



Shift **Happens**

Who is the farmer of 2030?



Shift Happens foreword

by Hon. Damien O'Connor



The case for change

New Zealand's primary industries have worked hard, and successfully, over decades to build a reputation. 'If it comes from New Zealand, it must be good (for you)' would aptly paraphrase that reputation.

Anyone who has run a business knows how tough brand building is. Similarly, they know that the biggest risk to a company is brand risk. Why? Because if perceptions of your product or service turn sour, not only do sales volumes drop along with your price point, but trust evaporates.

We have certainly earned the level of trust we enjoy and when you look at the global challenges, we are very well placed to capitalise on our reputation... but only if we are willing to shift with the times. I would even go a step further and say that what makes us competitive is staying ahead of the times. I understand that change is unsettling, but for our farmers, growers and exporters that's where the upside is. Why? Because that's where the upside is for our customers and so that's where the value is.

We've climbed the value chain by understanding our customers. Our fortunes will depend on how well we can align our story with the values of discerning consumers, which in turn rests on our willingness to embrace change.

"Who made this?" "How was this grown?" "Will this product improve my carbon footprint?" "Can I trust that this is good for me?" These are questions that high-value consumers abroad are asking, but more critically, expecting answers to. That expectation is being driven by shifting values and the rise of internet technology.

Clearly, the COVID-19 pandemic and global climate change are impacting our primary industries, but people overlook the significance of internet technology. If you didn't get the postcard from overseas: we now live in the information age. Digital technology has disrupted myriad industries. Look at how we bank, do the accounts, watch TV, get our news, stay in touch with family, listen to music, or keep photos. Most would agree that many of these changes have been good for the consumer.

Now take a minute to think about the companies within these industries. Who has disruption been good for? It was great for the ones who saw change coming and disastrous for those who saw it too late. Just look at how the rise of the digital camera all but destroyed Kodak.

And of course, new competitors came in to play. Change is where opportunity lives.

It's not surprising that Shift Happens reports a 50:50 split between those who are optimistic about change and those who aren't. That's the bell curve of human nature.

In short, we have to do our part on climate change. We need to reverse the degradation of our rivers and then restore them within a generation. We need to attract young people into rural life. The Government is making significant effort and investment in sustainability to support our farmers and growers as they adapt to the conditions of our markets overseas.

For example, to date we've co-invested more than \$142 million through the Sustainable Food & Fibre Future fund into 163 industry projects worth almost \$313 million in total. We've funded over 170 catchment groups that comprise some 5,000 farmers and growers. And of course there's the industry partnership of He Waka Eke Noa, which brings farmers, iwi and government together to address greenhouse gas emissions.

My focus is on supporting exporters, farmers and growers to make this as simple as possible. I'm proud to have been a farmer. I'm proud to represent our farming interests abroad. I absolutely believe that the future for farming is positive. There is great work being done by our industries and this report speaks to that.

Yes, we are living through significant change, but what won't change is the drive of New Zealand farmers and growers to adapt, innovate and lead. Through leadership and innovation that tackles sustainability challenges, we can make New Zealand the best country for the world.

Damien O'Connor

Minister of Agriculture

Minister for Trade & Export Growth

Minister for Rural Communities

Shift Happens CEO message



This year, buffeted by the winds of COVID-19, our primary sector has continued to steady the ship. While other industries have felt the impacts of COVID, our primary sector has largely gone about its business and continued to grow.

Demand for New Zealand’s clean, nutritious food remains robust, and our commodity prices are strong. We have seen our agribusiness customers strengthen their positions, using the good times to pay down debt and shore up balance sheets. An influx of new money seeking yield has also found its way into the sector.

However, our Shift Happens report also finds the sector at a crossroads battling with what some have called a once in a generation level of change.

Chief among them is climate change. Whether demand driven by more conscious consumers and markets, increasingly severe weather or through escalating regulatory compliance, farmers are having to change the way they work to improve waterways and biodiversity, and reduce emissions.

For many, the work is already well underway. They see this is an opportunity to position their farms for long-term success, supporting the regeneration of land and waterways, and the ongoing viability of their business. But for some the change is harder.

Increasing requirements to improve environmental outcomes requires capital and longer investment horizons. For many, it necessitates changes to the way they have been farming for decades. None of this is easy. It requires choices to be made and changes to established norms, and our report finds the sector evenly split as to whether they see opportunity or impost from this challenge.

Our report also finds that farmers who are cognisant of the changing demands of the global consumer, open to diversification, and embracing digital tools, are well positioned to cement their place in a cleaner and increasingly online economy.

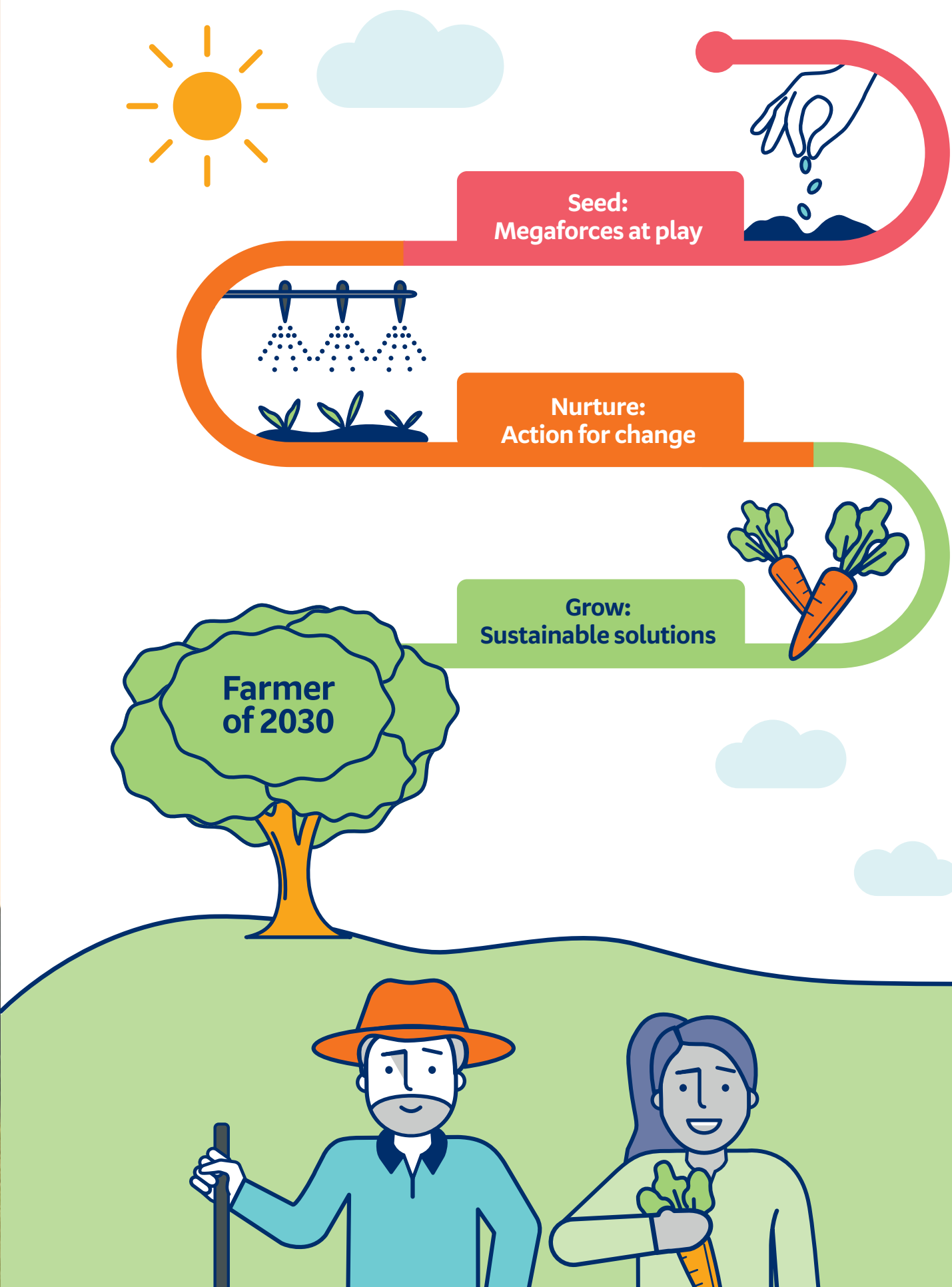
Our BNZ agribusiness partners deeply understand the challenges on farm, with many having come from dairy, sheep and beef, and horticulture operations from around the country. They are committed to working hard with our farming customers to help build financially and environmentally sustainable businesses that will be around for decades to come.

We have developed the Climate Action Toolbox, to support businesses to measure and reduce emissions, and we have incentive-based solutions that will lower costs for achievement of ambitious environmental, social, and governance targets.

We are proud of what the primary sector has achieved and the critical role it plays in our economy. Our farmers have proven time and time again they can overcome challenges, and our agribusiness team is up to the task of partnering with you to chart a successful future.

Dan Huggins
CEO, Bank of New Zealand

The road to 2030: Seed, Nurture, Grow.



Executive summary

The road to 2030: Seed, Nurture, Grow.

Who is the farmer of 2030? How do we become the farmers of 2030 when we have a sector divided by change, the pace and scale of it, and the discomfort of it?

As a primary sector, we have been hearing that the road to 2030 comes with many warning signs, potholes, and roadblocks, but we're being asked to speed along this treacherous road at great speed, all the same.

Running a successful agribusiness takes stamina, skill, and courage – qualities, time and again, New Zealand primary producers have demonstrated as they adapted to satisfy market forces and meet the ever-evolving obligations of their social licence to operate.

In doing so, they have embraced a myriad of opportunities to seed and nourish the future growth of their agribusinesses, drawing deeply on the sector's traditions of finding pragmatic solutions, through collaboration and partnership, to overcome challenges.

In the 2020 Shift Happens, Future of Agribusiness report, we spoke about five key forces at play within an agribusiness. The consumer, technology, finance, environment, and mindset. We explored how these five forces, when embraced in synergy with one another, can form the road to a successful agribusiness.

In this report, we expand on these ideas, under three key topics:

1. The **megaforces** persuading the primary sector are copious, providing an opportunity to plant seeds of opportunity and develop ideas to realign ourselves toward the farming systems, practices, and outputs we'll need to succeed in 2030.
2. The **pace and scale of the change** being asked of us is surmountable, but only when we nurture the benefits of change, through shifting our mindset toward a proactive mentality, eager to see the possibilities this change may bring.
3. There is a myriad of **solutions** available to help, too. If we allow ourselves to nurture the seeds of change, we can grow some great new skills, and embrace new technologies and mindsets.

That's how to become the farmer of 2030. By facing into the future and wrapping ourselves in the solutions and support the sector is working tirelessly to deliver.

In each section, you'll find the voice of the farmers and growers of New Zealand. We surveyed 532 BNZ Agribusiness customers and networks over September and October 2021 to understand their views on topics under each section. Their voices form the foundations of this report, a snapshot in time of the sentiment across the primary sector. The results told a story of feeling challenged by the future and the ways the sector is changing – but not at the expense of action to be more innovative and stronger.

We heard of the impacts COVID-19 has had on supply chains and labour, and of the influences innovation and rural connectivity will have on the ability to succeed in 2030. We saw a sector focused on managing their impacts on the environment and adapting to climate change, astutely aware of the conscious consumer and the costs being incurred to meet their expectations. We learnt how many agribusinesses already have a Farm Environment Plan, and who is planning to use more technology or diversify their current land use. We heard from those who are ready to leave the land behind, but also found a set of new leaders waiting in the wings to help create the primary sector of 2030.

We've added some expert opinion pieces to the mix, from leaders in business, farming, and sporting fields. You'll get a look into why, for example, when you get down to it, being a championship Super Rugby team (like the Crusaders) isn't so different from running a successful agribusiness.

You'll hear from farmers and growers at various stages in their careers. How are they nurturing their business to help it grow, and what kind of farmer do they hope to be, come 2030?

And, because we know the best way to learn is by doing, we've offered a series of 'Natural Capital fact sheets' if you need a hand getting started on some of the most pressing challenges. We've made these so you can tear them out, pin them on the shed wall, and refer to them when needed.

The culmination of all this? An offering of who the farmer of 2030 is, how they think, how they face into change, and how they embrace the new while grounding themselves in the old. Some skillsets may be new in 2030 but, most importantly, the love of the land and everything on it won't have changed.

Who is the farmer of 2030? The farmer of 2030 is you.

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Seed: Megaforces at play

We online surveyed 532 BNZ Agribusiness customers and networks from Friday 24 September 2021 to Monday 11 October 2021, to understand their views on the various megaforces influencing their agribusinesses, now and in 2030.

We share their voice:

There is excitement, positivity, and optimism when picturing agribusiness in 2030. But for some, 2030 remains uncertain and concerning.

Emotions that best describe current feelings about agribusiness in 2021:



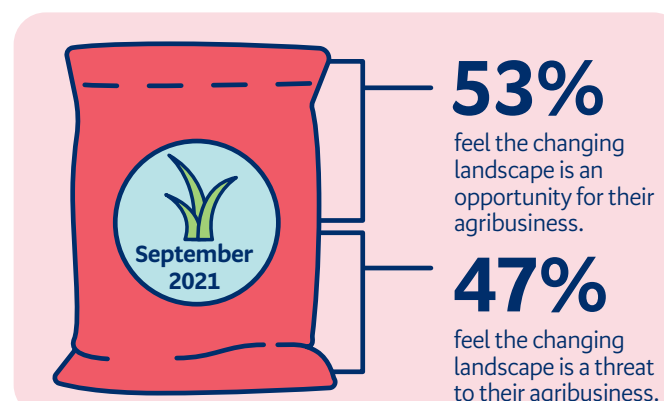
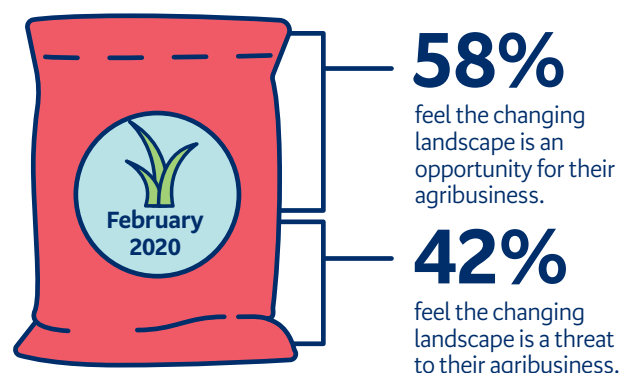
Emotions that best describe feelings about agribusiness in 2030:



What does sustainability mean to you?

“Positive people, profitable, happy animals, healthy rivers, producing products that consumers value, and reducing the environmental impact on our farms. - Dairy farmer, Manawatu.”

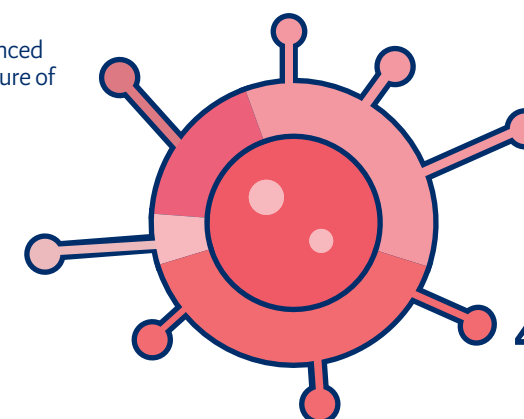
New Zealand primary producers feel slightly less optimistic in 2021 than they did in 2020 about the changing landscape of the New Zealand primary sector.



Has COVID-19 enhanced the opportunities or contributed to the threats of the future of your agribusiness?

18% feel COVID-19 has enhanced opportunities for the future of their agribusiness.

6% don't know.

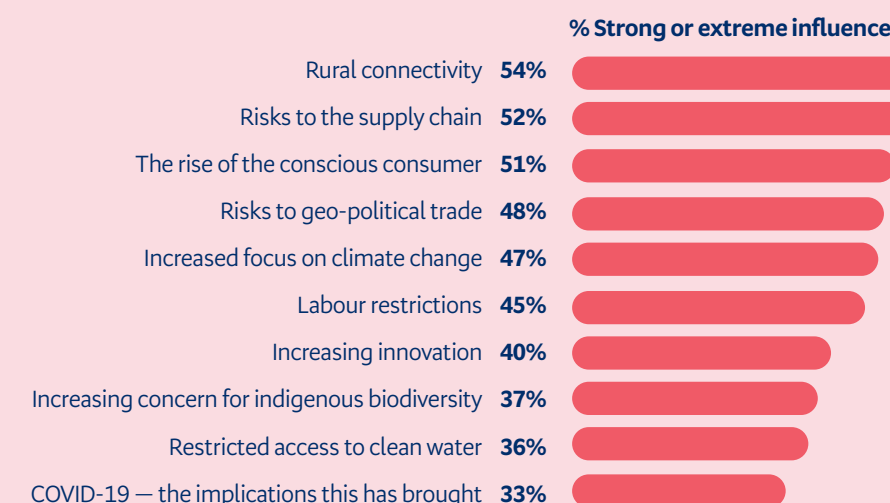


35% feel COVID-19 is not relevant to how they view the future of their agribusiness.

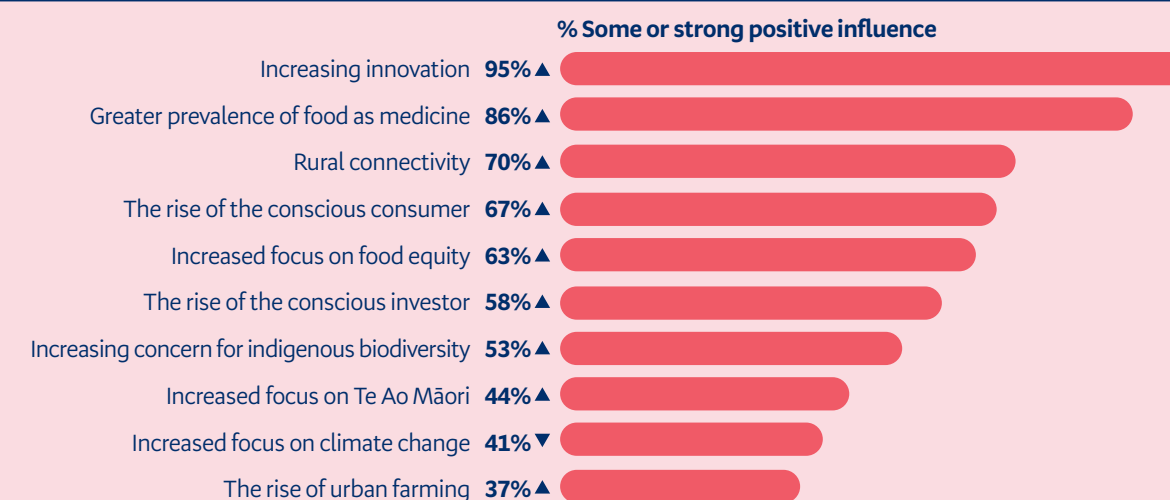
40% feel COVID-19 has contributed to the threats of operating and managing their agribusiness.

Of a selection of megaforces currently influencing agribusinesses, 'Rural connectivity' and 'The rise of the conscious consumer' remain highly influential in both 2021 and 2030. 'Greater prevalence of food as medicine' is anticipated to become a highly influential megaforce in 2030, but is not considered so in 2021.

