

# Agri-Gate



**Agriculture & Investment Services**

Ministry for Primary Industries  
Manatū Ahu Matua

Latest news about MPI's Investment Programmes

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## Steve's desk

**Welcome to this bumper edition of Agri-gate.**

**The last couple of months since our last edition have been action-packed with a number of milestones and achievements. In this edition we talk about the launch of new projects, the outcome of application and funding rounds we've held, and some of the achievements from across the investment portfolio. We also feature some of the work touching on the primary sector that could be of interest.**

### **New Zealand to host 10th World Avocado Congress**

I'd like to congratulate Jen Scouler and her New Zealand Avocado team on their successful bid to host the 10th World Avocado Congress.

The World Avocado Congress is held every four years, and represents a great opportunity for New Zealand to showcase its innovative avocado and horticulture sectors. It'll be the first time this global flagship event is held in New Zealand.

The Ministry for Primary Industries (MPI) and New Zealand Avocado are co-investors in the **New Zealand Avocados Go Global** programme that aims to increase productivity and capability within the avocado industry to deliver significant additional returns for New Zealand.

### **Clearview Innovations delivers new superphosphate product**

In mid-October, **Clearview Innovations** programme partner Ballance Agri-Nutrients launched SurePhos™, a new low-soluble superphosphate product expected to reduce phosphate losses by up to 75 percent, and therefore lessen the impact on water quality. Due to its low water solubility, the product will ensure more nutrients stay in the soil, where they're needed.

The product was developed by Clearview Innovations, a former Primary Growth Partnership programme. Clearview Innovations has delivered a number of award-winning products to boost the efficiency of nitrogen and phosphorous use on-farm and improve environmental outcomes.

### **Spring Sheep Farm Open Day**

On 1 November, Spring Sheep Milk Co. held its Farm Open Day at their Tauwhare Farm near Hamilton, as part of its **Sheep – Horizon Three** Primary Growth Partnership programme.

This six-year programme aims to develop a high value New Zealand sheep milk industry.

The Open Day provided the opportunity to hear updates about the farm's activities, market opportunities, and the genetics programme.

I'd like to congratulate Spring Sheep Milk Co. on a successful day.

### **Innovators recognised**

Two organisations involved in innovation programmes with MPI have taken out awards recently.



A scene from the Sheep – Horizon Three Open Farm Day on 1 November 2019

I'd like to congratulate The New Zealand Merino Company who won the Supreme Award at the New Zealand International Business Awards earlier this month. MPI is co-investing with this company in a 7-year programme to explore ways to deliver premiums for New Zealand's strong wool sector called **W3: Wool Unleashed**.

I'd also like to congratulate Plant & Food Research who received a Team Award at the Science New Zealand Awards for their work with Precision Seafood Harvesting. **Precision Seafood Harvesting** was a 7-year innovation programme that wrapped up in September 2019. It developed a new wildfish harvesting technology that enables more precise catches, allowing fish to be landed fresher and in better condition, and resulting in a higher value product. Precision Seafood Harvesting built on prior research by Plant & Food, and involved fishing companies Moana, Sanford and Sealord.

### Changes to the independent Investment Advisory Panel

A number of changes to the independent Investment Advisory Panel (IAP) for Sustainable Food and Fibre Futures (SFF Futures) took effect on 1 October 2019.

I'd like to acknowledge the significant contribution by John Parker, whose term as IAP Chair ended on 30 September 2019, a role he held since 1 May 2016. My team and I have appreciated John's no-nonsense approach and his valuable advice on MPI's investment decisions. You'll find John's final Agri-gate column in this edition of Agri-gate.

IAP member Steve Smith has taken over the helm of the IAP, and I'd like to thank him for stepping into this role.

I'd also like to acknowledge the significant contribution made to the IAP by Sir Maarten Wevers, who served on the IAP for two terms over the past six years. We valued his significant experience in governance and the public sector operating environment, and his strong understanding of New Zealand's trade and international environment.

We also welcome two new IAP members: Anne-Marie Broughton and Lucy Griffiths.

You'll find more information about Anne-Marie and Lucy in this edition of Agri-gate.

### Other stories

In this edition of Agri-gate we also talk about:

- exciting results from the SPATnz Greenshell mussel breeding programme;
- a report of achievements and learnings developed by the High Performance Mānuka Plantations programme that set out to move the industry from wild harvest to science-based farming of mānuka plantations;
- making regional connections with Māori agribusinesses, including the launch of a new funding programme called Māori Agribusiness Extension (MABx);
- a financial boost from the Voluntary Bonding Scheme for Veterinarians for vet graduates working with production animals in the regions;
- the launch of a new project that could pave the way to reducing agricultural greenhouse gas emissions from cattle to a fraction of current levels, through a new game-changing feed supplement made from seaweed;
- broadening the scope of SFF Futures to include fisheries innovations projects, both small and large;
- new climate change research projects that will receive funding from the Sustainable Land Management and Climate Change (SLMACC) research programme;
- a three-year project trialling nitrogen strips as a cost-effective way for farmers to manage nitrogen levels in their soil;
- MPI's involvement in the NZ Aerospace Challenge 2019 designed to recognise sustainability in the agricultural sector through the use of unmanned aircraft and space satellite technology;
- opportunities from Expo 2020 in Dubai, set to be the largest World Expo ever staged;
- **Standards New Zealand**, which is committed to working with the primary sector to identify areas where standards can help foster innovation and help businesses thrive.

I hope you enjoy this edition of Agri-gate.

I can't believe it's December already. It has been great to see the projects and initiatives that have kicked off this year, aimed at making a real difference for our food and fibre sectors. I'm excited about what 2020 may bring.

I'd like to take this opportunity to wish you and your families a fantastic and safe Christmas and New Year.

