Agri-Gate

Latest news about MPI's Investment Programmes



Agriculture & Investment Services

Ministry for Primary Industries Manatū Ahu Matua

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Steve's desk

Welcome to this edition of Agri-Gate.

In this issue, I'm delighted to share stories about just some of the innovative projects we're investing in – from short-term projects to

multi-million-dollar long-term programmes.

Last month we announced a major five-year research and development partnership with Leaft Foods*, with an \$8 million contribution through Sustainable Food and Fibre Futures (SFF Futures). Minister of Agriculture Hon Damien O'Connor went down to visit the facilities in Lincoln and learn more about the programme. Its key goals are to develop a range of high-value leaf protein concentrate ingredients for human consumption from green leafy crops, and a high-quality silage feed for farming operations. This could lead to a new leaf protein industry in New Zealand, and may enable us to ensure early market share ahead of leaf protein innovators in other countries. There are several other large projects in the pipeline, including ones initiated through our sector acceleration workshops, held late last year. We look forward to announcing some of these soon.

We kicked off some smaller projects recently too, which have the potential to deliver big results. The Māui Dolphin Project is testing drone technology that could help save our critically endangered Māui dolphin. This is a great example of government, the not-for-profit sector and industry working together towards a common goal. It was great to be at the launch in Auckland, to hear about this cutting-edge technology first-hand.

An exciting aspect of SFF Futures is its potential to help pioneer new industries. We're delighted to be working with Pic's Peanut Butter, and tapping into the expertise of Plant & Food Research, to explore the viability of growing peanuts in Northland. If successful, Pic's will one day be able to produce 100 percent Kiwi-made peanut butter. This would bring new value into the Northland region and reduce our reliance on sourcing peanuts from overseas.

We don't yet know whether this project will be successful but the beauty of this fund is that it enables us to provide funding and resources to "step outside the box" and try something new.

We've now approved 118 SFF Futures projects with Ministry for Primary Industries (MPI) funding totalling more than \$87 million – and plenty more applications are in the pipeline. Keep them coming – we love hearing new ideas.

Other stories

In this issue we also talk about:

- a successful one-year trial demonstrating that it's possible to produce independently verified sustainable beef in New Zealand through the entire supply chain.
- Woolchemy's success in securing overseas nappy manufacturers to trial its new wool-based textile, developed for use in biodegradable disposable nappies.
- a community project supported by our Earthquake Recovery Fund, aimed at restoring pāua to the Kaikōura coastline.
- the independent evaluations of four of our completed Primary Growth Partnership programmes.

Steve Penno

Director Investment Programmes

*Editor's note: Steve Penno was not part of the funding approval process for this programme due to a familial conflict of interest.





Steve Smith's column

Chair, Independent Advisory Panel, SFF Futures

The New Zealand Government has been making significant coinvestments with sector groups and businesses in the agriculture, food and fibre sector for more than

a decade through two funds – the Primary Growth Partnership and the Sustainable Farming Fund. The Primary Growth Partnership in particular took quite a transformational approach with some very significant investments, as partners with business and sector groups to enhance innovation in both product and business model design, and our wider New Zealand society.

These two funds were combined in 2018 into the Sustainable Food and Fibre Futures fund (SFF Futures), bringing with it a dynamic change to the way we assessed projects. Not only do we look for innovative and transformational approaches to end-user driven food and fibre products and services, but we now run a strong "excellence in sustainability" lens across these projects. This ensures SFF Futures aligns fully with the Fit for a Better World vision for the sector, which seeks to boost food and fibre sector export earnings by \$44 billion over the next decade, while protecting the environment and growing jobs. It has also allowed us to provide some leadership in advancing more transformational approaches to modern agriculture, especially in technology and regenerative production systems where a more applied research approach is taken. We are seeing some exciting projects come across our desk that will play a strong role in underpinning the Fit for a Better World proposition. This issue of Agri-Gate highlights independent

evaluation reports on four of our Primary Growth Partnership programmes. One of them, Precision Seafood Harvesting, has been innovative and transformational in dramatically changing fishing practices, driving commercial high-value opportunities that simply did not exist previously, and achieving considerable social and environmental enhancements. To me this programme has achieved for the fishing industry what our sailors and boat designers have done for the America's Cup to find a way to make boats fly fast on water, using exactly the same creative, "of course we can do it" approach. The new technology developed by Precision Seafood Harvesting allows smaller fish to escape the trawling net unscathed. In addition, any larger by-catch can be released back to the ocean in a healthy state instead of being potentially fatally damaged by traditional trawling. These harvested fish are alive and healthy when they reach the surface because of this innovative gentle capture technology, which creates the potential to increase value significantly.

