Fertiliser Association

Shaping profitable and sustainable farming

2023-24 FERTILISER ASSOCIATION ANNUAL REPORT

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Shaping profitable and sustainable farming

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Fertiliser Association
Shaping profitable and sustainable farming

Introduction

About us

The Fertiliser Association of New Zealand (the Association) is an industry association funded by member companies to address issues of common public good. Member companies include Ballance Agri-Nutrients Ltd and Ravensdown Ltd. Both are farmer co-operatives with some 35,000 farmer shareholders. Between them, our members supply the majority of fertiliser used in New Zealand. As co-operatives, they are driven by delivering best value to farmer shareholders rather than maximising the value of product sales.

The Association member companies have invested significantly in products, systems, research and procedures which support responsible nutrient management to enable a viable primary industry within environmental limits.

The Association submits on national policy and proposed regulation, with the view that policy and regulation should be enabling, and that controls are both appropriate and necessary while providing for sustainable primary production.

This Annual Report covers the activities undertaken by the Association between 1 July 2023 and 30 June 2024.

Vision

That New Zealand's food producers are the best users of nutrients in the world, because of their skill at blending efficiency and value with environmental and social responsibility.

Goal

To be recognised as the key authority in New Zealand on nutrient management in the agriculture sector.

Snapshot

$600,000

Investment in Research

5

Submissions Made

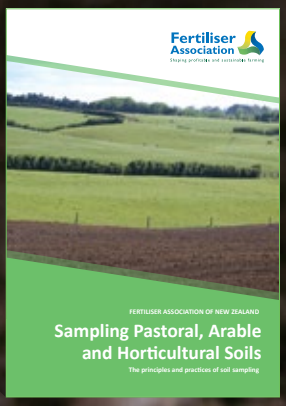
3

Student Research Supported

218

Number of CNMAs

Booklets – new or updated



1680 Total booklets distributed.

Chair and CE reports

Message from the Chair

Bruce Wills

As in any year with a change of government the Association has worked hard to ensure that the new government has a good understanding of the fertiliser industry, that they understand the needs of our farmers and growers (including current pressures on the industry) and understand how the Association is working with industry to promote and encourage responsible nutrient management use in New Zealand.

Responsible nutrient management use is evident in the increased uptake of fertiliser coated with urease inhibitor. This product has been sold in New Zealand for 23 years now, and in the past decade uptake has dramatically increased, with half of urea sold currently coated with urease inhibitor (globally this is the highest market penetration for inhibitor products).

This is a big win enabling farmers to maintain productivity while at the same time reducing environmental impact with a significant reduction in volatilisation losses of ammonia from urea use, maximising the nitrogen available for uptake and contributing to mitigating greenhouse gases.

It continues to be a challenging time financially for many farmers, so the Association's investment in research and existing and new tools has been important to ensure farmers and growers are getting the best outcomes from their choices in fertiliser products.

Message from the CE

Dr Vera Power

When deciding on the best fertiliser for their needs, a farmer or grower cannot estimate the nutrient content simply by look alone. That's why it's so important that fertiliser products are represented accurately.

This year, the Association made an application for an injunction against a new fertiliser supplier in New Zealand, due to concerns about representations made about the fertiliser they were supplying. Our action forced the supplier to undertake further analysis which found that their product was lower in phosphate content than they had been representing to the market. Their test results showed the phosphorus, citric and water solubility were well below specification values expected for a superphosphate product, and below the Fertmark quality assurance for superphosphate. As a result of these findings the supplier agreed to stop marketing the product as superphosphate and provided assurance that all purchasers of their product have been informed about the lower phosphorus content.

As an organisation established to address issues of common public good, the Association made it clear in all communications that we do not oppose the supplier selling or promoting its product in New Zealand, but that it is important that they are clear and accurate about the product that farmers and growers are buying. For farmers and growers, having assurance about what you are buying is key to getting the best return from fertiliser spend.

Nutrient Management Adviser Certification Programme Ltd

Celebrating ten years of the Nutrient Management Advisor Certification Programme.

2023 marked ten years since the establishment of the Nutrient Management Adviser Certification Programme (NMACP).

The programme was established to ensure that New Zealand farmers can get the best, most up-to-date nutrient management advice possible.

The past decade has seen the programme evolve in response to changes in nutrient management and farming best practice in New Zealand. In the early days of the programme, certified advisers were mainly from the fertiliser companies, but today they come from a much broader range of organisations.

"We have people from Councils, sector groups, farm consultancies, and professional service firms," said Programme Manager Donna Mumm.

During the past ten years more than 350 people have become certified – with current certified nutrient management advisor numbers sitting at 218.

So, who were the first people officially certified back in 2013 and what are they up to now?

The first person certified was Ants Roberts. Today he is the Chief Scientific Officer at Ravensdown and an active member of the Standard Setting Group, which acts as the powerhouse of the programme.

Jason Griffin was the second person certified. While he no longer maintains his certification status, he has joined the Board that governs the programme.

Graduate number three was Mark Crawford, who continues to work as an advisor in the Otago region today.

One of our more recent graduates, Gareth McKerchar (pictured below), an Agri Manager for Ravensdown, was crowned Aorangi FMG Young Farmer of the Year in 2024, before taking out third place in the national Young Farmer of the Year competition.

Industry initiatives

Supply chain

To help grow the food we need, New Zealand relies on imported mineral resources to manufacture fertiliser. Fertiliser is essential for growing food in productive farm systems.

The minerals imported in New Zealand for fertiliser use, to aid food production, are from highly concentrated markets. These minerals can be highly susceptible to supply disruptions. Conflict, such as that resulting from Russia's invasion of Ukraine, can restrict the supply of fertilisers and mineral resources, triggering higher world prices. Shipping disruptions, such as events in the Red Sea and low water levels in the Panama Canal, have made it harder to ship fertilisers around the world. Higher fossil fuel prices can lead to a drop in nitrogen fertiliser production, creating supply issues on the global market.

As an OECD nation, New Zealand is unique in that our economy is highly dependent on growing and exporting food. In turn, the New Zealand economy is dependent on imports of the raw materials required to grow food. Phosphate rock, potash, trace elements and (since the closure of Marsden Point) sulphur, are import dependent. Part of New Zealand's urea fertiliser supply is manufactured domestically, but long-term the ability to economically produce urea in New Zealand is dependent on the ability to decarbonise manufacturing.

Internationally such risks are increasingly understood. Recent work through the OECD has highlighted the increased vulnerability of global fertiliser supplies and trade. These studies suggest that New Zealand may be the only OECD country that has a significant vulnerability to supply chain risk in terms of fertiliser but has no government policies or initiatives in place to address the risk.

During the year we engaged with the Ministry of Foreign Affairs and Trade (MFAT) and the Ministry of Primary Industries (MPI) to highlight the risks and discuss international approaches currently being used to manage supply chains.

Responsible Sourcing

As an industry reliant on international sourcing, the assessment of human rights risks is inherently important.

Our industry is increasingly evaluating human rights risk as part of wider assessment activities. Key to this is the adoption of the UN Guiding Principles on Business and Human Rights (UNGPs) by our members.

This year the Association, on behalf of our members, completed an assessment of a key source of New Zealand imported nutrients – phosphate rock from the OCP mine at Phosboucraa in Western Sahara.

Western Sahara, identified by the UN as a Non-Self-Governing Territory, has been the subject of political dispute for a long time. The UN has set expectations that resources in such territories are used to promote the political, economic, social and educational advancement of the inhabitants and to protect the human and natural resources of those Territories against abuses.

The Association commissioned a full human rights due diligence assessment by Tūhana Business and Human Rights Ltd, which was undertaken in accordance with guidance set out in the UNGPs.