**Steve Penno**  
Director Investment Programmes



### John Parker's column

**As I've just retired as the Investment Advisory Panel (IAP) Chair, I thought I'd use this last column for a few thoughts on Sustainable Food and Fibre**

**Futures (SFF Futures), successor to the Primary Growth Partnership (PGP) and the Sustainable Farming Fund (SFF).**

Of course SFF Futures is a combination of two funds into a single entity. It does have advantages. It allows a continuum between the old funds without a 'gap' between them; it has administrative advantages; it allows the IAP members to see across the spectrum of projects funded in this space; and is delivering what the Minister of Agriculture wants.

The merger of the two funds has worked well. The IAP gets a better sense of the balance of spending (projects under the SFF were not so evident to the IAP previously), and while criteria for funding has not changed much, the emphasis on social and environmental issues is greater in keeping with Government policy.

While the change from the old funds to SFF Futures was signaled, there was something of a hiatus as new rules were written, applications for programmes considered under the old rules were completed and new applicants got their head around the new requirements and application systems. Now we're getting traction, and with considerable credit due to Ministry for Primary Industries (MPI) staff, the application pipeline is getting very substantial with a very good range of applicants across the spectrum of primary sector innovation and improvement – be it financial, social or environmental – and preferably all three.

As a cynic and enthusiast for not wasting Crown funds (I'm a taxpayer too!), I've seen a few schemes that looked poor value for our hard earned dollars but SFF Futures works. Having to put up at least half of the money for any programme keeps an applicant from simply seeking a subsidy. Having a reasonably hardnosed and independent IAP with a lot of business experience and a nose for bull helps. Having MPI as an investment partner and not just a grantor is also important – it means the Crown (and the IAP) see all the internal workings of a programme and ensures that New Zealand gets true benefit commensurate with the Crown's risk and investment.

The panel I chaired is in good shape with Chair Steve Smith taking over surrounded by IAP members with a lot of good sense and served by some very skilled MPI staff.

So, I sign off happy that this is a scheme where taxpayers get a solid bang for their bucks.

**John Parker**

## Changes to SFF Futures independent Investment Advisory Panel

**The independent Investment Advisory Panel (IAP) performs an important role in Sustainable Food and Fibre Futures (SFF Futures), and previously the Primary Growth Partnership, by providing independent expert advice on both funding proposals and active programmes.**

John Parker's term as Chair of the IAP ended on 30 September 2019, a role he held since 1 May 2016.

During his term, John led the IAP during a particularly busy period, as a number of large new government and industry programmes were launched, and the IAP's role was expanded to consider a wider breadth of projects following the launch of SFF Futures.

Steve Smith has assumed the role as IAP Chair from 1 October 2019, having been an IAP member since 1 November 2015.

The IAP farewells Sir Maarten Wevers, who served on the IAP for two terms over the past six years. Sir Maarten made a huge contribution to the IAP and the success of the Ministry for Primary Industries' investments.

With the terms of John Parker and Maarten Wevers ending, two new members have joined the IAP.

### **Anne-Marie Broughton**

Anne-Marie has significant experience in sustainable business development, including Māori agribusiness, project and change management, strategy development and implementation, and governance.

Her experience includes leading the start-up of Māori food innovation



New Investment Advisory Panel member  
Anne-Marie Broughton.

venture Kaitahi™ – The Native Superfood Company which won the 2018 Fine Food NZ Champion of Innovation Award, Te Rua o Te Moko dairy farm which won the 2014 Ahu Whenua Trophy, and establishing a native plant nursery and manuka honey joint venture.

### **Lucy Griffiths**

Lucy is a governance and marketing expert, and has worked in diverse areas such as the global food and beverage sector, agriculture, tourism, economic development and social housing.

She's the owner of Innov8 Aotearoa, a company formed to assist New Zealand agri-food companies to market their products strategically, with a focus on export development.

Originally from Southland farming roots, Lucy has travelled the world as a Nuffield New Zealand scholar and as part of FAME (Food & Agribusiness Market Experience).



New Investment Advisory Panel member  
Lucy Griffiths.

# Mussels Get their Eureka Moment!

Kiwi scientists reveal startling trial results for Greenshell mussel breeding, with potential \$200 million payoff



Mussel families raised by SPATnz.

**Nelson-based Greenshell mussel company SPATnz publicly released the impressive results of its multi-year breeding programme developed in partnership with Sanford, the Ministry for Primary Industries (MPI) and the Cawthron Institute. The results show that selected hatchery mussels can grow up to twice as fast as those caught from the wild. The work is expected to be worth around \$200 million a year to the wider New Zealand economy.**

SPATnz Programme Manager Rodney Roberts says his team, and all who were involved, are thrilled with the results.

“The final results from this seven-year Primary Growth Partnership (PGP) programme have exceeded all our expectations,” says Rodney.

“We have compared growth rates for mussel spat from our hatchery with those collected in the wild from both Golden

Bay and Kaitaia. The trials show our mussels get to market size at a significantly faster rate. SPATnz Greenshell mussels took on average 16.7 months to grow from seed to harvest size, versus 28.3 months for the weighted average of the wild caught varieties – nearly a year faster.

“The biggest contrast was with Kaitaia mussels, which are the main seed source for the industry. The quickest of three

hatchery strains halved the growing time of Kaitaia mussels in Marlborough, which is a pretty incredible result.”

The mussel breeding programme results are a true team effort, the result of a collaboration between New Zealand seafood industry leader Sanford and highly respected independent science organisation Cawthron Institute. Cawthron’s Ministry for Business Innovation and Employment-funded Cultured Shellfish programme developed the fundamentals of the selective breeding programme in anticipation of hatchery spat production. Commercialisation of the selective breeding was then jointly funded by Sanford Ltd and MPI through the PGP.

MPI’s Director Investment Programmes Steve Penno says the results are great news for the mussel sector.