Top 10 megaforces influencing agribusinesses in 2021



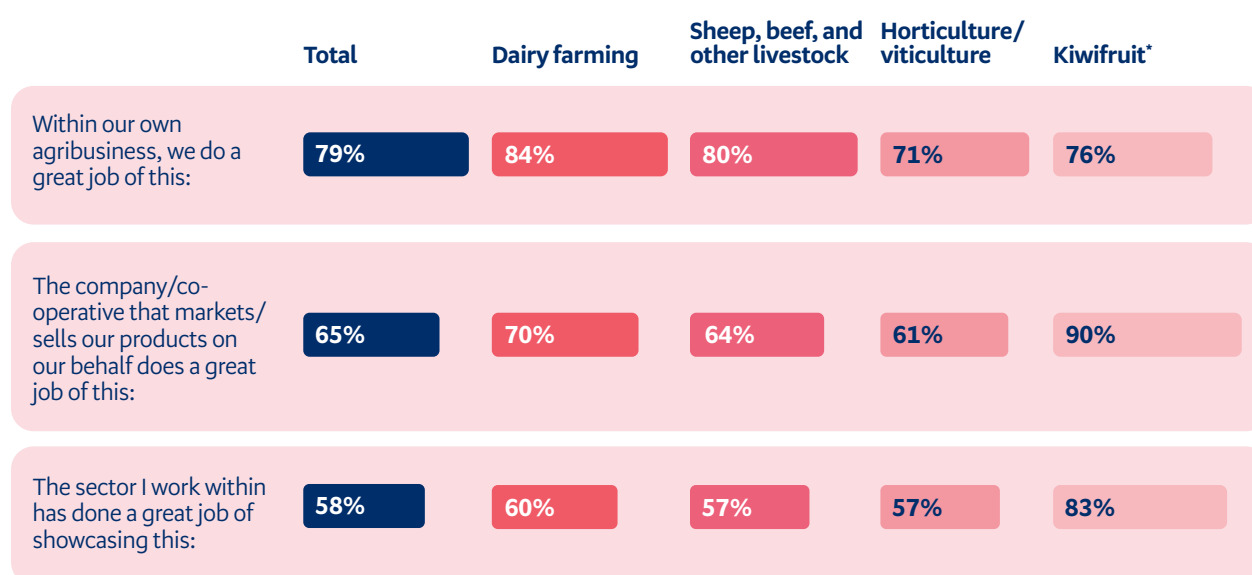
Top 10 megaforces influencing agribusinesses in 2030



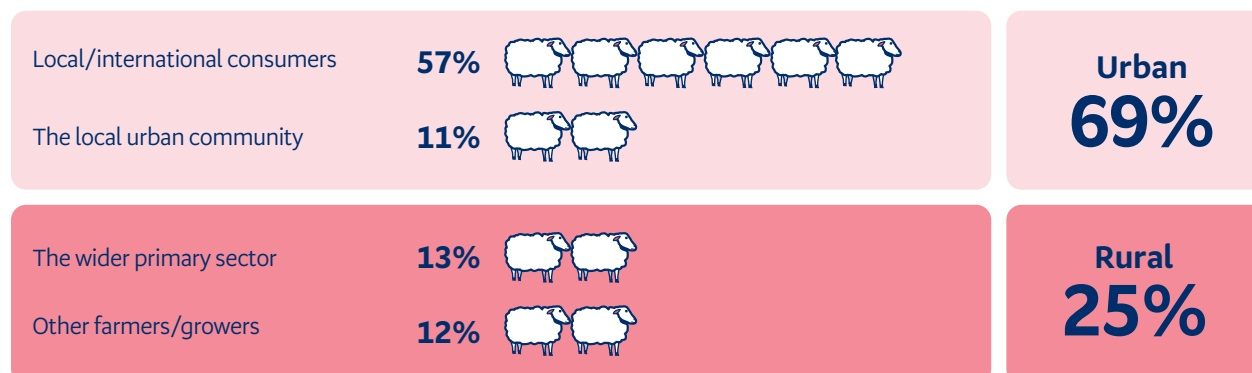


Kiwifruit* growers (90%) are most likely to agree their marketing company/co-operative does a great job showcasing their values-based approach to food production.

Who do you agree does a great job of ensuring the values and showcasing the values that drive your food/beverage and fibre production?

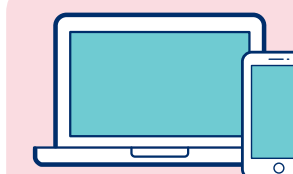
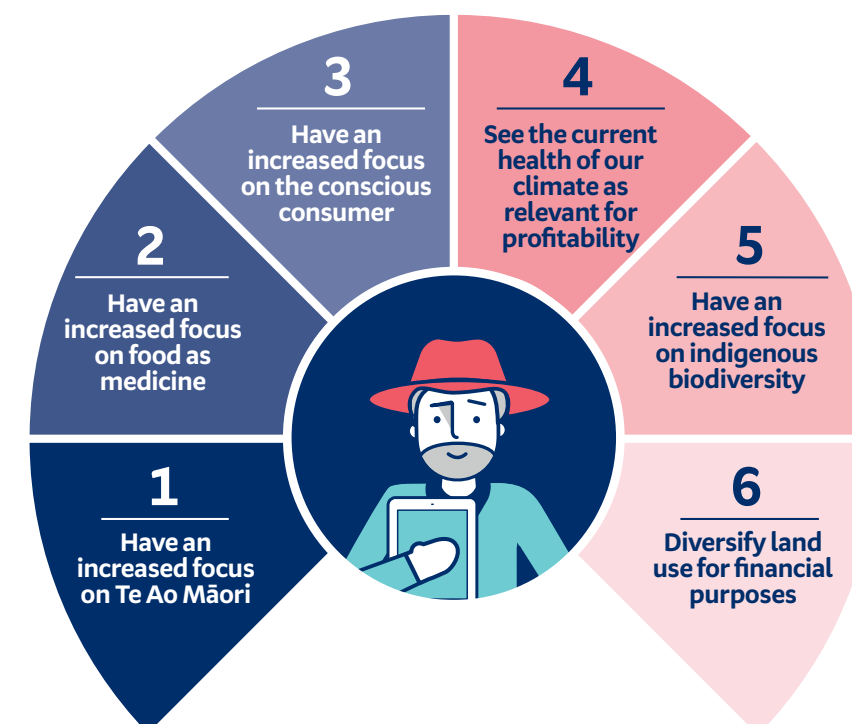


Whose perceptions do you consider the most important when showcasing your current farming practices and future plans?



*Small sample size. Data is indicative only.

Those who saw the changing landscape of the primary sector as an opportunity were more likely to:



Rural connectivity as a megaforce is felt across all regions and all sectors in 2021, but less so by younger farmers with only **42% of 18 to 44-year-olds** seeing it as a current impact compared to 54% across all of agribusiness.

What kind of farmer do you want to become in 2030?

“Socially and financially successful with a good work-life balance.”
- Dairy farmer, Tasman.

Two in every five NZ primary producers are motivated to make changes in response to megaforges facing agribusiness in 2030.

Motivation is higher among...



Horticulture, viticulture, and arable growers.



Large and corporate agribusinesses.



Farmers outside Waikato.



Farmers with higher levels of digital proficiency.



Farmers who plan to use more technology.



Farmers who see the future of their agribusiness as an opportunity.



Farmers who see COVID-19 as an opportunity for their agribusiness.



Seed: Megaforces at play

Five fast facts:

- **More than half** (53%) of farmers and growers surveyed view the changing landscape for the NZ primary sector as a future opportunity, compared to 58% last year.
- **Over a third** of producers (35%) don't think COVID-19 is relevant to the future of their business, while 18% see the pandemic as an opportunity.
- In 2021, producers see climate change and the rise of the conscious consumer as two of the top five megaforces influencing the future of the primary sector.
- **Seven out of every ten** farmers in the horticulture, viticulture, and kiwifruit sectors plan to increase, or have already increased, their level of collaboration with others in their sector.
- Rural connectivity is the top megaforce influencing agribusinesses in 2021, felt across all regions and sectors.



What kind of farmer do you want to become in 2030?

“

One that is growing sustainable products using the latest technology and having the least effect on the land and environment.

– Arable farmer, Canterbury.

”

Megaforces propelling change

This year, BNZ surveyed our agribusiness customers and networks to understand their views on some of the biggest trends influencing their agribusiness now and looking ahead to 2030. We call these trends ‘megaforces’. Think of them as the ocean swells of change – powerful, relentless, and dynamic. Their impact is global and lasting, presenting opportunities and threats (often in equal measure) that leave little room for indecision.

Glass half empty or three quarters full?

Our 2021 survey found a sector divided in opinion. Sentiment about the changing landscape of the NZ primary sector was almost evenly split, with 53% viewing it as an opportunity to embrace a new future for their agribusiness, and 47% seeing it as a threat. How producers responded to this question predicated their answer to other questions regarding proactive behaviours and plans. Throughout this report, you'll note comments from respondents that highlight these two opposing views.

When considering the qualities and characteristics farmers and growers want to emulate in 2030, producers most commonly stated they aim to be sustainable, profitable, and able to hand over a successful business to the next generation as they retire. Our 2021 survey shows that producers' success is based on what they are doing right today – and the opportunities to strengthen their businesses through change over the next decade.

Getting there will require a scale of change undertaken at a speed reminiscent of the large-scale land use, production, technology, and marketing reforms of the 1980s. It will also require resilience and plenty of support from across the sector.

Primary producers rightfully take pride in the substantial contribution they make to the NZ economy. MPI's 2021 Annual Report highlighted food and fibre export revenue reached \$47.5b for the year ending 30 June 2021 and, with sustained growth, is forecast to reach \$53.1b for the year ending 30 June 2025.¹

The sense of a path towards a better future is implicit in the 2021 survey findings. Two in every five producers are motivated to make changes in response to the megaforces that will shape their businesses by 2030.

Respondents ranked the following megaforces as the most influential to their agribusiness now and/or in 2030:

- 1. Rural connectivity:** 54% of respondents rate rural connectivity as having a strong or extreme influence on their agribusiness today. Moreover, with increasing technology use and data collection, 70% think rural connectivity will have some or a strong influence on the farm of 2030.

A 2020 survey by Federated Farmers highlights issues with slow or no internet access in parts of rural New Zealand. Around one third of agribusinesses have slow or no internet access, making it difficult to conduct basic business functions online, let alone upload farm systems data from remote parts of the farm.²
- 2. Risk to the supply chain:** Supply chain risks have risen in importance as a megaforce, with 52% ranking this as a strong or extreme influence on their agribusinesses in 2021. Speed to market is critical given the perishable nature of many primary sector products. Since the onset of COVID-19, there have been major disruptions to the global movement of goods across borders by air and sea freight. Locally too, supply chain pressures have made it more challenging and costly to move domestic food to processors or ports. Through to 2030, respondents saw supply chain risks as having a largely negative influence on their agribusiness.
- 3. The rise of the conscious consumer:** Primary producers realise that meeting the needs of end customers is critical to their success, with over half indicating that the rise of the conscious consumer is having a strong or extreme influence on their agribusiness. According to international consultants EY, globally, consumers are continuously increasing demand for knowledge of the environmental, social, and governance (ESG) credentials of the products they consume, to ensure they align with their own values.³

The conscious consumer is even becoming a driving force in trade negotiations. The recent NZ-UK Free Trade Agreement (FTA) – expected to lift NZ's GDP by around \$1b over 15 years – has ambitious environmental commitments, including the elimination of fossil fuel subsidies and prohibitions on overfishing⁴. The FTA also lists over 260 environmentally beneficial products prioritised for tariff elimination. That's welcome news for the 48% of farmers and growers who cited geo-political trade risks as having a strong or extreme influence on their agribusiness in 2021.

Our survey found that producers expect the conscious consumer to endure as a key megaforce influencing agribusinesses in 2030. Gaining access to new markets and new capital will increasingly be grounded in how well agribusinesses can meet the ESG expectations of consumers (and investors – more on this later).
- 4. Increased focus on climate change and the environment:** Our 2021 survey results put paid to the suggestion in last year's survey that farmers and growers are not prepared to address climate and environmental issues with urgency. In fact, sustainability issues are very much front and centre, with 47% of respondents citing climate change as a megaforce having a strong or extreme influence. Restricted access to clean water also featured in the top ten megaforces for 2021.

At the 2021 United Nations Climate Change Conference (COP26) in Glasgow, NZ joined more than 100 countries in pledging to reduce overall methane (including from biological and non-biological sources) over the next decade. Collectively, signatories aim to reduce methane emissions to 30% below 2020 levels by 2030⁵. The Climate Change Response (Zero Carbon) Amendment Act 2019 currently focuses on biological methane reductions, the primary source of methane emissions in New Zealand. The Act requires New Zealand to reduce biogenic methane by 10% by 2030, and between 24% and 47% by 2050, below 2017 levels.

NZ is implementing leading solutions to achieve the targets set out. For example, we are expected to be the first country in the world to legislate for a price on agricultural emissions. We are currently building the world's only farm-level emissions measurement, management, and pricing system under He Waka Eke Noa, which will work with primary producers to create practical tools and solutions to reduce biological methane in line with the Zero Carbon Act, including exploring alternative land uses, farm systems or technologies and genetics.

Responding to climate change is essential to protect our environment and meet the ever-evolving expectations of consumers and investors, something primary producers are naturally attuned to, with our respondents continuing to focus on climate change as a top 10 megaforce influencing agribusiness in 2030.
- 5. Labour restrictions:** Labour shortages have been an issue for farmers and growers since well before COVID-19, as the reluctance of the domestic labour market to work in the primary sector forced employers to seek migrant workers to fill roles. However, our closed border during the pandemic has worsened the issue, prompting 45% of respondents to rate it as an immediate risk.

In a recent survey by DairyNZ and Federated Farmers, 49% of respondents reported being short-staffed, while 24% had been unable to fill a gap on their team for more than six months.⁶ On the positive side, the findings also showed that 87% of respondents had improved conditions for their employees, with higher salaries and wages at the top of the list of improvements.
- 6. Increasing innovation:** Two in every five farmers and growers rank increasing innovation as a strong or extreme influence on their agribusinesses. Innovation is considered even more vital in future, topping the list of megaforces in 2030. The strong priority that respondents attach to innovation shows that farmers and growers across the sector are willing to adapt and innovate to resolve future challenges and respond to market signals.

The desire for more widespread adoption of technology is encouraging, particularly considering its critical role in the transition to carbon-neutral agribusinesses. The challenge now is to accelerate the use of agritech and ensure agribusinesses advance farming practices that are future-fit.⁷



Becoming world renowned: kaitiaki of our land and nature

Both Te Ao Māori and ‘protecting indigenous biodiversity’ are megafactors that producers are more likely to focus on over the next decade. Although not considered a top megafactor in 2021, when looking ahead to 2030, 44% of producers consider Te Ao Māori a positive megafactor.

Rēnata Blair, General Manager Māori Business at BNZ, outlines the growing role of Māori agribusinesses in the primary sector and the economy at large: “Māori are active participants and owners within the primary sector and are achieving outstanding results, often leaders in sustainability, implementing ancient practices to care for the environment, and ensuring their assets are there for future generations. Importantly, Māori agribusinesses are significant contributors to the lives of their shareholders and make large financial and social contributions in their communities”.

Studies estimated the contribution of the Māori economy at \$68.7b in 2018⁸. Assets are largely concentrated in the primary industries and include:

- \$13b primary sector assets (c. 10% of total NZ agriculture, forestry, and fishing assets in 2019).
- 30% of sheep and beef production, 10% of dairy production.
- 1.4m hectares registered Māori-owned land, a third of this land still undeveloped (as of 2019).⁹

The Aotearoa Circle is a voluntary initiative bringing together leaders from the public and private sectors to promote guardianship of natural resources in NZ. The Circle is developing a national food roadmap, which highlights Māori philosophies as integral to the future direction of the primary sector. Phase II of the roadmap’s development - The Mana Kai Initiative - is explicit in its commitment to put “...kōrero at its core...the framework presents a Māori view of our food system and its connection to the land, our natural environment, and to our people.”¹⁰

The Food and Fibre Partnership Group, a group of senior primary sector leaders established to guide the implementation of the Government’s ‘Fit for a Better World – Accelerating our Economic Potential’ roadmap, shares a similar focus, recognising that the way forward for the sector is ‘taiao’ – a uniquely NZ way of working that focuses on shaping our future around the health of our climate, land, water, and living systems.”¹¹ The roadmap itself explores opportunities to accelerate productivity, sustainability, and inclusivity across the primary sector.

Approaches such as these are expected to increasingly focus on concern for indigenous biodiversity, according to 53% of survey respondents who consider it a key megafactor for agribusiness in 2030. Sheep and beef farmers, in particular, are already putting a great deal of investment into biodiversity. Two thirds of all Queen Elizabeth II National Trust (QEII) covenants in 2017 were on sheep and beef properties, with landowners protecting c. 180,000 ha since QEII was established in 1977. 60% of covenants were on sheep and beef farms, with farmers forgoing c. \$105,000 per covenant by removing these areas from grazeable farmland.¹² The sector hopes to see these ‘investments in nature’ paying dividends in the longer term. The inclusion of biodiversity considerations within the increased volumes of land being planted in forests is also a point well traversed. Exotic forestry plantations offer short-term carbon sequestration options for our highest emitters via purchasing the carbon credits associated with these forests. Furthermore, forestry offers strong income potential for landowners, from not only traditional forestry, but carbon too. However, the integration of forestry plantations across farmland is widely debated. Issues include the credibility of using exotic forests as a short-term solution for offsetting emissions, the loss of biodiversity and/or farmland from scaled exotic plantations, native forestry’s potential for permanent carbon sequestration, and the impacts on rural communities.

Through a mix of external forces and recent reforms to the NZ Emissions Trading Scheme (ETS), the value of carbon has more than doubled, from \$30 per tonne of emissions in September 2020, to \$65 in September 2021, and is expected to continually outperform market price predictions in coming years. The higher price is a signal of demand for carbon offsets from our largest emitters, and a reason we can expect more forests to be planted for the purpose of carbon farming.¹³

A study by consultancy firm BakerAg found that from 2017 to 2020 an estimated 77,780 hectares of sheep and beef farms were sold to forestry, 34% of which were sold directly to carbon farming entities.

The biodiversity challenge for regulators and industry will be to find a balance that incentivises the use of native trees (which sequester at longer rates than exotics, delaying any income from carbon credits, although new research suggesting sequestering rates are better than commonly thought is being watched with interest¹⁴), recognises the efforts of farmers to integrate biodiversity across their land, and continues to accommodate offsetting as a short-term solution for high emitters.



I am seriously worried about the future of farming as an industry in this country. Dairying is our strongest export earning industry but is constantly being denigrated.

– Dairy farmer, Northland.

Travelling the road to 2030 will require a social licence

“High-value consumers abroad want to know they’re buying food and fibre that are quality, ethical, and sustainable. Aotearoa New Zealand has to move from volume to values – that is, aligning our story with the values of our consumers.”¹⁵ – Hon Damien O’Connor, Minister of Agriculture, 20 May 2021.

Shoppers are becoming increasingly aware of the effect consumer goods are having not only on their bodies, but the world around them, and they are changing buying habits to match. 73% of global consumers¹⁶ say they would definitely or probably change their consumption habits to reduce their impact on the environment. Primary producers are aware that these market signals put the spotlight on their farming practices. More than half of respondents consider the local and international consumer to be the most important audience for showcasing their current and future farm practices, highlighting the imperative of the values-based traceability story, from paddock to plate (or premium fashion brand).

Across the primary sector, there are increased efforts to tell the story about NZ primary producers’ ambitions in improving sustainability and ethics, including the increased focus on actions that address climate change. The Fonterra ‘Path to 2030’ strategy details plans to direct \$1b into research and development, and innovation, and a further c. \$1b to reduce carbon emissions and improve water efficiency and treatment at its manufacturing sites. These moves signal a recognition of the strategic importance of sustainability across the co-operative’s supply chain.¹⁷

In the horticulture sector, the conscious consumer megafactor is driving new marketing campaigns to capture hearts and minds. Last year, Zespri unveiled its first major brand refresh in 22 years, focused on the tagline: ‘Make your healthy irresistible’, while its purpose is to ‘contribute to the prosperity of people, communities, and the environment through the benefits of kiwifruit’. Zespri cited evidence that consumers are making more considered purchasing decisions, buying from brands that have a purpose and set of values with which they can personally identify.¹⁸

Even as COVID-19 forces our largest trading partners like China and Australia to plan for a greater degree of self-sufficiency with domestic production, they are expected to continue looking beyond their borders for high-quality, ethically produced imports.

