Agri-Gate

Agriculture & Investment Services
Ministry for Primary Industries
Manatū Ahu Matua

Latest news about MPI's Investment Programmes

ISSUE 56 | JULY 2021

Steve's desk

Welcome to this edition of Agri-Gate.

What a busy year it's been! We continue to receive high-quality applications for projects that are set to make a significant and long-lasting difference to our food and fibre sector. Looking back over the past year, I'm astounded by the breadth of projects that are already underway, from small community projects to nationwide multi-year programmes. These projects will ensure that the sector continues to grow sustainably and thrive. Many of them will also enable us to respond to market demands nationally and across the globe.

Our latest Sustainable Food and Fibre Futures (SFF Futures) Snapshot report for the period June 2020 to May 2021, shows that as at 31 May 2021 MPI had approved 138 projects with a total MPI investment of $111 million, and a further $138 million investment from industry and community groups. There were also 80 applications under assessment.

On 7 July SFF Futures received its 100th new application in 2021. This far exceeds the volume at the same time in the previous two years, which indicates that the word is getting out there about our fund.

Over the past few months we've announced three long-term programmes, each with SFF Futures co-investment of more than $1 million. This included a contribution of $8.98 million to a $22.23 million seven-year programme led by DairyNZ, which aims to deliver a low-cost forage solution to nitrate leaching. The programme was launched at Fieldays at an event hosted by DairyNZ, with Associate Agriculture Minister Meka Whaitiri as guest speaker. You can read about this programme and the others in this issue of Agri-Gate.

We also caught up with Waikaitu Limited, to find out what progress the Nelson-based company has made since completing its SFF Futures funded project. I'm happy to report that Waikaitu has successfully created a line of products using the pest seaweed *Undaria Pinnatifida* and expects to sign contracts with several overseas export companies within the next few months. I congratulate them on their efforts, which will bring more employment opportunities to the Nelson region.

This Agri-Gate also features articles on some of the projects we're funding that are still in the early stages. One project, led by Iris Data Science, aims to help mitigate the issue of lameness in cattle. Another, led by Pictor Ltd, is working on a solution for detecting Johne's Disease and pregnancy in cows from a single milk sample. These projects demonstrate problem-solving and innovation at its best. I'm proud of the way SFF Futures is playing a part in finding solutions to enable the food and fibre sector to operate at its full potential, with minimal impact on our environment.

Other stories

This issue also covers:

- all-wool New Zealand carpet company Bremworth's project to develop more sustainable all-wool carpets and rugs.
- SFF Futures' support of New Zealand Young Farmers to help the organisation grow and attract people into the sector.
- a project led by the Foundation for Arable Research to evaluate the opportunity for a grower-owned value chain to supply the growing demand for high-end durum wheat flour in New Zealand.
- a video of the Resilient Dairy: Innovative Breeding for a Sustainable Future programme.

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ISSN (online) 2350-3289

Steve Smith's column

Chair, Independent Advisory Panel, SFF Futures

SFF Futures has created a new and exciting approach to the government support for innovation and transformation in the agriculture, food and fibre sectors.

As a panel we have seen a significant increase in applications that aim to solve the challenges of producing food and fibre in today's world, whether that be ethical, environmental, or integration of technology into modern regenerative production systems. As Steve Penno mentioned, this has really ramped up in the last year with over 100 applications received in 2021 and since June 2020, 138 projects approved.

The IAP gets deeply involved in assessing and making recommendations for the large grant and partnership applications where there is considerable co-investment with industry groups and the private sector, and it is an area where the panel can see truly transformative outcomes that can have wide ranging impacts. It has been very encouraging to have several of these SFF Futures partnerships and large grants receive ministerial approval in the last few months, projects that we believe provide a very strong endorsement of partnership to drive strong commercial, ethical and environmental outcomes, and a more prosperous Aotearoa New Zealand. I for one am very excited about these projects, and we look forward to announcing them once the contracts have been signed. It's exciting to see applications coming from a broad range of sectors – many from first-time applicants.

As we are co-investing in projects using public money, we need to be transparent about how this money will add value for our country, from providing new employment opportunities to finding new ways to reduce our impact on the environment. One area where many applications fall down is the ability to explain how their project will be of benefit to New Zealand. We encourage all applicants for partnerships or large grants to consider this carefully in their applications.

