Ministry for Primary Industries
Manatū Ahu Matua

Primary Growth Partnership

Annual Report

1 July 2015 to 30 June 2016

Growing and Protecting New Zealand

Primary Growth Partnership at a glance

19

Number of programmes underway during 2015/16

$727m

Total committed investment over time by the Crown and industry so far across 21 programmes

$6.4b

Estimated contribution to New Zealand's GDP expected from the PGP from 2025

50+

Number of companies involved across the PGP.

Contents

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Foreword from Hon Nathan Guy

It's been another exciting and productive year for the Primary Growth Partnership (PGP).

This is undoubtedly the flagship research and development programme for the primary sector in New Zealand. Industry and government are investing together and helping drive innovation that will have widespread economic, social and environmental benefits.

Recently the newest PGP programme *Sheep – Horizon Three* was announced to boost New Zealand's sheep milk industry.

This is an industry with huge potential. There is increasing demand for sheep milk products, particularly in Asia, where many people are intolerant to cow's milk. It also has a much lower environmental footprint than traditional dairying. A contract is currently being agreed so the programme can formally start.

It's been pleasing to see dairy farmers supported through a tough year by the *Transforming the Dairy Value Chain* PGP programme. Amongst a wide range of other activities, it has invested around $3 million in farmer wellness and wellbeing initiatives.

The *GoodYarn* rural mental health initiative was developed as part of this, and was honoured this year with an international award. It was developed by DairyNZ and WellSouth and was named joint Best Mental Health Promotion/Illness Prevention scheme at the Australia and New Zealand The MHS (Mental Health Services) Conference.

Another success is the new Tiaki seafood category which has come out of the Precision Seafood Harvesting PGP programme. This programme is developing a revolutionary new net that can bring fish on board in much better condition. Undersized or unintended catch can then be returned to the sea with a much higher survivability rate.

Customers around the world will know when they see the Tiaki label that the fish has been caught and carefully selected in a revolutionary way. They will also be able to use their smartphone to connect with where and how their fish was caught via a specially designed traceability app.

Industry and government are co-investing $24 million each into this programme which will help enhance New Zealand's reputation as a producer of premium,

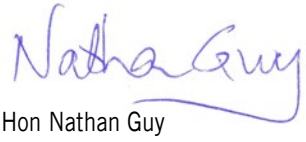
high quality, sustainable products.

Other PGP programmes have also reached points where they are delivering tangible benefits, such as new value-add products and markets, and a range of initiatives aimed at helping primary industry sectors. For example, the New Zealand Sheep Industry Transformation (NZSTX) programme secured a $45 million deal to supply fine wool to Italian textile leader Successori Reda, bringing returns to farmers. To date Farm^{IQ} has delivered increased earnings to the industry of more than $68 million per annum through a combination of productivity and market value improvements.

The Marbled Grass-fed Beef programme has provided opportunities for dairy farmers to mate their cows with wagyu genetics and therefore provide high value calves for beef rearing. Not only is this programme allowing diversification, it's enabling farmers to receive premium payments. Other programmes are attracting people to a career in the primary industries and delivering training, tools and support to help lift the capability, capacity and resilience of our primary industry workforce.

These are just a few examples of the progress made this year. You can find many more inside this report which showcases the great work happening all around the country.

Regards



Hon Nathan Guy
Minister for Primary Industries

Introduction from Martyn Dunne

It is my pleasure to present the 2015/16 Annual Report for the Primary Growth Partnership (PGP).

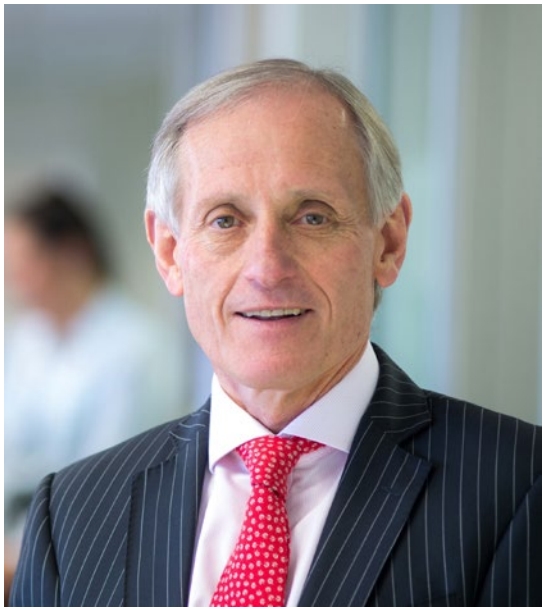
Throughout the year, programmes have continued to deliver important scientific breakthroughs, high value products, and cutting edge technology and processes aimed at driving sustainability, productivity and profitability throughout the value chain and across our primary sectors.