The preference for values-based products is pushing our key trading partners to pay a premium for ethical and sustainable NZ products, a long-awaited trend towards higher returns that will justify the investment to improve production standards. Markets such as Singapore and Australia are now joining traditional markets such as Europe, paying premium prices for top-quality food and fibre. However, NZ Trade and Enterprise Chief Executive Peter Chrisp warns that achieving premiums for ethical, environmental production requires investment. Business owners need to plan carefully to balance the input costs of enhanced sustainability measures against the expected premiums.^{19, 20}

Alongside the conscious consumer, producers identified the importance of the conscious investor for whom ESG disclosures are vital measures of a business’s performance. The experts agree. In a March 2021 commentary²¹, EY observed that: “It seems the COVID-19 pandemic has accelerated the transition to a more purposeful and inclusive capitalism. Although many organisations are in survival mode, ESG issues are likely to remain critical and essential to resilience and long-term recovery.”



Nicola and Blair Childs

Working hard is still the key to farm ownership
Agribusiness showcase

On the outskirts of Stratford, Taranaki, Nicola and Blair Childs, with their young son Oakley, have recently purchased their second dairy farm, a 175-cow unit. They credit hard work, a desire to prove the naysayers wrong, and a lot of sacrifice with being able to build their farming dream.

The couple acknowledge their pathway to farm ownership was not through the traditional sharemilking model. They take us through how they were able to get to where they are now:

“Originally, Blair was a builder and I was a local vet technician while we saved up to buy our first run-off”, Nicola says. The couple’s savings and the sale of their first home helped fund the run-off, and then the sale of that land, plus another new build, helped secure their first 100-cow dairy farm. It was a joint effort running the farm while juggling their off-farm jobs and new parenting responsibilities. Nicola says of that time; “At one point we changed over to once-a-day milking, just to ease some of the pressure.”

Strategic planning is a strength of theirs. Blair explains, “Our first farm was close to town, so we anticipated its value appreciating with urban sprawl. We were fortunate to sell on the rising property market, giving us the equity we needed to purchase this new farm. BNZ were very supportive; we couldn’t have done this without our banker, Patrick.”

A key motivation for moving to a larger farm was to enable Blair to work full-time on the farm. Driven to farm as a team, Blair talks about their ‘why’:

“The farming lifestyle means more time to spend with Oakley. We want to support his future ambitions and we see farming as a way to be able to do that.” Blair’s focus is on improving herd genetics and organising the various CapEx upgrades. Nicola adds, of her own focus, “I’ve always had a love for animals and seeing them happy and healthy. We have great family support and have always been told, ‘milk the cows you want to milk’ and create herd genetics that work for us, rather than what the industry wants. It gives us a good feeling going into the shed”.

The couple have two key priorities: reducing debt to allow themselves options in future, and adapting to environmental regulations. Nicola explains:

“Our farm is a showcase for the industry as it’s near a main road. We want to ensure the farming sector has a long future, so we know the importance of keeping the farm tidy and the waterways well protected.” To help with plantings, the couple utilised riparian grants from the regional council.

The couple talk frankly about approaching new environmental regulation.

“You have a bit of a grump and then you just get on with what needs to be done. We’re on the waitlist for a farm environment plan with Fonterra, which we’re looking forward to using, as it will give us a clear sense of direction.”

As for future ambitions, the couple have a vision for the type of farmers they want to be in 2030:

“We’ll be focused on efficiency, strong herd genetics, milking the cows we want to milk, and ensuring we’re on track to providing Oakley with a bright future.”

BNZ Agribusiness Partner: Patrick Taylor

“Nicola and Blair have a natural understanding of both the financial and non-financial aspects of their business. Their curiosity for the banking side of the business and areas for improvement made it easy to support their recent farm purchase. The couple have a great work ethic and a passion for the industry that sets them up well for a long, successful farming career.”



Murray and Fred Gane

Slow and steady transitions are key to a regenerative approach
Agribusiness showcase

Father and son duo Murray and Fred Gane are continuing the family farming legacy on their vineyard, and sheep and beef property, in Marlborough. Cared for by the Gane family since 1867, the mainly Sauvignon Blanc vineyard is Murray’s pride and joy. Fred has joined the farming team and is now running the recently purchased 825-hectare sheep and beef farm.

The Ganes talked to us about their passion for farming, and the evolution of their business.

Murray recalls back in the 1980s when they ventured into viticulture: “Traditionally, the family land was planted in arable, but the deregulation of the wheat industry in the 1980s led us to explore alternatives.” Murray credits his time at Lincoln University, and visiting other successful farmers and growers, with the realisation that vines could secure the family’s future on the land. “The relatively small scale of the block meant a new way of thinking was needed to secure strong income potential and the lifestyle we wanted as a family.”

Fred talks of the importance of the vineyard, “It’s been crucial for our growth. Dad’s foresight has enabled us to purchase the sheep and beef farm. I’ve always had a passion for farming, and sheep are a particular love of mine. I’ve had a bunch of different fads but never strayed from sheep.” Murray acknowledges the diversity and synergies of the two operations.

In recent years, the Ganes have started exploring the potential of new farming systems, and how they could support their future ambitions. Fred highlights the farm system changes recently made on the vineyard operation:

“We’ve made a significant change towards a regenerative system over the past four years, starting with the introduction of an under-vine sward. Initially we were hesitant, so we trialled this on a small block. Early on, we observed a reduction in production, but that was followed by a harvest which outperformed our conventional vineyard. The trial has since led to a new way of managing the entire vineyard.”

The pair are also excited about the new system’s ability to reduce reliance on chemicals, and the lifted levels of soil organic matter they’ve noted, which allows the sward to grow, and stock to graze earlier.

“We are interested in what conversion to regenerative farming could mean for the sheep and beef business too. However, we need to understand the value proposition when compared with the current system”, Fred says. “We intend to set up some trials on two different paddocks. One with a regenerative mixed pasture base, and another one that’s conventional. That way we can measure dry matter intake, evaluate stock performance, and make an informed decision.”

Fred sees the changes to the farm systems as critical to meeting consumer expectations, adding: “We want to showcase New Zealand’s clean and green image, and promote our brand”.

Looking towards 2030, the Ganes have a clear vision for the future of the family legacy:

“We want to be farming sustainably, and play our part in having a planet that we can proudly hand over to future generations. Agriculture is going to look different in 2030 and our aspiration is to have a business that will meet the challenges of the time.”

BNZ Agribusiness Partner: Jim Pain

“Murray and Fred are a strong intergenerational team. They enjoy discovering and embracing new technology, and using it to adapt to change, generating positive solutions, and growing and diversifying their business. They anticipate future requirements and are continually future-proofing their business.”



View from an expert



Hugh Good - Author

Global Market Intelligence & Research Manager,
Beef + Lamb New Zealand

Despite the impacts of COVID-19, New Zealand's red meat sector has not only proven its resilience, but it continues to perform well on the global stage. In 2021, prices for our sheep meat and beef are near record highs – the average price per tonne of lamb is up 21 percent on 5-year averages, with beef up 16 percent.

We can also look forward to increasing our access in the UK. This year, New Zealand has signed a historic trade agreement (in principle) with the UK, removing tariffs on sheep meat and beef after a 10- to 15-year phased period. This has the potential to save the industry up to \$44 million in the first year on beef tariffs alone, and may go some way to assuaging concerns related to geo-political trade risk.

It is heartening to see 'the rise of the conscious consumer' recognised within the survey as a major force impacting the sector. Beef + Lamb New Zealand's Market Development team conducted a global segmentation that identified the 'conscious foodie' as our target consumer. All communication and marketing efforts for Taste Pure Nature, New Zealand's red meat-origin story, were then targeted at this demographic. This research has enabled us to have laser focus on how to develop and engage our international target audiences. We have been able to conduct specific work in our two key-focus territories, China and the USA, deep diving into these segments to understand how their food choices link to beliefs around health, wellbeing, and wider ethics.

Since starting our Taste Pure Nature campaign in the USA in March 2019, we've grown awareness of New Zealand's farming practices amongst Californian Conscious Foodies by 17 percent, and more than doubled preference for New Zealand grass-fed beef (in the home of grain-fed beef!). More widely, we have brand- and social-media-tracking programmes active in our major export markets, to remain positioned on top of change and enable our stakeholders to be proactive.

In China, our strategy includes identifying and developing partnerships with brands that enable growth in awareness and reach of our brand. Through campaigns using influencers, social media, paid advertising, and more, we have reached millions of Conscious Foodies. This has included an exclusive New Zealand, grass-fed beef and lamb zone at Swiss Butchery, a high-end, specialist retailer in Shanghai, where no customised branding had been allowed before. We've also partnered with Shanghai-based Kiwi chef Hamish Waddle, Executive Chef at the iconic 'M on the Bund' and 'M Glam' restaurants, to design and create restaurant-quality meals using New Zealand, grass-fed beef and lamb.

Shift Happens 2021 highlights the increasing importance of the environmental aspects of farming, such as water, biodiversity, and more (all concerns of the Conscious Foodie). We are the first major sector to conduct an evaluation of the market potential for regenerative agriculture, which is purported to deliver better environmental outcomes versus conventional farming. This study has given farmers and processors direction on where and how to capitalise on this farming system. It has also given them direction on how to realise this opportunity through a New Zealand-specific lens, with programmes such as the New Zealand Farm Assurance Programme Plus, etc. The study has also highlighted that we're well ahead of our global competition when it comes to this style of farming system, and that it's up to us to seize this opportunity.

Concerns around rural connectivity, bundled with ever-increasing technological demands on-farm, and management change, brought about in reaction to the pandemic, is echoed in our research conducted by UMR. The survey shows that whilst there are a growing number of farmers who regularly use the internet to learn something new for their farm, there is growing dissatisfaction around farmers' rural connectivity. Ensuring that farmers are connected, and part of ongoing digital and technological development, will be critical for the sector's current and future success.

We acknowledge the scale and pace of regulatory change is extraordinary. Later in this report, you can read about Beef + Lamb New Zealand's tools that can help farmers to navigate these changes, such as the Beef + Lamb New Zealand Greenhouse Gas Calculator and the New Zealand Farm Assurance Programme Plus.

Ultimately, the sector is investing in its future through telling New Zealand's farming story on the global stage, and looking at opportunities for improved marketing through concepts such as regenerative agriculture.

Towards 2030 fact sheets to help you prepare

Tear me out
and refer to
me later

The Essential Freshwater package - managing your obligations to improve water quality

In partnership with AgFirst Waikato, we've designed a series of helpful fact sheets to support with planning for the future of your agribusiness. In this fact sheet, we explore the Essential Freshwater package and offer practical steps to help you manage your obligations and continually improve water quality on your farm and in your catchment area.

Why is understanding the Government's freshwater management regulations important for your agribusiness?

We all know that freshwater is a valuable resource. The 'Our Freshwater 2020' report, produced by the Ministry for the Environment and Statistics NZ, highlighted nitrogen and E. coli concentrations in waterways under pastoral land were higher than those under native land cover. Despite some water quality trends showing improvement in recent years, the majority of rivers in rural areas are still classified as polluted, and action continues to be needed to reduce the impact of agricultural activities on water quality, to restore and protect the health of our freshwater.

The Essential Freshwater package - what's in it and what's the aim?

The Essential Freshwater package (released in 2020 by Government) contains several new pieces of regulations, including:

- National Policy Statement for Freshwater Management 2020 (NPS-FM 2020)
- National Environmental Standards for Freshwater 2020 (NES-F 2020)
- Stock Exclusion Regulations 2020
- Measurement and Reporting of Water Takes Amendment Regulations 2020
- Amendments to the Resource Management Act (RMA) 1991 to provide for faster freshwater planning, and mandatory and enforceable freshwater farm plans.

The aim of the Essential Freshwater package is to:

- stop further degradation of our freshwater
- start making immediate improvements, so water quality improves within five years
- reverse past damage and bring our freshwater resources, waterways, and ecosystems to a healthy state within a generation.

What key policies and regulations will be most relevant to your agribusiness?

National Policy Statement for Freshwater Management (NPS-FM 2020)

- Provides national direction for regional councils’ policy statements and plans.
- Regional councils must give effect to Te Mana o te Wai and actively involve tangata whenua in freshwater management.
- Te Mana o te Wai ensures the health and well-being of the water is protected and human needs are provided for before enabling other uses of water.

National Environmental Standards for Freshwater 2020 (NES-F 2020)

- Set national rules for the ways particular activities or use of resource are to be carried out to deliver on shorter-term freshwater objectives.

What conditions does your agribusiness currently need to meet?

For natural wetlands and rivers, resource consents are required for:

- certain in-stream structures that can impede fish passage
- reclaiming beds of rivers
- some restoration, scientific research, maintenance of certain infrastructure, arable and horticultural land use, and natural hazard works in and around wetlands are permitted, subject to conditions
- vegetation clearance, earthworks, drainage or taking, using, damming, diverting, and discharging water in and around natural wetlands, if they are not otherwise permitted.

Prohibited: any activity within a natural wetland that could result in the complete or partial drainage of that wetland.

For agricultural intensification, resource consents are required for:

- land use change of more than 10 hectares from any farming land use to dairy farming
- land use change of more than 10 hectares from forestry to pastoral farming
- increase in irrigated area of more than 10 hectares on dairy farm land
- increase in area of dairy support land above the highest annual amount in the period from 1 July 2014 to 30 June 2019.

For new intensive winter grazing of livestock on an annual forage crop, a resource consent is required if any of the following conditions cannot be met:

- The area of the farm that is used for intensive winter grazing (IWG) must be no greater than 50 hectares or 10% of the area of the farm, whichever is greater.
- The mean slope of a paddock used for IWG must be 10 degrees or less.
- Pugging (penetration of 5 cm or more) must not cover more than 50% of the paddock and must not be deeper than 20 cm at any one point (except 10 m or less from fixed water troughs or entrance gates).
- Livestock must be kept at least 5 m away from the bed of any river, lake, wetland, or drain.
- Land used for IWG must be replanted as soon as practicable after livestock have grazed the crop, but no later than 1 October (1 November in Otago and Southland where this date applies only until 30 April 2024, then it changes to 1 October thereafter).

Note: For any existing IWG, rules apply from 1 May 2022. As of November 2021, the Government is currently reviewing proposed changes.

For stockholding areas, where vegetative cover cannot be maintained, a resource consent is required if:

- more than 10% of the cattle held are older than four months or weigh more than 120 kg; and any of the following conditions cannot be met:
 - The base area of the stockholding area must be sealed to a minimum permeability of 10⁻⁹ m/s.
 - Effluent must be collected, stored, and disposed of in accordance with regional council requirements.
 - The stockholding area must be at least 50 m from any waterbody, bore, drain or the coastal marine area.

For feedlots, a resource consent is required if:

- more than 10% of the cattle held are older than four months or weigh more than 120 kg, and
- cattle are kept for at least 80 days in any six-month period and fed exclusively by hand or machine.

For synthetic nitrogen fertiliser applied to pastoral land, a resource consent is required if:

- more than 190 kg per hectare per year is applied.

The nitrogen cap does not apply to land used to grow annual forage crops or to land used to graze livestock on the stubble of a crop after arable land use. Dairy farmers must collect records of fertiliser purchased and used for the year ending 30 June 2022, and report to councils by 31 July 2022, and each year after that.

For protection of lakes and rivers, stock must be excluded from grazing within 3 m of a lake or river with a bed wider than 1 m (existing permanent fences as of 3 September 2020 do not need to be moved) as follows:

- From 3 September 2020, the rules apply on any terrain, to any new pastoral system for dairy cattle, dairy support cattle, beef cattle intensively grazing, deer intensively grazing, and pigs; as well as to deer and beef cattle on low-slope land as defined at the following website: <https://environment.govt.nz/acts-and-regulations/regulations/stock-exclusion-regulations> (‘Intensively grazing’ means break feeding, or grazing on annual forage crops, or grazing on pasture that has been irrigated with water in the previous 12 months).
- From 1 July 2023, the rules apply on any terrain, to dairy cattle (except dairy support cattle), beef cattle intensively grazing, deer intensively grazing, and pigs.
- From 1 July 2025, the requirements apply to all dairy support cattle (regardless of land slope); and to beef cattle and deer on low-slope land.
- A dedicated culvert or bridge must be used when cattle or pigs cross a lake or wide river more than twice a month unless they are supervised and actively driven across.

For protection of wetlands, all cattle, deer, and pigs must be excluded from the following:

- Natural wetlands identified in an operative regional plan, district plan, or regional policy statement as of 3 September 2020, by 1 July 2023 (on any slope of land).
- Natural wetlands that support a population of threatened species, from 3 September 2020 for any new pastoral system and by 1 July 2025 in any other case.
- Natural wetlands more than 500 m² in area on low-slope land (as mapped), from 3 September 2020 for any new pastoral system and by 1 July 2025 in any other case.

For water takes of 5 litres per second or more, permit holders will be required to record water use every 15 minutes and supply the data directly to regional councils effective the following dates:

- From 3 September 2022 for 20 litres per second or more.
- From 3 September 2024 for 10 litres per second or more.
- From 3 September 2026 for 5 litres per second or more.

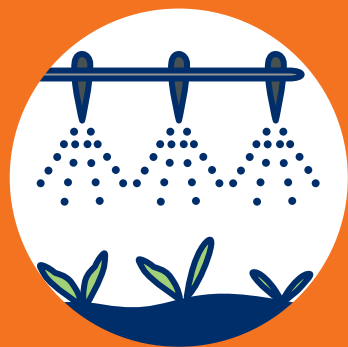
For managing freshwater, a certified freshwater farm plan¹ will be required for a farm that is:

- 20 or more hectares of pastoral, 20 or more hectares of arable, or 5 or more hectares of horticulture.

We know that’s a lot of information. For your agribusiness, here are a few things to help you get started:

1. Ask your farm consultant or industry professional for advice.
2. Identify the freshwater regulations that are going to impact your farming system.
3. Get started on putting together a Farm Environment Plan.

¹You can find out more about this in our ‘Farm Environment Plans: A key planning tool for your agribusiness’ fact sheet. This and more Natural Capital fact sheets are on the BNZ Agribusiness website: <https://www.bnz.co.nz/business-banking/agribusiness>

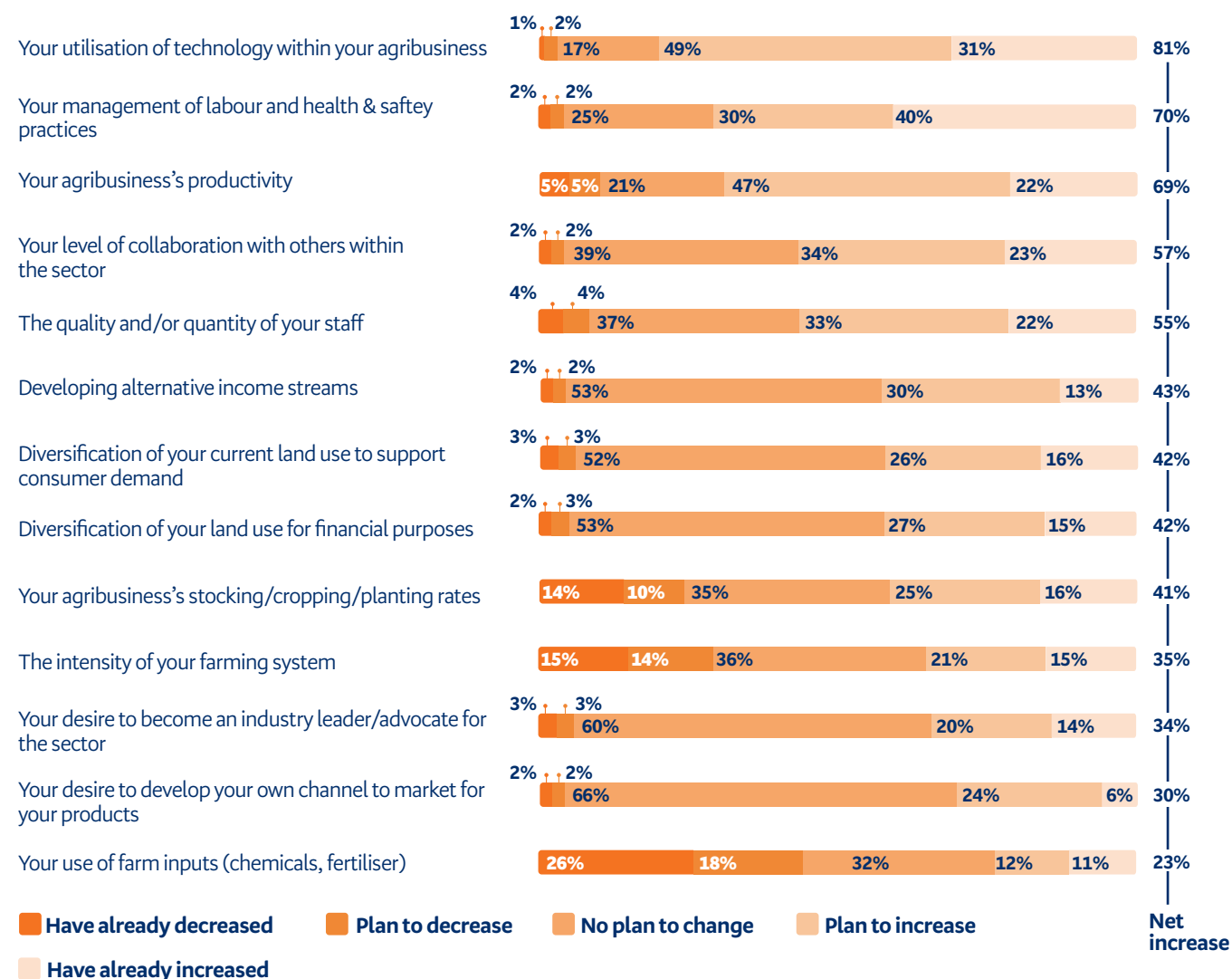


Nurture: Action for change

We surveyed BNZ agribusiness customers and networks to understand their views on the pace and scale of change influencing their agribusiness, now and in 2030. We also asked what plans (if any) were being made in response.