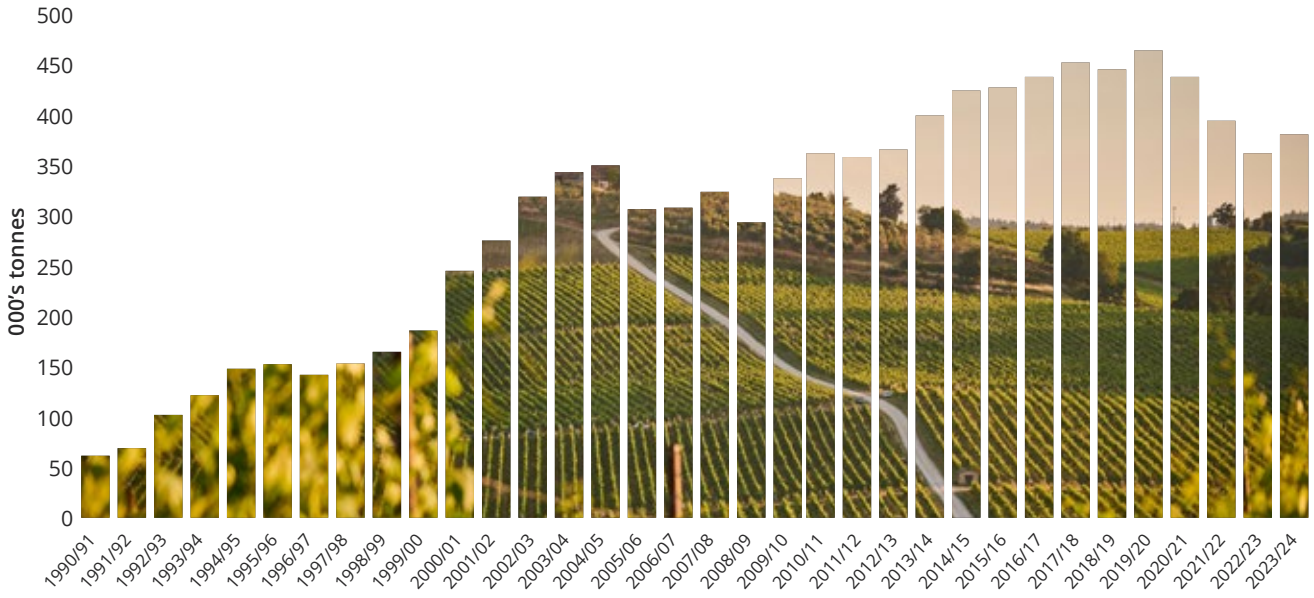
Tūhana visited Western Sahara in October 2023 as part of this assessment. The visit enabled Tūhana to draw conclusions about health and safety, employee relations, and procurement relating to cleaning and security services in OCP/Phosboucraa operations.

Tūhana's view is that OCP has demonstrated it is taking clear responsibility in identifying and managing human rights risk within the company. The assessment found that our member companies, Ravensdown and Ballance Agri-Nutrients are not causing or contributing to potential or actual negative human rights impacts in Western Sahara through their business relationships with OCP/Phosboucraa.

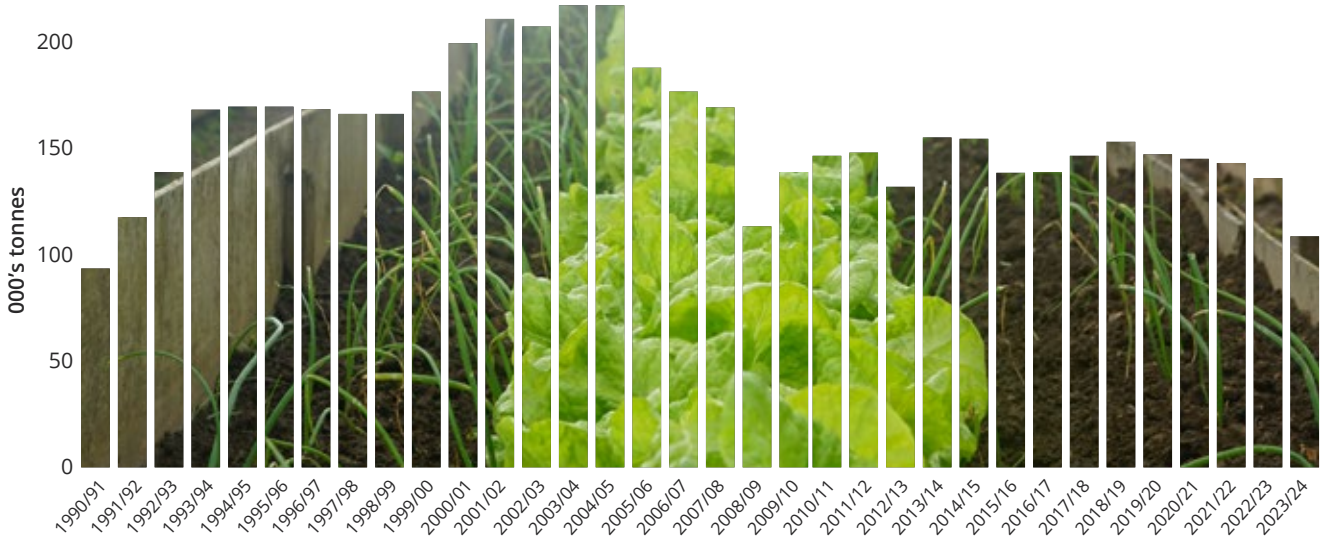
Change in fertiliser use.

As global supply and demand gradually stabilises, New Zealand fertiliser prices have fallen back from a recent peak. However, tough conditions for farmers, due to low commodity returns, has resulted in continued reduced fertiliser use - particularly in terms of superphosphate use by drystock farmers.

Nitrogen



Phosphorus



Inhibitors

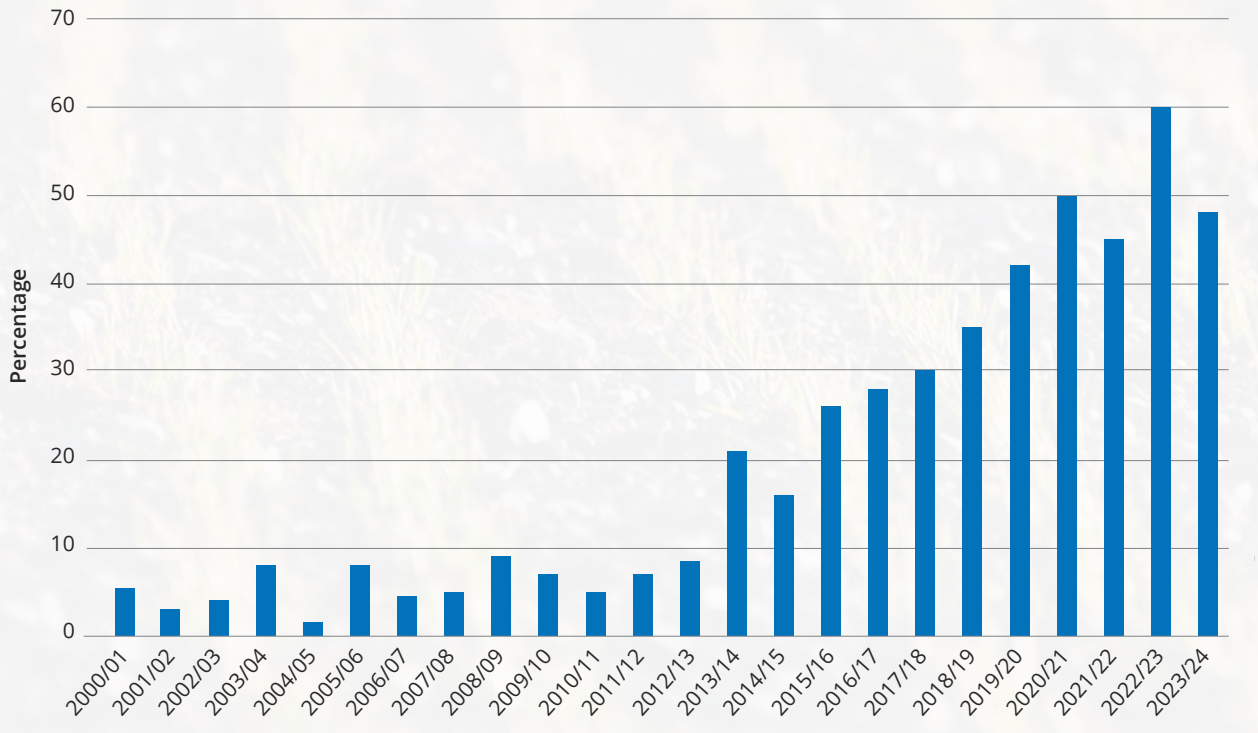
The development of fertiliser inhibitors has been an important part of supporting farmers and growers to meet their market expectations for greenhouse gas emissions reductions through efficient use of fertiliser. In 2022 emissions from fertiliser represented 3.8 percent of agricultural greenhouse gas emissions.

