experienced a decent number of summer days with temperatures exceeding 25° Celsius, but under **all** warming scenarios, the **so-called hot day* counts dramatically increase**. Under climate change, summer is the season likely to warm the most in Northland.[1]

Figure 1 shows Whangārei observations from the last 56 years, with counts of summer days (December–February) hitting or exceeding 25° Celsius. The decadal average ranges between 26 and 29 days per annum prior to 2010, after which there is a jump to an average of 39 days per annum.

*Acknowledging that nowadays, no one in Northland would think of 25°C as a hot day!

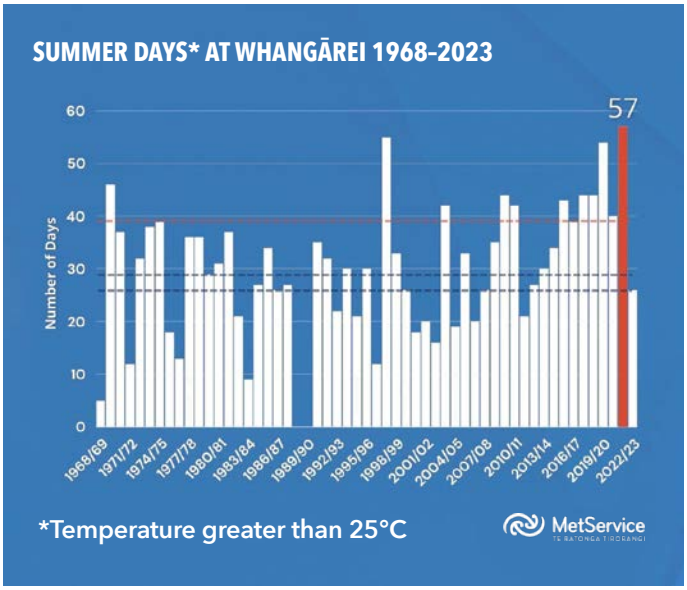


Figure 1. *Count of Whangārei Airport summer days with maximum temperature >=25°C. Blue dashed lines indicate an average decadal count prior to 2010 ranging between 26°C and 29°C respectively; the red dashed line shows the average count post 2010 (39 days)*

Northland rainfall is highly volatile, and always will be

Figure 2 shows the rainfall accumulation at Whangārei Airport from 1948 to 2023, noting that there are some years of missing data within this period. The extreme weather of 2023 (red line) is clearly visible, being the wettest year on record at this rain gauge. Other notably extreme wet years are 1960, 1956, and 2022 (green line). Flooding and ground water impacts in 2023 were exacerbated by the extreme rainfall of the year before (2022). What really stands out is the **large variability in rainfall** that Northland experiences from year to year, literally from drought to deluge and back again.

Given the large volatility in Northland rainfall overall, it may come as no surprise that climate change projections for Northland are uncertain,1 with a large span of outcomes modelled. That this, projected rainfall changes due to global warming are small for Northland prior to 2040, although there is a tendency toward a drier spring.

1. *Pearce, P.R. (2017) Northland Climate Change Projections and Impacts. NIWA Client Report for Northland Regional Council, 2017027AK.*