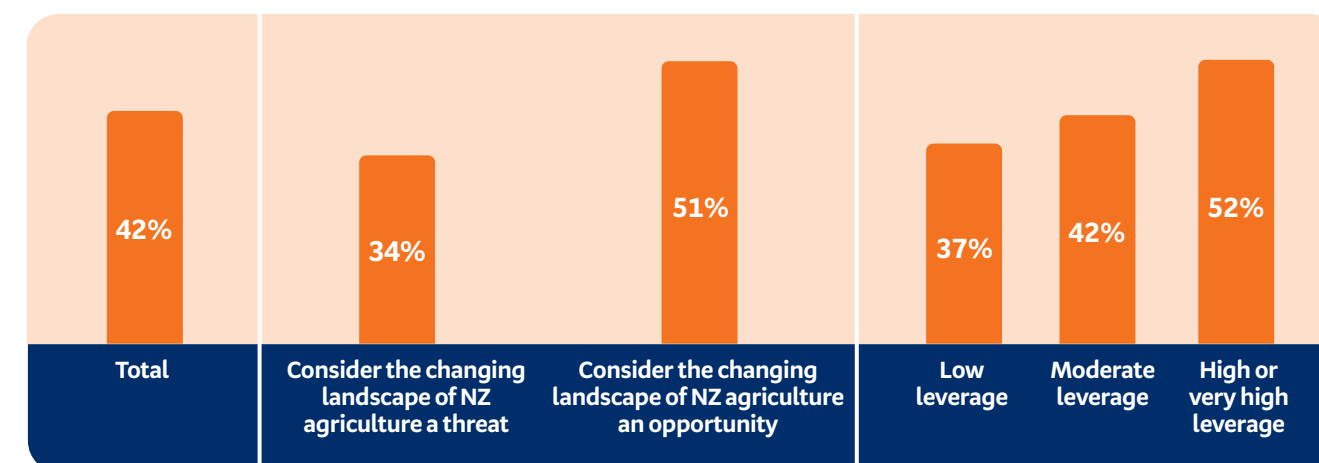
We share their voice:

In response to the various megaforges influencing NZ agribusinesses, it's most likely primary producers will have already made positive changes to their farms' chemical use, labour, health and safety practices, and utilisation of technology.



Likely to diversify land use in response to consumer demand:

NZ primary producers with high or very high perceived debt levels are more likely to consider this strategy in future.

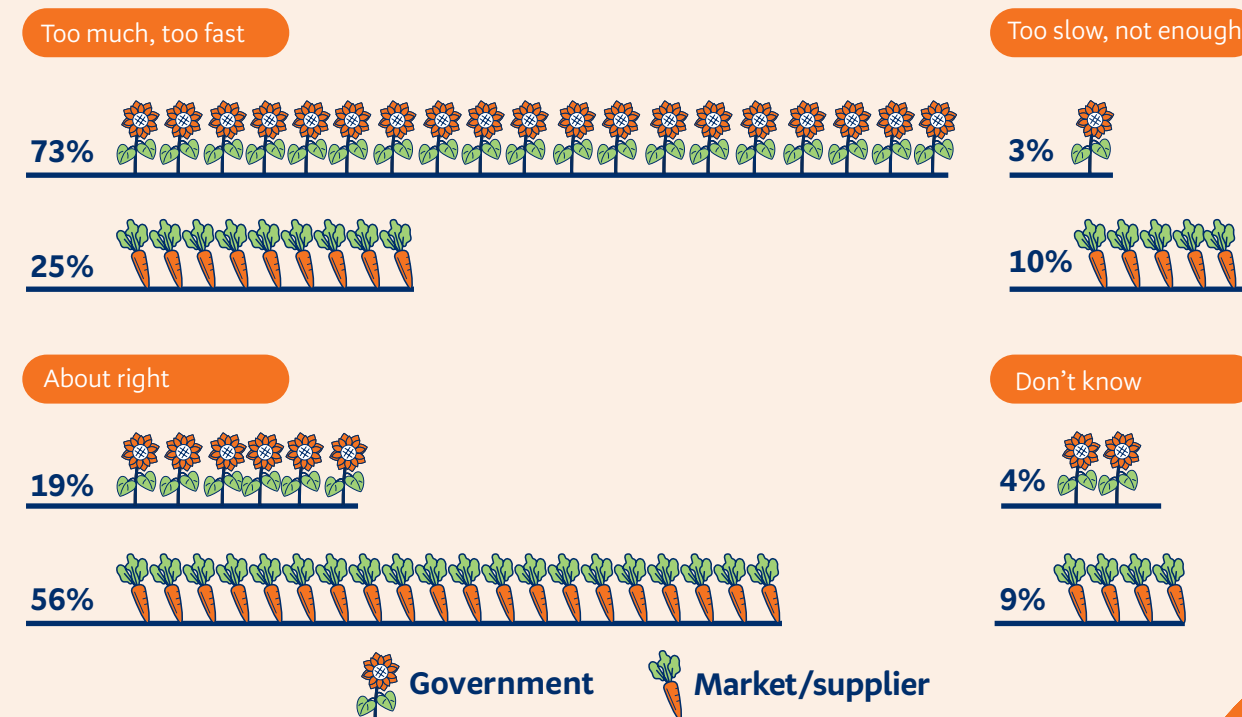


70% of farmers have already or are planning to improve their management of labour and health & safety practices.

Almost half of NZ primary producers say that labour restrictions currently have a strong or extreme influence on their agribusiness.

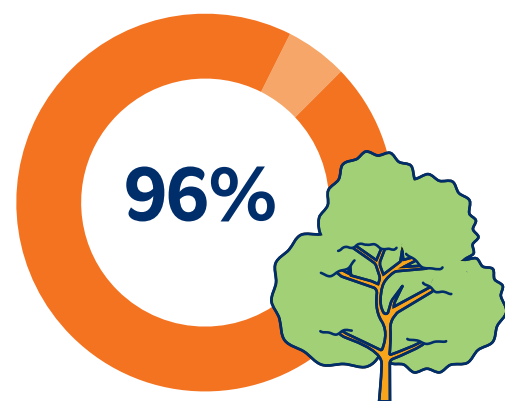


In the last two years, the pace and scale of change asked of NZ farming by government regulations is widely considered 'too much, too fast'. However, over half consider changes asked by the market to be 'about right'.





Where are the greatest cost increases coming from?

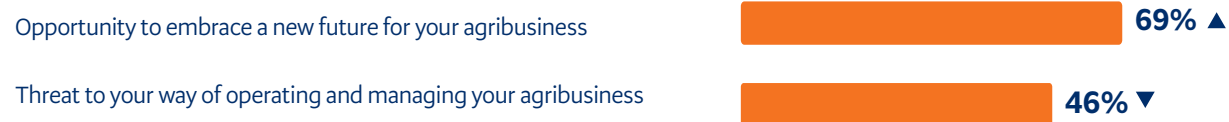


96% of farmers have noticed an increase in environmental costs in the last 5 years, suggesting a dramatic increase in projects across all sectors to improve the environment.

Anticipated level of change in technology usage for personal agribusiness in next two years:



Percentage of farmers looking to use more technology, considering their perception of future agribusiness:



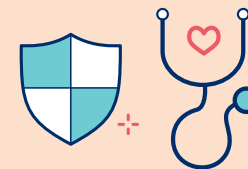
58%

of horticulture and viticulture farmers have already or plan to increase their planting rates.



78%

of dairy farmers have already or plan to increase their management of labour and health & safety practices.



81%

of farmers from all sectors plan to or have already increased technology use.



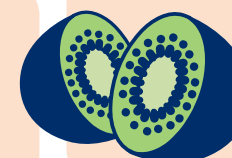
The Waikato is more focused on improving the quality and/or quantity of staff (70% of farmers) than other regions.

7/10



farmers in the horticulture, viticulture and kiwifruit sectors plan to increase or have already increased their level of collaboration with others in their sector.

More than half of dairy farmers are planning to or have already decreased the use of farm inputs (chemicals, fertiliser), whereas 42% of kiwifruit* farmers plan to or have already increased use.



The kiwifruit* sector is the most confident in the R&D coming out of their sector, with more than half of the farmers in the sector somewhat or very confident.

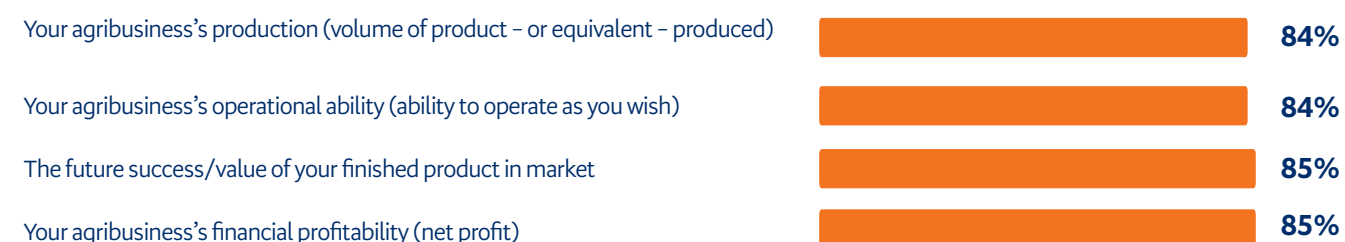
In response to megaforces, younger farmers (18-44 years old) are more likely to use technology, strive to develop their own channels for products to market, and develop alternative income streams.

Dairy farmers are the least likely to diversify land use because of consumer demand, or for financial purposes. Less than a third plan to or have already done so.



Those who saw changes in the primary sector as a threat to the future of their agribusiness were more likely to have little or no confidence in their sectors ability to promote and invest in R&D solutions (54% of farmers, compared to 40% on average).

Across all sectors, the relevance of the current health of climate, land, and water to the future performance of an agribusiness is well understood.



What kind of farmer do you want to become in 2030?

“ Everything in balance. The environment and the bank balance, and the people balanced to be the best they can. – Mixed Livestock, Taranaki. ”

*Small sample size. Data is indicative only.



Nurture: Action for change

Five fast facts:

- **73%** of farmers and growers think Government regulation has been ‘too much, too fast’ in the last two years.
- **42%** understand that financial gains are linked to consumer demand and are willing to respond by adjusting their land use.
- The majority of farmers and growers see the health of our climate, land, and water as highly relevant to their productivity (**84%**) and profitability (**85%**).
- **96%** report an increase in environmental costs over the past five years, signalling rapid improvements to meet increasing environmental standards across the primary sector.
- **70%** are planning to or are already improving their labour, and health & safety practices.



The pace and scale of change

In this section, we examine how agribusinesses are responding to the changes brought about by megaforges. If megaforges are like ocean swells, the pace and scale of change are akin to offshore weather conditions – sometimes it’s a great day to go boating, other times it’s safer to stay onshore.

A sector divided by change

In section one, we discussed the primary sector’s divided opinion: 53% view the pace and scale of change as a future opportunity, 47% as a threat. This is in line with our pre-COVID-19 findings last year when primary producers were slightly more optimistic (58% of respondents saw the future as an opportunity).

No one demographic – age, debt or profit level, region, or farm size – is more optimistic than another. It is a divided sector, squarely down the middle.

However, while split cleanly across demographics, farmers and growers who see change as an opportunity are more likely to have a ‘glass half full’ mentality. They are prepared to pursue the opportunities of 2030 to advance their agribusiness, reflected in:

- An increased focus on the megaforge of food as medicine, and the conscious consumer.
- Viewing the current health of our climate, land, and water as relevant to profitability.
- Exploring diversified land uses for financial purposes or changes to their agribusiness.
- Embracing new technology in the next two years or having confidence in their sector’s ability to promote and invest in R&D solutions.

Farming is like driving a car. You have a big screen in front of you and a small rear-view mirror. If you spend all your time looking back, you will never move forward. You can change the future, but you can’t change the past. – Craig MacKenzie, Canterbury Arable Farmer

Craig is a member of the He Waka Eke Noa farmer reference group, 2016 International Precision Ag Farmer of the Year, and 2008 Nuffield Scholar.

We’re all for progress – it’s change we don’t like

In March 2020, we asked primary producers to outline their view of the impacts of environmental issues on their business currently and in five years. In each case, the view was that reforms would have a higher impact over the longer term. Producers perceive reforms – such as limits to land use activities, management of waterways, limits to nutrient inputs, and restrictions on GHG emissions – as having increasing impacts, with c. 50% viewing reforms as having moderate or high impact in 2019/2020, increasing to more than 60% in five years’ time.

Since March 2020, the primary sector has been subject to several further environmental reforms that mandate changes in farming practices or land use. These include the Essential Freshwater Package, the Zero Carbon Act, the introduction of He Waka Eke Noa, the draft National Policy Statement on Indigenous Biodiversity, and the Three Waters Reform Programme. This trend is widely expected to continue as the Government continues to implement its transformation agenda.

The context for legislative reform is hotly debated. Effectively, it boils down to the Government’s view that environmental regulations over the last 30 years have been insufficient to reduce environmental degradation stemming from the rapid expansion of intensive forms of agriculture. The prosperity this expansion has generated for the nation has been widely acknowledged. However, the impact on our natural capital has spurred the Government to introduce stronger environmental regulations to address a perceived imbalance.

Successive governments have been down this path before. In 2003, the Government proposed a tax on all livestock for their methane emissions – dubbed the ‘fart tax’ – and unleashed a wave of farmer protest.

Fast forward to July 2021 when an estimated 60,000 mostly rural New Zealanders took to the streets to protest environmental regulations. Some said they opposed unworkable regulations and critical labour shortages. Others objected to the rate and volume of implementation. A second protest was held in November 2021.

During its conversations with the primary sector, the 2021 KPMG agribusiness agenda found the current breadth of change is stretching many organisations.²² Similarly, our BNZ survey found that three quarters of producers perceived government regulation to be ‘too much, too fast’ in the last two years. In contrast to government-mandated change, over half the producers we surveyed agree that changes required by the market or suppliers in the last two years were ‘about right’.

Irrespective of perceptions, regulatory and market signals are unlikely to let up anytime soon. Increasingly, consumers and investors will focus on the environmental and social impacts of their purchase and investment decisions. The world’s political and business leaders will continue to evaluate the impacts of climate change and respond to it. For example, roughly 200 listed companies, banks, and insurers in NZ are being legislated to make climate-related financial disclosures from 2023.²³

Regulation might force the hand of the c. 10% of agribusinesses we surveyed who think the current health of the climate, land, and water has no relevance on the future performance of their agribusiness. For the rest, establishing a new equilibrium will mean embracing mitigation or adaptation, using new bio and agritech, and seeking fresh ideas to harness opportunities.

What kind of farmer do you want to become in 2030?

Constantly being aware of changes and reacting positively.

– Sheep & Beef Farmer, West Coast.

We are already well down the track

Many producers are already off and running. Our survey found that more than 81% of farmers and growers were ready to or had already embraced new technologies. 44% had already or were planning to reduce farm inputs such as chemicals and fertilisers, especially dairy farmers. They were also most likely to have made a net decrease in farm system intensity (42%), and stocking rates (35%).

We also found that two out of every five producers were motivated to change their agribusiness in response to megaforges, particularly those in horticulture and viticulture.

While not every agribusiness has taken drastic action, almost all have made some changes. According to the October 2021 BNZ Rural Wrap, farmer spending intentions are about as high as they have been over the decade. Some of this no doubt reflects expected cost increases. But generally good prices for product, and still relatively low interest rates, are also encouraging investment.²⁴ Our survey reflects this sentiment too, with 96% reporting an increase in environmental costs over the past five years. Whether producers see the future as an opportunity or a threat, for the vast majority their ‘can-do’ attitude is turning the wheels of change.

This finding aligns with KPMG’s inaugural Net Zero Readiness Index (NZRI) 2021, in which NZ was ranked ninth globally in the lead-up to COP26. The index compares the progress of 32 countries in reducing GHG emissions and assesses their preparedness and ability to achieve net zero by 2050. NZ’s overall ranking was driven primarily by the agricultural sector’s readiness to invest in and implement change.²⁵

In the solutions section of this report, we discuss the myriad of solutions available now, and in development, to help producers ready themselves for the future.

Future fit: innovation unlocks growth

Changing regulations and market signals will require solutions to some of the biggest challenges the food and fibre sector has faced. Necessity is the mother of invention - embracing technology and innovation will be key to becoming the farmer of 2030.

In February 2020, about half of primary producers anticipated using more technology in their agribusiness over the next two years. In this year's survey, 81% plan to or are already increasing technology use. The main driver - particularly for those aged 18-44 - is the need for accurate data to make informed decisions, measure efficiency, and innovate.

The role that technology and digital adoption will play in your agribusiness in 2030:

“Investing in technology will enable our ability to adapt, innovate, and prove the impact of our farming systems. – Beef farmer, Waikato”

In 2020, MBIE released the NZ Industry Transformation Plan (ITP) for the primary sector.²⁶ It outlines the opportunity for agritech (including biotech) to play a vital role in delivering the Primary Sector Council's vision: 'Fit for a Better World'. Increased uptake of agritech is estimated to be worth \$17b annually in additional output and export for NZ farmers and growers. The sector is widely considered to be relatively untapped, particularly in areas such as input efficiencies, water quality, and climate.

Sustained growth of the agritech sector is a key priority of AgritechNZ, a membership organisation launched in 2018, designed to advance the ecosystem of Agritech in NZ. BNZ is a proud member.

In 2020, there were around 950 agritech companies in NZ²⁷. Most were focused on improving automation and efficiencies in growing and harvesting, data solutions, environmental management, and animal/crop health - areas critical in developing the farm of 2030. Agritech also has the potential to solve labour shortages and supply chain challenges (particularly in relation to food waste), making the case for rapid agritech adoption even more compelling, especially if the sector is able to collaborate through data sharing.²⁸

PlantTech is an example of collaboration between business, academia, and government to develop digital technologies in horticulture. It will use the Bay of Plenty's leading horticultural sectors - including kiwifruit and avocado - to test innovations, pool knowledge, and apply deep artificial intelligence (AI) expertise to common industry challenges.²⁹ Its case studies include exploring how AI can improve pollination, determine the impact of weather on avocado yields, or estimate the size profile of kiwifruit.

Our survey found kiwifruit growers have the most confidence in the R&D emerging from their sector. They also understand the benefits of pooling knowledge - 70% of horticulture/viticulture and kiwifruit businesses have increased or plan to increase their level of collaboration.

Perhaps the confidence is due to the surge of innovation within the sector. The 2021 establishment of the Kiwifruit Breeding Centre³⁰ - a 50/50 joint venture between Plant & Food Research and Zespri - will focus on greater innovation in kiwifruit breeding, by creating healthier, better tasting, and more sustainability-focused varieties. The Centre's role is explicitly linked to growers' needs for future solutions.