For fertiliser, there are two general groups of inhibitor activity. These include urease inhibitors and nitrification inhibitors. Inhibitors need to be acceptable to international markets for New Zealand food products. In 2022, an Order in Council under the ACVM Act declared 46 substances to be agricultural compounds when used as inhibitors and required that inhibitors be registered.

Currently, an amendment to the ACVM Act is being considered by parliament to widen the scope of the Act to cover products such as inhibitors which are used for environmental purposes. The new Ministry of Regulation is now conducting a review of the regulatory requirements of inhibitor products. MPI are also looking at ways to streamline the existing system.

In 2023/24 there has been a slight drop in use of coated urea as farmers respond to limited budget and high fertiliser price.

Proportion of urea fertiliser coated with urease inhibitor



Research Update

Supporting Student Research in Nutrient Management

Nicola Wilson

Massey University student Nicola Wilson is currently undertaking research on 'What Hot Water Extractable Carbon and Nitrogen can tell us about changes in labile soil Carbon and Nitrogen.'

Nicola grew up on a sheep and beef farm in Northland, which she describes as her happy place.

"I grew up with a large focus on the ocean, spending a lot of my spare time sailing and I always knew I wanted to do something in my future to help the environment," said Nicola.

Her switch from the ocean to the land took place when she decided to study Agricultural Science and discovered an interest in soil science.

"I realised that I could do my bit for the environment within the Agricultural sector. Working with farmers to better our farming practices and improve soil health felt like it was addressing the problems from their origin, and through this I was doing my bit towards soil, freshwater and marine health," said Nicola.

Nicola's research aims to provide further analysis of the ways in which Hot Water Extractable Carbon (HWEC) and Nitrogen (HWEN) relate to soil health measures and agricultural management practices and builds on current research surrounding these.

"Working on my family's farm throughout my research as well as seeing the work other farms are doing to improve their systems from an environmental standpoint greatly inspired me to go into this research. My hopes are that this research helps farmers to use the Hot Water Extractable Carbon (HWEC) and Hot Water Extractable Nitrogen (HWEN) measures for insight into their soils in a way which is potentially more economically viable than others."

There has been a lot of research on HWEC and HWEN measures over the past decades. Nicola's research aims to build on the current knowledge and fill some gaps so these measures can be better implemented by farmers in their systems. A research focus on farms in Aotearoa, New Zealand means that there is more information that specifically relates to New Zealand farmers and their systems.

Kaitlin Watson

Kaitlin Watson is a Lincoln University student whose PhD looks at phosphorus (P) and nitrogen (N) cycling in dryland pastures under conventional and regenerative agriculture management.

Kaitlin grew up on a dairy farm in South Canterbury, moving to a sheep and beef property in the Mackenzie country, when she was 12.

“Naturally, I took an interest in farming and ended up studying a Bachelor of Agricultural Science (Hons) at Lincoln University. After doing my honours research on falcata lucerne and its potential in acidic high-country soils, my supervisor, Dr Jim Moir mentioned that he was looking for a student to study a soil science PhD looking at regenerative agriculture on the new farmlet trial on Lincoln campus. I decided to take up this opportunity, starting my PhD in July last year,” said Kaitlin.

Kaitlin’s research looks at the yield and botanical composition of regenerative and conventional practicing farmlets, in relation to high and low soil fertility regimes.

“I am measuring P and N cycling under each system as well as soil biology including microbial biomass and soil extracellular enzyme activity,” said Kaitlin.

The individual components of nutrient cycling such as P and N have only rarely been examined and tested in fully controlled grazed environments. Kaitlin’s research aims to close these knowledge gaps by utilising a closed grazed farmlet system, operated under ‘high’ and ‘low’ soil fertility (fertiliser P input) regimes.

Her research will address the impacts of regenerative agriculture principles, such as minimal fertiliser input and diverse pasture species in New Zealand dryland farming. It will play an important role in understanding regenerative agriculture in a New Zealand environment. With quantifiable data farmers can determine if regenerative agriculture is a feasible practice to implement.

Theané de Klerk

An interest in farm sustainability and sustainable fertiliser management was the key driver behind Massey University student Theané de Klerk's decision to focus her Master's degree on New Zealand's agricultural phosphorus budget.

Theané's interest in agriculture was kick-started when she started secondary school. "I was introduced to agriculture and horticultural science when I attended Mount Albert Grammar, with the school's eight-acre model farm providing up-close learning opportunities. I was initially drawn to farm and animal management and enjoyed helping the farm manager with daily farm tasks," Theané said.

With a move to the Hawke's Bay in her fourth year of high school Theané continued to study agriculture and horticultural science at Taradale High School. "At Taradale, I became more interested in the environmental impact and sustainability side of the agricultural industry which is what inspired me to continue with this line of study at University," she said.

Enrolling in Massey University, Theané took Soil Fertility and Fertilisers and Integrated Farm and Environmental Management papers which solidified her interest in farm sustainability and sustainable fertiliser management and lead to her decision to conduct her current research.

"Understanding the interactions of nutrients with the soil, and the plant/animal requirements for these nutrients is key to managing fertiliser application in a way that will increase production while still being economical and sustainable," she said.

Theané's research will provide data on the current phosphorus fertiliser usage in the agricultural industry and will develop a current soil phosphorus nutrient budget to understand how the current usage is influencing the soil P status. The budget will help identify the accumulation or depletion of P from our agricultural soils and help inform best practice P fertiliser recommendations for the wider industry.

Winchmore

The Winchmore sheep-grazed phosphate fertiliser trial at Hinau Farm on the Canterbury Plains is funded by the Association with a long-term lease. It has provided valuable insights into fertiliser use on sheep-grazed pasture for more than 70 years. The research data generated is unique because of stable management practices creating steady state soil conditions. Long term trials such as this have national and international significance. Our aim in maintaining the trial is to maximise the research on the site to build understanding of soil dynamics.

Annual reports for the trial are available on the Association website here.

Aggregation of Olsen P data

To better understand how soil phosphorus fertility is reflected across New Zealand's production land, the Association has examined routine soil Olsen P test results. Data comprises approximately 1,170,000 records from across New Zealand, covering a range of farm systems and soil types collected over a ten-year period from 2012 to 2022.

The soil test results do not necessarily represent the 'average' farm system, but rather those farm businesses investing in evidence-based nutrient management advice. These are often the more fertile sections of higher producing farms.

The national annual median Olsen P of soils sampled from 2012 to 2022 shows some fluctuations over time, but with a small overall increase. There has also been an increase in the number of soil samples taken.

The median for each year is represented by the dark solid line. The boxed area shows the 25% to 75% quantiles. The number of records per year are indicated underneath the graph.