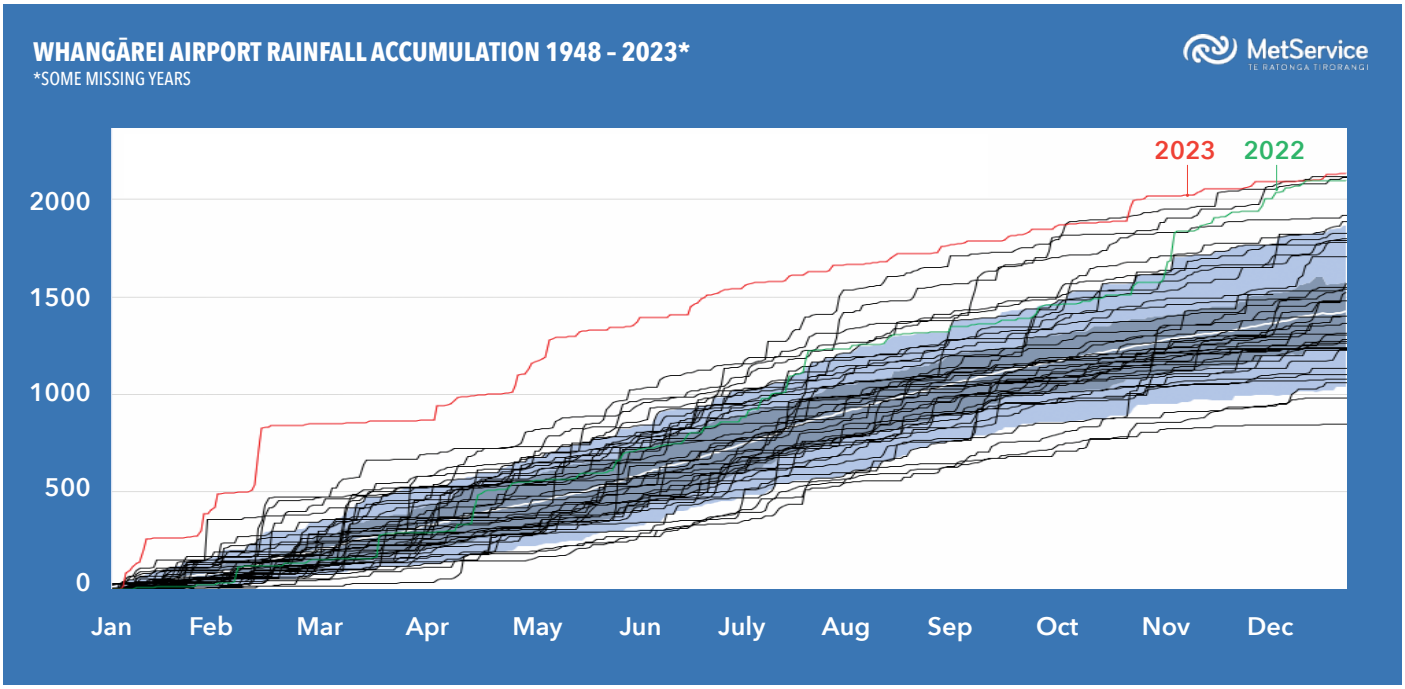


Figure 2. *Whangārei Airport rainfall accumulation from 1 January to 31 December, for the period 1948–2023.* The red line is the 2023 rainfall accumulation, the green line is the 2022 rainfall accumulation. The 10th/90th and 25th/75th percentiles are shaded light grey and dark grey, respectively. The thick white line is the long-term average accumulation. *Note: there are some years with missing data in this period*

By 2090, however, the modelling shows significant spring rainfall reductions (and associated increase in drought in prone areas), and an increase in summer to autumn rainfall. By 2090, extreme rainfall events are likely to increase for Northland, due to increasing moisture availability in a warmer atmosphere. However, the future impact of Tropical Cyclones for Northland remains uncertain.

Looking ahead – autumn projections

The 2023–2024 El Niño has already peaked in the tropical Pacific Ocean and is now easing. The climate system should return to neutral levels during autumn 2024.

The long-range forecast using the ECMWF (European Centre for Medium-Range Weather Forecasts) ensemble (based on 7 February data) predicts that the **Northland ridge will be slightly stronger than usual this autumn**, and there should be a **higher frequency of northwest winds** over New Zealand than normal. The models intersperse these northwesterly winds with a run of fairly settled weather under a High around April, give or take on timing.

In line with these weather patterns, a slightly drier than usual autumn is forecast for the Northland region, with above average to well above average autumn temperatures.

For the record, we can never rule out a late burst of tropical activity in the Coral Sea area around Fiji, spawning **a 'wild card' late Tropical Cyclone** to bring humidity and moisture down towards the upper North Island – but the risk is much lower than in 2023.

With respect to winter (June–July), El Niño is forecast to remain in its neutral phase, or possibly start to trend towards La Niña in the tropical Pacific Ocean.

Regardless of El Niño Southern Oscillation (ENSO), New Zealand winter weather maps will be driven by the usual battle between the Tasman Sea and the Southern Ocean weather systems vying for dominance. If the Tasman Sea becomes dominant, the North Island will typically see a warmer but wetter than usual winter. If the Southern Ocean fires up, the South Island would typically experience a wetter and windier than normal winter.