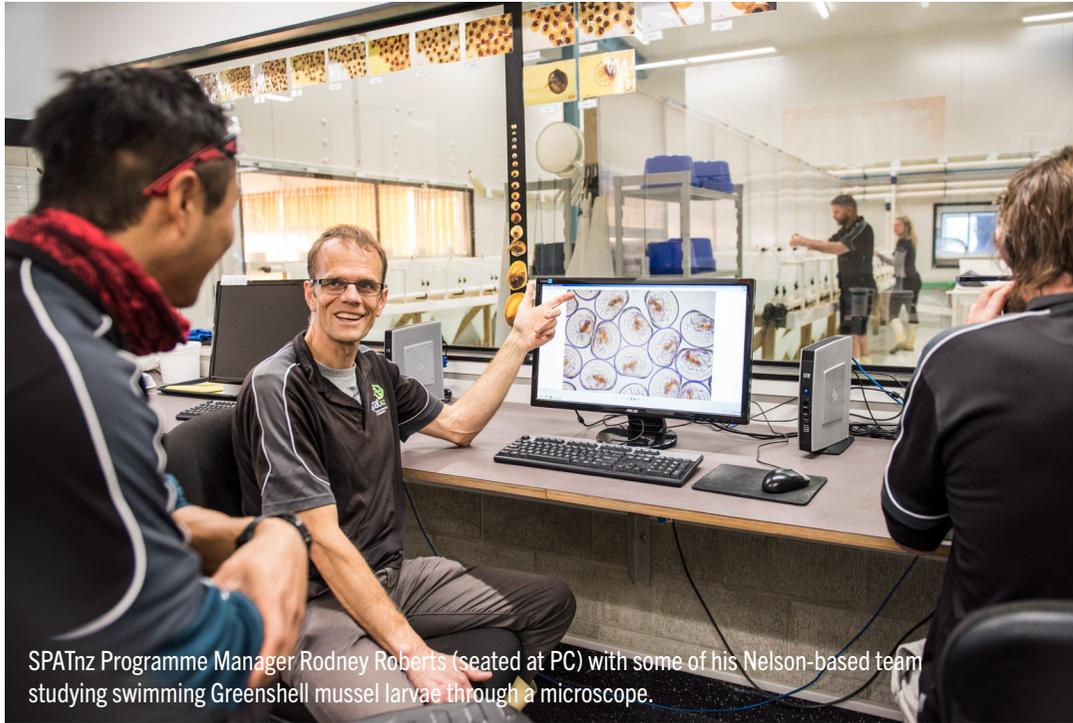
“Faster growing mussels means more of this great product will be available to consumers both in New Zealand and around the world,” says Steve.

“MPI is investing in SPATnz as it has the potential to be a real game-changer for New Zealand’s Greenshell mussel industry, delivering benefits for mussel farmers, our economy and the environment. The latest growth rate results provide solid proof that we’re on the right track, and show what’s possible through collaboration.”

Sanford CEO Volker Kuntzsch says the success of SPATnz is an excellent example of the benefits of innovation and collaboration.

“At Sanford we are real believers that you cannot achieve great things without great team work and these results from SPATnz are proof of that,” says Volker.

“Wider utilisation of this spat will see a potential increase in sales for the New Zealand mussel sector of \$229 million dollars a year by 2026\* which means a thriving



SPATnz Programme Manager Rodney Roberts (seated at PC) with some of his Nelson-based team studying swimming Greenshell mussel larvae through a microscope.

mussel industry, more regional jobs and stronger regional economies. With an ambitious and exciting goal from the New Zealand Government for the aquaculture sector to be worth \$3 billion in annual sales by 2035, this is a great stepping stone towards that target.

Volker is also recognising the wider environmental benefits of the work saying “the mussel breeding programme will also help us to mitigate the impact of climate change on New Zealand’s aquaculture sector.”

Rodney confirms that his team’s work can help manage the increased uncertainty produced by climate change.

“What we have done is selectively breed by choosing some of the best mussels that nature has to offer as the parents to produce our mussel families,” he says. “Careful selective breeding can help future-proof the New Zealand mussel industry against threats like ocean acidification, global warming and disease.”

our country.”

The programme has the potential to deliver much more than just economic benefits as New Zealand’s Greenshell Mussels are green in more than just name.

“Shellfish generally are an extremely sustainable food and that is very true of Greenshell mussels,” says Rodney. “Compared to other forms of animal protein, they have an extremely light touch on the environment.”

As well as faster growth, SPATnz and Cawthron are focusing on other characteristics that selective breeding can promote, such as better mussel condition, as well as looking at enhancing the renowned anti-inflammatory qualities of Greenshell mussels.

Volker says with mussel powder and oil highly sought after on global markets, there is so much potential here for growth.

Cawthron CEO, Professor Charles Eason says he is delighted with the outcome of the work and the partnerships involved.

“It is really exciting for Cawthron and our partners to have these results from a long-term research and development relationship delivering real-world impact, adding value to a unique New Zealand resource and helping realise sustainable farming and employment opportunities around

“Sanford is already exploring the incredible opportunities in the nutraceuticals market,” says Volker. “Greenshell mussels have proven anti-inflammatory benefits and this work can only enhance that. We have something very unique and exciting on our hands here.”

Rodney is also feeling very optimistic about the future. “There may be no Olympic Games for mussels, but if there were, you could certainly say our Greenshell mussels are taking the motto ‘faster, higher, stronger’ to heart, except in our case, it is more like faster, fatter, stronger,” says Rodney. “We believe they are a wonderful kiwi success story for both science and business.”

## The facts: the numbers behind the success of SPATnz

\*The BERL analysis of predicted economic benefits quoted in this article was based on an assumption of 35 percent more product from existing space by 2026 (BERL publication 2010, *Scenarios of the wider economic impacts in 2026 of the New Generation Shellfish Industry*).