More information can be found on the Associations website: https://www.fertiliser.org.nz/Site/about/soil-health-fertility/nz-soil-olsen-p-levels.aspx

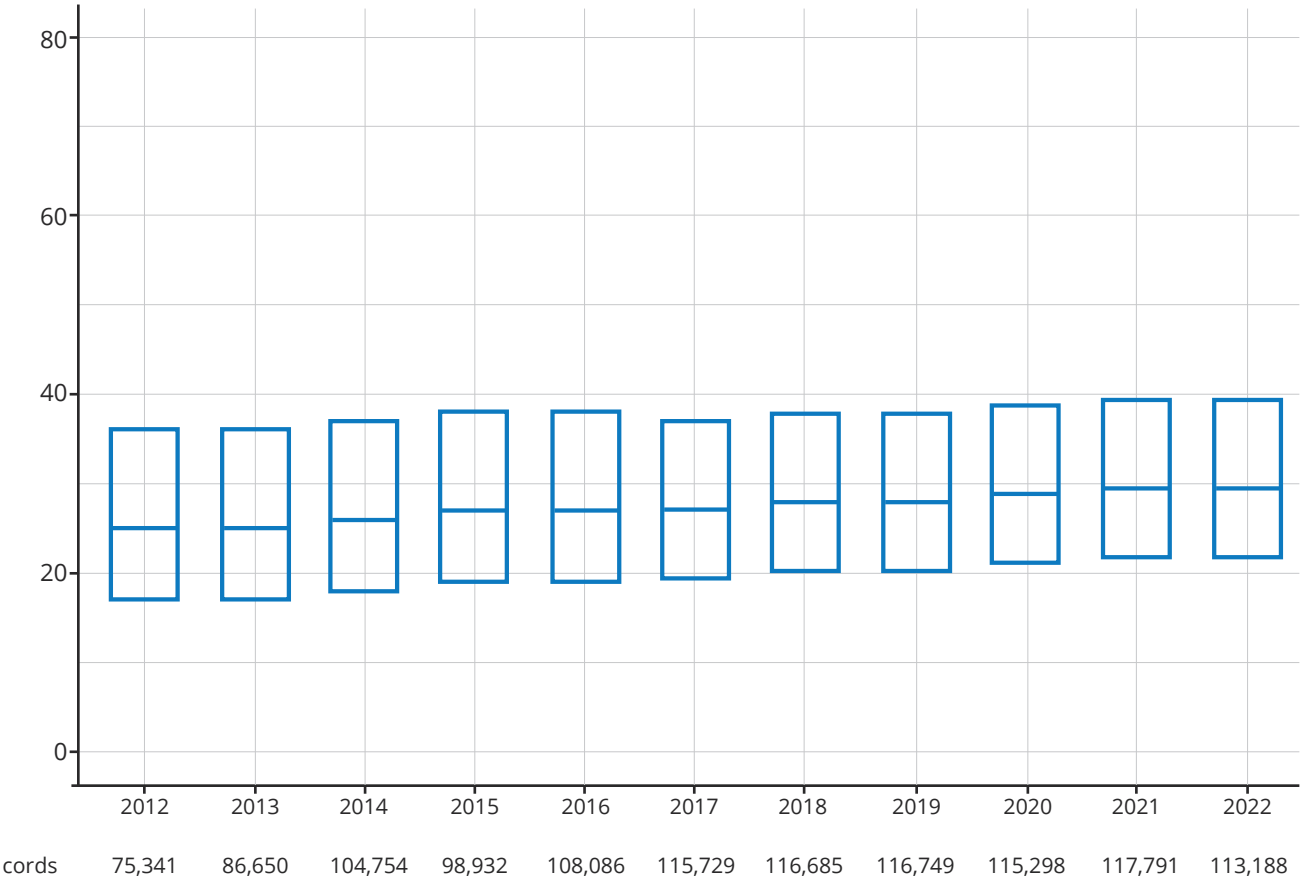


Figure 1: Time series of the national median value of Olsen P across all farm types, soil types and regions.

THE VALUE OF PHOSPHORUS FERTILISER TO THE NEW ZEALAND ECONOMY

The Fertiliser Association of New Zealand commissioned a study to analyse the value of phosphorus fertiliser to the primary sector, both at the farm gate and to the wider New Zealand economy.

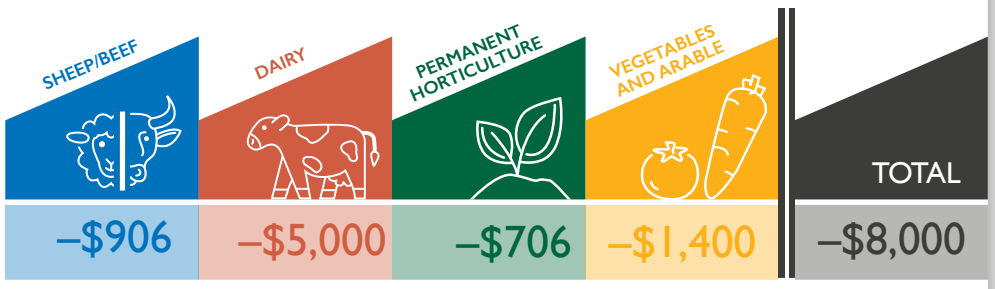
The study assesses the economic impact of the decline in soil fertility if phosphorus fertiliser was not available. Here is a summary of the key findings.

Financial impact at the farm gate

While the removal of phosphorus as a farm input would reduce (by a small amount) farming impacts on water quality and green house gas emissions, at the farm gate this is estimated to cost:

$8 billion

On-farm impacts ($million)



Impact on the New Zealand economy

A drop in annual gross output by **$44 billion**

A drop in value add (GDP) of **$14.2 billion**

A reduction in employment by **161,210**

Test strips for identifying molybdenum deficiency.

Molybdenum deficiency impacts on clover growth. Previous work by Jeff Morton funded by the Association, collated research results on the molybdenum requirements and discussed the availability and management of molybdenum in different soil orders and soil pH, and the relationship to clover nitrogen levels and copper interactions.

This follow-up project tested the suitability of applying molybdenum in a test strip over a small, marked area where a deficiency is suspected. Using test strips allows comparison of clover vigour in the strip with adjacent swards that have not received molybdenum. The trial result showed that visual assessment of clover vigour and cover in a test strip is feasible. Extension material was developed to describe and promote the protocols to be followed by farmers wishing to assess molybdenum deficiency.

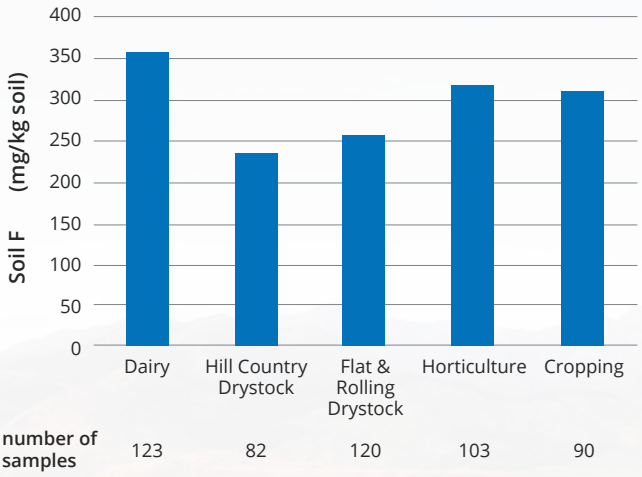
Nationwide benchmark soils analysis for heavy metals

Over the past four years Manaaki Whenua have undertaken nationwide soil sampling (as show in the graph on page 15) to estimate the carbon content of agricultural soils at 500 sites, representative across different regions, soil types and land uses. We were able to use the opportunity to analyse for a range of basic soil tests as well as for heavy metals and fluoride.