PRODUCT GROUPS

ALL THE LATEST NEWS FROM YOUR PRODUCT GROUPS

Caroline Craggs, IGS head of operations Asia Pacific, visiting Greg Dunn at Southern Fresh in Cambridge late last year

IMPROVING SUPPLY AND DEMAND SO GROWERS THRIVE AGAIN

Antony Heywood : Vegetables New Zealand Inc. general manager

For most New Zealanders, summer is sun, swimming and beaches. For growers, it's harvest, supplying markets and keeping up with irrigation. Here lies the juxtaposition.

In Wellington, January is traditionally a quiet month. This January was certainly that, as the new coalition government – especially the new ministers – have learnt the ropes and staffed their offices.

Vegetables NZ has welcomed the new ministers who are closest to the vegetable growing sector. In particular, the four new Agriculture Ministers (in particular, Todd McClay and Nicola Grigg), the new Environment Minister (Penny Simmonds), the Minister in charge of Resource Management Act reform (Chris Bishop), the Ministers for Regional Development (Shane Jones) and Regulation (David Seymour).

In particular, we have brought to the attention of the Environment Minister the imposition being placed on covered crop growers by the Environment Ministry – at this extremely busy growing time – of asking for copious amounts of data about energy use, also at a time when the new government says it wants to reform the Emissions Trading Scheme.

We have also engaged with the Environment Minister about the High Court decision on special vegetable growing areas. The Minister has said that she will meet with us once she has received advice from Environment Ministry officials. We will ensure this meeting happens.

The High Court decision is an excellent example of why New Zealand needs a national approach to vegetable production – via a National Environmental Standard for Commercial Vegetable Production – to ensure food security and minimise overall impact on the environment. Vegetables NZ has sought independent advice and is working with Horticulture New Zealand to scope out and plan the work involved in getting a National Environmental Standard in place.

The other side of supply – and safeguarding local supply and ensuring the industry thrives again – is increasing consumer demand. Vegetables NZ is newly active in this area with the launch of the Add One More Vegetable campaign on 1 March, in partnership with 5+ A Day.

Add One More Vegetable is a very powerful concept as it is so straightforward and so easy to do. Adding one more vegetable also has the endorsement of health professionals, because of the improvement it brings about in people's health and wellbeing. Then there is the reduction in the cost of running the health system, which has to be a good thing for taxpayers.

The Add One More Vegetable campaign will gather momentum throughout the year. It will focus on promoting in season vegetables. Over time, the idea is to partner with others in the supply chain, based on the success of the campaign.

UPDATE FOR TOMATO GROWERS

Dinah Cohen : TomatoesNZ business manager

It seems 2024 is flying past already and I'm sure for most of you it's been a busy start to the year! There is a lot going on in the next few months, so I thought I'd give you a quick run through of what to look out for.

Levy Renewal Process

If you pay levies to TomatoesNZ you should have seen communication about how the Commodity Levy Order needs to be renewed next year. This is a long process which ends with growers voting on the rate in May or June this year. The final proposal is drawn up after grower consultation – which is about to begin! If you are able to attend one of the Vegetable Research and Development workshops around the country, not only will you hear about some project updates (see below) but you will also be asked for your feedback on the TomatoesNZ levy proposal. While the TomatoesNZ board doesn't intend to change the levy rate currently being collected, it is important to have your say. Do you agree with the way your levy is spent by this product group? Do you think there should be different areas of focus? Should the current rate of 35c paid per $100 of fresh tomatoes sold, be calculated differently?

Any feedback can be sent directly to me **Dinah.cohen@tomatoesNZ.co.nz** and if you would like, I can also send your feedback on to the board directors who work on your behalf.

Biosecurity projects

The TomatoesNZ board believes that working with Biosecurity NZ ahead of an unwanted organism entering New Zealand is very important as this will mean that in the unfortunate event of a pest being detected in a greenhouse, we have a plan already in place with how to deal with the situation. One example of this is *Tuta absoluta* – a leafminer pest that is already in many countries and can be devasting for tomato crops. We have worked with Biosecurity NZ to develop a plan should this pest ever be found in New Zealand. Have a look at page 45 to learn more about this work.