As at 30 June 2016 there were 19 PGP programmes underway and two completed. These programmes represent around $727 million combined investment committed by MPI and industry partners over time. The Ministry for Primary Industries (MPI) and more than 50 companies continue to dedicate significant time and expertise into PGP programmes.

During 2015/16 we welcomed two new PGP programmes. In July 2015, the seven year, $25 million Omega Lamb PGP programme led by Alliance Group and Headwaters New Zealand formally started. This programme aims to reach existing and emerging markets with a new class of premium lamb products with improved health qualities. This includes fresh and manufactured meat products and health supplements. Since its start, this programme has made good progress in its journey to deliver lamb that is lower in saturated fat and higher in polyunsaturated fat and essential healthy Omega-3 oils. This is the result of extensive research in genetics and lamb nutrition.

In February 2016 we welcomed the seven-year, $22.1 million Wool Unleashed (W^3) PGP programme led by The New Zealand Merino Company. This programme aims to deliver long-term economic benefits by securing a premium for New Zealand strong wool, increasing on-shore processing, and lifting the returns of the strong wool sector overall. This programme has the potential to capture value through the eyes of the consumer and respond to declining profitability and volume.

In May 2016 we welcomed primary industry and governance specialist John Parker as the new Chair of the PGP's independent Investment Advisory Panel (IAP), replacing Joanna Perry who ended her tenure as Chair on 30 April 2016. John joined IAP members Sir Maarten Wevers, Melissa Clark-Reynolds, Steve Smith, Harry Burkhardt and Barry Brook, who was appointed



as Deputy Chair of the IAP. I would like to acknowledge Joanna's contribution to the PGP after nearly seven years on the IAP, including almost three as its Chair. I would also like to thank the current IAP for their continued valuable contribution to the PGP.

During 2015/16, some adjustments were made to the PGP, as well as to MPI's administrative processes.

From 1 December 2015, the maximum Crown investment share in new PGP programmes shifted from 50 percent to 40 percent. This reflected that commercial benefits from PGP programmes are higher than the public benefits, and enabled Government to align PGP investment to other funds. Overall funding for the PGP was not affected by the shift. The minimum industry investment required for PGP programmes remained at $500,000 over the lifetime of the programme.

During the year we made changes to the way we administer the PGP, to make it more accessible and attract further interest in new programmes from industry. We are simplifying the reporting requirements for PGP programmes, and are providing assistance to applicants for business case development. We also continue to explore opportunities to assist smaller sub-sectors to access PGP. We continue to encourage anyone with good, innovative ideas that will deliver on opportunities or solve problems for the primary industries to contact us.

Since 2013, we have held annual PGP Expos to showcase the PGP, including the products and scientific breakthroughs PGP programmes are delivering. In October 2015 we held our third PGP Expo. More than 200 people attended including the Minister for Primary Industries Hon Nathan Guy, PGP programme partners, primary industry and business representatives, government agencies, IAP members and media. Our Expos bring together all of our PGP programmes, representing more than 50 of our leading primary industry companies.

During 2015/16, we also held our first ever PGP conference, focussed on business innovation and consumer insights. The purposes of our conferences are to provoke thinking and share information to help our primary industries to succeed.

This annual report provides many examples of achievements of PGP programmes during 2015/16, including awards received by some of them. It also includes case studies of two of our PGP programmes: Transforming the Dairy Value Chain and Omega Lamb.

In my discussions with PGP programmes and industry, I clearly sense passion, excitement and commitment towards making a difference for our primary industries and for New Zealand. The PGP provides a key platform that is enabling this difference to be made. PGP partners would not have embarked on these innovation programmes alone. The investment in time and funding, and the risk involved in these innovation programmes would be far too great for an organisation to bear on its own. Therefore, in my view, PGP is enabling investment and risk to be shared, it is accelerating thinking and achieving innovations that would not otherwise happen. Further, the combined, collaborative efforts enabled by the PGP are making a difference for our primary industries and our economy.