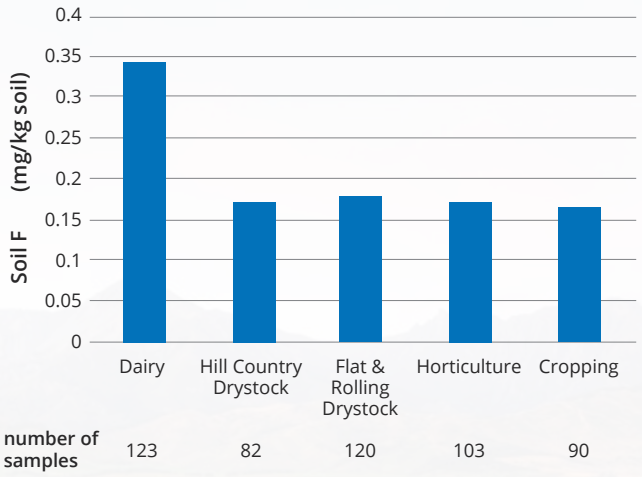
The soil collection programme by Manaaki Whenua is intended to provide a statistically robust, unbiased sampling approach representative of agricultural land use across New Zealand.

Initial analysis shows:

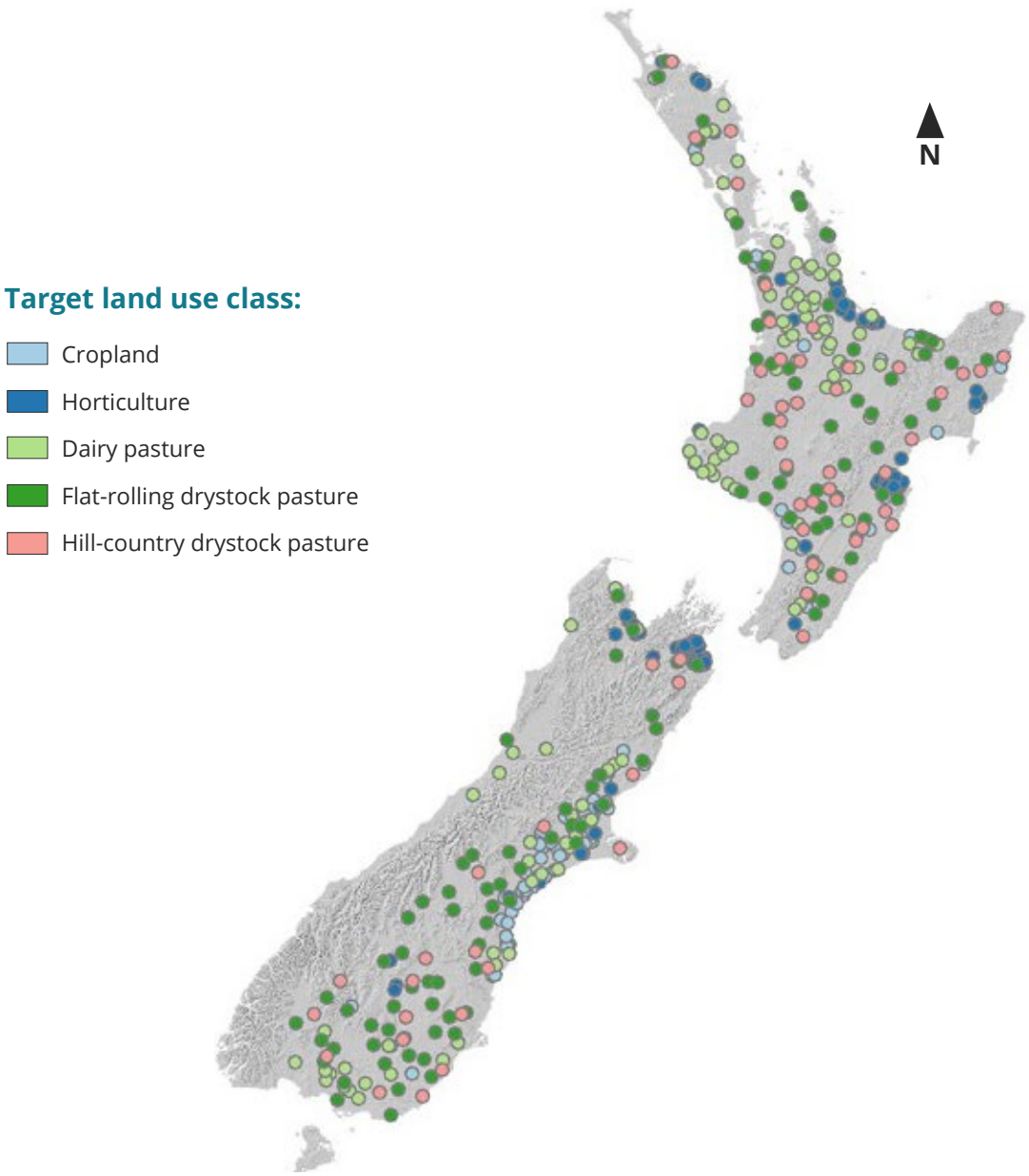
Median Soil Fluoride Concentration by Land Use



Median Soil Cadmium Concentration by Land Use



We will continue to work with Manaaki Whenua to repeat this sampling to allow assessment of accumulation over time.



Source: https://www.landcareresearch.co.nz/publications

Nitrogen mitigation

Mitigation of nitrogen losses from farms is a key focus for the primary sector, regulators and the community. Many strategies and options are promoted but not necessarily with the scientific vigour to back them up.

The Association commissioned Dr Ross Monaghan, Senior Scientist, Land and Environment group, AgResearch to produce a science-based summary of mitigation options to minimise or avoid losses of fertiliser nitrogen to the environment. Dr Monaghan is the foremost expert in understanding and developing farm systems and management practices that can deliver greater profitability to our farmers and reduce losses of contaminants to the environment.

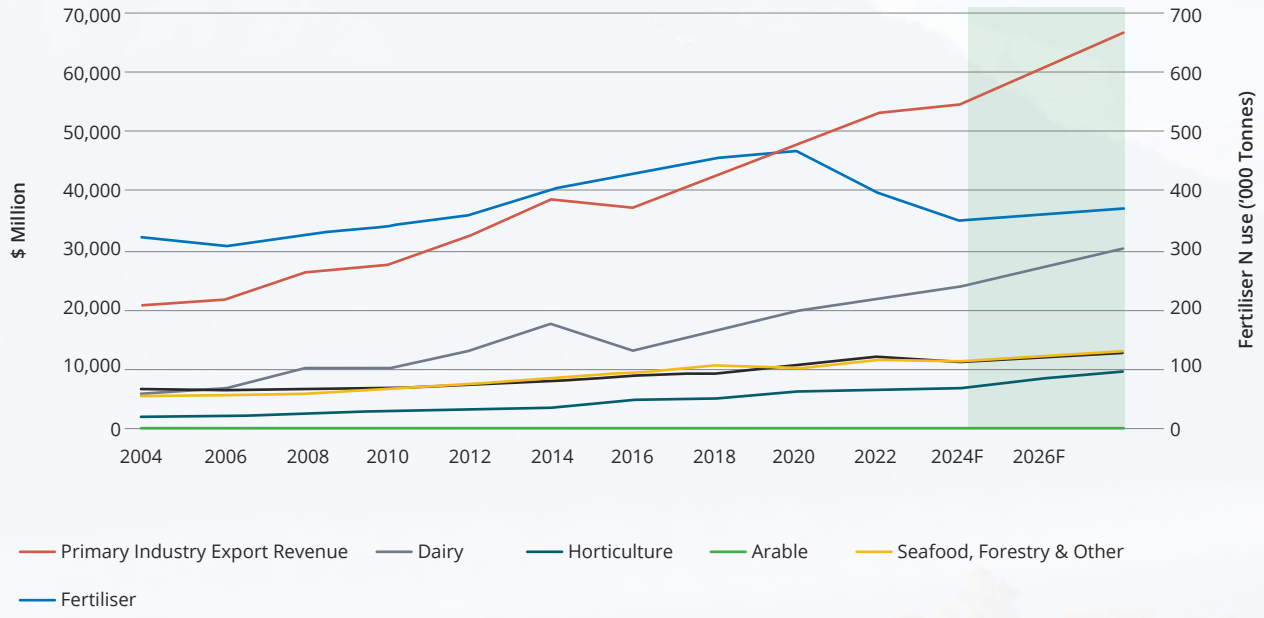
The review addresses fertiliser N losses to surface and ground water, and greenhouse gases and is intended to provide scientific context for mitigations included in a new booklet on Nitrogen Fertiliser Use on New Zealand Pastures.