We also encourage the sector to think boldly about the future. Please be in touch with MPI if you have an idea for the benefit of a more enriched future for our country. They, and the IAP, would love to be part of the conversation.

100 Applications received in 2021

138 Projects approved since June 2020

SFF Futures Snapshot

SFF Futures is now in its third year. We've produced a Snapshot report, looking back on some of the highlights of the past year. Here you'll find key statistics, case studies, and more.

Read the report.

Major plantain forage programme commences

A major programme investigating plantain's potential to help farmers protect waterways and improve freshwater quality was announced at Fieldays.

SFF Futures is contributing $8.98 million to the $22.23 million seven-year programme, which aims to deliver a low-cost forage solution to nitrate leaching.

Industry programme partners DairyNZ, Fonterra, and PGG Wrightson Seeds are collectively investing around $10.47 million in cash and $2.8 million in-kind to the programme.

"It's vital we look after our precious streams, rivers and lakes – but we acknowledge that the necessary freshwater management measures come at a cost to livestock farmers. Plantain as a fodder crop has the potential to provide a cost-effective solution," says Associate Agriculture Minister Meka Whaitiri, who announced the programme at an event organised by DairyNZ.

"This programme is expected to demonstrate plantain's efficacy at scale, so farmers have the confidence they need to invest in pasture and practice change."

The programme will focus on Ecotain, a proprietary environmental plantain cultivar developed by PGG Wrightson Seeds, which could reduce nitrate-leaching by at least 20 percent. Modelling by DairyNZ forecasts a potential reduction of 15,000 tonnes of nitrate leached per year by 2035 on New Zealand farms.

"The programme will involve farm scale trials, and implementation and practice improvement across various New Zealand conditions," Meka Whaitiri says.

"As well as the obvious environmental benefits, modelling suggests that Ecotain could save farmers up to $1 billion from 2031 to 2040, when compared to other, higher-cost solutions."

A major output of the programme will be a generic plantain evaluation system that will link to tools for farmers.

"The programme's first priority will be making sure we have substantial and robust scientific proof that Ecotain markedly reduces nitrate leaching at both the paddock and farm system scale, with no or minimal negative effects on farm profitability," Meka Whaitiri says.

"It will also ensure there are no risks to animal health or welfare.

"We're excited by plantain's unique potential to make a positive difference to our farms, and contribute towards meeting our climate goals."

MPI Director-General Ray Smith, DairyNZ Chief Executive Dr Tim Mackle and Associate Agriculture Minister Meka Whaitiri spoke at the launch of the SFF Futures funded Plantain Potency and Practice programme, held at Fieldays.

Backing sustainable wool carpets

All-wool New Zealand carpet company, Bremworth, has its sights on developing more sustainable all-wool carpets and rugs.

SFF Futures is contributing $1.9 million towards Bremworth's $4.9 million sustainability project. Bremworth is a subsidiary of Cavalier Corporation Limited.

The three-year programme will involve research and development of natural and green chemistry-based alternatives to the few remaining synthetic components of woollen carpets.

"The rise of synthetic carpets has overtaken wool dramatically in the last few decades, which has severely affected the wool industry," says Agriculture Minister Damien O'Connor, who announced the project in April.

"I'm told that an average Kiwi household laid with synthetic carpet is estimated to have the equivalent weight of 22,000 plastic shopping bags on its floor. That's a compelling reason to use sustainable wool wherever we can to make healthy homes for Kiwis and the world.

"More than ever, consumers are considering the entire life-cycle of products. We believe this programme will spur demand for New Zealand strong wool and enhance our manufacturing competitiveness through strong environmental credentials that challenge industry norms."

New Zealand wool is 100 percent biodegradable, renewable and sustainable.

"It aims to keep New Zealand woollen yarn and carpet manufacturing capacity in New Zealand, preserving jobs, and protecting local communities and supply chains," says Damien O'Connor.

"Ultimately, we hope this project will benefit New Zealand's strong wool sector, with better returns for our farmers and manufacturers, and supporting their communities.

"If we get this right, then that's a compelling yarn we can sell to our markets abroad."

Agriculture Minister Damien O'Connor and Cavalier Corporation Chairman touring Bremworth's Auckland factory.

Investing in the future of New Zealand Young Farmers

Waikato/Bay of Plenty club, Tirau Young Farmers, having a go at shearing at the AgriITO training day.