SPATnz Greenshell mussel spat is already growing fast enough to exceed that target, with wild caught spat from Kaitaia and Golden Bay averaging 69 percent longer grow-out time than hatchery mussels in Marlborough (based on a weighted average calculated by the proportions of spat from each location used in the industry).

The table on the following page shows this result. Results are from SPATnz trials over 10 growing sites in Marlborough, 2017-2019.

## Background on Greenshell mussels and mussel breeding

- Greenshell mussels (*Perna canaliculus*) are endemic to New Zealand.
- Normally they release their gametes into the ocean. The eggs that are fertilised will hatch into swimming larvae after about a day. The larvae swim in the water column for several weeks until they latch onto seaweed which can later be collected from 90 Mile Beach/Te-Oneroa-a-Tōhē. Farmers also catch as much mussel spat as they can by hanging ropes in Golden Bay and Tasman Bay in the Tasman District. There is limited predictability to these sources and commercial mussel farmers looking for spat to grow on their mussel farms don't know how much spat they will get from year to year or when it will arrive.
- The SPATnz hatchery opened in 2015 at the Cawthron Aquaculture Park in Nelson and hatchery spat are

currently growing on mussel farms in Pelorus Sound in Marlborough.

- 23 people are employed by SPATnz at present.
- Aquaculture generally is worth around \$616 million to New Zealand annually (including \$435 million in exports).
- Greenshell mussels are a highly sustainable source of high quality protein with a light environmental footprint. Mussel farming is a sink (rather than source) for nutrients like nitrogen and phosphorus, has low freshwater consumption and high productivity per hectare.
- SPATnz has developed hatchery facilities and methods capable of producing spat for around 30 thousand tonnes a year of adult mussels. Last year the industry produced a total of 90 thousand tonnes of Greenshell mussels.
- When the SPATnz programme is fully operational and

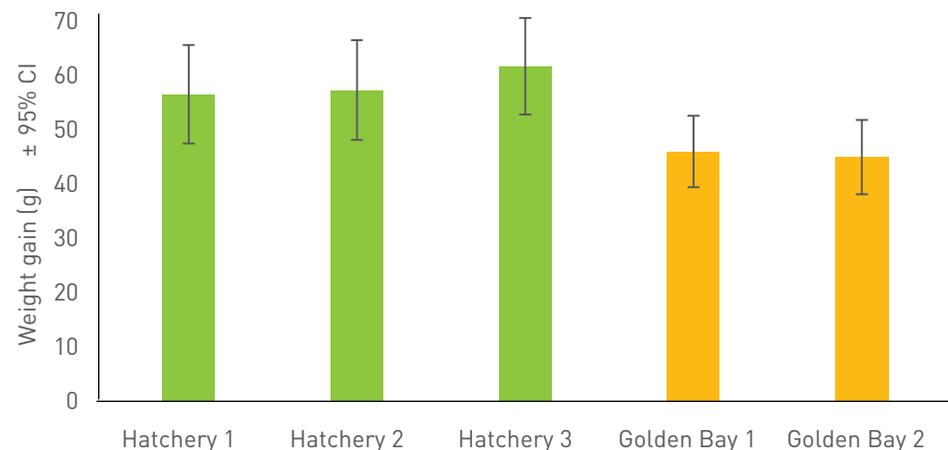
the spat are taken up across the New Zealand industry, it will add nearly \$200 million a year in GDP.

- There is NO genetic engineering involved in the selective breeding. The scientists pick the cream of the crop as parents for selective breeding so their offspring are among the best that nature provides.
- The SPATnz breeding programme relies on conventional selective breeding, similar to the way terrestrial farmers breed more productive sheep and cows. This programme is not aiming to produce a single “super mussel” but maintains a wide range of high performing lines to choose from.
- The selective mussel breeding programme was a finalist in the 2019 Kiwi Innovation Network Research Commercialisation Awards in the Commercial Impact section. SPATnz won the 2017 New Zealand Innovation Award in the Agribusiness and Environment category, and the New Zealand Marine Farming Association Research and Development Award in 2015.

### Results from SPATnz trials in Marlborough, 2017-2019

Strain	Average months from 7 to 55 grams	% longer growout time than hatchery average
Selectively bred hatchery strains	15.4 to 17.7 Av 16.7	
Golden Bay wild caught mussels	22.7	36%
Kaitaia wild caught mussels	30.8	84%
Average for a 70/30 mix of Kaitaia/ Golden Bay wild mussels	28.3	69%

Weight gain after 20 months of growout at 10 farms in Marlborough.



# High Performance Mānuka Plantations programme releases its report of achievements and learnings

**Growth of domestic and international demand for mānuka honey and products continues to soar, but issues like unpredictability of honey yield and quality across growing regions, mānuka blocks and seasons creates challenges for the industry.**



High Performance Mānuka Plantations set out to move the industry from wild harvest to science-based farming of mānuka plantations.

In April 2011, a consortium with primary sector and apiary interests, known as the Mānuka Research Partnership Limited (MRPL), joined forces in a \$2.98 million seven-year programme called High Performance Mānuka Plantations. The consortium of Arborex Industries Limited, Comvita NZ Limited, DC and CY Tweeddale Partnership, Hawke's Bay Regional Council, Landcorp Farming Limited, Nukuhau Carbon Limited and Te Tumu Paeroa, also attracted investment from the Ministry for Primary Industries (MPI) through the former Primary Growth Partnership (PGP). High Performance Mānuka Plantations set out to move the industry from wild harvest to science-based farming of mānuka plantations to increase yield and reliability in the supply of medical-grade mānuka honey.

The programme's research canvassed many aspects of plantation establishment, growth and management, through observing mānuka from relatively young plantations through to reaching productive maturity. It also included looking at how local ecosystems affect mānuka honey yields and quality, and studying a range of mānuka genetic material to identify the best cultivars.

"During the programme, we were able to identify productivity gains from mānuka plantations over the first six years of plantation development," says Neil Walker, Chairman for the MRPL.