KEY METRICS

Agricultural Export income and fertiliser use

National nitrogen fertiliser use relative to primary sector export income. Green shading shows forecasts.

Primary Industry Export Revenue ($ Million) by sector and Fertiliser N Use ('000 tonnes)



Source: National export revenue data taken from MPI's Situation and Outlook for Primary Industries, updated June 2024.

Underpinned by essential nutrients, primary industry exports accounted for 80.9 percent of New Zealand's merchandise exports in the year to 31 March 2024. Over the last 10 years, primary industry exports have grown on average by 3.6 percent per year whereas other merchandise exports have grown by 1.6 percent.

Aggregate nitrogen and phosphorous fertiliser use has decreased 20 percent over the last five years. MPI projects that increasing efficiency in fertiliser use, engaging smart technologies and precision agricultural systems will enable increased export production without further increases in nitrogen fertiliser use. The MfE Fifth Biennial Report predicts the decline in fertiliser use to continue to at least 2035.

Managing for contaminants - monitoring fertiliser

Cadmium is an unwanted trace element contaminant of phosphate fertiliser.

Cadmium concentration in samples of dispatched fertiliser has been monitored weekly since 2005. The below graph summarises 8,628 samples, showing monthly median values, the overall median, the 90% confidence band, and the voluntary limit of 280 mg/kg P. Overall median concentration since 2005 is 177 mg Cd/kg P.

Data until July 2018 provided by QCONZ (3,188 samples). Data from July 2018 supplied by the FANZ cadmium database (5,367 samples).

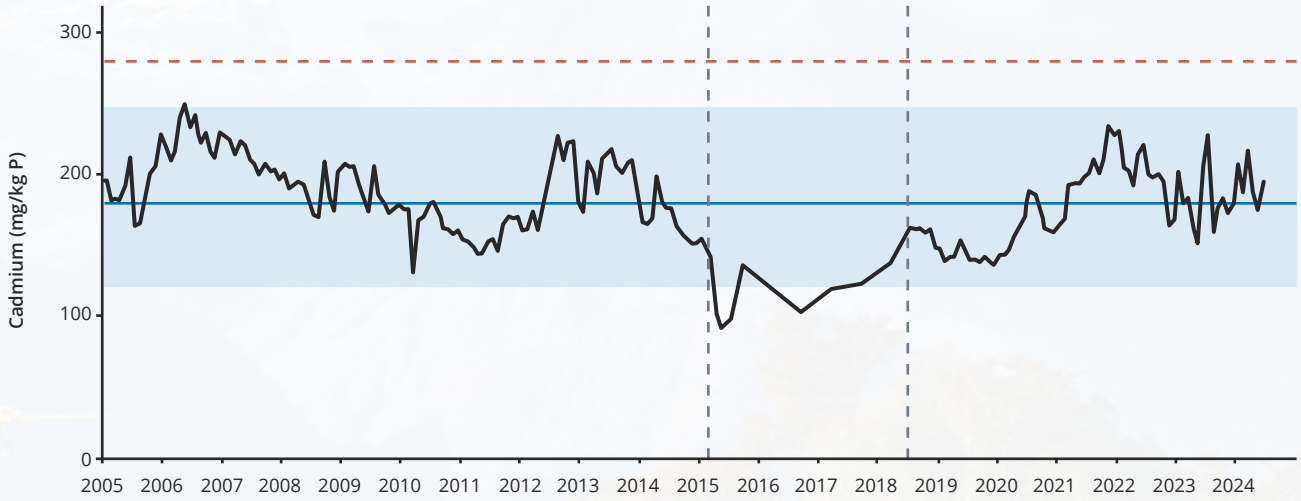


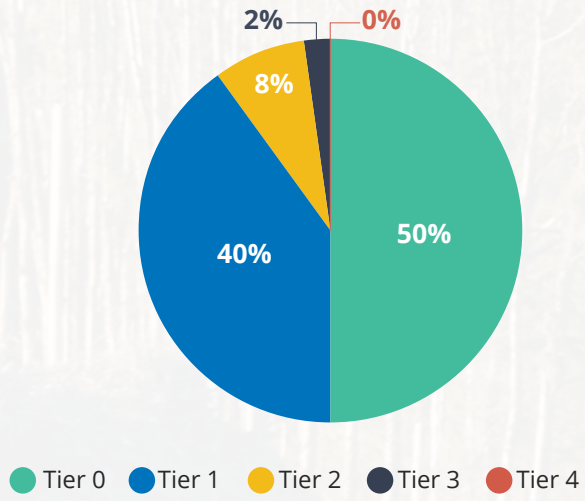
Figure 2: Median weekly fertiliser cadmium levels over time.

Monitoring for Cadmium in legacy areas

A programme of soil cadmium analysis in Taranaki, Waikato and Bay of Plenty pastoral soils has been underway since 2019 with 837 analyses undertaken to May 2024 These 'legacy' areas have soils with high phosphate requirements and a long history of phosphate applications. Results are reported against the categories described in the Tiered Fertiliser Management System.

More than 90 percent of soil samples taken at the screening level of 75 mm have returned results at below 1.0 mg Cd/kg soil (below Tier 2).

Percentage of SCREENING samples at each Tier level



Submissions

The Association actively engages in a number of policy processes. We publish our submissions on our website here: https://www.fertiliser.org.nz/Site/news/submissions/

Regulatory systems amendment bill

In May 2024 we submitted to Select Committee on the Regulatory Systems (Primary Industries) Amendment Bill.

Our submission supported the amendment to the definition of agricultural compound in the Agricultural Compounds and Veterinary Medicines Act to cover products whose purpose is mitigation of environmental impacts. We focused on the definition of inhibitor and transitional arrangements, in particular that the definition for inhibitors does not inadvertently exclude the use of urease or nitrification inhibitors.

Amendments to Hazardous Substances (Importers and Manufacturers) Notice

In March 2024 we submitted to the Environmental Protection Agency on the Amendments to Hazardous Substances (Importers and Manufacturers)

In our submission we supported the proposal that fertiliser products are to be excluded from the quantity reporting requirements and highlighted that those materials imported as raw materials for the manufacture of fertilisers, as well as materials imported and applied with fertiliser e.g., urease inhibitors, should also be exempt and not inadvertently captured in the reporting requirements.

Climate Commission submissions

In late May 2024 we submitted to the Climate Change Commission on the *Review on whether emissions from international shipping and aviation should be included in the 2050 target, and if so how*.

We focused our submission on the potential to include international shipping in New Zealand's domestic carbon targets.

We discussed policy commitments to emissions reduction in the context of shipping emissions as a component of overall emissions from agricultural products; supply chain risk for New Zealand; current port infrastructure issues; and international policy and shipping company initiatives to address vessel emissions.

We also submitted on the *Draft Advice on New Zealand's Fourth Emissions Budget*. Our submission focused on the uncertainty about what the appropriate EB4 should be. At the same time, we emphasised the need to create enduring signals. If the emissions budgets are to be grounded, meaningful and achievable then the emissions budgets must be based on science and robust information and assumptions within a framework which includes how the budgets are to be achieved. It would seem prudent that recommendations for an emissions budget are not set independently from consideration of options on how to achieve them while commensurately protecting social and economic well-being.

Our submission on the *Review of the 2050 Emissions Reduction Target* focused on the Commission's assessment of significant change since the 2019 target commitments were made. Our view was that there is insufficient change since the initial evaluation to signal an amendment to the 2050 emissions target. Regular review, as the Commission is undertaking, is important, but the legislation deliberately sets a high bar for change. New Zealand needs to continue to focus on how it will achieve the current target. While recent analysis suggests that New Zealand is on track, there is a lot more to be done.

Working with Others

Bursary winner

We are delighted to announce this year's recipient of the New Zealand Society of Soil Science postgraduate bursary award - Max Nightingale.