SFF Futures is backing New Zealand Young Farmers to help the organisation grow and attract people into the food and fibre sector.

The fund is contributing $1.76 million to New Zealand Young Farmers over three years.

That will be boosted by support of about $350,000 from DairyNZ, Beef + Lamb New Zealand, and AGMARDT.

Agriculture Minister Damien O'Connor, who announced the project, says New Zealand Young Farmers is an important organisation for attracting, nurturing, and retaining people in the sector.

“The organisation has a proud history and we want to ensure it can continue to provide help to young farmers for many years to come. Their network of 80 clubs around the country provides a range of benefits – particularly to rural communities.

"The help from SFF Futures will enable New Zealand Young Farmers to transition to a more financially sustainable business model that delivers more support to its local clubs and members.

"The support will help the organisation focus on further development of its clubs, introduce a new membership model and develop a wide-ranging digital platform to better connect members and provide services.

“The digital platform especially will allow the organisation to reach a far wider, more diverse range of young people and help them connect in with all the sector has to offer. I want our rural communities to be vibrant and viable.

“This project will be transformational for New Zealand Young Farmers – it will bring members back to the centre of focus, set them on a strong path for future growth and boost their part in helping the food and fibre sector add more value to our great products.”

Damien O'Connor says the Government is proud to support such an important rural organisation.

“New Zealand Young Farmers is part of our rural history and it’s important it continues to help its members and support rural communities.

"As a proud former member of Young Farmers, I've seen the importance of the work they do to help farmers adapt and meet challenges head on.

"We’re pleased, alongside our industry partners, to play a part in transitioning the organisation to a more modern and sustainable business model so it continues to thrive and enhance the wellbeing of our rural communities.”

Pest seaweed products set to hit export market

Eight years of research and development to create a line of products using the pest seaweed *Undaria Pinnatifida* is paying off for Waikaitu Limited, which is poised to heavily expand into the export market in the next few months.

In mid-2019, MPI invested $325,600 through SFF Futures to help the Nelson-based company achieve its goal of manufacturing a range of nutritional, bio-stimulant and crop protectant products in New Zealand. This included creating a pilot processing plant that could be easily replicated and scaled up to meet global demand.

"It's taken a lot of effort and innovation to get to where we're at," says Alex Pressman, CEO, Waikaitu. "We've developed manufacturing capability by engineering our own specialised equipment that is capable of processing the Undaria. We've also trained up local mussel farmers to harvest the seaweed cleanly from their lines, so we have good quality raw material to work with."

Undaria grows fast and is the scourge of mussel farmers, who constantly need to remove it from their lines.

"We've found a valuable use for this invasive species, while creating an additional income for local mussel farmers," says Mr Pressman.

Waikatu's point of difference is that they use fresh seaweed, rather than seaweed that has been dried prior to processing. This retains the potency of the seaweed, so it packs an environmentally friendly punch.

Waikaitu's products aim to address the agricultural industry's global concerns of plant resilience to climate change, the health of our soils and waterways, and increasing resistance of fungal pathogens to standard chemical controls.

"Our products help build up soil health, and assist with carbon sequestration, which reduces the reliance on chemical fertiliser," says Mr Pressman.

The company is in the final stages of a deal with a global distributor to ensure availability of their products to growers through existing distribution channels. The global distributor has invested significantly into verifying the products' efficacy within multiple markets with randomised and replicated trials over three years. In addition, third-party trials were conducted in California to verify the benefits for increasing nutrient use efficiency and reduced nitrate leaching into the water table.

"In particular, the trial data produced by the global distributor has shown statistically significant results as an anti-fungal plant protectant," says Mr Pressman.

"There is enough of the invasive species to source through the existing supply channel in Marlborough and Golden Bay to change the landscape of the mussel industry and create a new leading industry for the region.

"Our dream is to have an established and thriving export market for our products within the next five years."

Alex Pressman harvesting seaweed in Marlborough.

Pictor developing bovine test to detect Johne's Disease and pregnancy from single milk sample

Auckland-based biotechnology company Pictor Limited has been developing an affordable multiplex bovine test that could save the dairy industry $40 million to $90 million a year.

Pictor received a $404,040 grant from SFF Futures to develop the test.

The test is being developed in collaboration with Massey University, and will initially be used to detect Johne's Disease and pregnancy from a single milk sample.