We expect uptake to grow significantly in the coming fishing seasons. Notably this project has been funded by three of New Zealand's fishing companies, Sealord, Sanford and Moana – the first time they have come together to drive transformational change not just for their businesses, but most importantly for New Zealand's reputation as the most sustainable and ethical fishing industry in the world. We take our hat off to them. It has worked so well that they are working on a version 2.0 which looks like it will be even more innovative.

Let's see more of these projects across our desk!

Future Ready Farms

A new five-year partnership called Future Ready Farms seeks to significantly reduce the food and fibre sector's environmental footprint, while boosting economic growth and sustainability.

The \$25 million programme is led by Ballance Agri-Nutrients with co-investment of more than \$10 million from SFF Futures.

The programme will develop new solutions to meet national environmental targets for reducing greenhouse gas emissions, agricultural chemical use, and nutrient loss to waterways.

"Our farmers and growers are among the most progressive in the world and have been working hard for years to increase productivity while minimising their environmental footprint. This programme will contribute to these efforts across the country to further lower our emissions," says Minister of Agriculture Hon Damien O'Connor.

"It aims to trial and develop farm nutrient technologies that offer significant environmental benefits, while being economically viable for our farmers."

Ballance Agri-Nutrients CEO, Mark Wynne says Ballance is extremely grateful to government for its significant show of support towards this new programme.

"We know New Zealand's food and fibres sector takes its responsibility to reduce its environmental impact seriously, and this programme represents our ongoing commitment to partnering with farmers and growers on that journey."

The new programme features 12 projects, and will develop products, tools, and technologies to help farmers and growers to continue to build on their sustainable agricultural practices.

The outputs of the Future Ready Farms programme will address multiple sectors within the food and fibres sector including fertiliser manufacture, livestock production, forestry, horticulture, and arable, with projected benefits of \$1.063 billion to New Zealand farmers by 2030. ■

Green could be the new gold

A new \$20 million research and development programme could put New Zealand on the map as a leading leaf protein concentrate producer.

The five-year programme, led by Leaft Foods with \$8 million of funding from SFF Futures, is developing technology that extracts edible protein from New Zealand grown green leafy crops.

Leaft Foods' technology will be used to produce high-quality protein in the form of gels or powders that can be used in a range of foods in the fast-growing global market for plant proteins. The plant-based protein start-up will also produce an animal feed that is optimised for ruminant nutrition and has the potential to lower nitrogen losses and emissions onfarm.

"A growing number of global food manufacturers and consumers are demanding that their proteins come from a sustainable source," says Minister of Agriculture Hon Damien O'Connor.

"This could be a game-changer for pastoral enterprises seeking to take environmental leadership, by providing them with a low impact, locally sourced feed, and the opportunity to diversify into low emission farm systems.

Leaft Foods co-founder Dr John Leyland Penno says this programme will build on New Zealand's reputation as a trusted exporter of high-quality protein, while reducing the environmental impact of agricultural systems. "We aim to meet the increase in demand for plant proteins in a way that aligns with consumer values."

Minister O'Connor says Leaft Foods is building a world-class team of experts to develop the technology. "We're thrilled to be assisting them to expand and progress their successful laboratory and technical proof-of-concept trials," he says. "This programme is a great example of the types of innovation and value-add we're calling for through our food and fibre sector roadmap, *Fit for a Better World – Accelerating our economic potential.*" Leaft Foods was founded by Dr John Leyland Penno and Maury Leyland Penno, and was launched in August 2019. The company is based in Lincoln, Canterbury.





