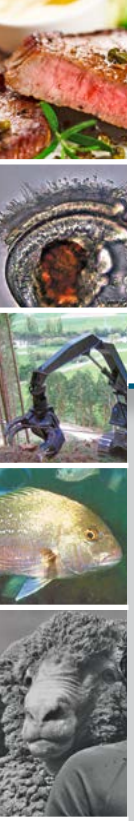

Agri-Gate

News from the Primary Growth Partnership

Ministry for Primary Industries
Manatū Ahu Matua

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Michael's Desk

Earlier this month, New Zealand Avocado reported positive progress from last season towards quadrupling the sales of avocados to $280 million by 2023, the goal of its PGP programme with MPI called NZ Avocados Go Global. A record 7.1 million trays of avocados worth $135 million were harvested in the 2014/15 season. I'd like to congratulate the Avocado sector for this positive progress.

We often talk about the PGP enabling innovation and research, but equally important is understanding the needs of our end users to achieve greatest value. Traditionally, I think we often think about the term 'value-add' in terms of additional processing and cost. While this is still correct, we can also think about it in another way—looking at the definition of value through our end users' eyes, and not necessarily our own.

Understanding what they want and what they perceive as important should have a significant bearing in the research and development of the value-added products, services and processes by PGP programmes. This is essential in driving innovation and growth.

An example of this was provided by Volker Kuntzsch, Chief Executive Officer for Sanford Limited, at KPMG's Agri-business Leaders Breakfast at the Mystery Creek Fieldays in June. Volker spoke about demand in Sanford's frozen whole, unprocessed orange roughy. In particular he talked about the importance of understanding the market—what customers want, where they see value, and then utilising this information to connect with them. While Sanford's orange roughy is unprocessed, it meets the needs of markets, for example China, where this fish is valued by Chinese consumers as a ceremony fish due to its appearance and colour.

This to me is an example of truly understanding what the customer values. Innovation and obtaining greatest value may not necessarily mean more processing and cost. An interesting perspective and food for thought.

Michael Jamieson
Acting Director PGP

From the Chair

Funding or investment? At our Investment Advisory Panel meeting earlier this month we discussed the notion of PGP funding versus PGP investment. It was raised because we had seen a few comments about PGP funding and it just didn't quite seem right. In our view, the PGP is categorically the latter. Across the PGP, both industry and government are investing significant time, effort, resources and funding into PGP programmes. So it is much much more than funding. It is what it says it is—a partnership.

This collaborative partnership approach gives PGP programmes a far higher probability of success than if each partner embarked on a programme in isolation. The expected economic, sustainability and productivity benefits being enabled by the PGP would simply not be possible without investment by both industry and government. And each partner shares the risks traditionally associated with any innovation activities.

In past talks I've had with PGP programme partners, what is very clear is that the government and industry involvement in programmes, for example in terms of shared expertise and governance, is very useful and valuable.

I'm convinced this partnership investment approach means there is a higher probability of delivering benefits for the primary industries and for New Zealand as a whole than if there was simply funding to assist a private sector party in a particular venture.

When talking with internal and external stakeholders, I really do encourage you to talk about the investment that MPI and your organisations are making in PGP programmes, which includes the collective time, expertise, effort, energy and indeed funding.

Joanna Perry
Chair, Investment Advisory Panel

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NEXT

Programme Spotlight

Transforming the Dairy Value Chain

As our most significant industry, innovation throughout New Zealand's dairy value chain is essential. Areas such as increasing on-farm productivity, reducing environmental impacts, supporting the mental health and wellbeing of New Zealand farmers, improving agricultural education and developing new and novel dairy products are more important than ever.

These areas and more are the focus of Transforming the Dairy Value Chain, a PGP programme led by DairyNZ and Fonterra. This programme is working with Synlait, Landcorp, LIC, New Zealand Young Farmers, Agricultural Services Limited and ZESPRI to deliver tangible, important benefits across the value chain.

Examples of some of the valuable work being undertaken by the programme are outlined below.

Developing Dairy Cow Genetics

LIC is using new genetics technologies to help produce healthy and more productive dairy herds as part of the programme. Economic analysis shows results so far could enable genetic gain of the national dairy herd worth up to an extra 10 percent per year.

The entire DNA of around 650 dairy bulls and cows has been mapped out and is now being investigated. The main research thrust is identifying which dairy cattle genes are associated with which economically important trait in the animals. The researchers are also looking at which genetic variations – of the 30 million that exist – cause measurable differences in the traits. This work started in 2011. So far the gene sequencing project has discovered 13 gene variations linked to important dairy cow traits such as mastitis, milk composition, production and animal health.