"We established trial sites around the country, with high quality monofloral mānuka honey harvested on our largest 130 hectare plantation trial site in Tutira, north of Napier."

Some of the mānuka trial cultivars consistently over three seasons produced nectar with twice the level of dihydroxyacetone (DHA) compared with general, wild mānuka growing in the same district. Dihydroxyacetone is the precursor to methylglyoxal, which is one of the ingredients that gives value to mānuka honey.

"The High Performance Mānuka Plantations programme developed a range of expertise and knowledge to help landowners to assess a site, establish plantation mānuka as an alternative land use, and maximise the opportunity to produce high quality monofloral mānuka honey," says Stephen Lee, CEO of Manuka Farming NZ Ltd, the MRPL's commercial arm.

"It also compiled an extensive volume of technical notes to aid in plantation mānuka design and husbandry, which is

available to the public through Mānuka Farming NZ Ltd.

"The information and expertise developed by the programme will help landowners to effectively establish and manage mānuka plantations regardless of factors like location and seasonal variations."

The programme also developed a predictive model for plantation mānuka for honey to predict/forecast nectar production, growth rates, flowering times, and carbon sequestration rates for the elite mānuka varieties tested. This is undergoing testing and validation.

A number of spill-over benefits also stemmed from the High Performance Mānuka Plantations programme, such as enabling training of PhD-qualified scientists skilled in mānuka research, the development of profitable alternative land-use options for owners of marginal land, and identifying further options for riparian plantings and shelter belts.

Other than honey, plantation mānuka has a range of other environmental benefits including speeding up the rate of hill-country remediation, reducing the direct and indirect costs of erosion, providing further carbon sinks and improving water quality.

High Performance Mānuka Plantations wrapped up in September 2018, and its achievements and learnings have now been compiled into the programme's final report, available on the [MPI website](#).

As part of the governance process, MPI has also commissioned an independent evaluation of the programme.

# Māori Agribusiness making regional connections

**For a Māori land-owning collective on the East Coast of the North Island, central government can seem a long way away.**

And yet the current Government clearly wants to realise the opportunities and address barriers that exist in regional areas like this to create sustainable economic growth.

The Ministry for Primary Industries' (MPI's) Māori Agribusiness directorate is one group making this happen. This MPI team has 13 regional advisers located in places like Te Tai Tokerau (Northland), Waiariki (Bay of Plenty), Tairāwhiti (Gisborne) and Te Tau Ihu (Nelson).

They have a brief to gather proposals for two MPI Māori Agribusiness funding programmes. They also act as a contact point for Māori to the MPI programmes available to any land-owner – like the One Billion Trees Fund through Te Uru Rākau, or ones offered by other agencies – usually Te Puni Kōkiri or the Ministry of Business, Innovation and Employment.

The key is getting alongside people associated with Māori land and finding out what they want – for their whenua and their whānau, and then connecting them with government programmes they can tap into.

“Our Māori Agribusiness staff probably spend about three days out of five out and about, meeting with groups and talking about their development pathway,” says MPI Māori Agribusiness Director Andrew McConnell.

“Across government there are options to suit a whānau whose land is still under lease or does not have a formal governance group, right through to whānau who have already developed an enterprise and want to take it a step further.”

Some of the challenges are unique to Māori land. “The major obstacle is limited capital being available for the up-front investment,” says Andrew. “This is because most of the Māori Land Trusts are cash-poor and are unable to use their land as security to raise debt. This means that traditional funding options are not available to many Māori landowners.

Minister of Agriculture Hon Damien O'Connor noted recently that Māori naturally think long-term about their land and this is something many other land owners could learn from as the Government pushes for more sustainable outcomes.

On 1 July 2019 MPI's Māori Agribusiness directorate started a new funding programme, the Māori Agribusiness Extension (MABx) programme, which offers a group learning approach for numbers of whānau who have similar interests.

Three months later, on 1 October 2019, Minister O'Connor was on the East Coast announcing the first two MABx projects

featuring local groups who have been working with Rotorua-based Māori Agribusiness regional advisor Kani Edwards.

The Whangaparaoa Māori Lands Trust is a grouping of 10 who will investigate a range of development options. And the MABx dairy cluster of five remote Māori dairy farms want to look into system changes to future-proof their farming operations.

For more information about MPI's work with Māori agribusinesses, check out the [MPI website](#).



Participants in the first two Māori Agribusiness Extension clusters gathered at Whangaparaoa Marae to meet Minister of Agriculture Hon Damien O'Connor in early October.

## Regional vet graduates to receive financial boost

**Thirty-two graduate vets will receive a financial boost from the Ministry for Primary Industries' (MPI's) Voluntary Bonding Scheme for Veterinarians to help ease the shortage of veterinarians working with production animals in our regions.**

"Our Voluntary Bonding Scheme for Veterinarians is designed to support and boost the number of graduate vets in our regions," says Steve Penno, Director Investment Programmes at MPI.



MPI's Voluntary Bonding Scheme for Veterinarians is designed to support and boost the number of graduate vets in our regions who are working with production animals such as cows, sheep and working dogs.

"It's available for graduates who are working with production animals such as cows, sheep and working dogs."

This year's successful recipients will each receive funding of \$55,000 over five years – a total of \$1.76 million. The funding was made available through the annual application round for the scheme.

The scheme generally provides funding for 30 graduate vets a year, but additional funding was available this year for an

extra two. Since the programme started in February 2009 MPI has approved funding for 318 graduate vets.

"Vets play a vital role in our primary industries and rural communities," says Steve.

"The Voluntary Bonding Scheme for Veterinarians is a key way of attracting skilled workers to hard-to-staff veterinary practices in the regions, and giving graduates an early boost to their careers."

For further information about the Voluntary Bonding Scheme for Veterinarians, check out the [MPI website](#).