Drone project to aid protection of Māui dolphin



Prime Minister Rt Hon Jacinda Ardern and Minister of Oceans and Fisheries Hon David Parker attended the official launch of the Māui Drone Project in Auckland on 26 February.

The project is working with MAUI63, a non-profit organisation developing an unmanned aerial vehicle (UAV) capable of finding and tracking Māui dolphins using artificial intelligence. Minister Parker says the drone could provide unparalleled access to information about Māui dolphins, at a fraction of the cost of other data collection methods.

"This technology has the potential to compile detailed data on the habitats, population size and distribution and behaviour of the dolphins, along with many other types of marine species such as other dolphins, seabirds, and whales."

By advancing our understanding of how Māui dolphins behave during the day and throughout the year this project will help us ensure the measures already put in place to protect our Māui dolphins are robust and appropriate.

The Māui Drone Project is a one-year collaboration between MPI, which is contributing \$545,762 through SFF Futures, non-profit wildlife technology organisation MAUI63, and



Prime Minister Rt Hon Jacinda Ardern at the official launch of the Māui Drone Project in Auckland on 26 February.

WWF-New Zealand. Fishing companies Moana New Zealand and Sanford Limited are also supporting the project.

"Current estimates suggest that only 63 Māui dolphins aged over one year remain, so it's critical that we work together to help save them from extinction," Minister Parker says. Fisheries New Zealand has committed 800 hours of technical expertise to help the project to analyse data, and develop models to track and predict the dolphins' movements. Data from the project will be publicly available. Fishing

companies Moana New Zealand and Sanford are exploring how to use the information from the drone technology to reduce the risk to Māui and Hector's dolphins.

Pic's Peanut Butter to trial growing peanuts in Northland

Pic's Peanut Butter has kicked off a project to look at the feasibility of growing peanuts commercially in Northland, with backing from SFF Futures.

The \$91,320 project is led by Picot Productions, and SFF Futures is contributing more than \$59,000. Research expertise is being provided by Plant & Food Research.

The project is expected to bring new employment opportunities to the Northland region by trialling growing peanuts in three locations – Ruawai on a kumara farm, Poutu Peninsular near Dargaville, and on Māori land in the Kai lwi Lakes district.

"We've selected three locations with different soil types and environments to see where the peanuts grow best," says Declan Graham, Business Manager – Science at Plant & Food Research, which is managing the project trials.

"A soil temperature of around 18 degrees is ideal, so the window for getting the peanuts in the ground and harvesting them is small."

Spanish Hi Oleic peanuts, which have smaller kernels and reddish-brown skins, have been identified as the most appropriate cultivar for Northland conditions.

"This type of peanut is most widely used in confectionary and snacks, as well as peanut butter production," says Mr Graham. "Their high oil content makes them ideal for crushing."





Mr Graham said his team doesn't expect the project to be plain sailing. They'll need to deal with aspects like weed control and pests. "But of course, the proof will be in the tasting," he said.

"It has always felt a little weird to be making an iconic New Zealand product with imported ingredients," says Pic Picot, Picot Productions owner and founder. "These trials have the potential to make a very real difference to our carbon footprint and redirect the millions of dollars we spend on imported nuts to Northland.

"I can think of nothing finer than to help the Northland community establish a new industry."

Sustainably produced beef patties aimed to become "new normal"

It's possible to produce a beef patty sustainably across the supply chain in New Zealand, a year-long trial has shown.

Key players in the red meat industry partnered with SFF Futures to develop a model for producing independently verified sustainable beef through the entire supply chain. The project aimed to help meet the growing demand for ethically sourced and sustainable products.

"The project showed that New Zealand can do this, and the model can be scaled up – so this really is an encouraging milestone," says Steve Penno, MPI's Director Investment Programmes. "It provides transparency to customers and the public in a way that hasn't been possible before."

> The trial used the McDonald's supply chain as a test case. Six farms, processing companies ANZCO Foods, Greenlea, Silver Fern Farms (comprising 50% of New Zealand's beef industry), and Beef+Lamb New Zealand collaborated to work out how to meet sustainability requirements.