I hope you enjoy reading about our programmes' successes, challenges, and outcomes in this year's Annual Report.

Martyn Dunne
Director-General, MPI

Message from John Parker
Chair, Investment Advisory Panel

Having chaired the Primary Growth Partnership (PGP) Investment Advisory Panel (IAP) since 1 May 2016, my experience with the PGP is somewhat limited. However, I am impressed with the dedication of my fellow panel members and the effort put in by Ministry for Primary Industries (MPI) staff and those industries that have partnered with MPI in the various PGP programmes.

It is generally accepted that New Zealand's primary industries are already highly innovative at the production and primary processing stage of the value chain. However, there is also thinking that suggests innovation beyond that, in terms of adding value, unique product development, retail presentations and marketing, is behind where New Zealand might obtain maximum advantage. The reasons are fairly obvious. New Zealand is a tiny market relative to production and we are a long way, in terms of distance, from the market place. Brands, innovative products, packaging and distribution are a much simpler proposition when producers and consumers are proximate and understand each other well; where protectionism and local preference isn't an issue and nor is distance from market.

So, while MPI and the IAP seeks innovation anywhere and everywhere in the chain from production to market, we particularly encourage applications that have an important or primary focus on the market end of the chain, or at least aim to lessen impediments to getting innovative added value products to the market.

The IAP appreciates that true innovation, at least that government should assist investing in, will carry risk. After all, if there is little risk, why should government invest in it? Some programmes will therefore not reach all their ambitious targets set at the beginning of the programmes. Currently, the IAP is not aware of any programmes that look likely to fail – indeed all are projected to make a healthy return on the government's investment, but parts of some programmes will probably not succeed and we need not be fearful of this. In some cases, ambitious

trials or experiments don't produce the desired results but the knowledge gained has value. Indeed, increasingly PGP programmes include measures for "fast fail" decisions if certain programme objectives or milestones are not met.

When you read this Annual Report you will see the great diversity in programmes underway, and it is pleasing to know that applications for PGP investment in the pipeline look to be both numerous and wide-ranging. Increasingly it is being appreciated in the wider industry that applications for PGP investment are not limited to established primary industry players. Provided intended programmes are aimed at increasing the economic growth and sustainability of New Zealand's primary or food industries, any organisation may apply.

The IAP has six members with diverse industry and business backgrounds. Discussion is robust and decisions are by consensus, with assistance and participation of MPI staff. It has been my pleasure to chair the IAP to date, and I look forward to my continued involvement in the Panel in the years ahead.

John Parker
Chair Investment Advisory Panel

Achievements by PGP programmes

PGP programmes continue to deliver real and tangible benefits for New Zealand's primary industries, and 2015/16 marked a further successful year across PGP. The achievements for each programme for 2015/16 are outlined in this report, along with case studies for the Omega Lamb and the Transforming the Dairy Value Chain PGP programmes.

NEW ZEALAND SHEEP INDUSTRY TRANSFORMATION PROJECT (NZSTX)

The New Zealand Sheep Industry Transformation Project (NZSTX) aims to increase production of market-driven sheep, shifting the balance between New Zealand strong and fine wool production, and using product differentiation to generate better grower returns for fibre, meat and other products.

Achievements for the 2015/16 financial year:

- There has been continued growth in terms of new brand partners and new business prospects across a range of micron categories, as well as exciting new business from established brand partners. This is a result of NZSTX's investment in innovation and product differentiation through the Fibre component of the programme in its first five years.
- During 2015/16, The New Zealand Merino Company (NZM) and Reda Successori released a $45 million, five-year, 2,500 tonne contract for 15.8-19.2 micron fibre. Renowned globally for wool suiting fabrics, Reda diversified into activewear with their launch of sports brand Rewoolution in 2012. Superfine New Zealand Merino wool woven by Reda is used in the production of the Allbirds Wool Runners. The Reda contract is the result of a long-standing relationship between Reda, NZM and New Zealand fine-wool growers, and a targeted investment through NZSTX to accelerate Reda's innovative approach.
- The Production Science component of the NZSTX programme has continued its world-first research into a new genetic test for footrot resistance for the New Zealand fine-wool industry. The genomic breeding value (gBV) for footrot resistance will be released to the New Zealand industry during year seven of the programme.
- Individual breeder support, along with the fine-wool central progeny test, has continued to increase understanding and uptake of breeding values by fine-wool ram breeders. This work is an important foundation for the uptake of the gBV for footrot resistance.
- Newly formed producer discussion groups are proving to be an effective vehicle for extending Production Science project results, incorporating peer-to-peer learning and hands-on demonstrations. The network of producer groups will be extended during year seven.
- Initial research into the impact of mob size and stocking rate on lamb survival, undertaken by Murdoch University and co-funded by NZSTX, is demonstrating the opportunity for fine-wool sheep growers to improve this crucial production driver by changing management practices. Further research into improving lamb survival will be undertaken during year seven.