### Where are the successful graduates located?

Successful applicants in this year's application round are from a number of areas throughout New Zealand:



## Standards New Zealand working with the primary sector

**Standards New Zealand (SNZ) is committed to working with the primary sector to identify areas where standards can help foster innovation and help businesses thrive. Standards can help with access to global markets, establish trust with customers and keep New Zealanders healthy and safe.**

Natalie Bowie from SNZ has a primary sector background, and her role is to help agencies, regulators and businesses identify whether standards could help deliver a particular outcome. Get in touch with Natalie ([natalie.bowie@mbie.govt.nz](mailto:natalie.bowie@mbie.govt.nz)) to find out more about the standards development process and why people choose to utilise SNZ services, how to engage as a business in international standards development related to the primary sector and/or what the World Trade Organisation Technical Barriers to Trade agreement is all about.



Natalie Bowie from Standards New Zealand.

# Lower climate impacts possible from game-changing feed supplement

**A preliminary project looking to develop a new feed supplement from seaweed could pave the way to reducing agricultural greenhouse gas emissions from cattle to a fraction of current levels.**

Nelson research institute Cawthron Institute is receiving \$100,000 of funding through Sustainable Food and Fibre Futures (SFF Futures) to turn a native red seaweed (*Asparagopsis armata*) into a greenhouse gas-busting cattle feed supplement for domestic and global markets.

In previous trials *Asparagopsis* has proven to reduce greenhouse gas (GHG) emissions in livestock by up to 80 percent. The majority of other forms of agricultural GHG emission reduction available now, which do not have significant financial downsides for the agricultural sector, typically provide reductions of between 10 and 20 percent.

Australian research estimates that if just 10 per cent of global ruminant producers adopted *Asparagopsis* as an additive to feed their livestock, it would have the same impact for our climate as removing 50 million cars from the world's roads, and potential increases in livestock productivity could create enough food to feed an additional 23 million people.

The new project was announced by Prime Minister Rt Hon Jacinda Ardern and Minister of Agriculture Hon Damien O'Connor at the Cawthron Aquaculture Park on 18 October 2019.

"The project will undertake research into the effect of *Asparagopsis* on greenhouse gas emissions, and develop an early proof of concept of the production systems needed to develop the feed supplement at pilot scale," says Steve Penno, Director Investment Programmes at the Ministry for Primary Industries (MPI).

"In previous trials *Asparagopsis* has proven to reduce greenhouse gas emissions in livestock by up to 80 percent. This could provide a big step forward for domestic and global efforts to reduce agricultural emissions.

"If successful this project has the potential to help significantly reduce environmental impacts and create a new high-value industry for New Zealand."

"*Asparagopsis armata* grows abundantly throughout New Zealand waters. This project is a great example of thinking outside the box to find a novel, high-value use for this seaweed," says Sally Ann Hughes, Senior Business Case Adviser at MPI.

"We are excited to offer our aquaculture expertise as part of this collaborative research effort," says Prof. Charles Eason, Chief Executive of Cawthron Institute.

"This type of seaweed is native in New Zealand, but there is not enough of it to meet the potential demand from farmers. Part of our job is to work out how this could be grown at mass scale in order to meet demand both domestically and globally, which could be thousands of tonnes each year.

"This research project firmly aligns with our aim of using our independent scientific research to help protect our environment and support the development of sustainable industries."

The project will also contribute towards meeting the recently launched Aquaculture Strategy's objective of reducing emissions and waste across the value chain, towards net zero carbon emissions by 2050.

"If this project is successful, its work could support both our land-based and marine aquaculture industries, create jobs, and help the aquaculture sector to maximise value from existing marine farm space," says Sally Ann.

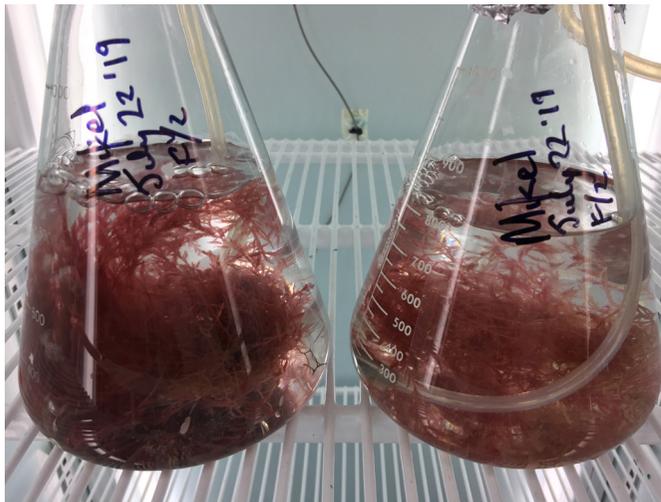


Prime Minister Rt Hon Jacinda Ardern and Minister of Agriculture Hon Damien O'Connor announce the new Sustainable Food and Fibre Futures (SFF Futures) project (source: Cawthron Institute).

Minister O'Connor said: "Aquaculture is a growth industry for this country and has the potential to play a more significant role in our economy. It's currently worth \$600 million a year and employs over 3000 people.

"The Cawthron project could lay the foundations for a new high-value industry, along with the jobs that go with it. There is also export potential and potential on-farm economic benefits, including price premiums for milk and meat.

"We want to be the most productive, sustainable country in the world. Projects like this will contribute to New Zealand's reputation in sustainable and innovative aquaculture and agriculture."



*Asparagopsis armata* seaweed (source: Cawthron Institute)

### More information about the project

**Commercial Seaweed Aquaculture to Reduce Agricultural Methane Emissions** is a project led by the Cawthron Institute, which has attracted investment from the Sustainable Food and Fibre Futures (SFF Futures) fund.

SFF Futures, through the Ministry for Primary Industries (MPI), is contributing \$100,000 over the one-year life of the programme, and Cawthron is contributing \$150,000.