The pilot focused on the sustainable principles of economic, environmental, and social responsibility. It involved an independent audit and verification of the supply chain's sustainability, including onfarm, meat processing and patty production. It also aimed to address the stakeholder expectations identified in the Red Meat Profit Partnership and New Zealand Roundtable for Sustainable Beef materiality studies, completed in 2019. These priorities included water quality and water use, animal welfare, and on-farm environmental management.

The trial showed that the New Zealand Farm Assurance Programme Plus (NZFAP+) developed under the Red Meat Profit Partnership is an important part of demonstrating New Zealand's ability to produce sustainable beef on-farm.

NZFAP+ complements and builds on the existing Farm Assurance Programme with three additional components: Farm Environment, People, and Biosecurity. It has been designed to protect and enhance all resources, create better and more sustainable farming businesses, and incorporate socially responsible and ethical practices.

McDonald's Restaurants NZ, which serves 1.6 million people in New Zealand every week, says it is proud to play a role in moving the industry further towards sustainable practices.

"More and more our customers are asking us how our beef is produced," says Dave Howse, Managing Director McDonald's Restaurants NZ.

"We need to change and evolve with the times and we also need to lead – and sustainability is one of those areas where we really feel we can work with industry to move things forward."

The New Zealand Roundtable for Sustainable Beef will look at building on the success of the pilot project by involving more farms and promoting the adoption of NZFAP+.

"Many of New Zealand farmers' practices are already sustainable and we hope that over time these practices will be adopted as the new norm," says Grant Bunting, New Zealand Roundtable for Sustainable Beef Chairman.

"We have the opportunity to be world leaders and consciously create a complete food package that is better for the planet."

Read the final report.

Watch a video about the project.

Woolchemy set to change nappy industry one layer at a time

Wellington-based company Woolchemy has secured several overseas nappy manufacturers to trial its new sustainable wool-based non-woven textile, developed for use in biodegradable disposable nappies.

The company received \$80,000 from SFF Futures last year to make samples and test neweFlex, a unique non-woven textile that is mostly derived from wool.

"The timing is perfect. Healthcare brands of hygiene products like nappies and wipes are desperately searching for sustainable materials to satisfy a consumer need for natural and safe products," says Woolchemy co-founder and chief executive Derelee Potroz-Smith.

> "They really see the unique benefits wool has to offer. And given we have a lot of strong wool here in New Zealand, we're not going to run out in a hurry!"

> > Woolchemy co-founder and chief executive Derelee Potroz-Smith showcases the company's innovative neweFlex product.

Mrs Potroz-Smith explains that commercial single-use nappies are highly engineered products traditionally made up of several layers of synthetic fibres.

"Currently most nappy manufacturers are producing products made from synthetic resources. We're developing better, multi-functional materials with wool. There's no reason to use plastic anymore."

Woolchemy originally set out to make their own 100 percent biodegradable nappy containing absorbent wool. However, they decided that supplying their non-woven material to existing nappy companies and offering their expertise would have more far-reaching benefits for everyone including nappy manufacturers, consumers, wool growers, and for the planet.

"We realised we had something pretty special that was best shared for greatest impact. So, we decided to work with other companies wanting to make responsible and sustainable products."

It has not always been plain sailing for Woolchemy in the past year.

"It has been very challenging, not only because we launched neweFlex during a global pandemic but because we're doing something that's quite radically different to what wool has been used for. Also, the non-woven material manufacturers are processing wool for the first time, so they have been learning too."

Mrs Potroz-Smith says that Woolchemy's manufacturing partners have been impressed by the product.

"They've been amazed with the quality output and excited, as we are, about the potential applications for non-woven wool material."

While the MPI funding has been used for the nappy trial, Mrs Potroz-Smith says neweFlex could have multiple uses. "Just by tweaking the formulation of this material we could turn it into wipes or wound care products, and it could even be used to make biodegradable disposable PPE gear."

Woolchemy is aiming high. "Our goal is to replace fossil fuel derived synthetics in everyday products with our wool-based textiles using New Zealand wool. And we want to ensure farmers are getting paid well above what they are receiving now for their strong wool.

"Our ultimate dream is to make Woolchemy a billion-dollar export company. We want New Zealand to be the centre of sustainable product innovation by making the most of our incredible natural resources, and collaborating with other New Zealand-based innovative companies.