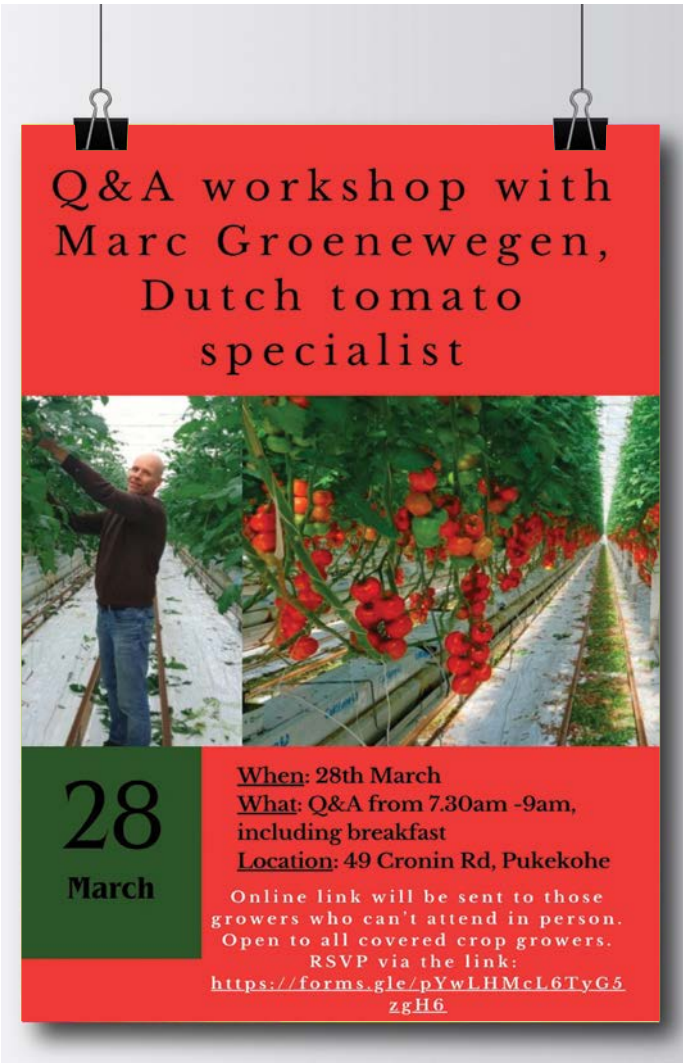
Funding still available for energy related projects

While the GIDI (Government Investment in Decarbonising Industry) fund no longer exists, the Energy Efficiency & Conservation Authority (EECA) do still have the Technology Demonstration Fund available to growers who are looking to reduce their use of fossil fuels. Some examples of projects that have already been completed with help from this fund are dehumidification units, high-temperature heat pumps and an electric tractor. Generally speaking if your project qualifies, EECA could fund 50 percent of the costs to a maximum of $250k, or $500k if decarbonising industrial process heat. More information, including how to contact EECA to see if your project would qualify, is available here: **www.eeca.govt.nz/co-funding-and-support/products/technology-demonstration/**

We're also lucky enough to have Ellery Peters, an energy engineer project manager, who is available to talk you through what options are available for your greenhouse business. This could include, if appropriate, visiting your greenhouse to conduct an energy assessment. Ellery's work is funded through Vegetables NZ and EECA and we are able to offer his services to TomatoesNZ growers free of charge. Please get in touch with me or directly with Ellery: **ellery.peters@freshvegetables.co.nz**

Grocery Supply Code of Conduct

Some of you will be aware that the Commerce Commission is overseeing the Grocery Supply Code of Conduct which outlines various rules that retailers must follow when drawing up agreements with suppliers. TomatoesNZ is aware that for most growers, the reality is that they will have an agreement with a wholesaler rather than directly with a retailer, which this code does not yet cover. I am looking to provide the Commerce Commission with feedback into the problems that growers currently face with supply agreements with wholesalers, in the hope that the Grocery Supply Code of Conduct can be extended to include this important area. Please email me by 31 March with any problems or experiences that you have had. I will be compiling grower feedback so that it can be submitted completely anonymously to the Commerce Commission.