Tim Wixon, BNZ Head of Technology Industries, notes great momentum in NZ's agritech industry:

“It's an exciting space, in which New Zealand could be world leading, given existing strong expertise in agriculture and technology. BNZ is playing its part investing in agritech leadership and supporting agritech businesses earlier in their evolution, through non-dilutive capital, networks, and expertise. We're also offering innovative financing solutions, and recently launched a revenue-based financing product for agritech 'software as a service' companies with over half a million of recurring revenues.”



Dollars and sense: adjusting to a shortage economy

According to work by the New Zealand Institute of Economic Research, a typical dairy farmer receives about 19 cents from every retail dollar spent on dairy products. Across other agribusinesses it's: red meat: 31 cents, grains: 22 cents, and vegetables: 16 cents.

In section one, we spoke about the rise of the conscious consumer and the potential for Kiwi farmers and growers to earn premium prices by selling products that are ethically and sustainably produced. This emerging trend gives agribusinesses an opportunity to increase their cut of the retail dollar by lifting the share of value add produced on the farm.

Selling premium products into global markets would also help protect agribusinesses' profitability in the face of rising input costs. 2021 has certainly presented farmers and growers with an inflationary environment. Constrained supply chains have meant shortages of imported inputs and volatile prices, meaning difficulties in accurately predicting costs and delays for farmers wanting to invest in their agribusiness.

Raw material prices have also increased markedly. For example, urea and DAP prices have doubled since the beginning of the pandemic, putting upward pressure on farm-gate prices. With freight rates at or near all-time highs - NZ international freight costs doubled in the year to June 2021 - it has also become more difficult and expensive to get product offshore.

As well as the importance of producing premium products, inflationary cost pressures also highlight the need for robust budgeting and forecasting, particularly for smaller-scale producers who are more sensitive to price fluctuations. Strong financial management by smaller agribusinesses is key in lifting profitability - while 70% of large agribusinesses are exploring innovative ways to increase profitability within their current farming systems, only 54% of small agribusinesses are doing likewise.

Only a third of agribusinesses currently budget and forecast on a monthly or quarterly basis, up slightly on March 2020. Agribusinesses that report profits of \$250K or more per year are more likely to budget and forecast monthly or quarterly, indicating a direct correlation between higher profits and active budgeting.

Sheep and beef, dairy, and forestry farmers Jo and Allen Johnstone say proactive planning and a diversified portfolio has been key to overcoming cost pressures: “We see diversity as the key to riding the volatility of commodity prices. For us it's a way to future-proof our business and ensure we stay ahead of the curve. We believe in being proactive and planning strategically. It's hard work putting out fires and a lot easier being prepared”.

Cost pressures are not only confined to material inputs. The labour market is also extremely tight, with many farmers and growers who previously relied on migrant workers now unable to source crucial labour at their busiest times of the year. In June 2021, the Government recognised the crippling shortage of workers in the primary sector and approved border class exceptions for 200 skilled dairy workers and 50 veterinarians, with additional seasonal workers from the Pacific Islands being given MIQ exemptions, offering some short-term relief to an acute sector shortage.³¹

However, the Government has signalled that NZ is not going back to the days of high migrant inflows. Recognising this, many farmers and growers are taking action to make their businesses more attractive places for New Zealanders to work and live. 70% of respondents already have or plan to improve their management of labour, and health and safety practices. 43% are exploring employing a different type of qualified skillset, often on higher wages.

Employee experience expert, Shane Green - a New Zealander with experience advising businesses in the USA - suggests local employers should pay attention to the quality of the work environments they provide:

“COVID has created a very unique opportunity in terms of the workforce. We're in the employee experience economy now, which means taking care of our employees is more important than anything else, and New Zealand needs to catch up. – Shane Green, Employee experience expert.”

BNZ Head of Corporate Agribusiness Guy Ensor adds that, in addition to creating a high-performance culture, primary sector employers need to ensure accommodation is kept to a very high standard to attract and retain staff. He also says taking time to help staff with financial literacy and managing finances can have a lifelong impact for good.³²

Future-focused leadership

Primary sector leaders who pave the way for innovation and material transformation will need to be bold. Uniting the primary sector behind a common cause and set of actions to nourish their agribusinesses by 2030 will be no small feat, but is essential to create a world-leading sector.

Our survey tested confidence levels in the current sector leadership, in terms of promoting and investing in R&D and solutions to support agribusinesses to make the necessary changes needed in the coming years. Only 34% were confident, while 40% had little or no confidence their current leaders would be able to offer the solutions needed. Sheep farmers felt the least confident, presumably as a strong wool strategy to lift wool prices has yet to be bedded down, although one is expected early 2022. In line with a recurring theme throughout our findings, the kiwifruit sector was more likely to be confident that their leaders could deliver*.

Those who saw the future of their agribusiness as an opportunity were more likely to feel optimistic about their sector leadership. This finding is in line with KPMG's Agribusiness Agenda 2021, which identified declining morale among industry leaders and executives as a key issue, along with a lack of bench strength at the senior level.³³

Pleasingly, there is no shortage of farmers and growers wanting to step up to the challenge of leading their sector. There is an increased desire among 34% of respondents to become an industry leader or advocate for their sector, particularly among those aged 18-44.

By embracing and seeking diversity of thought, the sector will be best placed to tackle the challenges it faces. Recently there have been moves to improve the gender balance in primary sector leadership, where men hold 80% of senior leadership roles, even though females make up over 50% of graduates in agricultural fields.

While confidence in future-focussed support from sector leaders was low, when asked if their specific sector (in general) has done a great job, to date, of showcasing the values-based approach to food and fibre production, more than 58% agreed they had. Asked the same question of their marketer/co-operative, the agreement lifted further to 65%.

The challenge for the leaders of tomorrow is to further build national and international recognition of the primary sector's considerable achievements.

*Small sample size. Data is indicative only.



Willie and Ed White

The White Group

A new way of thinking to ensure a thriving industry for future generations
Agribusiness showcase

Willie and Ed White are the fifth generation to farm on their Central Hawke's Bay property. The brothers are in the process of adopting organic and regenerative farming practices on their 1,100-cow dairy farm and 700-hectare arable operation. They shared with us their thinking behind the move.

"Our goal has always been to create a business that meets both the needs of today and of our children. We wanted a sustainable farming system", Willie shares, adding that complying with new environmental regulations and driving better environmental outcomes has always been front of mind. The brothers use a Fonterra Tiaki Farm Environment Plan to track their environmental goals and actions, and work with a local catchment group to share ideas about new ways to continuously improve their on-farm sustainability.

The original idea to shift their farming systems came after Willie visited a farm field day, where organic and regenerative practices were on show. He says:

"We wanted a sustainable farming system. The farm we visited was highlighting good organic and regenerative practices. I had a gut feeling that this was the right thing to do."

Since starting their transitions, the dairy farm has also converted to once-a-day milking. Willie explains that not only does he expect this to improve animal health, but the working environment for staff too: "Without the same means to treat sick cows as non-organic farmers, it made sense to take stress off the cows. It's also attractive for staff."

As they transition to full-organic certification, the Whites are confident in the financials too; "In the long-term, we think organic farming can be just as profitable."

When considering the financial aspects, ex-banker Willie understands the importance of mitigating risks and constantly looking for improved revenue opportunities. Of the arable business, he shares:

"We market our own grain so have invested significantly in silo storage and a dryer. We produce a lot of grain so being able to store it allows us to sell outside prime harvest time, giving access to more favourable contracts. The dryer mitigates harvest risk and expands revenue opportunities."

Willie adds that the overall goal of the arable business, just like the dairy farm, is to maintain the health of the land. "Our goal is an efficient organic farming system with healthy soils", he says.

The brothers are acutely aware of the changing landscape of the New Zealand primary sector, and have some advice for other farmers planning for the future and dealing with change:

"We should have an open mind and be willing to look at everything without being defensive. Don't be scared to have a look at something differently and challenge what you're doing", Willie says.

As to what kind of farmers the Whites want to be, come 2030:

"We want to have a business that's in good shape. We want to be long-term focused, thinking unselfishly about what we need to do to ensure our industry thrives. We see ourselves having farming systems that can adapt."

BNZ Agribusiness Partner: David Bartram

"As a fifth-generation business, the White family are driven to see their business thrive for future generations. They are open-minded, have strong governance, and are not afraid to make changes to meet environmental regulations. I believe these are the key factors of their business's success."



Michelle and Tony Roberts

Top Deck Trading

The collective power of like-minded people
Agribusiness showcase

Near Gore in Southland, Michelle and Tony Roberts run a successful deer velvet and dairy heifer grazing business. The couple shared with us their pathway from dairy farm workers to farm ownership, and the support they've found in sharing knowledge with like-minded people.

The couple talked us through their motivation for moving from dairy farming to dry stock, and their plans to support their daughter Kate in her farming ambitions.

Michelle and Tony spent close to 30 years dairy farming across New Zealand, before exiting the industry four and a half years ago. "We are passionate about farming and love what we do. At the time, we wanted to step back from a busy schedule and invest in a business that could meet our family's future needs", Tony says.

The couple decided to settle in Southland and pursue an interest in deer. They purchased two adjoining properties to set up the deer and heifer grazing operation, also giving their daughter the opportunity to further her career. "Kate was keen to continue farming", Michelle recalls. "Kate is now employed on the farm and also owns a mob of Speckle Park cattle. This provides her with extra income to grow equity".

Tony shares the key to the family's success is grounded in focusing on long-term sustainability and the end consumer of their products:

"We take great pride in running a sustainable business and generating a living from healthy land and well-cared-for stock." Producing good quality velvet for their customers is a key focus too; "Our velvet ends up in Asia. The consumer wants assurance that the product comes from well-reared animals, so we aim to meet those expectations", Tony explains. "Our velvet is labelled and traceable back to us. We are motivated to assure our markets." On the inspiration to strive for quality, Michelle adds, "There are great farmers locally that we try to emulate. We want to be the best we can".

Michelle and Tony have teamed up with like-minded deer farmers to form a local discussion group facilitated by Deer Industry NZ. They shared with us the collective power of the group:

"The group discusses environmental challenges and solutions relating to the deer sector", Tony says. "It's a great platform for sharing knowledge. We have a combination of field days and workshops, where experts educate us on topics such as greenhouse gases, water quality, and biodiversity". Michelle is equally enthusiastic about the group, "It's about farmers collaboratively doing the right thing. We share our farming burdens and help each other form solutions". She adds that the knowledge gained has been invaluable to their business. "For example, we completed a Farm Environmental Plan that covers good management practices, an intensive winter grazing plan, and key steps to protect and improve water quality."

When asked about what kind of farmer they'll be come 2030, the Roberts share their vision:

"Our vision for 2030 is to have a profitable and sustainable business that we can hand over to the next generation. Our land should be in a better state than we found it. Ideally, we will have a wintering barn for the deer, increased biodiversity, and more sediment traps to protect waterways."

BNZ Agribusiness Partner: Kurt Knarston

"Michelle, Tony, and Kate are hard working and passionate. They aim to operate their business in a financially, environmentally, and socially sustainable way. Their investment into enhancing their environment has been immense, and the results have shone through over time. They have a positive attitude towards the agricultural sector and tackle challenges head on, ensuring they are always one step ahead."



Spotlight on excellence in Agribusiness



The Ahuwhenua Trophy – the legacy of a lifetime

Māori sheep and beef farmers are being urged to enter the 2022 Ahuwhenua Trophy competition for Excellence in Māori Farming. The trophy is the oldest and one of the most prestigious competitions in the agri sector, and is designed to recognise excellence in Māori farming. Initiated in 1933 by the great Māori leader Sir Āpirana Ngata and, the Governor General at the time, Lord Bledisloe, it has since produced an outstanding alumni of finalists and winners, showcasing the very best in Māori farming.

Māori contribute more than 15% of red meat exports. They have done much to expand and develop their farming operations, both in terms of sustainability and profitability. This competition provides an outstanding opportunity for Māori farmers to showcase their success and innovation to a wide audience of political, business, and farming leaders, as well as their own whānau.

BNZ has proudly been an integral partner in the Ahuwhenua Trophy for the past 18 years.



While the 2022 award focuses on excellence in sheep and beef farming, previous awards have highlighted those at the top of the dairy and horticulture sectors. We take a look at the past two winners:



Tataiwhetu Trust

2021 Dairy winners

Based on pride, passion, and performance, Tataiwhetu Trust epitomises the concept of Māori land ownership developing profitable, sustainable land for future generations.

Based south of Whakatane, the 450-cow dairy farm transitioned to a fully certified organic system in 2015. Enabling a price premium, the Trust now generates better returns with lower stock numbers and a move to once-a-day milking. Tataiwhetu Trust Chairman Paki Nikora said of the transition, “It plays an important role in keeping to our farm’s philosophy. If you look at our cows in the afternoons they’re smiling and playing.”

Paki suggests deciding to apply for the Ahuwhenua Trophy was a leap of faith. “We weren’t sure if we were good enough. Eventually we decided to have a go, and worked hard to get our farms up to a quality standard. We were really surprised that we were a finalist and then to win the award on the night, that was just an awesome experience for our whānau.”

Paying homage to their ancestors and kaitiakitanga, Paki suggests the win for Tataiwhetu was a win for Māoridom. “Winning this award has shown that we can deliver better outcomes for ourselves – for Māoridom. It doesn’t mean we know everything – there is always more to learn – but this award has cemented a new attitude, from our farm right through to our communities.”

He adds that collaboration within the sector has been one of the most meaningful benefits of winning the award. “Doors of opportunity have opened every day since. It’s been fantastic to collaborate with like-minded farms, businesses, and government agencies.”



Te Kaha 15B, Hineora Orchard

2020 Horticulture winners

As they look to expand their thriving kiwifruit business, Te Kaha 15B are focused on lifting the wellbeing of their people. They are working to offer greater employment opportunities, education, and staff housing for their community. Te Kaha 15B, Hineora Orchard is a freehold Māori land block, near Te Kaha in the Eastern Bay of Plenty. The 11.5-hectare, gold kiwifruit orchard produces 133,000 trays per year, and includes a packhouse and staff accommodation.

Te Kaha Chairman Norman Carter said they declined the request to apply for the Ahuwhenua Trophy when first approached, suggesting it was too early. After some reflection, they entered, considering the experience an opportunity to measure themselves against their peers. Norman suggests the application process is robust; “If you’re looking to apply, understand that all areas of your business will be thoroughly looked over, including accounting, environment, and community.”

The mana of winning the award is immense, Norman comments, adding that winning has been pivotal to opening up more opportunities for the region. Te Kaha have since received PGF investment funding, allowing further joint-venture developments. They are also exploring the development of a new 15-hectare Hayward Orchard, piloting a nursery, and investing in a small holiday park.

The win has also helped them to attract (traditionally hard-to-find) permanent staff, through the ability to explore ways to support their education and upskilling.



Marcus Tietjen – BNZ Agribusiness Partner for both entities:

“The Ahuwhenua committee understand the importance of identifying businesses that approach problems with an extremely long-term view, and factor sustainability into all decisions. BNZ is proud of our banking relationships with both Te Kaha 15B, Hineora Orchard and Tataiwhetu Trust. Both winners do an outstanding job of leading by example, and managing finance and risks across their businesses.”

View from an expert



Colin Mansbridge - Author

CEO of Crusaders

Having been Head of Agribusiness banking at BNZ for almost two years, I am exceptionally aware of the constant changes, challenges, and external pressures faced by the primary sector. Many of these are similar to challenges we face in the world of sports, with climatic and commodity changes in agriculture being easily translated to law changes, injury impacts, media feedback, and the desire to not let our community down.

The key with any change is not necessarily how you predict what will happen, but how prepared you are to deal with it when it does. There are certain qualities within the Crusaders' culture that prepare our people for change and ensure we are not mortally wounded when it inevitably occurs.

Resilience is one of our four pillars of performance and is underpinned as follows:

Getting better: From the early days of the Crusaders, a culture of seeking improvement has pervaded our whole organisation. Across all facets of our business and the modern game, getting better is a priority, whether it be match analysis, communication, time management, or strength and conditioning. The Crusaders will not rest on their laurels from one season to the next, and are willing to change and innovate in areas that others would not normally look to change.

In recent years, the Crusaders have been innovative with their on-field training approach. We are now the team who spends the least amount of time at training compared to other Super Rugby clubs. It is counter-intuitive for many to reduce on-field training time, but it has allowed us to dedicate the saved time to further innovation and growth.

Language: Language has an impactful influence on emotionally dealing with challenges and crisis. A positive vocabulary rubs off on your wider team and helps your own internal emotional bank account. Crusaders constantly police the use of negative language with a view to changing discussion around what we can't do to what we can do. By avoiding the use of terms such as 'can't' and 'don't', you can easily reframe the way you talk about a challenge or crisis into a positive action, rather than focussing on the negative impacts.

Mindset: If you approach change as the 'change agent' rather than the 'change victim', you will control your narrative and your game plan. Working on having a positive mindset, which creates more passion and engagement within a team, rather than a negative mindset, means every problem can be viewed as an opportunity.

When a player gets injured, the Crusader does not talk about the negative impact this may have. Instead, the team approaches the positive aspect around bleeding a player who the opposition does not understand, and the positive impact this player will make with their skillset. This approach stimulates belief from the individuals and the collective team.

In a world that is changing more rapidly and profoundly than we have ever seen, it is critical that we equip ourselves for the change. We must be pragmatic around the cards we have been dealt, and that which is out of our control. Conversely, we must take control of what we can control – that is our attitude to change and our mindset for when it inevitably arrives.

Towards 2030 fact sheets to help you prepare

Tear me out
and refer to
me later

Getting to know and manage on-farm Greenhouse Gas (GHG) Emissions

In partnership with Agfirst Waikato, we've designed a series of helpful fact sheets to support with planning for the future of your agribusiness. This fact sheet explores managing on-farm Greenhouse Gas (GHG) emissions, and offers practical steps to knowing your number and putting together an emissions reduction plan.

Why is it important for your agribusiness to take action now?

Under the Paris Agreement, New Zealand agreed to reduce its GHG emissions by 30% by 2030 (based on 2005 emissions). To this end, the Zero Carbon Act was enacted in 2019. This stipulated a 10% reduction, below 2017 emissions, of biogenic methane by 2030 and a longer-term target of 24-47% reduction by 2050. The big target is a net zero emissions level of all GHGs other than biogenic methane by 2050.

Currently, the Primary Sector Climate Action Partnership (Government, industry, and Iwi) called He Waka Eke Noa¹, is considering how agriculture will set a price for on-farm GHG emissions from January 2025 onwards. A key aspect of He Waka Eke Noa's work is to develop an on-farm accounting system, which would allow the 'point of obligation' for on-farm emissions to sit at the farmer level.

What is the point of obligation?

This refers to the point at which any GHG emissions will be accounted for. There are two key options:

1. At the processor level: this means that the processors (e.g. dairy/meat companies) would pay the tax to the Government, and recoup this from farmers via reduced pay-outs and schedules. Administratively, this would be more efficient but masks the cost to farmers.
2. At the farmer level: this would involve a direct cost for each farm, relative to their net GHG emissions. Administratively, this would be more complex but offers the individual farmer a direct cost of their emissions, and therefore an incentive to mitigate these. This option is widely considered favourable to the primary sector.

What targets will the primary sector need to meet, and by when?

As part of the work underway through He Waka Eke Noa, they are identifying ways to ensure the primary sector can meet the following targets:

- By 31 December 2021, 25% of farmers need to know their on-farm GHG emissions numbers and have a written plan to manage emissions.
- By 31 December 2022, 100% of farmers need to know their on-farm GHG emissions numbers.
- By 31 December 2024, 100% of farmers need to have a written plan to manage GHG emissions.

¹<https://hewakaekenoa.nz>

So, what options are available to manage and reduce on-farm GHG emissions?

Firstly, it's essential to understand what the key drivers of two of the key on-farm GHG emissions (methane and nitrous oxide) are and what the reduction steps could be:

The amount of dry matter eaten by livestock. There is a direct correlation between this and methane emissions.