"Wool's time is now!"

Watch an interview with Derelee Potroz-Smith.

Kaikoura community rallies to save the paua

The Kaikoura community has been working together to help the earthquake-devastated pāua population along the Kaikoura coastline to thrive once more.

MPI provided \$236,000 through its Earthquake Recovery Fund to aid the community's attempt to restore paua to the region. The funding has been used to establish a hatchery and an education programme through the local high school.

Paua Industry Council Chair Storm Stanley says the education project was initiated by Jason Ruawai from PauaMAC 3, the local paua industry association.

"Jason and the other local paua divers have really put a lot of energy in getting it up and running, and helping the community understand why protecting the paua is so important," says Mr Stanley.

"I think it really helped the paua divers to cope with the disaster, to be able to actually participate in working towards the fishery's recovery, as well as being good for the environment and fisheries."

The 2016 earthquake destroyed much of the habitat of both adult and juvenile paua by lifting the seabed out of the water. The fishery is currently closed to protect the remaining adult breeding stock and allow time for recovery. The community-run hatchery aims to boost this recovery.

To establish the hatchery Mr Ruawai consulted

with hatchery operators and people with hatchery experience. He also drew on the knowledge of Canterbury University researchers, who have been researching the Kaikoura coast and marine environment pre- and post-earthquake.

The process involved finding a location for the hatchery, registering as a fish farmer, and setting up the physical infrastructure. Many locals offered donations and volunteered their time to make the dream a reality.

The next step was to gather the brood stocks and work out how to get the paua to spawn and breed. "To ensure the genetics are local we collected

local paua species, and this was also an iwi requirement," says Mr Stanley. "Because the fishery is closed we needed a special permit from MPI to allow the shellfish to be gathered."

The paua goes through a conditioning stage to get used to living in tanks rather than in the wild.

"Then there's a whole scientific process around making sure they're sexually mature before they start spawning. Once they're conditioned to the artificial environment they can be spawned and start growing."

The end goal is to boost the natural population through breeding them in the hatchery, and release them into the wild when they're the right size.

Mr Stanley says the survival rate is still quite low because of natural predation and other

Students counting juvenile paua within an



environmental factors. "Part of the research has been trying to boost the survival rate – for instance finding out what types of seaweeds might increase survival rates."

The project has involved the local high school, by tying the restoration efforts into the national science curriculum and into the Māori course. Students learn about the life cycle of pāua and the impact the earthquake had on the pāua population.

"It helps them understand why the fishery needs to remain closed, and the importance of looking after it into the future."

The students have also been able to do hands-on work in the hatchery and help with the out-planting and monitoring of the juvenile pāua.

"The education is important because it sets our young people up as kaitiaki – and the future protection of the fisheries hinges on it."



Independent evaluations: Primary Growth Partnership programmes

MPI has recently released independent evaluation reports on the outcomes of four of our seven-year Primary Growth Partnership programmes.

Precision Seafood Harvesting

Precision Seafood Harvesting was a partnership with Moana New Zealand, Sanford and the Sealord Group. The programme aimed to supply higher quality, higher value fish, and help ensure the sustainability of our fish stocks. It finished in 2019. **Read the report.**



The Tiaki modular harvesting system, an innovative new fishing method and handling system developed through the Precision Seafood Harvesting programme.

High-Performance Mānuka Plantations

High-performance Mānuka Plantations was a partnership with Manuka Research Partnership (NZ) Limited and Comvita Limited. The programme aimed to grow the value of New Zealand's mānuka honey industry from an estimated \$75 million in 2010 towards \$1.2 billion per annum. It finished in September 2018.

Read the report.

Seed and Nutritional Technology Development

Seed and Nutritional Technology Development was a partnership with Grasslanz Technology and PGG Wrightson Seeds. The programme developed new options for forage crops that can boost productivity and animal health. It finished in January 2020. Read the report.

FoodPlus

FoodPlus was a partnership with ANZCO Foods. The programme aimed to generate more value from the red meat carcase by developing new and innovative uses for parts of the animal. The programme finished in late 2019.

Read the report.