Workshops in the regions – sign up

TomatoesNZ is holding a breakfast Q&A with Marc Groenewegen, Dutch tomato specialist and passionate grower. Marc enjoys sharing what he knows with growers all over the world and feels it is always an exchange as he learns from them as well. The details are:

Date	Thursday 28 March
Time	7.30am for breakfast until 9am
Venue	Seminar Room, 49 Cronin Road, Pukekohe
RSVP	https://forms.gle/WXL1mksRNC8jewch8 (including any questions that you already have for Marc)

TomatoesNZ growers are invited to hear about research into vegetables that has been happening recently at multiple centres around the country. Vegetables NZ and VR&I (Vegetable Research & Innovation) will be hosting these events, with specific tomato research news also shared in:

- Richmond Tuesday 19 March at 3pm
- Pukekohe Wednesday 10 April at 3pm
- Ashburton Tuesday 16 April at 3pm.

Dates in other regions are also available and will concentrate on relaying Vegetables NZ and VR&I updates.

For all the dates and to register for these events please use this link: **https://docs.google.com/forms/d/e/1FAIpQLSdyMJTndlcyBs-ZOj2rXtLZAHl8ZAwfbcSnLTY-GBO-57euGA/viewform**

GROWING TOGETHER

Kate Trufitt : Potatoes NZ chief executive

Four international visiting scientists: Andy Robinson, Mike Thornton, Brad Geary and Jeff Miller as well as Potatoes NZ team members visited a Canterbury potato farm in February

Potatoes are a cornerstone of New Zealand agriculture, significantly contributing to the economy and local diets. The New Zealand potato sector offers a diverse variety of potatoes all benefiting from the unique climate for high quality local cultivation. Potatoes are a dietary staple and integral to iconic Kiwi dishes, like fish and chips.

Our industry has evolved and continues to evolve to meet consumer preferences, prioritising healthier, sustainable products and highlighting the nutritional value of potatoes as a versatile, nutrient rich food. Take for example, the low carb potato varieties available.

Potatoes NZ must be across current industry issues to ensure our 173 potato growers can address any arising problems before they escalate and significantly impact our $800m domestic and $160m export markets.

Food security

Greater consumption of vegetables, including potatoes, is vital for improving the wellbeing of all Kiwis while reducing the burden on the government's healthcare system. As an industry, we need prices to be sustainable for growers, recognising that potatoes are a crucial component of New Zealand's vegetable production, contributing to the nation's food security and overall health.

The need for a comprehensive contingency plan, such as a national food supply strategy, is required to ensure continuity of supply. It is important to recognise that market yield, quality standards and labour supply play a significant role in determining the cost of healthy food. To address these issues, the appointment of a Minister of Agriculture (Horticulture), has been positive. The integration of food production into the new Natural and Built Environment Act is another critical step to ensure food security and the wellbeing of New Zealanders.

Biosecurity

Biosecurity is a critical concern within the potato industry, with incursions, whether originating in New Zealand or from elsewhere in the world, carrying significant consequences. These incursions disrupt not only the supply of fresh potatoes but also have ramifications for both domestic and international markets.

It is essential that Potatoes NZ works with government and industry to share responsibility for biosecurity readiness and response as well as the commitment to improve awareness of biosecurity threats. There are several pests and diseases that could have a dramatic impact on the viability of the potato industry in New Zealand, and industry collaboration is essential to address these concerns. This could involve better coordinated surveillance programmes and more stringent border controls, particularly concerning true seed and nursery stock imports, to fortify the industry's biosecurity.

Environmental regulation

Environmental regulation plays a pivotal role in the sustainable cultivation of potatoes. Potato growers require access to fundamental resources such as land, water and nutrients. Dependence on councils for water supply needs a regulatory framework to ensure efficient and effective implementation.

Growers are encouraged to work with councils to create a Farm Environment Plan to identify environmental risks on farms and make plans to manage, as well as mitigate those factors. The plan would be unique to the farm and consider the type of farm, operating practices and local environment. Such planning is an essential tool to be aware of to address a range of potentially devasting situations that may arise. Potatoes NZ continues to work with council, government and industry to ensure access to land and water that growers need to ensure the supply of top quality potatoes.

Levy Organisation

Potatoes NZ is a Levy Organisation, and every six years we go to our growers to seek to continue the good work we do on their behalf.