- This is the biggest driver of on-farm GHG reductions. In most circumstances, a reduction in stocking rates would reduce dry matter eaten significantly and reduce GHG emissions². AgFirst modelling highlights that if stocking rates are reduced, per-animal performance must be improved in order to maintain the financial viability of the business.

The amount of protein in the diet – excess protein is excreted via urine, some of which is converted to nitrous oxide by soil organisms.

- One option is to explore reducing the amount of protein in the animals' diet coming from imported supplements. For example, switching from palm kernel (moderate protein) to maize silage (low protein) will reduce nitrous oxide emissions by a few percent.

The amount of nitrogen fertiliser used. On pastoral farms this is largely used to grow more dry matter. Nitrogen fertiliser also has direct nitrous oxide and carbon dioxide emissions.

- Some potential actions include: lower application rates at any one time, only applying when necessary, and not applying when soil mineralisation rates are high³.

It's also important to note the variety of research and development currently underway to support on-farm GHG emissions reductions through new innovative solutions:

Genetics:

- Low-methane rams should be available within 2-3 years (as of November 2021).
- There is significant research underway within the dairy industry, with the first low-methane bulls, able to reduce methane emissions by about 10%, anticipated to be available in the next 5 years.

A methane vaccine:

- May reduce methane emissions by about 30%. It is hoped to be available by 2031.

Methane inhibitor:

- An additive which when fed directly to ruminants could reduce methane emissions by about 30%. The key challenge, given New Zealand's pasture-based feed system, is in developing either long-term inhibitors and/or slow-release mechanisms.

Nitrification inhibitor:

- A compound which when applied to the soil can reduce nitrous oxide emissions. While some compounds have been identified, commercial availability is still some years off.

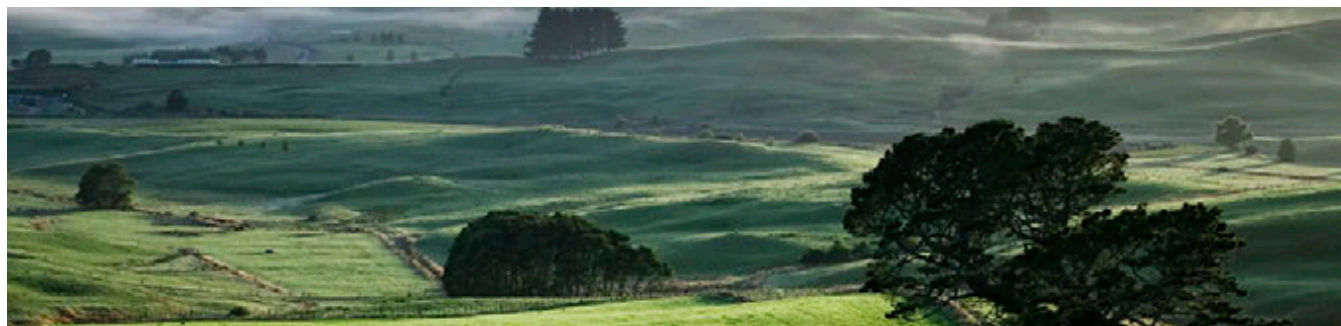
There's also the ability to offset emissions via Forestry, as a short-term solution.

It's possible for an agribusiness to use carbon sequestered from forestry to offset their on-farm emissions.

It's important to familiarise yourself with what is eligible to be used as an official offset.

You can read about the current definitions and details of what counts as a Forest under the ETS, in Natural Capital fact sheet 2⁴.

He Waka Eke Noa are currently considering an expansion on what farmers could claim for sequestration. Forestry for either carbon farming or offsetting is a complex area, and expert advice on this is recommended.



²<https://www.agfirst.co.nz/wp-content/uploads/2020/09/Achieving-Zero-Carbon-Act-Reduction-Targets-on-Farm-AGF.pdf>

³<https://www.dairynz.co.nz/environment/on-farm-actions/strategies-to-reduce-n-fertiliser-use>

⁴<https://www.bnz.co.nz/business-banking/agribusiness>

How to get started within your agribusiness: know your number, build a plan.

Know your number:

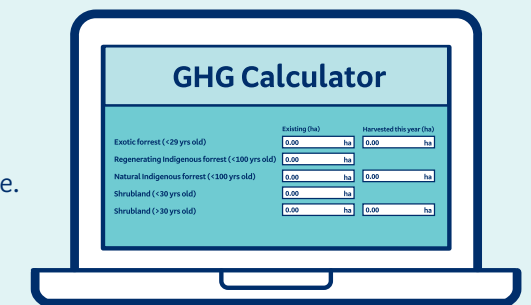
Above we outlined that by the end of 2022, 100% of NZ farmers will need to know their on-farm GHG number. For calculating farm-level emissions, a GHG calculator is essential.

Several tools are available to calculate on-farm GHG emissions. A review of these can be found here:

- <https://hewakaekenoa.nz/wp-content/uploads/2021/05/Review-of-Models-Calculating-Farm-Level-GHG-Emissions-2-June-2021.pdf>

Of the available calculators, possibly the two best known are Overseer and Farmax. There are various calculators available, including:

- Within the dairy industry, many milk processing companies have opted to use Overseer to calculate their suppliers' on-farm GHG emissions.
- Fonterra use their Agricultural Inventory Model (AIM) as another alternative to calculate the on-farm emissions of their supplier base.
- In addition, Beef+Lamb New Zealand have recently released their GHG calculator⁵.



Build a plan:

1. The first step to building an on-farm emissions plan is to know your GHG emissions number and benchmark this against wider industry emission figures. A 2017 Dairy NZ study showed an average emission of 9.6 Tonne CO₂e/ha, with a range of 3.1 – 18.8 T CO₂e/ha, and a 2020 study by AgResearch showed an average emission of 3.6 T CO₂e/ha, range 0.16 – 7.1 T CO₂e/ha for sheep and beef farms.
2. The second step is to understand the drivers of on-farm GHG emissions, and what options are available to either mitigate and/or offset emissions. This may involve farm system change, lower stocking rates, improved productivity, reduced supplement inputs, and so forth.
3. Land use change may be a viable option in some cases. For example, land use change may average emissions down (via horticulture), or provide offsetting via forestry. Consider thoroughly the implications on GHG emissions, and also its financial viability. Seek help from an industry professional or consultant.
4. Ensure that your GHG management plan is integrated into your Farm Environment Plan (FEP). Actions to improve water quality will also likely reduce GHG emissions and vice versa, so it's imperative that both are included in the same FEP.
5. If you're considering significant change, it may be advisable to wait until He Waka Eke Noa has completed its work (expected March 2022). Three of the key aspects here are the price farmers will face, any changes to the forestry sequestration regime, and how the on-farm accounting system works. Until these are known, any implementation needs to be done cautiously. A possible exception here may be if forestry is a part of your plan; this will take time to implement, so planning and implementation should proceed.

Within your agribusiness, here are the most important actions to start doing right now:

- ☒ Ask your farm consultant or industry professional for advice.
- ☒ Understand the options you have to reduce GHG emissions; either altering your farming system, and/or land use change.
- ☒ Start thinking how you will incorporate this into your Farm Environment Plan, alongside actions on water quality.
- ☒ If you are contemplating using forestry as a carbon offset, then (a) get good advice, and (b) start organising your planting.

⁵<https://beeflambnz.com/ghg-calculator-info>

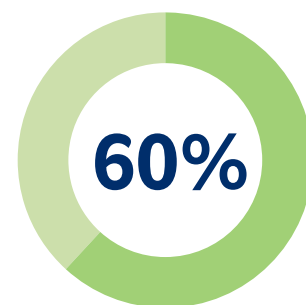
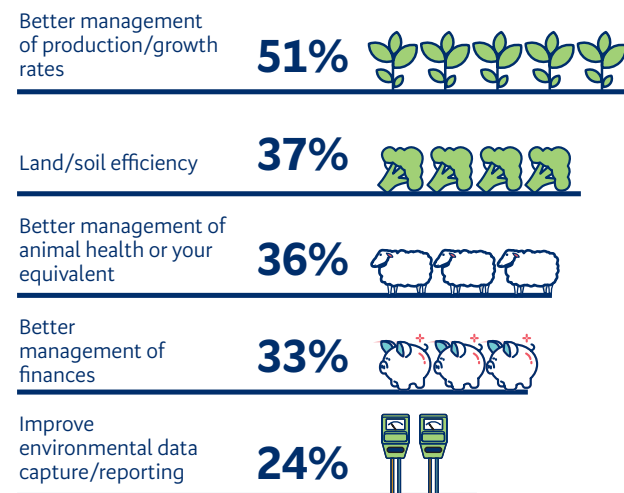


Grow: Sustainable solutions

We surveyed BNZ agribusiness customers and networks to understand which tools and solutions are already (or may be) supporting agribusinesses with their current and future challenges.

We share their voice:

Top five challenges farmers are trying to solve using new technology:

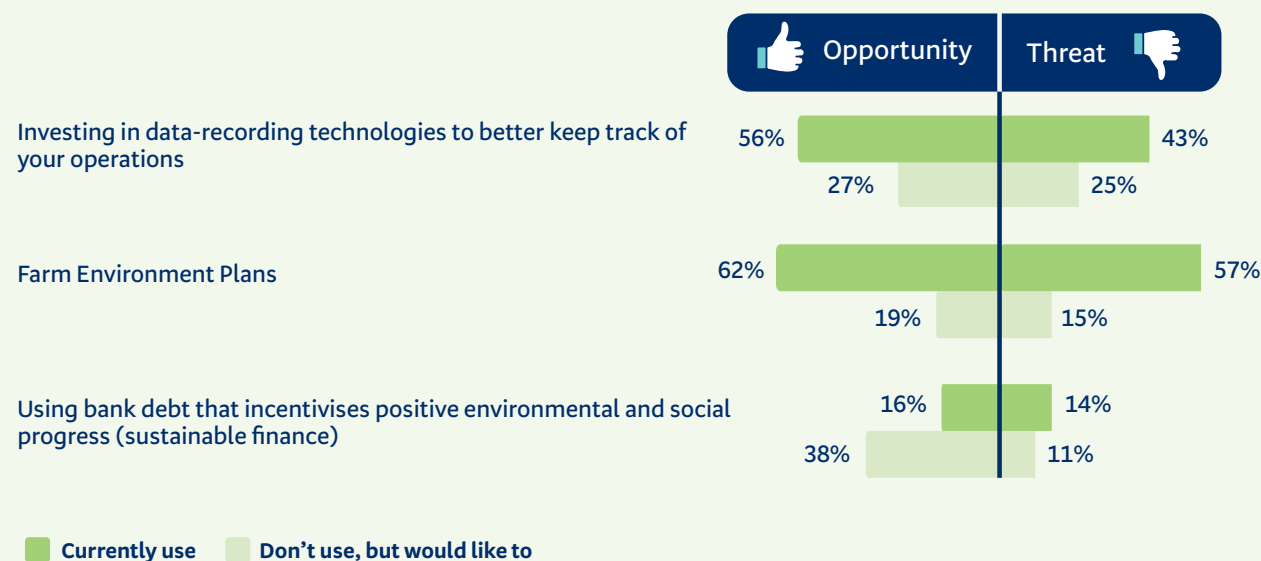


of farmers and growers are exploring innovative ways to increase profitability within their current farming system (including R&D on new genetics/cultivars) between now and 2030.



anticipate using more technology in their agribusiness in the next two years.

Those who see the changing landscape as an opportunity to the future of their agribusiness are more likely to invest in data-recording technologies and Farm Environment Plans, and utilise forms of sustainable finance from their banks.



The solutions and tools being used now and in the future to respond to the megaforges influencing agribusinesses:

Sustainability strategies that incorporate compliance obligations



Farm Environment Plans



Integrated farm plan



Accreditation to farm assurance programmes/certifications



Farm Environment Plans that include reducing Greenhouse Gas (GHG) emissions



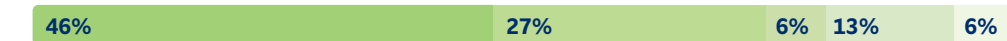
GHG emissions calculators



Using a farm/environmental consultant



Investing in data-recording technologies to better keep track of your operations



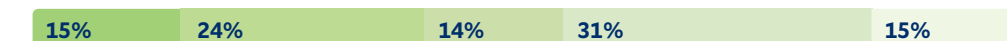
Exploring different genetics and breeding to increase livestock efficiencies



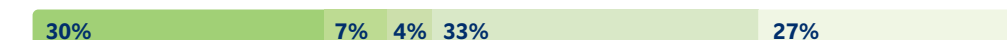
Investing in automation equipment



Using bank debt that incentivises positive environmental and social progress



Investing in PaySauce or similar to better manage your wages/payroll



Employing a different type of skill set amongst your staff



Legend: Currently use Don't use, but would like to Don't use/don't know how Don't use and don't plan to N/A

Environmental solutions

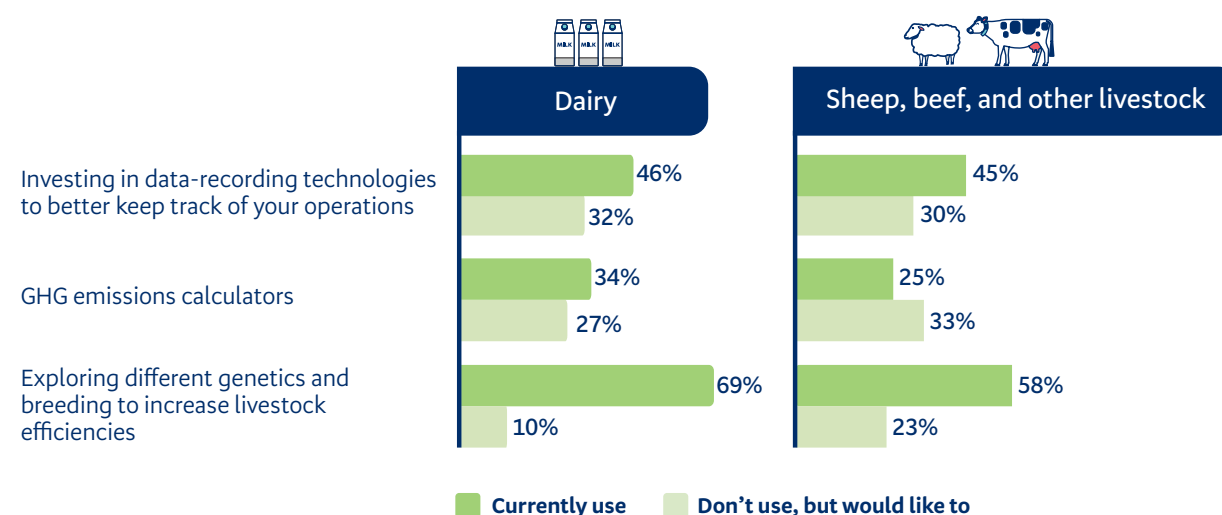
Innovation and research

Financial

Labour



The dairy sector is more likely than the sheep and beef sector to currently use data-recording technology and GHG emissions calculators, and explore new genetics and breeding systems. However, the sheep and beef sector are more likely to employ these solutions in future.



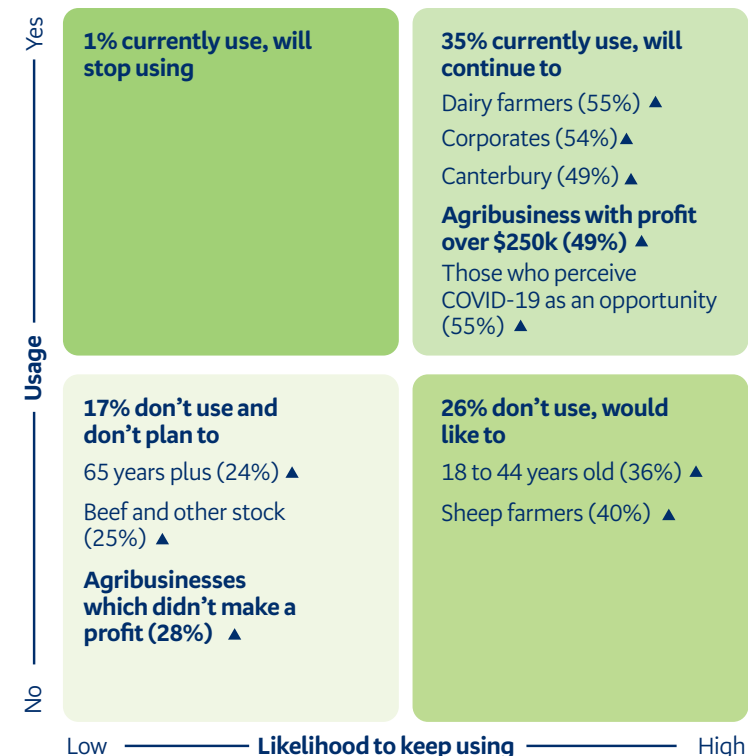
What kind of farmer do you want to become in 2030?

Sustainability is the ability of an entity to fulfill its own financial, environmental, and social outcomes to survive and thrive.
 – Beef farmer, Waikato

Who are the top three trusted advisors to an NZ agribusiness?



Those who are most likely to use a Farm Environment Plan that includes GHG emissions:



Over **50%** of farmers either currently use a form of sustainable finance, would like to use it, or need more training on how to use it.

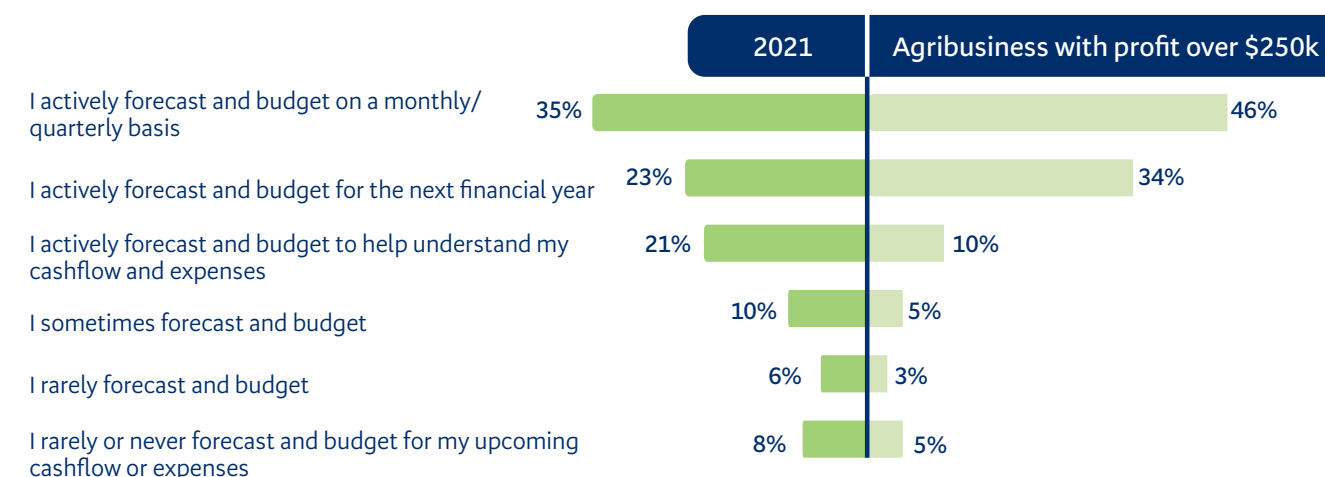


60% are already accredited with a farm assurance programme or certification.



One third of agribusinesses complete a financial budget and forecast, monthly or quarterly. This is most common among corporate-sized farms, those with high debt or high profit, and dairy farmers.

Within your agribusiness, please choose which statement best describes how you/your team forecast and budget for cashflow and expenses each season?



42% of farmers and growers suggested they were exploring succession and/or exit strategies within their agribusiness. This is most common amongst farmers aged 55 to 64.

Exploring succession/exit strategies for your agribusiness in next five years



Canterbury (57%) farmers are most likely to invest in new technology to support animal health.

Manawatu - Whanganui and Wellington are more likely to increase biodiversity (43%), reduce GHG emissions (41%), and explore land use diversification (15%).

Kiwifruit* sector most likely to invest in employee development, followed by horticulture/viticulture, and dairy.