The project will undertake research into the effect of *Asparagopsis* on greenhouse gas emissions, and develop an early proof of concept of the production systems needed to develop the feed supplement at pilot-scale.

The project is starting at a small, pilot scale, and if successful, would provide the impetus for further work.

It could lay the foundations for a new high-value industry for New Zealand, along with the jobs that go with it, and deliver both economic and environmental benefits.

Possible demand of the new feed supplement could be hundreds of tonnes per year domestically. There is also export potential and new jobs could be created from harvesting and processing the seaweed.

Cawthron is collaborating with researchers in Australia and the University of Waikato on the project's research into the effect of *Asparagopsis* on greenhouse gas emissions.

## New applications sought for fisheries innovation projects

**The Ministry for Primary Industries (MPI) is seeking fisheries innovation projects both small and large, through Sustainable Food and Fibre Futures (SFF Futures).**

SFF Futures was established in 2018 and its scope has recently been broadened to include a wider breadth of new fisheries projects.

"SFF Futures could already invest in large fisheries innovations projects upwards of \$840,000, but we've broadened the scope to smaller projects to enable further untapped potential innovation," says Eflamm Allain, Manager SFF Futures at MPI.

"Innovation at all levels of the supply chain will be an important part of ensuring the ongoing protection of our fish stocks, and improve the sustainability of the industry.

"SFF Futures is designed to help create more value in New Zealand's food and fibre industries, and improve sustainability that means our natural resources will be there for future generations."

SFF Futures can fund small grants, right up to multi-million dollar projects. Organisations of any size can apply for investment.

If you have a great idea for the food and fibre industries, from the ocean, forest or farm to consumers, get in touch with the team at MPI.

For more information, check out this [media release](#).

For more information about SFF Futures visit [www.sff-futures.mpi.govt.nz](http://www.sff-futures.mpi.govt.nz).



Sustainable Food and Fibre Futures (SFF Futures) can now invest in fisheries innovations projects both large and small.

# New climate change research projects announced

**Funding has been approved for eight new research projects aimed at helping New Zealand's primary sector to better understand and respond to the impacts of climate change.**

Funding of \$1.56 million will be provided for the new projects over three years from the Ministry for Primary Industries' (MPI's) **Sustainable Land Management and Climate Change (SLMACC) Research Programme**.

The new projects were announced by Minister of Agriculture Hon Damien O'Connor at the National Institute of Water and Atmospheric Research (NIWA), one of the successful applicants, in Wellington on 23 September 2019.

"Climate change is impacting on our primary sector and we need to ensure our farmers, growers, foresters and others can be resilient, particularly as the world is rapidly changing," says Neil Williams, Manager Sustainable Resources at MPI.

"The SLMACC Research Programme was set up in 2007, and has invested around \$50 million in over 150 research projects relating to climate change in the land-based production sectors."

This year's SLMACC funding round invited project ideas for two themes: extension of climate change research and impacts of climate change and adaptation.

Successful applicants include the New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC), Manaaki Whenua – Landcare Research, AgResearch, Scion, and NIWA.

"The approved projects will actively support the primary sectors to be more productive and sustainable, by researching climate impacts and turning this into practical information our primary sectors can use," says Ashleigh Smith, Investment Adviser Sustainable Resources at MPI.

"New Zealand has a leading role on the world stage in supporting climate-friendly primary sectors. Any action on climate change needs to be grounded on good research and good information, which these new projects aim to provide."



Minister of Agriculture Hon Damien O'Connor at NIWA announcing \$1.56 million from the Sustainable Land Management and Climate Change (SLMACC) Research Programme for eight new research projects.

## The new projects

### **New knowledge, tools and practices for rural professionals – the New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC)**

- The New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC) will develop an extension system to give rural professionals the information they need to help farmers and growers respond effectively to climate change.

### **Adapting and mitigating wildfire risk due to climate change: extending knowledge and best practice – Scion**

- Scion will help rural landowners prepare for any future extreme fires by applying climate science threat assessments to location-based, best practice climate change adaptation and mitigation activities.

### **Developing strategies for risk assessment and adaptation in the primary sector – Scion**

- Scion will develop tools to manage risks from climate change, based on understanding the impacts these have on primary

sector operations, finances, and environmental and social goals, and identifying knowledge gaps.

### **Flexible policy pathways for enabling climate change adaptation – Manaaki Whenua – Landcare Research**

- Manaaki Whenua – Landcare Research will identify whether or not current policies enable or hinder approaches to adapt to climate change, with a view to making these policies more flexible.

### **Adaptation and transformation: resilient responses to change in New Zealand primary industries – Manaaki Whenua – Landcare Research & AgResearch**

- Manaaki Whenua – Landcare Research and AgResearch will work with farmers and scientists to produce a suite of practical actions the farming community can take to respond to climate change, and boost the resilience of their farming practices.

### **Review of Free Air Carbon Dioxide Enrichment (FACE) results in relation to impacts of elevated carbon dioxide on future farm practices – AgResearch**

- AgResearch will model impacts to farm management practices in a high carbon dioxide environment based on FACE research results, specifically the effective use of new plant species such as plantain, along with appropriate grazing management.
- FACE is a method used by ecologists and plant biologists that raises concentration of carbon dioxide in a specified area to measure the response of plant growth.

### **Support for National Climate Risk Assessment: processes for the identification and quantification of climate change risk – Scion**

- Scion will hypothesise future risks resulting from climate change to enable the primary sectors, the finance and commerce sector, government and Māori to identify and mitigate these risks.

### **Improved New Zealand Drought Index – NIWA**

- NIWA's work will make the Drought Index more accurate so farmers' decision-making around mitigating the effects of drought can be more timely and accurate. It will also assist government in its ability to accurately declare regions in drought or not.