In the next few months, we will be connecting with growers and industry stakeholders to continue the conversations on how Potatoes NZ can best serve the industry. We encourage growers and stakeholders to attend the events being held, or if they wish to have one-on-one conversations reach out to me directly or through my team.

When the time comes, we ask that growers vote. It is critical that we hear from you and have your backing to continue to support your business and to advocate for you on the key issues. Potatoes NZ's prime reason for existence is to protect potato growers' business interests, increase potato consumption and improve the profitability of the entire industry. Without a levy, Potatoes NZ would cease to operate, hence it is imperative to vote when the time comes.

CONNECT WITH POTATOES NEW ZEALAND

Potatoes NZ is hosting and attending a number of events in the coming months and we encourage you to attend to find out more about what is happening as well as share your feedback. To find out more, please visit: **http://tinyurl.com/Events24**

Contact the friendly team at Potatoes NZ with any queries:

Phone: **0800 399 674**
Email: **info@potatoesnz.co.nz**
Website: **www.potatoesnz.co.nz**

SUSTAINABLE VEGETABLE SYSTEMS (SVS) TOOL

Potatoes NZ is working alongside the Ministry for Primary Industries, Horticulture New Zealand, Plant & Food Research, as well as Vegetables Research and Innovation to help improve current practices through provision of mitigation strategies to reduce nitrogen losses, whilst sustaining productivity. Together they have developed a Sustainable Vegetable Systems Tool for nitrogen budgeting, which has integrated soil nitrogen tests into fertiliser decision making.

The SVS tool follows the "4Rs approach", the Right fertiliser, the Right place, the Right time and the Right amount for applying nitrogen to the crop to match the desired yield, optimise returns and minimise loss.

This necessary tool will be officially launched later this year.

GOING VERTICAL

Daniel Sutton : Vegetables NZ research, development and extension manager

IGS growth towers enable consistent and predictable production. Photo courtesy of IGS

Vegetables NZ has made a concerted effort over the past year to build connections domestically and internationally to help identify new technology, techniques or products that could be utilised to optimise growers' current operations. As part of this effort, Vegetables NZ was excited to host Intelligent Growth Solutions (IGS) in New Zealand in November.

Caroline Craggs, IGS head of operations Asia Pacific, was in the country to attend the ForestTECH 2023 conference in Rotorua. We saw this as an opportunity to connect Caroline with local vegetable growers to learn more about the opportunities and challenges they face and how these could be addressed.

IGS is a ten-year-old vertical farming technology company combining farming and engineering expertise. It takes controlled environment agriculture (CEA) a step further with total controlled environment agriculture (TCEA). CEA is reactive and yields inconsistent results, while TCEA enables predictable and consistent cultivation in any suitable location.

As well as growing seed to harvest crops, IGS growth towers enable consistent and predictable production of healthy and clean propagules and plants. This enables surety of supply as they are not at risk from climate or logistics disruptions.

As part of getting IGS in front of the vegetable industry, growers were invited to a breakfast meeting in Pukekohe, with attendees also able to join online. Caroline provided an overview of IGS and covered some of the key opportunities of the technology:

- Vertically integrated IGS infrastructure can operate in a hybrid business model to increase revenue and profitability
- Proven IGS growth recipes ensure a consistent and repeatable product with faster growth cycles
- IGS growth towers can grow uniform propagules and plants predictably to consistently meet planting schedules, removing risks to supply
- IGS growth towers produce high health plants that are disease and chemical free.
- The Pukekohe event was attended in person by about 30 attendees including growers, service providers, researchers and other interested parties. Another 40 people joined the online presentation.

I was pleased to see so many people attend and participate in the vertical farming discussion. Obviously, there is a lot of interest in the industry, and Vegetables NZ is happy to help growers find more information.

In addition to the breakfast, some one-on-one meetings were held. One of these was with Greg Dunn, indoor cropping manager at Southern Fresh in Cambridge. This was a great opportunity to discuss how IGS technology could be utilised in an established crop production system.

Caroline said she really enjoyed her time in New Zealand and the chance to get in front of local growers. "The benefit of working in collaboration with Vegetables NZ is huge in terms of being able to connect and reach the right contacts – those looking to tech adoption to strengthen their existing operations."

CLASSIFIEDS

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