One example is the discovery of variations of a gene called AGPAT6 that determine milk composition. This is helping researchers to better understand what goes on in a cow's mammary gland and how milk composition is regulated by genes. The find was reported in an international scientific journal.

Overall, this work is helping the industry understand the best dairy cattle genetics for New Zealand and also improving the ability to predict future performance of animals based on their genetic profile. Over time this will help the industry to increase the rate of genetic gain, while being able to rapidly adapt breeding objectives to address challenges, such as animal health and environmental sustainability.

It also gives researchers the ability to identify unhelpful gene variations, such as ones that have been found to cause the termination of a pregnancy or a production of a particularly small calf. The use of DNA sequencing technology to identify the specific gene opens the door to reducing and perhaps eliminating its incidence. And while the main thrust is the New Zealand dairy herd,

a fortuitous discovery is a gene that gives an animal better heat tolerance, which may be useful for dairy production in tropical countries. LIC also works closely with the University of Auckland who have used the same techniques used for bovine gene discovery to diagnose rare human genetic disorders at the Starship Children's Hospital.

Nutrient Advisor Certification

Dairy farmers now have access to recognised nutrient advisers as the result of a certification programme established under the programme. Nutrients drive pasture and animal production on a farm, but losses from land to waterways and lakes, particularly of nitrogen and phosphorus, can lead to increased growth of weeds and algae.

The Nutrient Management Adviser Certification Programme is helping dairy farmers get good nutrient management advice so they can plan to efficiently use nutrients for on-farm production – and minimise the potentially harmful losses.

DairyNZ commissioned the Fertiliser Association in 2012 to develop the programme. Its aim is to build and uphold a transparent set of industry standards for nutrient management advisers to meet, to ensure they provide nationally consistent advice of the highest standard to farmers. One hundred fertiliser company staff and farm consultants are now certified as nutrient management advisers through the programme.

To become certified, they have had to demonstrate they have appropriate qualifications or equivalent field experience. They must also have completed the Intermediate and Advanced courses in Sustainable Nutrient Management, which are available through Massey University, plus demonstrate that their skills and knowledge meet required standards through a competency assessment.

Once gained, they maintain certification by completing a minimum of 15 hours of continuing professional development activities each year. The names of certified advisers are listed on the programme's website so farmers and the public can view them. An advisory with representation from across the sector oversees the qualifications.

Endgame Mozzarella

Fonterra has for many years made Mozzarella using a "traditional" process. Cheese is made, and then stored for six weeks before being shredded, frozen and packed ready for use in Pizza restaurants.

Prior to PGP, Fonterra had established a radically new manufacturing process for Mozzarella at Clandeboye that reduced the total time from six weeks to approximately six hours, as well as other cost advantages. The new process also provided a degree of product design flexibility not present in traditional mozzarella – creating the potential for a pipeline of innovative new products.

However, implementation of such radical technology at commercial scale identified a number of scientific and technical challenges. There were major problems with commercial-scale processing and delivering the targeted product functional performance, and the investment looked like it may fail. A technical development team spent more than 18 months getting to the point where the plant could produce acceptable product – albeit by walking a tight-rope. Whilst the new technology had exciting potential, it was clear that Fonterra did not have the scientific background required to develop and further exploit this.

Endgame Mozzarella was set up as part of the PGP programme to address the scientific knowledge gaps and to create options for future product development. The projects looked into fundamental aspects of the structure of mozzarella and how these impacted performance of the cheese on pizza. This included understanding the manner in which fat is held within the protein structure of the cheese, and how this changed based on processing conditions in the factory. This was the first large-scale application of a Food Structure Design approach by Fonterra.

From an early stage scientific insights from the programme were applied to improve the operation of the Clandeboye plant, increasing confidence in the technology. In October 2013 the Fonterra Board approved $72 million of investment to double the capacity; this expansion will be commissioned in time for the 2015/16 production season.

The programme has since resulted in initiation of two new product development (NPD) projects, with more to come. These future mozzarella products are a critical component of Fonterra's strategy to "deliver on food service potential".

Night milk powder

Synlait Milk has commercialised a dairy-based milk powder ingredient, called iNdream^3, developed with investment from the Transforming the Dairy Value Chain programme. It is a melatonin-rich powder and has been clinically proven to enhance sleep.

Melatonin is a sleep-promoting hormone that plays a key role in helping humans to regulate their day/night cycle. iNdream^3 is made from milk collected in the hours of darkness, when cows naturally produce increased concentrations of melatonin in their milk. Synlait farmers receive a premium payment for supplying milk used to produce iNdream^3.

iNdream^3 has initially been used as a key ingredient in a Korean sleep-promoting product called Sleepiz. Sleepiz was launched in January 2015 through a Korean pharmacy chain, Olive Young.