The award recognises the efforts and present, or likely contribution to New Zealand soil science arising from a Doctorate study.

To be eligible, applicants need to be a postgraduate (PhD) student working on the properties, productivity or sustainability of New Zealand's soil and land resources. They will be about to enter their third year of study, with the intention to pursue a career in New Zealand.

The award recipient receives a stipend of $5,000 for one year.

Max fittingly was presented the award on World Soil Day at the Lincoln Forum by New Zealand Society of Soil Science president Sam Carrick.

Max is in his third year of research in Environmental Science at the University of Canterbury, Max's research addresses the applications of winery wastewater to land and the implications for soil quality and carbon sequestration.

During his Ph.D. programme, Max has sought to determine the likely effects, both in the short and long term, of irrigating wintery wastewater to soil at rates at which water and nutrients may be beneficially used by plants. Winery wastewater is an unavoidable, high-volume by-product of the winemaking process, generated from grape processing and cleaning operations within each of the wineries.

Organic waste initiatives

Circular economy principles focus on the recycling of food wastes onto land to grow more food. The Ministry for the Environment (MfE) supported a series of studies investigating the opportunity for use of urban-derived organic wastes on land with a focus both on waste reduction and energy generation.

Projects supported include the investigation of the application of biodigester to land from the new waste to energy facility at Reporoa and a systems review of the opportunity for the use of organic material as it is shifted away from landfill.

Some key issues remain – poor coherence across the range of regulatory controls, biosecurity and contamination risks such as plastics, and PFAS.

The Association has engaged with the projects to ensure the benefits and risks to agriculture are understood and managed.

Overseer

We continue to support Overseer alongside MPI and AgResearch.

OverseerFM is a decision support tool that assists farmers, growers, and their advisers to be environmentally and economically sustainable. It is used by farmers to understand the flow of nutrients on their farm from sources such as fertiliser and animal effluent.

2023 Case Study: Dairy farms in Canterbury.

In November Overseer released a case study of analysis of data for Canterbury dairy farms which emphasises the power of robust data in enabling assessment of change.

The analysis of 1,269 Canterbury farm records showed a 27 percent decrease in mean nitrogen loss per hectare over five years to 2021-22.

The report provides evidence that OverseerFM information can shed light on how farmers are adapting their systems over time. It shows that when farmers have good information and support tools, they will make necessary changes to improve their environmental footprint.

Learn more here: https://www.overseer.org.nz/articles/new-analysis-shows-downward-trend-in-nitrogen-loss-from-canterbury-dairy

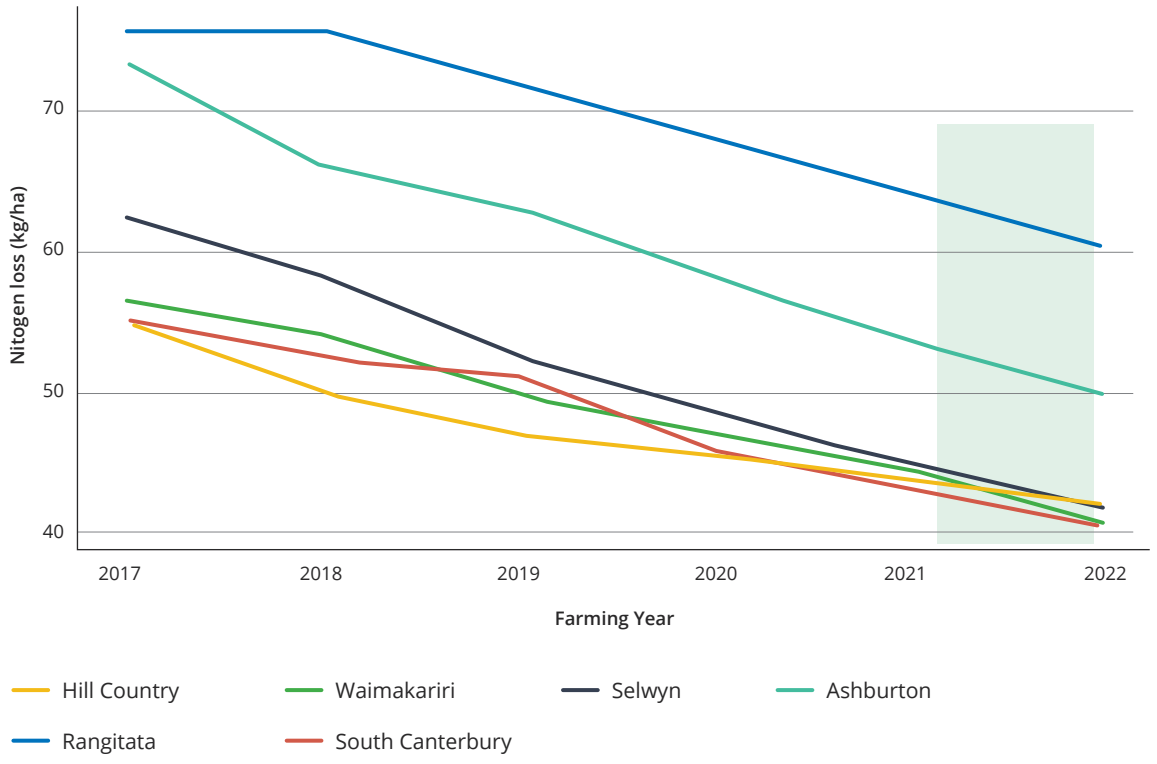


Figure 3: Mean nitrogen loss (kg) per hectare of productive farm area for Canterbury dairy farms, for each of the six sub-regions as defined in this study. The sub-regions were defined as hill country at >300 m altitude, with five further divisions of the plains, defined by main rivers.

N-cap reporting

Rules about the amount of synthetic nitrogen that can be applied to pastoral land over 20 ha being used to provide feed for dairy cows came into effect on 1 July 2021. The amount of nitrogen fertiliser applied must not exceed 190 kilograms of nitrogen per hectare, per year, averaged across the grazed land area.

To comply with the rules, each July farmers are required to submit records of synthetic nitrogen purchase and application for the previous 12 months.

Almost 60 percent of dairy farms reported N fertiliser use for 2023. Of those most farms (80 percent) are using the digital systems developed by Ballance and Ravensdown, which have been used to report on about one million hectares of land in dairying.

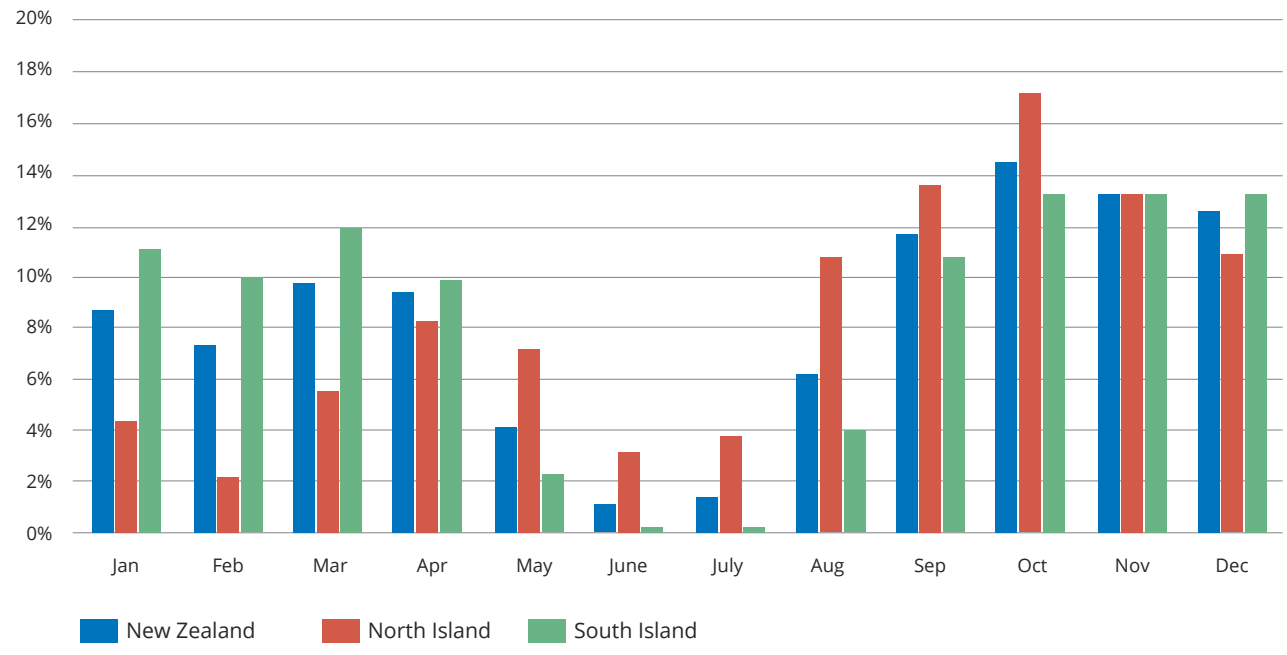
Not only does it make sense for farmers to use the tools they are ready familiar with – but it also means that there is a much higher degree of data accuracy and validation. These tools enable real-time decision making and management of fertiliser applications. Just under 40% of farmers sought the direct assistance of their fertiliser co-operative to complete the reporting.