## Test nitrogen strips a cheap solution for soil testing

**A simple test that farmers can conduct themselves is a cost-effective way to manage nitrogen levels in their soil, a three-year project has shown.**

The Foundation for Arable Research (FAR), backed by the Ministry for Primary Industries' (MPI's) Sustainable Farming Fund and other collaborators, has spent the past three years testing the use of Quick Test nitrogen strips to see how they work in New Zealand soils and farming systems. The strips were originally used in the United States for the vegetable industry.

Diana Mathers, FAR's Research Manager in Farm Systems, says the research confirms the product provides a useful gauge of nitrogen levels in New Zealand soils involved in farming.

"In 14 of the 18 trials farmers were able to reduce the amount of fertiliser they applied without a loss in yield," she says.

"To manage nitrogen without great losses to the environment farmers need to know how much nitrogen is in the soil. The way to do this in the past was mineral nitrogen tests in a laboratory which are quite expensive and we found that some farmers weren't doing them. We hope that this much cheaper solution will encourage more soil testing."

A \$200 kitset includes tubes, a rack, calcium chloride and 100 strips – meaning each test costs just \$2, compared to \$50 in a laboratory.

The testing process involves collecting and mixing soil samples, and adding a small sub-sample to a calcium chloride solution – which can be done in farmers' kitchens. After shaking and allowing the soil to settle, the test strip is dipped in. A colour change on the strip shows the current nitrate level in the soil. The farmer then consults the Quick Test Tool, a chart on an Excel spreadsheet that helps determine how much nitrate is needed for their particular crop – or whether they need to apply nitrogen at all.

"The nitrogen strips are an economical way to test every paddock at the start of the season," says Diana. "While costs may seem daunting at first the savings on fertiliser costs far outweigh this."

Steve Penno, Director Investment Programmes at MPI, says the results of the research inspire confidence for farmers.

"Responsible nutrient management is essential to protect the health of our waterways," says Steve.

"MPI is delighted to support this research, which shows these nitrogen strips are effective in New Zealand soils. This is a practical and cost effective tool for farmers that will help them with nutrient management."

The next step in the project will be to develop an online version of the tool and add more crop types, including forage crops.

### About the Nitrogen – measure it and manage it project

*Nitrogen – Measure it and Manage it* is a FAR-led programme with a focus on developing a management practice for fertiliser decisions for arable and vegetable crops. Quick test nitrogen strips are used to provide a quick and affordable measure of soil nitrate levels to help inform fertiliser recommendations.

MPI's Sustainable Farming Fund (now Sustainable Food and Fibre Futures – SFF Futures) is the main funder for the three year programme of work, with co-funding and in-kind support from collaborating partners: FAR, Horticulture New Zealand's Vegetable Research & Innovation Board, Waikato Regional Council, Ravensdown, Ballance Agri-Nutrients and Hawke's Bay Regional Council, with research expertise from Plant & Food Research.



A nitrogen strip

# NZ Aerospace Challenge 2019 recognising sustainability in agriculture

The 2019 New Zealand Aerospace Challenge, held in Christchurch, was designed to recognise sustainability in the agricultural sector through unmanned aircraft and space satellite technology. Christchurch-based team, Seequent, took out the grand prize with their cloud-based, global remote sensing solution for monitoring lake water health.

In May this year, MPI entered into a partnership with ChristchurchNZ to support the delivery of the NZ Aerospace Challenge 2019.

“MPI’s interest in the Challenge is that we want to improve outcomes for farmers, and unmanned aircraft and space satellite technology is emerging as an innovative solution to monitoring water quality and soil pollution,” says Cathy Robinson, MPI’s Director Investment Portfolio, who watched the Challenge pitches from applicants and participated on the judging panel.

“According to this year’s winners, Seequent, only a very small number of New Zealand’s lakes are monitored for water quality. Their solution will provide the opportunity to remotely monitor water quality levels for a whole region all at once. It’s very exciting.

“MPI’s vision is that New Zealand will be the world’s most sustainable provider of high-value food and primary products. New technologies for monitoring water quality and improving outcomes for farmers are emerging, and it’s important to us that we’re involved.”

Seequent received a cash prize of \$30,000, over \$15,000 of Airbus data vouchers, \$2,500 of legal support and six months of commercialisation support. Seequent generously donated their cash prize back to the Challenge organisers to be used for future challenges, or as seed funding for small businesses in the aerospace industry.

The two runners-up in the Challenge were the National Institute of Atmospheric Research (NIWA) and Drone Technologies NZ Ltd. NIWA developed a dynamic user-friendly system to show nutrient levels and movement in the soil to help target and reduce pollution. Drone Technologies

NZ Ltd created a near real-time model of water health along river corridors that will be available to research partners and the public.

More information on the Challenge is available on the New Zealand Aerospace Challenge website.



MC of the New Zealand Aerospace Challenge 2019, Rod Oram, opening the event.



The team from Seequent, winner of the New Zealand Aerospace Challenge 2019.



The New Zealand Aerospace Challenge 2019's judging panel.

## Expo 2020 Dubai – connecting New Zealand businesses to the world

Opening in just over a year's time, Expo 2020 Dubai will be the largest World Expo ever staged – bringing together 192 nations and 25 million visitors from around the world over a six-month period. Seventy percent of visitors are expected to come from outside the Middle East, making Expo 2020 Dubai a truly global event.

If you want to grow your business in the Middle East, India or Africa, or simply want to understand how your business could benefit from Expo 2020, check out the [New Zealand at Expo website](#).

You'll find information about:

- progress on Expo 2020 Dubai and New Zealand's presence at the Expo;
- how you can use the New Zealand pavilion at Expo 2020 to reach regional and global audiences;
- how to get involved in NZTE's Expo Business Leverage Programme, *Road to Expo 2020*, including tailored Discover Middle East and Discover Plus programmes for exporters, and activities at major trade shows before and during the Expo.