Sheep farmers are most inclined to work with a local catchment group.

Otago and Southland agribusinesses are most likely to invest in new on-farm infrastructure, especially small businesses.

Digital capabilities decrease with age. The sheep, beef, and dairy farmers have slightly poorer digital capabilities than the horticulture/viticulture and kiwifruit growers.

*Small sample size. Data is indicative only.



Grow: Sustainable solutions

Five fast facts:

- **60%** of farmers are accredited with a farm assurance programme or certification.
- **54%** anticipate using more technology in the next two years (compared to 56% in 2020), with 46% currently investing in data-recording technologies.
- **More than 50%** use sustainability strategies that incorporate compliance obligations, while 59% are using Farm Environment Plans.
- **Over 50%** use sustainable finance, would like to do so, or need more training to use it.
- While the dairy sector is most likely to already use a GHG emissions calculator (**34%**), the sheep and beef sector are most likely to get one in the near term (**33%**).



Solutions mindset

New Zealand's reputation for innovation is embedded in our history and culture. The BNZ Shift Happens survey explored the tools and solutions farmers and growers are using to adapt and meet challenges within their agribusinesses.

Respondents delivered a clear message: solutions are already being adopted at pace, with more on the horizon. Primary producers are stepping up to become the farmers and growers of 2030.

A problem shared is a problem solved

Earlier in this report, we noted the Government's pre-COP26 announcement that NZ pledged to reduce net emissions by 50% by 2030 (from 2005 levels), lifting its former target by 20%³⁴. We also mentioned the freshwater reforms currently underway.

Achieving such targets will require a raft of future solutions to be deployed in the primary sector – as well as a mindset shift that prioritises planning, solid understanding of the numbers, and a resolve to act. So, what does everyone need to know, and by when?

- **On-farm emissions:** He Waka Eke Noa is developing information and tools to help the sector understand their GHG emissions numbers and obligations. By the end of 2022,³⁵ all farms will need to know their GHG number. More detail can be found in our Natural Capital fact sheet #4: 'Getting to know and manage on-farm Greenhouse Gas (GHG) Emissions'.

Ensuring farmer awareness of this deadline was a focus of the October 2021 Silver Fern Farms Co-operative farmer roadshow, at the time, Co-Chairman Rob Hewett said legislative change behind the farm gate was, 'coming at us like a freight train', and farmers who did not know their GHG number, or the mission of He Waka Eke Noa, would find out about them very soon, when He Waka Eke Noa releases its guidance for pricing emissions in early 2022.³⁶ A discussion document with two proposed options was released to selected groups in late November 2021. The options are for a farm-level levy for pricing on-farm emissions or a processor-level hybrid levy.

- **Freshwater:** The Government's new Essential Freshwater regulations require all farmers and growers to have a freshwater farm plan, to be phased in from mid-2022.³⁷ More detail on this can be found in Natural Capital fact sheet #3: 'The Essential Freshwater package – managing your obligations to improve water quality', and #5: 'Farm Environment Plans: a key planning tool for your agribusiness'.

Importantly, more than half of respondents already have a Farm Environment Plan (FEP) (59%), or would like to implement one (17%). Slightly fewer (35%) have an FEP that also includes their GHG number, with a further 35% likely to implement one. 25% use their own GHG calculator, and a further 38% would like to use one.

Our survey found those who already have an FEP that includes their GHG number are more likely to be dairy farmers. This isn't surprising given that some processors have launched FEP programmes to help their suppliers and/or shareholders to understand their obligations. Those looking to obtain one shortly are more likely to be aged 18-44 or sheep farmers, signalling the red meat sector's leadership with initiatives such as the New Zealand Farm Assurance Programme Plus (NZFAP+).

NZFAP+ is an extension of the original NZFAP,³⁸ which offers a seal of authentication for consumers covering the origin, food safety, and animal welfare of food production standards across the red meat and fibre sector. NZFAP+ incorporates a higher voluntary sustainability standard with additional components: people, farm and natural resource, and biosecurity.

Workshops have long been a successful forum for sharing farmer information. BNZ is supporting agribusiness customers to upskill by partnering with DairyNZ on 'The Dollars and Sense of Going Green' workshops held in 13 regions, attended by c. 400 farmers. This was part of the DairyNZ Step Change Project that builds farmer knowledge and provides practical solutions to enhance profitability and reduce environmental impacts.

There is also pan-sector work underway, led by MPI and industry groups, to offer Integrated Farm Plans (IFP), which bring together all facets of compliance obligations. A living document, an IFP further helps farmers and growers tell their story around what is already being done, and form a plan for areas that still need attention.

Ultimately, farmers and growers learn by doing, which explains the popularity of catchment groups that allow knowledge sharing about freshwater and GHG emission solutions with neighbouring farmers. Government investment has resulted in more than 170 catchment groups nationwide receiving support to transition to more-sustainable land use.

One example is the five-year Aparima Community Environment, part of the 'Thriving Southland' catchment project, established to help dairy and dry stock farmers improve their farming practices, and river and estuary water quality. The project involves six farmer-led catchment groups, Environment Southland, DairyNZ, Beef + Lamb New Zealand (B+L NZ), Fonterra, and Open Country Dairy, plus support from other industry groups.⁴⁰

Incentive-based solutions aligning capital with progress

In section one, we discussed the rise of the conscious consumer and investors as a megaforce shaping the future of the food and fibre sector. The conscious investor is influencing new forms of sustainable finance and incentive-based lending – adding another tool to the 'Farmer of 2030' toolkit. Our survey found that more than 50% of respondents use, would like to use, or need more training on sustainable finance.

In February 2021, BNZ launched the first on-farm, sustainability-linked loan in Australasia, with ethical dairy investor Southern Pastures, for \$50 million over three years. Southern Pastures, owner of Lewis Road Creamery, is financially incentivised to meet ambitious water quality and biodiversity targets, and for achieving further reductions in its on-farm GHG emissions. Achievement or failure of the targets will be directly linked to a portion of loan costs.⁴¹

BNZ has committed to offering more of this type of lending to businesses across NZ, and was the first bank to set an ambitious target to achieve \$10b of sustainable finance lending by 2025.



We understand that solving the challenges of tomorrow will take innovative solutions, and believe that incentive-based loan products for NZ agribusinesses allows them to align their ambitious and material ESG goals with their capital requirements. That is why BNZ pioneered sustainability-linked loans in the agribusiness marketplace.

– Dana Muir, Head of Natural Capital, BNZ



Along with MPI and other rural banks, BNZ contributed to the release of the 2021 Sustainable Agriculture Finance Initiative (SAFI) guidance, a workstream for The Aotearoa Circle.⁴² Its purpose is to accelerate investment and support for sustainable agriculture in NZ. The first phase was to develop guidance for sustainable-agriculture finance, taking note of emerging international frameworks and existing good-farming-practice standards used by NZ farmers and growers. Built to work alongside existing on-farm-assurance programmes, the financial sector can use the SAFI guidance to support sustainable agriculture.

Incentive-based structures are gaining in popularity. At the processor level, Fonterra joined other dairy processors in offering an incentive-based programme to reward its 10,000 farmer shareholders for future-proofing their businesses. From June 2021, as part of its 'Co-operative Difference' framework, up to 10 cents (per kg of milk solids) of each farm's milk payment is determined by the farm's sustainability and ethical credentials, and milk quality. The Co-operative says the incentive will help grow the value of NZ milk by meeting increasing global demand for sustainably produced dairy and the changing expectations of customers and communities.⁴³

Other processors are also pledging to join farmers in greening their operations. As just one example, in July 2021, Silver Fern Farms committed to amplify the sustainability efforts across their supply chain and supplier base, and to reduce the impact of their processing plants on the planet, including:⁴⁴

- Launching its first range of Toitū Net Carbon Zero Certified Beef in the USA in late 2021.
- Committing to a regenerative future.
- Ending coal use in its processing plants by 2030.

Technology and data at the frontier of change

The pace of change dictates that the primary sector's future solutions need to be found today. Investment in R&D is critical, not only to develop new technological tools, but also to thoroughly test their effectiveness. Along with the ITP for New Zealand AgriTech, the Government has allocated \$11.4m towards supporting activation of the ITP in its first two years.

Efforts across the public and private sectors are helping to build capacity, spur innovation, and stress test usefulness on-farm, aligning with respondents' desire for pragmatic technological solutions to current and future challenges. Our survey found that those who see the megafactors and changing landscape as an opportunity for the future of their agribusiness are more likely to invest in data-recording technologies. New technology is helping farmers and growers investigate the future and see it now. A snapshot of some tech solutions being used or trialed on the farms of the future includes:

1. **HyperFarm:** Allows users to visualise and understand the impacts of different land uses by interacting with underpinning models and spatial layers, giving users the ability to adopt a 'what happens if?' mindset.⁴⁵ Users are able to draw objects such as fence lines, forestry blocks or fruit trees anywhere in the landscape without having to follow existing paddock boundaries. HyperFarm will be available for commercial use in the near future, according to creator AgResearch.
2. **Allflex smart collar:** Monitors herds 24 hours a day, sending animal health data to the user's phone. This enables better animal monitoring, optimises the timing for artificial insemination, and allows for better decision making, to lift productivity. Herds can be 'watched' remotely, saving labour time throughout the day.⁴⁶
3. **Communities of Practice (COP):** A collaborative project, led by DairyNZ, that combines farming knowledge with scientific analysis to identify and test practical ways of lowering an agribusiness's environmental footprint.⁴⁷ Based around four farms in Southland/Otago that have different climate, topography, and vulnerabilities, the project explores different farm practices on each property, including mitigating environmental impacts, and uses the farms as a benchmark for other farmers.
4. **Transforming the food system:** An AgResearch project in the South Island that uses sensor technology to give farmers a detailed understanding of the effects that farming practices have on a waterway. The project is part of the \$5m New Zealand 'Bioeconomy in the Digital Age' programme, designed to harness the power of digital technologies to enable the transformation of food systems in New Zealand.⁴⁸
5. **Drones - a tool, not a toy:** The use of drones is evolving from weed control or spot spraying to data gathering. Drones can quickly and cheaply produce 3D maps, which can then be used for activities such as designing seed-planting patterns and managing nitrogen levels. They can also generate multispectral images of crops to precisely track changes in health and maturity.⁴⁹

Farmers who have jumped 'gumboots and all' into technology are also keen to share insights. Kolmar Dairies is a 1,600-cow dairy farm near Ashburton. Owner operators Bruce and Susan Turpie are Synlait Lead with Pride members and were recently awarded the Synlait 'Doing Milk Differently Award', recognising their Kiwi ingenuity in solving problems and pursuing new opportunities. Talking about land-use constraints and peak-cow numbers, they share how they plan to continually grow their business: "Since we can't milk more cows, our focus is on improving feed conversion efficiency, making more milk from less inputs. We have invested in technology such as cow collars, milk meters, sexed semen, and GPS systems in tractors. We are able to accurately measure feed requirements of our cows, and use precision tools to apply soil nutrients to grow plenty of pasture. We are also big on staff welfare. We run a six-on and two-off roster, as this keeps people fresh, healthy, and safe".

What kind of farmer do you want to become in 2030?

Future generations having the same or greater opportunities than we have had.

– Beef farmer, Waikato

Industry-led research

When innovation is led by a common mission and a focused approach, it can create great value and gain producers' backing, as our survey found in the big tick of approval horticulture, particularly kiwifruit growers, gave to the R&D in their sectors. Other sectors are also doing their bit:

1. **The market wants regenerative agriculture:** B+LNZ teamed up with New Zealand Winegrowers, and research provider Alpha Food Labs, to review the market potential of regenerative agriculture. It found that regenerative agriculture is gaining momentum and becoming a major food trend internationally that could generate premium value for producers.⁵⁰

The underlying philosophy of regenerative agriculture is that the farm is seen and worked as an integrated system. A regenerative farm might have areas for native biodiversity, like forest remnants, that are connected through the whole farm landscape and integrated with native habitats beyond the farm.⁵¹

2. **Sustainable Food and Fibre Futures fund:** The Government's Sustainable Food and Fibre Futures was launched in 2018 to support funding for innovations to help solve key challenges facing the sector.⁵² To date, the fund has supported 81 projects, including:
 - Miro – a collaboration between iwi, hapū, and whānau land trusts and Māori authorities aims to transition 310 hectares of under-used Māori-owned land into high-value horticulture, creating 565 jobs over the next five years.
 - Leafit Foods Ltd has expanded trials to extract edible protein ingredients from green leafy crops, and make high-quality silage with reduced environmental impacts.
 - Woolchemy has created a new product it calls neweFlex (patent pending), a unique, non-woven textile derived mostly from strong wool, and is working with overseas manufacturers to develop 100% biodegradable, disposable nappies.
3. **Healthier animals:** B+LNZ is running a pilot study to develop a laboratory test for facial eczema (FE) tolerance. This would revolutionise FE testing in NZ. FE is estimated to cost livestock industries up to \$200m annually, and currently available solutions are less than ideal.⁵³
4. **The problem with animal flatulence:** A big effort is underway to address enteric methane produced by the digestive systems of ruminant animals, and methane emitted from manure management. At AgResearch,⁵⁴ these efforts, undertaken in collaboration with industry groups, include:
 - Identifying low-emitting dairy cows and bulls and developing a national methane dairy breeding programme.
 - NZ breeders measuring and ranking their sheep based on their methane emissions, as a result of AgResearch's sheep-breeding programme.
 - Investigating the effects on ruminant methane emissions of including different proportions of plantain, forage rape, and other alternative forages in the diet.
 - Developing a vaccine that triggers an animal's immune system to generate antibodies in saliva that suppress the growth of methane-producing microbes in the rumen.
 - Assessing available technologies for reducing methane emissions from stored animal waste.
 - Looking at different ways to deliver small-molecule methane inhibitors (a chemical compound fed to an animal) safely and effectively to NZ's predominantly grazing livestock, to reduce the production of methane in the rumen.

A study of Bovaer®, a methane inhibitor being trialled internationally, is an example of a science-based solution to climate control in pastoral-based systems that is showing early promise.⁵⁵

5. **Maximising value from land use:** More than 40% of survey respondents say they'd consider land-use diversification in response to changing consumer demand. COVID-19 has encouraged NZ, and the world, to rethink food security. This is an issue that Our Land and Water National Science Challenge is also considering, looking at how crops such as soy, chickpeas, and quinoa can be grown here and could create more value and diversity from land. Other research includes:
 - Growing buckwheat in Canterbury for a Japanese customer making buckwheat noodles.
 - Ongoing trials with GE-free soybeans to identify the best lines for NZ conditions, as well as trials of chickpeas.⁵⁶
 - Picot Productions Ltd and Plant & Food Research looking at the feasibility of growing peanuts commercially in Northland⁵⁷.
 - The sheep milking sector continuing to build its supplier bases, following investments and growth by two key processors, Spring Sheep Dairy and Maui Milk.

Farmers are leading the change. Yvonne and Ben Lee – sheep and beef farmers in South Canterbury – have started a trial at their Bluestone Hereford beef stud to explore reducing nitrogen excreted in urine.

We see an opportunity to assist other farmers with ideas to manage their environmental compliance requirements. One project we have been working on is what we call "Low N beef" or "Green Bull". We do gene typing to identify animals that have less nitrogen in their urine than others. We've found there is a 28% difference in lowest and highest, so we are breeding from our low-nitrogen (N) animals as a tool to potentially lower N leaching.

– Yvonne and Ben Lee, Sheep and Beef farmers, South Canterbury.

Building rural connectivity for rural communities

The widespread adoption of new technology and digital tools faces the hurdle of poor rural connectivity. While efforts continue at a Government level to speed up the delivery of broadband services in rural areas, other options are helping rural users bypass roadblocks on the digital highway.

Elon Musk's SpaceX project plans to create a Starlink constellation of 12,000 satellites orbiting Earth, to bring improved broadband internet access to large swathes of the world's population. This year Southlanders, including primary producers, signed up to be Starlink beta testers. They report that despite the initial investment, it's making their lives easier. One participant said her house now had download speeds of up to 150 megabits per second, compared to less than 10 megabits previously.⁵⁸

The human factor

Given the labour shortages discussed in previous sections, and recognising the need to build a strong and enduring primary sector workforce, the Government announced the following measures in April 2021:

- Funding for an on-the-job mentoring programme.
- Funding for two horticulture career development managers in Pukekohe and Canterbury.
- Establishing a Food and Fibre Youth Network and advisory council with NZ Young Farmers.
- Establishing Innovation Activator workshops with Rural Women NZ to fast track entrepreneurial ideas.⁵⁹

Prior efforts – including MPI's 'Opportunity Grows Here'⁶⁰ campaign, which focused on attracting fruit pickers for the harvest seasons – resulted in 3,694 more people working in the sector since the onset of COVID-19.

Primary producers typically don't sit back and wait, either. Industry groups are taking the lead on long-term solutions to labour market issues, including:

- A Dairy Apprenticeship Scheme, the result of collaboration between Federated Farmers and Primary ITO⁶¹, providing formal training and support to attract motivated New Zealanders into dairy farming careers – 65 apprentices are currently enrolled.
- B+LNZ, in 2021, launching the Growing Future Farmers (GFF)⁶² charitable trust, which aims to accelerate entry-level Essential Farm Skills Programme graduates to advanced Farm Skills and Business Management, offering on-the-job training and support.
- Dairy Tomorrow⁶³ striving to ensure that, by 2025, dairy farmers are adopting best employment practices and providing quality work environments to attract the right staff.

Industry groups are helping members to improve their skills and to evaluate and adopt new technology. B+LNZ's Future Farm Project⁶⁴ demonstrates how new technologies can help maintain extremely high production standards while reducing a farm's environmental footprint. These and similar initiatives, like the Government's Food and Fibre Skills Action plan 2019–2022, aim to give primary producers greater confidence to adopt new tools.

A look to a positive future?

The activities captured in this section of our report highlight the level of ingenuity, commitment, and energy the groups and organisations from across the primary sector are dedicating to solutions for a prosperous and sustainable primary sector. The examples given are by no means comprehensive – a complete list of endeavours would require many more pages than this report can accommodate.

The emergence of initiatives like Toitū carbonzero farm certification allow farmers to calculate their emissions from livestock, inputs, and vehicles, offset by plantings that contribute toward carbon sequestration, including indigenous biodiversity and regenerative farming principles. Lake Hawea Station, the first farm to receive Toitū carbonzero certification, showcases a pivotal opportunity for the sector. Owner Geoff Ross says "The process with Toitū highlights that farming need not be a problem in climate change. Rather farming can be a solution".⁶⁵

Announcing the milestone, Toitū Envirocare said the certification "...demonstrates to farmers, their customers, and regulators that pastoral farms can be carbon neutral and at the same time be commercially viable".⁶⁶

As NZ's farmers and growers strive to shape the future farm of 2030, they have proven time and again that they will not do it by halves. If achieving certified carbon zero is on the near horizon, perhaps NZ's primary producers will go one step further by becoming the first nation to secure a certified-carbon-positive farming future.

Achieving a target like that will draw on the values that underpin our primary production standards: integrity, kaitiakitanga, ingenuity, and respect.

Who is the farmer of 2030?

The farmer of 2030 is **you**





Pete Morgan and Ann Bouma

Investing in smart technology – saving time and money
Agribusiness showcase

Waikato dairy farmers Pete Morgan and Ann Bouma know a lot about the changes the agriculture sector has experienced over the last decade. The couple have progressed through the farming pathway of management, contract milking, sharemilking, and now farm ownership with their 630-cow dairy farm near Te Awamutu.

Pete talked to us about the couple's success, and the farming principles that drive them:

"We base all decisions on the fundamentals of farming, always seeking to understand the science to support our thinking. We always remind ourselves why we love what we do. Success for us is about sticking to consistent themes, focusing on profitability, and maintaining a low-cost structure to withstand climatic pressures and volatile payouts." He adds that animal health, staff and family happiness, and a thriving farm environment are big measures of success.

The couple leverage each other's strengths. Pete says, "Ann and I both have areas of the business we thrive in. Ann fine-tunes the business, does thorough budgeting and financial analysis and, being a vet, she's also in charge of animal health. For me, my main goal is growing and utilising high-quality feed for the cows."