The iNdream^3 brand is featured on the box and contains seven sachets of 15.5 grams. It offers the benefit of being an all-natural solution for people who want a better quality of sleep.

Within a few weeks of the commercial launch, Sleepiz was among the Korean chain's top lines in the beauty and wellness category, and is now being rolled out to several major supermarket chains. Synlait has worked with its Korean partners for over a year, with the first large-scale production run occurring in February 2014. Production of iNdream^3 is organised in special runs, with around 40 farmers involved over the past year.

Also, in separately funded work, Synlait proved the efficacy of iNdream^3 through two years of independent clinical trials conducted by the Otago University's WellSleep Centre. The results showed iNdream^3 is likely to help people in three ways; it helps them go to sleep more quickly, they spend longer in the deepest phase of sleep (a.k.a. stage N3) and they function better the next day. The results have been formally presented and published at medical and trade conferences in Seattle, Geneva and Christchurch.

Synlait is continuing to develop opportunities with business to business (B2B) customers for the use of iNdream^3 as an ingredient in their products.

For further examples of achievements and benefits being delivered by Transforming the Dairy Value Chain, visit the programme's page on the Ministry for Primary Industries' website.

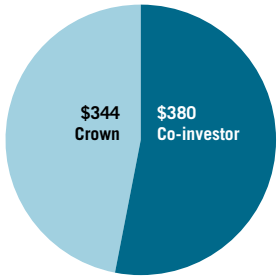
Overview of Primary Growth Partnership Investment

Sector	Programme Name and Co-investor	Total Crown and co-investor investment $ million	Sector total $ million	Estimated benefits $ million (per annum)
Wool	NZ Sheep Industry Transformation (NZSTX) NZ Merino	34	34	250
Dairy	Transforming the Dairy Value Chain Dairy NZ/Fonterra	170		2700
	New Dairy Products and Value Chains Whai Hua Limited Partnership	4	174	9
Fishing & Aquaculture	Shellfish – The Next Generation Shellfish Production and Technology NZ (SPATnz)	26		81
	Precision Seafood Harvesting Precision Seafood Harvesting (PSH)	48	74	44
Meat	FoodPlus – Redefining Meat Horizons ANZCO	77		630
	Marbled Grass-fed Beef Grass-fed Wagyu Ltd	23		80
	Red Meat Profit Partnership Red Meat Profit Partnership (RMPP)	64		194
	Integrated Value Chain for Red Meat FarmIQ	151		1100
	Targeting New Wealth with High Health	25		TBA
	NZ Deer Industry Passion2Profit	15	356	56
Pastoral	A New Vision for Pastoral Agriculture PGG Wrightson Seeds	15		200
	ClearView Innovations Ballance AgriNutrients	20		348
	Precision Application of Fertiliser in Hill Country Ravensdown Fertiliser Co-op Ltd	10	44	120
Bee Keeping	High Performance Manuka Plantations Manuka Research Partnership (NZ) Ltd (MRPL)	3	3	1200
Forestry	Innovative Steep-land Tree Harvesting Future Forests Research (FFR)	7		100
	Use of Fumigants for Log and Wood Product Exports Stakeholders in Methyl Bromide Reduction (STIMBR)	2.6 (actual cost)		TBA
	From Stump to Pump Phase 1 (feasibility study) Norske Skog Tasman Ltd (NSTL)/Z Energy	3.6 (actual cost)	13	TBA
Wine	Lifestyle Wines New Zealand Winegrowers	17	17	285
Horticulture	NZ Avocados Go Global Avocado Industry Council	9	9	280
Total			724	

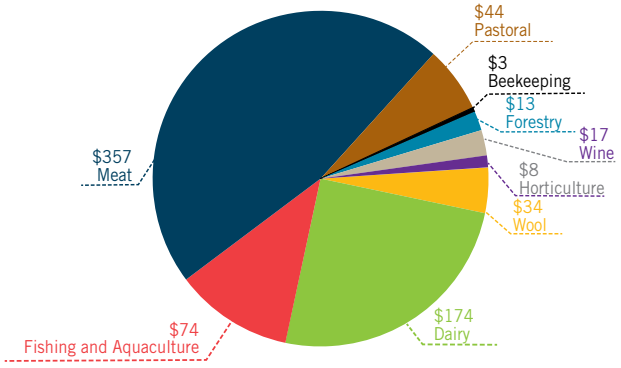
Please note that the figures in this table have been rounded.Therefore the total Crown and co-investor investment for each sector may differ to the sum of the individual programmes.

As at 31 July 2015, there were 17 programmes underway, one pending and two completed.

Crown/co-investor committed investment (in millions)



Crown/co-investor committed investment by sector (in millions)
Total $724 million



Total government funding paid to programmes as at 31 July 2015 was $153.2 million.