Reporting for 2022-23 has been summarised by Te Uru Kahika as follows:

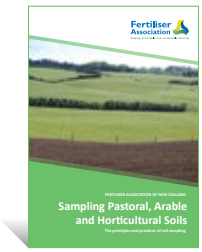
Number of farms reporting: 5,713		
Land categories	Average rate of N use (kg N/ha)	Area (ha)
Grazed forage land	47	40,324
Grazed non-forage land	116	995,614
Ungrazed land	15	91,191

Te Uru Kahika has also generated analysis of timing of nitrogen fertiliser applications. Peak application is predictably in spring. As expected, application in the North Island reflects continued pasture growth with warmer winters, while application in the South Island continues into summer and autumn, reflecting grass growth under irrigation.

Distribution of nitrogen fertiliser applications across months



Our latest booklets



Sampling Pastoral, Arable and Horticultural Soils

We have developed a new booklet *Sampling Pastoral, Arable and Horticultural Soil - the principles and practices of soil sampling*, which sets out recommended soil sampling methods, to ensure valid comparison and interpretation of repeated soil sampling overtime.

Soil sampling is an essential first step in assessing the amounts of available major nutrients present in soils relative to those required by the plants.

The soil sampling protocols, described in the booklet, have been developed to account for the variability of soil testing associated with complex biological ecosystems and varying landscapes.

A special thank you goes out to J D Morton (MortonAg), A.H.C Roberts (Ravensdown) and I.L Power (formerly Ballance Agri Nutrients Limited) for their editorial contributions to the booklet.

Fertiliser Use on NZ Dairy Farms and Fertiliser Use on NZ Sheep and Beef Farms

The *Fertiliser Use on NZ Dairy Farms* and *Fertiliser Use on NZ Sheep and Beef Farms* booklets provide clear, concise information on key aspects of soil fertility and nutrient management for productive dairy and drystock farming, respectively. The booklets have been revised to align with the 2023 Code of Practice for Fertiliser Nutrient Management and help to support improved environmental outcomes

The *Fertiliser Use on NZ Dairy Farms* booklet identifies recommended soil test ranges for different nutrients. These recommendations are intended to give production certainty on a range of soil types and conditions. For Olsen P, where a dairy farmer wishes to build up fertiliser levels about the target range, they are advised to consider risk of environmental loss from more susceptible production areas and also test whether there will be a financial return on the additional fertiliser applied.

The *Fertiliser Use on NZ Sheep and Beef Farms* booklet identifies recommended soil test ranges for different nutrients by soil type and provides science-based guidance on maintaining soil fertility. Environmental considerations remain an essential part of nutrient management. The latest edition includes new information on soil characteristics affecting phosphorus loss from more susceptible production areas. New information is also provided on economically optimal soil phosphorus levels, recognising that for many sheep and beef farms this may be below that required for near maximum pasture production.

All our booklets can be found here: https://www.fertiliser.org.nz/Site/resources/booklets.aspx

Ants (second from the left) with current members of our Technical Committee.

Thank you to Ants Roberts

We want to extend a very large thank you to Dr Ants Roberts for his contribution to our Technical Committee from which he has stepped down after nearly 30 years of service.

Ants is highly regarded domestically and internationally for his technical expertise in nutrient management, his breadth of knowledge of pastoral farm systems and his ability to communicate complex information clearly and concisely.

His contributions to the Association's Technical Committee have assisted our decision making through sound guidance for investment in research, development of nutrient management information resources, training and certification modules plus practical, farmer and research focused context for all nutrient management matters. There are few who would be his equal in this domain.

Although Ants is still active in his primary role in the fertiliser industry, we will greatly miss his invaluable contributions and the energy he has brought as a member of the Fertiliser Association Technical Committee.

Communications Snapshot

Media coverage

The Association featured in a range of media including RNZ, Stuff, Business Desk, NZ Farmers Weekly, Rural News, The Press, Agribusiness, Interest.co.nz, and Bay of Plenty Business news.

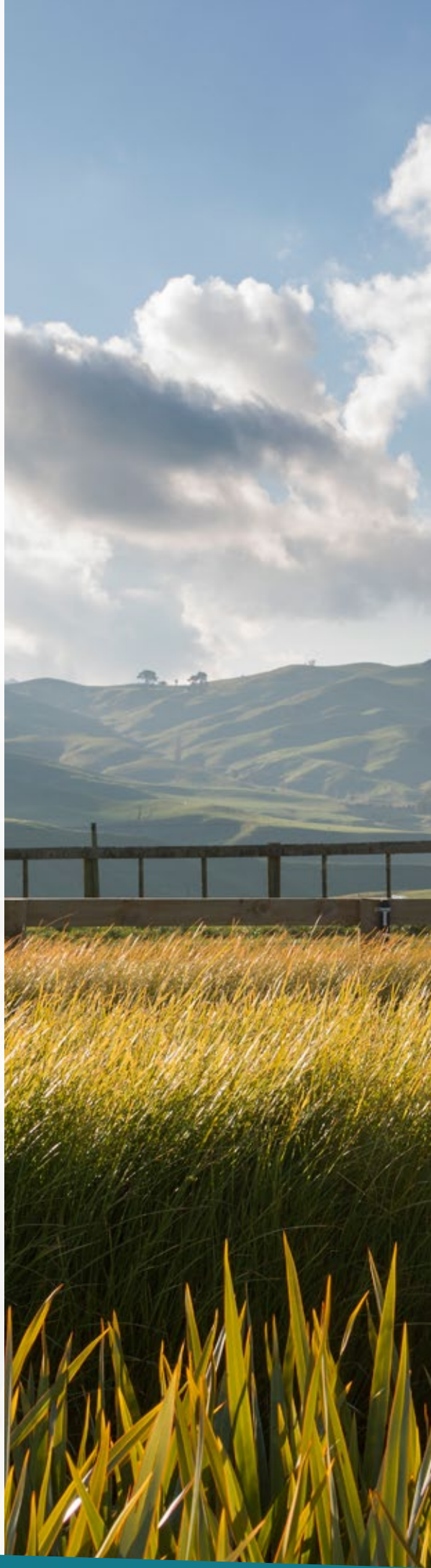
Fertiliser Matters Newsletter

Three (August 23, February 24 and June 24) issues of Fertiliser Matters were produced in the year in review, sent to just under 1,000 readers per issue. Open rates and click through rates were both above industry standards for all three issues.

Social Media

9,200 impressions across 21 posts since LinkedIn was launched in July 2023.

Followers grown from 0 to 210.

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Shaping profitable and sustainable farming