The couple are selective of the tools and technology they invest in, and discuss how one investment has helped to streamline their business.

Taking pride in a low-cost farming system means that investing in expensive cloud-based solutions isn't appealing. Rather, they have recently invested in HALTER cow collars, seeing the potential savings to farm maintenance, inputs, and a greater understanding of key farm-system measures.

Pete shares, "The collars tick all the boxes, and have transformed farming for us. They make use of virtual fencing and movement, meaning the number of hours on-farm has significantly reduced. We can fine tune grazing to the cow's exact needs. It removes the need

for early wake-ups to get the cows in – a positive for staff". Pete also feels he has a greater understanding of animal health and improved heat-detection accuracy. With increases in costs of inputs, and a focus on environmental improvements, the couple also see the advantages it offers for fertiliser efficiencies.

"All these benefits provide more free time for us and the staff to be proactive about farm management and achieving our goals", Pete shares. Pete and Ann consider the collars to be a useful tool for future-proofing their business; "We can see a future where consumers will want to know our farm, our treatment of animals, and our environmental footprint before they buy our produce. The collars help us gather this data".

Moving forward and casting their vision to 2030, the couple have big aspirations:

"The best way to prepare for future change, particularly around emissions, is to first put your efforts into understanding where you are, quantify it, and then help our industry develop good strategies to make improvements. We will be an important part of the answer for New Zealand."

BNZ Agribusiness Partner: Sharon Glenister

"Pete and Ann are passionate farmers who drive positive change in the dairy industry. They have a high level of knowledge, especially around climate change, their emissions profile, and sustainable dairying. They are excellent ambassadors for the dairy industry."



Jason, Quentin, and Andrew Miller

Roslyn Downs Ltd

The New Zealand Farm Assurance Programme Plus – helping to get ahead
Agribusiness showcase

Based near Invercargill, brothers Jason and Quentin Miller, with their wives Jocelyn and Eleanor, and Jason's son Andrew and wife Rachel farm Roslyn Downs, a 620-hectare sheep and beef property. Jason shares their love of the land and how piloting the recently launched New Zealand Farm Assurance Programme Plus (NZFAP+) has helped the sustainability of the business¹.

Jason explains the values that have enabled the intergenerational business to scale:

"We love nature and take pride in turning marginal land into a beautiful environment. We've seen the family farm grow. We want to create an intergenerational business that is financially sustainable." Financial sustainability has been something the family have strived for, sharing that the family's recent purchase of an 870-cow dairy farm was a proud financial achievement. It was also a pivotal expansion to allow Andrew to join the family business. "We've worked hard to remove past financial pressures and were happy the bank was able to support us to scale."

Being part of the NZFAP+ pilot programme has helped the Millers to focus on the business's direction and evaluate their strengths. Jason says of the experience:

"NZFAP+ gives us a working framework and direction, enabling us to achieve our sustainability goals. We started on the pilot programme and now we have full membership." Jason adds that since beginning NZFAP+ they've accomplished many environmental projects (in conjunction with their local catchment group's efforts), including significant double fencing and riparian planting to protect all the waterways, and the construction of several wetlands to improve nutrient management.

Jason breaks down what is required in the NZFAP+ programme, for other farmers considering giving it a go, and explains the benefits they've seen:

"The first step with NZFAP+ is an on-farm assessment. NZFAP+ then provide a basket of tools and solutions. Environment Southland carries out periodic water-quality tests, so now we can measure our impact, plus we do

annual, visual soil assessments." Jason adds that they now know their greenhouse gas (GHG) emissions number and have ramped up tree plantings on marginal land to mitigate.

NZFAP+ has helped the Millers work through impending environmental regulations.

"As farmers, we sometimes feel overloaded by new regulations. NZFAP+ gives us confidence that we can operate sustainably, and that we're moving in the right direction."

Jason sees programmes like NZFAP+ as a great way to showcase New Zealand's sustainable farming practices to consumers. "As farmers, we need to align our story to the top end market. The challenges are big, however, we can eat the elephant one bite at a time. We need all farmers to get on the bus."

And, as to what type of farmers the Millers want to be, come 2030? Jason shares their big plans:

"We want diversified land use, potentially growing vegetables. We also want data systems that integrate with our meat processor. Our vision is a low-cost, efficient, and financially sustainable business, positioned toward growth opportunities."

BNZ Agribusiness Partner: Kurt Knarston

"The Millers' positive mindset and forward-thinking outlook helps them improve financially and environmentally. Their recent dairy-farm investment was an easy one to support for BNZ. They also engage with many rural professionals ensuring they are consistently ahead of the curve."



¹ NZFAP+ was officially released in October 2021. You can find out more about the programme at www.nzfap.com

View from an expert



Ian Proudfoot - Author

Global Head of Agribusiness, KPMG Auckland, New Zealand

I was recently asked to join KPMG International's delegation to the World Economic Forum's Sustainable Development Impact Summit. With current lockdowns, this invitation didn't come with a trip to New York. Instead, it was a series of late-night, virtual dialogues on a range of issues, from sustainable fashion to digital food systems, and circularity to climate change. I heard a lot of great content from political leaders, business executives, and disrupters, but one comment stood out above all others and has shifted my thinking about the opportunity inherent in decarbonisation.

The comment is obvious, but I had never thought about decarbonisation in this way: **"Food and fibre production has a unique potential over all other sectors with high greenhouse gas emissions - it can decarbonise beyond zero and become climate positive."**

Putting some context around this; thinking about other high-emissions sectors (energy generation, industrial heat production, transportation), the best they can aspire to in terms of emissions is zero (or, more likely, net zero using some form of offset). However, farming has the inherent potential to go beyond zero and, rather than just being less bad, can become climate positive, contributing to a better future for the planet, for our communities, and our families.

This ability to become part of the emissions solution provides a strong signal for the sector's future. While farmers and growers will continue to supply food and fibre to the world, more of these products will be produced from systems that regenerate nature, use artificial intelligence to augment system performance, and be sold as certified zero carbon.

More importantly for many farmers, new revenue streams will emerge as they supply ecosystem services into global markets that are already developing and are likely to grow faster following COP26 (permanent carbon sequestration within a farming system is an example). This offers farmers and growers revenue diversification and improved farm resilience, but it will require change. There is no such thing as a free lunch.

The good news is that New Zealand's food and fibre sector is ahead of the world in being ready to make these changes and take advantage of these emerging, new markets. KPMG International's recent Net Zero Readiness Index ranked New Zealand's food and fibre sector first out of 32 countries in readiness to transition to net zero. Our traditional free-range approach to farming, a collaborative approach to setting a decarbonisation pathway through He Waka Eka Noa, and a significant, existing forest biomass all contributed to this ranking. These same factors mean the changes we face, to take a lead in being part of the solution to the world's climate crisis, is smaller than that facing many of our competitors.

I recognise that this does not make the real changes the industry is faced with in New Zealand any easier. Things that have been done forever will be replaced with new technology, tools, and reporting regimes. Some of this change will come with significant cost, in respect of both capital and people's time. Some will create frustration and confusion. When change is just challenge it feels like a massive imposition on an organisation, which delivers nothing in return.

Recognising that the change needs to be done to protect the future for our children, grandchildren, and generations to come, and it also presents opportunity for transformational economic returns, should make the challenging times ahead easier to navigate.

Generating higher returns for our traditional products, by delivering them with a zero-carbon attribute, is the obvious benefit, but one where competition will ultimately commoditise returns. Generating new revenue streams, by farming in alignment with nature and the environment, recognising the decarbonisation potential inherent in our oceans, and delivering ecosystem services that are integrated into day-to-day farming systems offers the potential to transform not only the New Zealand food and fibre sector's greenhouse gas footprint but also its economics.

Towards 2030 fact sheets to help you prepare

Tear me out
and refer to
me later

Farm Environment Plans: a key planning tool for your agribusiness

In partnership with AgFirst Waikato, we've designed a series of helpful fact sheets to support with planning for the future of your agribusiness. This fact sheet looks at why a Farm Environment Plan is an essential planning tool for your agribusiness and offers some practical steps to help you get one for your farm.

Why is getting a Farm Environment Plan (FEP) now important for your agribusiness?

The New Zealand Primary sector is constantly evolving. As an exporting nation, we know the importance of meeting the demands of our customers. Consumer pressure from local and international markets, as well as regulatory change from central and local government, is moving to ensure the NZ primary sector is continuously improving its management of NZ's freshwater, soil, climate, and biodiversity.

The Essential Freshwater Policy released by central government highlights that NZ's freshwater quality has been declining due to a range of issues, including nutrient loading, sediment load, heavy metals, and pathogens. The aim of this policy is to stop further degradation of waterways, to see material improvements within five years, and to reverse past damage within a generation, to ensure healthy waterways.

This is where an FEP can help your agribusiness. Adherence to a compliant FEP ensures:

- Compliance with local and central government regulations.
- Meeting the standards of farm assurance programmes, earning potential incentives, and avoiding market-led penalties for non-compliance.
- The right to supply product to markets and enhance the social licence of the NZ Primary Sector.

An FEP brings together a range of good management practices in areas such as freshwater management, biodiversity, and greenhouse gas management to ensure you continually improve your agribusiness.

What do we currently know?

The three key factors to consider for an FEP are:

- regional council and central government regulations.
- recommended industry good management practices.
- requirements from your processor.

The Essential Freshwater Policy will require all farms to have a certified freshwater farm plan for the following land use:

- 20 or more hectares of pastoral
- 20 or more hectares of arable
- 5 or more hectares of horticulture.

The monitoring and enforcement of these plans will be undertaken by the regional councils. In addition, each regional council will have their own set of rules and regulations. The Essential Freshwater Policy rules are a minimum standard. Your local regional council may choose to set higher standards than this. In addition, we are also starting to see processors enforcing more stringent requirements to meet marketplace demands. Every regional council is at a different stage of formulating and enforcing their own regional plans, so local knowledge for specific issues is essential. Note that, as of November 2021, Government is currently consulting on the proposed details of freshwater farm plans.

What does the requirement for a certified freshwater farm plan mean for your agribusiness?

As a farmer, you can prepare the farm plan yourself, or you can engage a rural professional to help you. The farm plan will need to be certified by a certifier appointed by the regional council. Many processing organisations also have their own template for an FEP, and it is envisaged that these documents will be refined to meet the requirements of the Essential Freshwater policies and regulations in the coming years.

Every farmer in NZ will need to know their on-farm greenhouse gas emissions numbers by December 2022 and have a written plan to manage these emissions by December 2024¹. There’s increasing focus on indigenous biodiversity, and there’ll be an increased level of regulation in this area in the future.

Under the Essential Freshwater policies and regulations, some of the key rules that should be kept in mind include the following²:

- A synthetic nitrogen fertiliser cap of 190 kg nitrogen per hectare per year on pastoral land use.
- Conditions on intensive winter grazing (IWG). As of November 2021, these are currently being refined and will be enforced in 2022.
- Minimum setbacks and stock exclusion from waterways (3 m).
- Drainage or modification of wetlands is essentially prohibited.
- Conditions on placement, use, alteration, extension, or reconstruction of culverts, weirs, flat gates, dams, and fords to ensure fish passages.
- Conditions on feedlots and stockholding areas.
- Water use reporting.
- Conditions on land use change and agricultural intensification.






So, how do you get started within your own agribusiness?

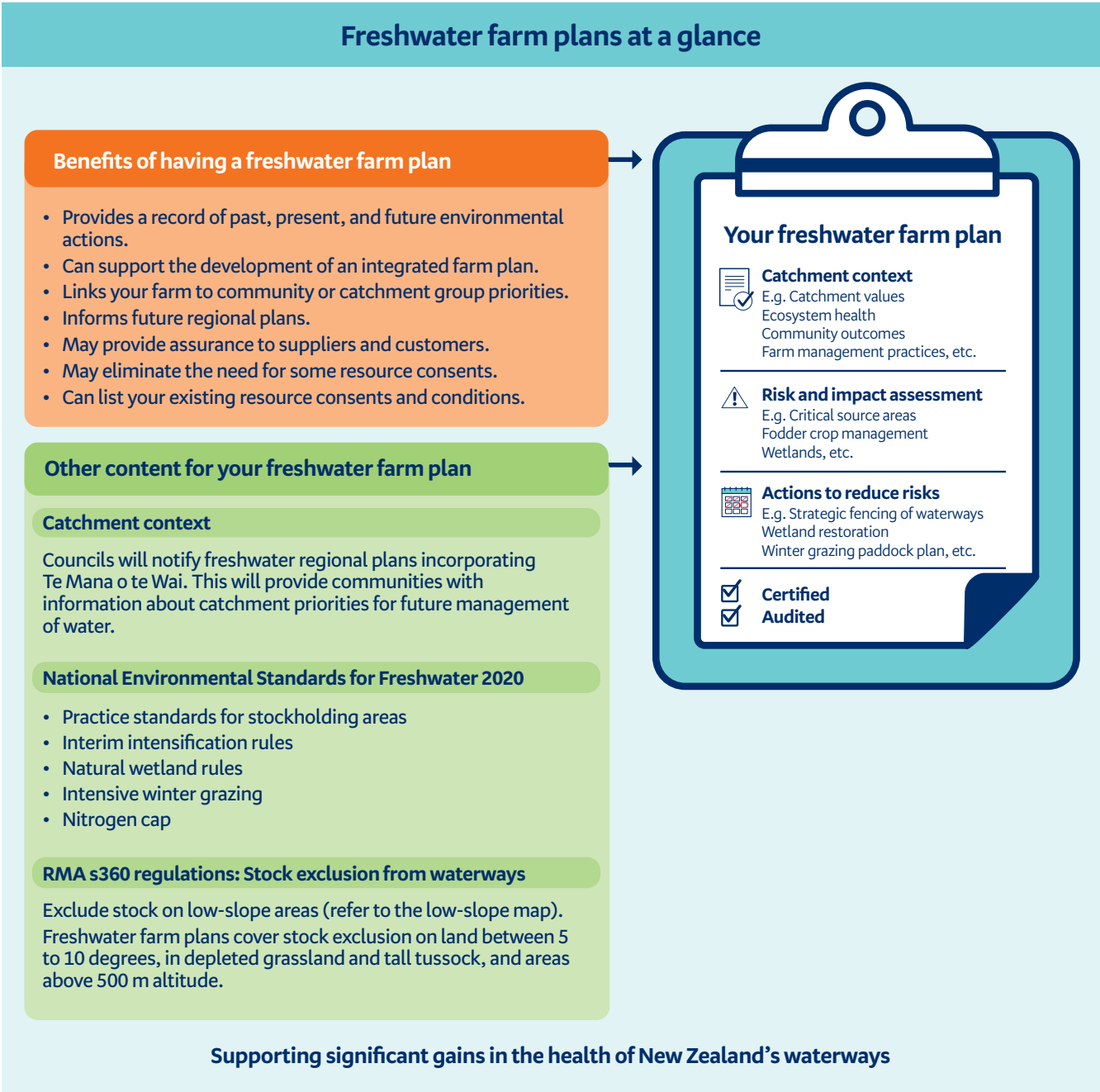
If you haven’t already, make a start to developing your own FEP. Engage with your farm consultant or industry professionals to get some help. Key components of this plan should include the following:

- A description of farm location, contact details, and farming activities on the land.
- A farm map that clearly outlines waterways, farmed areas, soil type, land slope, critical source areas, and infrastructure.
- Identifying the key areas of environmental risk on the farm.
- Identifying what actions will be undertaken to mitigate any environmental impacts, and by when.

¹ You can find out more about this in our ‘Getting to know and manage on-farm Greenhouse Gas (GHG) emissions’ fact sheet. You can find this and more Natural Capital fact sheets on the BNZ Agribusiness website: <https://www.bnz.co.nz/business-banking/agribusiness>
² You can find out more about this in our ‘The Essential Freshwater package - managing your obligations to improve water quality’ fact sheet. You can find this and more Natural Capital fact sheets on the BNZ Agribusiness website: <https://www.bnz.co.nz/business-banking/agribusiness>

Here are some ideas that can help you create your own FEP:

-  Ask your farm consultant or industry professional for advice.
-  Develop a good working understanding of the rules and regulations that are relevant to your agribusiness and most importantly the timelines that are involved.
-  Start analysing what your key issues might be, and how this might impact your farm system, your farm profitability, and whether any significant capital expenditure is required.
-  Collate and document information for your farm plan. It can take some time to do this, but you’ll find there is a significant amount of information already available online (e.g. S-Maps) and within your own resources.
-  It’ll take some time to prepare and document this information, and even more time to implement significant change. Ensure you leave yourself plenty of time to make this happen.



Source: <https://environment.govt.nz/what-government-is-doing/areas-of-work/freshwater/e/freshwater-farm-plans/>

Who is the farmer of 2030?

The farmer of 2030 is valued, proactive, engaged and sustainable – financially and environmentally.

Profitable leader in Māori Agribusiness
Sheep & beef farmer, Waikato

Zero Emissions
Stonefruit farmer, Otago

Seed

Nurture

Grow

Farmer of 2030

A thoughtful farmer
Kiwifruit farmer, Northland

Proud, sustainable, financial freedom
Dairy cattle farming, Otago

Growing sustainable products using the latest technology, and having the highest efficiencies on the land and environment.
Crop, Canterbury

Profitable, sustainable, proud, respected, data-driven
Mixed livestock, Taranaki

Technology is everything to productivity
Stonefruit, Otago

Happy, healthy, progressive stock and people
Sheep & Beef farmer, Southland

A valued one, and not just in a pandemic
Mixed livestock farmer, Manuwatu


Welcome
Proudly certified carbon positive

Sign in

The farmer of 2030 is you.

Summary



Four years on from the launch of BNZ Agri’s first Shift Happens report, the title is now more relevant than ever – ‘Shift Happens’.

Shift = Change

Change is a word that shows up in almost every article I read, social media post I view, or news report I listen to. Quite simply, change is the new norm; and this has only been exacerbated by COVID-19.

But change is nothing new, especially for our primary sector. What is new is the increased pace and intensity of change, and the reality that change will only ratchet up over coming years.

I often reflect on my awesome younger years, growing up on a sheep and beef farm in Hawke’s Bay, with my three siblings. I have very fond memories of the many jobs I used to help with, from grubbing thistles and crutching lambs, to helping Dad draft his first pick of lambs.

I also have vivid memories of the challenging times Mum and Dad faced, and I admired the calm and pragmatic way they worked through them. Consecutive, severe droughts, lamb prices at \$5, and interest rates over 20%! Challenges have always been part and parcel of farming in New Zealand. While many challenges are enduring, we have recently seen many new ones join the queue.

We have a myriad of environmental, compliance, and regulatory changes impacting on the rural landscape – GHG targets and preparing our agribusinesses for He Waka Eke Noa, freshwater rules, and a constrained labour economy. And, the primary sector is under more intense scrutiny from the public and media, all influencing our social licence to operate, and our ability to retain premiums in the market. These external pressures are increasingly in the face of farmers and the primary sector, week after week. I think this creates a sense that change is more harsh and rapid, and more targeted at the primary sector, than it perhaps actually is.

I have good friends who grew up on farms, who now own and run their own businesses – from a meat company in Auckland, to a backpackers in Tauranga. From speaking with them, it is very clear that change is not only impacting on their businesses, but almost every other business and industry in the country. COVID-19 has amplified the change and added significant financial pressure and stress. It is important we bear in mind that it is not only the primary sector in New Zealand facing some very significant changes.

Shift Happens 3.0 challenges us to envisage what a successful farmer may look like in 2030. We have heard from industry leaders, farmers, and growers who are at the cutting edge in their respective businesses. We hope you found this report insightful and thought provoking, and have taken away some tangible ideas and practical solutions to ensure you and your agribusiness are where you want to be, come 2030.

From what we see, a lot of agribusinesses are as financially strong as they have ever been. With commodity prices for many exports at record levels, we have an opportunity to further strengthen agribusinesses, in readiness to tackle change head on.

BNZ is incredibly proud and passionate about New Zealand’s primary sector. The sector now has an opportunity to embrace change with a positive mindset, and a ‘glass half full’, or even three quarters full, mentality.

Regards,
Dave Handley
General Manager Agribusiness

Acknowledgements

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Useful links

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