"Dairy cows are at risk of a range of bovine diseases including Johne's disease (JD), which costs the industry up to $90 million annually in lost milk production and poor calving rates," Pictor Chief Operations Officer Howard Moore said.

"Affordability is a key barrier to wider take-up of testing by farmers. There is a range of individual tests on the market, however, routine testing is not yet the norm. The novel multiplex diagnostic technology we're developing will lower costs and bundle tests, enabling more proactive and sustainable management of disease on-farm.

"Our bovine test aims to be faster, more cost-effective and more sensitive at detecting JD than existing tests. The inclusion of a pregnancy test will allow farmers to predict calving patterns more accurately, and make more accurate and timely decisions about which cows to retain for next season."

Regular and early testing for JD and pregnancy, coupled with good management practices, could increase herd productivity and boost calving rates.

The research project is led by Dr Jimena Tejerina, Senior Assay Scientist at Pictor, and Dr Rao Dukkipati, Senior Lecturer at Massey University. It builds on long-term research at Massey University, led by Associate Professor Alan Murray.

Pictor has filed a provisional patent for the diagnostic test.

Assay scientist Dr Jimena Tejerina beside the M2 iONE1200 array, a MicroArray printer used for development and commercial manufacturing of bovine tests.

Resilient Dairy: Innovative Breeding for a Sustainable Future programme

We caught up with two scientists from farmer-owned herd improvement co-operative Livestock Improvement Corporation (LIC), to see how the Resilient Dairy: Innovative Breeding for a Sustainable Future programme is going, two years on.

The $25 million seven-year programme includes investment and support from MPI ($10.3 million) and DairyNZ ($4.2 million). It is investing in new disease management technologies and advancements in genomic science to improve cow productivity, and produce better cows with improved health, wellbeing and environmental resilience.

In this video you'll hear about the 'milk-omics programme', which uses DNA technology to try and understand the health status of an animal based on their milk.

Watch a video about the project.

Assessing locally grown durum wheat

Ivan Lawrie, FAR's General Manager Business Operations, (literally) in the field.

New Zealanders could be tucking into artisan pasta, pizza and bread made from durum wheat grown in the Wairarapa if a new project indicates there's a market for it.

SFF Futures is contributing $100,000 to a $151,000 project led by the Foundation of Arable Research (FAR) that will evaluate the opportunity for a grower-owned value chain to supply the growing demand for high-end durum wheat flour in New Zealand.

The project builds on the findings of a 2017-2020 project funded by MPI's former Sustainable Farming Fund, which looked at alternative crops that could be profitable for the Wairarapa as a response to the pea weevil incursion. That project demonstrated that the warm, dry summers in the Wairarapa and some of the local soils are ideal for growing high-quality durum wheat.

"There's a big buzz about it already," says Ivan Lawrie, FAR's General Manager Business Operations. "We sent samples of milled flour to bakers and pasta makers throughout the country and everybody is really keen to use local ingredients rather than importing from Australia or Italy. However, the price point for this kind of product is not yet fully understood."

The project will focus on durum wheat grown in the Wairarapa, and will conduct consumer research and product testing with chefs, bakers, and pasta manufacturers. The results will help to evaluate alternative commercialisation models for marketing the flour to the food sector.

Mr Lawrie says it's looking promising so far. "COVID-19 has made people more aware of where their food comes from, and there's a push for more New Zealand-grown produce. We're aiming for a premium product that is fully traceable back to the growers, which of course will cost a bit more than the cheap packets of pasta you buy from the supermarket."

If successful, Mr Lawrie hopes this could become a pilot plan for other specialty grains, with a distinct provenance in different regions across the country.

On-farm 'intelligent eye' provides farmers with real-time health of dairy herd

A pilot of a new automated on-farm monitoring system designed to provide farmers with an 'intelligent eye' over the health of their herd, allowing for early detection of conditions such as lameness, was launched at Fieldays 2021.

Created by the makers of the world's first sheep facial recognition system, Dunedin-based Iris Data Science, the technology is currently being piloted on five dairy farms in the lower South Island with success – and the company hopes to extend this to around 50 farms.

MPI is contributing $40,000 to the project through SFF Futures.

"Our pilot farms are already seeing promising results, with farmers saying they are receiving valuable, accurate, and consistent information on the condition of their herds," says Iris Data Science's co-founder and managing director Greg Peyroux.

"We're seeking more farmers to help co-design this exciting new platform to ensure it meets the needs of farmers here and around the world."

The system uses a non-intrusive on-farm camera and monitoring system that collects tens of thousands of data points from every cow, every day, to provide an 'intelligent eye' over livestock. The visual identification of the cows uses a technique similar to the sheep facial recognition software earlier developed by the company.

The first product – OmniEye Locomotion – allows for early detection of lameness and drafting of animals, resulting in less suffering and less costly interventions and culling. Farmers receive real-time information that they can action – either automatically or manually drafting cows that need treatment, and allows for remote diagnostics for livestock by a vet.

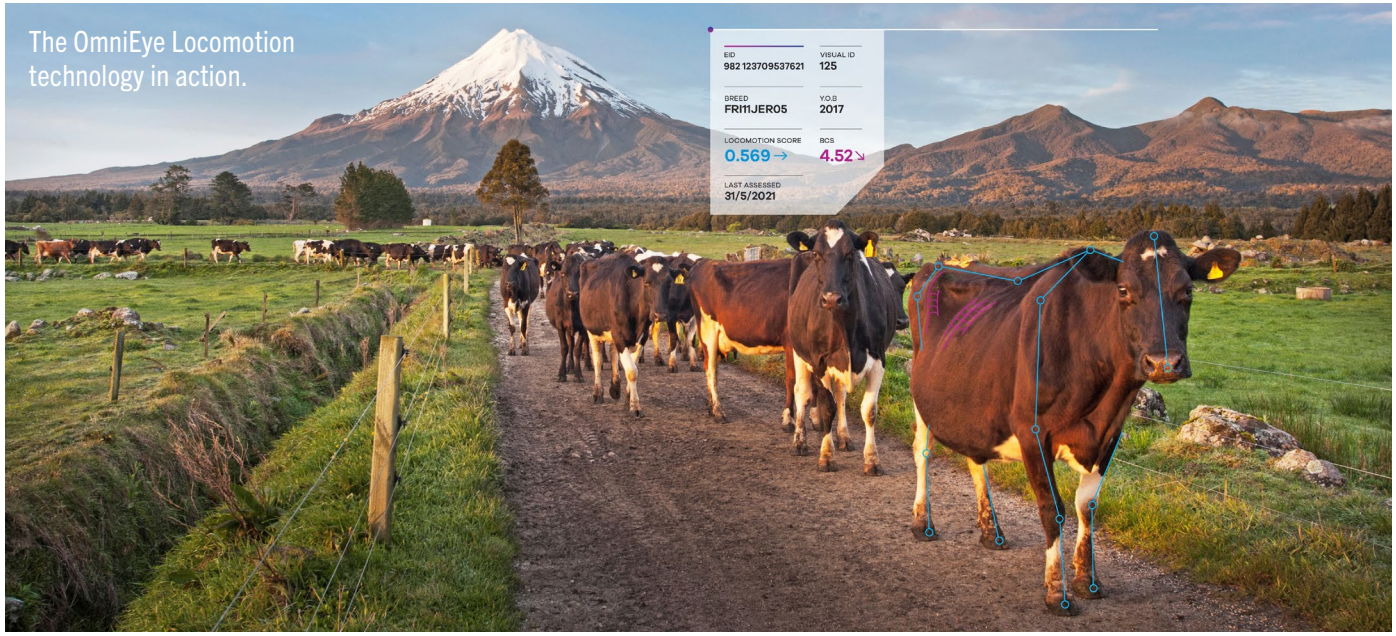
Another product in the system – OmniEye Diary – gives visual verification of an animal's condition over time to provide better understanding of the herd's health.

"We understand lameness is a huge issue for farmers in New Zealand, costing thousands of dollars each year through a loss of production and is also a major animal welfare issue. OmniEye allows for early detection and is already working well in its pilot phase.

"We're hoping to develop the technology further by bringing more farms into the pilot."

Powered by cutting-edge artificial intelligence software, the proprietary system is set to revolutionise animal monitoring by allowing farmers to automatically observe and record traits and conditions that would typically require human intervention or stock handling to install a physical device on the animals.

Iris Data Science co-founders Greg Peyroux (left) and Benoit Auvray at Fieldays.



The OmniEye Locomotion technology in action.