KEY FACTS:

Programme start: September 2010

Length: 7 years

PGP funding: $16.8 million

Industry funding: $16.8 million

WOOL UNLEASHED (W^3)

Wool Unleashed (W^3) aims to deliver premiums for New Zealand's strong wool sector. Premiums will come from applying a customer-led approach to wool production and processing to develop products that align with customer preferences.

Achievements for the 2015/16 financial year:

- The Wool Unleashed (W^3) programme was announced in February 2016. In its first few months the programme has put in place strong governance and dedicated resourcing, as well as establishing and building the momentum of its workstreams.
- The programme engaged widely with the wool industry to explore opportunities for partnerships and collaboration, and also with the research community to understand the current wool innovation landscape, particularly for new uses. This engagement campaign has resulted in a number of collaborative agreements.
- In May 2016 a new strong wool contract with Prestige Carpets in Australia was announced. With contracts also secured with Dixie Carpets (USA) and Best Wool Carpets (Netherlands) there are clear signals of the shift the programme is aiming for, raising the value of New Zealand strong wool by moving brand partners from purchasing at auction to contracts.

KEY FACTS:

Programme start: February 2016

Length: 7 years

PGP funding: $11.05 million

Industry funding: $11.05 million

FARM[IQ]

Farm[IQ], owned by Silver Fern Farms and Landcorp, aims to create a demand-driven, integrated value chain for red meat that could grow the sector by 50 percent by 2025.

The programme consists of a suite of projects throughout the value chain, from on-farm production systems and genetics, to processing and analysis of market requirements.

Achievements for the 2015/16 financial year:

- Turnover for Silver Fern Farms' value-added range of products developed by the programme is now $68 million with a range of retail and food service products in key international markets. The most recent addition has been the German retail range of lamb, venison and beef in Germany's largest retail chain, EDEKA. Returns are being provided to farmers.
- The Farm[IQ] software now supports close to 4 million (3,937,680) stock units being run on 609,400 effective hectares.
- In April 2016 Farm[IQ] software commercially released two online packages, Health & Safety and Environment Planning, which provide the recording and reporting a farm needs to do based on industry good-practice guidelines. Also, the software now has data linkages with Farmax and Cashmanager Rural.
- The Farm Productive Capacity workstream, working with 11 commercial farms to test the value of measuring and monitoring, has demonstrated an increase in Economic Farm Surplus from $336 to $518 per hectare since the start of the programme.
- The Genetics workstream has developed a system for providing accurate and cost-effective predictions of sheep breeding values for meat quality and also supports the wider industry for productivity.

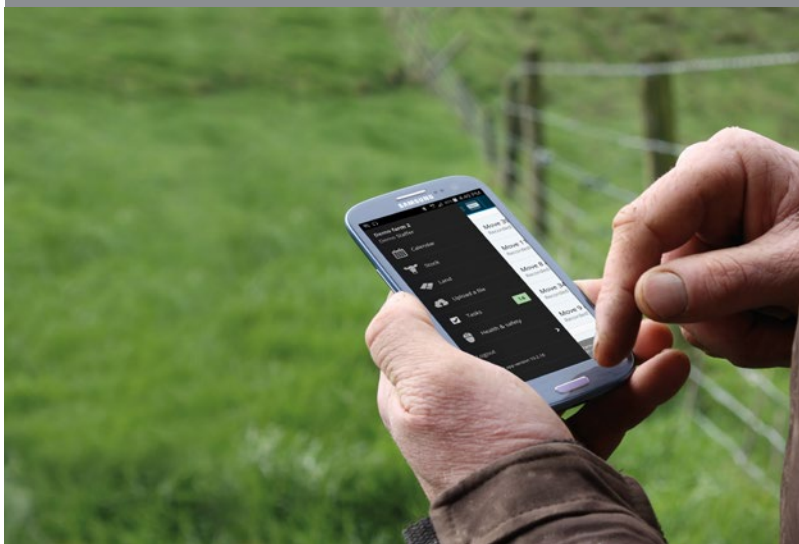
KEY FACTS:

Programme start: November 2010

Length: 7 years

PGP funding: $59 million

Industry funding: $65 million



TRANSFORMING THE DAIRY VALUE CHAIN (TDVC)

In 2011, MPI, Fonterra, and DairyNZ joined forces with LIC, Synlait, Zespri and others to fund a seven-year, $170 million programme to transform the dairy value chain. It aims to create new dairy products, increase on-farm productivity, reduce environmental impacts, and improve agricultural education. The vision is that the benefits of this work will be $2.7 billion a year by 2025.

Achievements for the 2015/16 financial year:

- TDVC support has enabled building of a unique, world-leading database at LIC with 20 million genetic markers targeted, 120,000 genotyped animals and 6 patents filed, accelerating knowledge of what makes stock more productive and enabling genetic gains.
- TDVC support has helped develop three data integration initiatives: NZ Farm Data Standards, Farm Data Code of Practice and DataLinker.
- Every region now has a tailored riparian guide.
- Significant non-compliance for effluent discharge is down to 5.8 percent, the lowest on record.
- Mental health and wellbeing training has been delivered to almost 2000 rural professionals and support workers as part of the GoodYarn initiative, which won an international award in August 2016. Around 3000 farmers have attended a Health Pitstop run by TDVC.
- An expert panel of top global dairy scientists announced in February 2016 that the TDVC-supported food structure research programme is “one of the top three and possibly the top programme” of its type in the world, further boosting the nation’s reputation overseas.
- ANMUM™ infant formula was launched in the New Zealand market early in 2016, on the back of comprehensive TDVC-supported research into the cognitive benefits of dairy proteins and ingredients.
- A major consumer preference study has revealed significant, previously untapped opportunities in Asian markets for New Zealand dairy products. Further research is underway.
- In October 2015, Fonterra won the New Zealand Innovators Award for Excellence in Research for Milk Fingerprinting technology. Fonterra Chief Science and Technology Officer, Jeremy Hill, says it’s the biggest industry development he’s seen in 30 years.
- In its 2016 annual report, Fonterra reported that an extra 380 million litres of milk had been pumped into its value-add operations. This was supported by the science, research and innovation under the TDVC programme.

KEY FACTS:

Programme start: April 2011

Length: 7 years

PGP funding: $84.6 million

Industry funding: $84.7 million

CASE STUDY:
TRANSFORMING THE DAIRY VALUE CHAIN – NURTURING GROWTH OF THE DAIRY INDUSTRY'S BRIGHT FUTURE

People power – it's one of the greatest successes of the Transforming the Dairy Value Chain (TDVC) PGP programme.

The programme is investing tens of millions of dollars into cutting-edge science, research and development. This has benefits far and wide for the nation's farms, firms, schools, universities and research centres in the development of some of our brightest young minds and a pipeline for a talented rural workforce. Many of these people are building on that investment in capability to make important scientific breakthroughs, create a sustainable value-added dairy industry and drive innovation on-farm.


Fonterra's Andrew Fletcher

"The primary goal of the programme is assisting towards increasing the market success of New Zealand's primary industries," says Programme Manager Andrew Fletcher. But the work towards upskilling people is one of the most important, enduring benefits because it's boosting the country's capacity and capability to do even better and push the boundaries.

People like Orianne Thionnet, a Fonterra research technologist who helped build the scientific knowledge behind the Co-op's breakthrough mozzarella. That development played a pivotal role in the $72 million expansion of Fonterra's Clandeboye plant and the creation of 25 permanent new jobs. She is now using that research in the development of other products. Much of Orianne's work was supported by the TDVC programme, which helped to accelerate her learning and the potential outcomes by encouraging new partnerships.

"You have all these connections between different experts from different universities in different areas - that really helps," she says. "And I think it helps to develop new scientists as well."

There are close to 60 students and researchers right along the dairy value chain whose Masters, PhDs and post-doctoral research is supported by the programme. These future industry leaders are delivering science and knowledge that will enable new high-value products, build better farms and realise vital environmental goals.

Auckland's Mel Hayr is completing her PhD degree at Iowa State University, one of the world's top varsities for studying animal breeding and genetics. Her research, supported by the programme, focuses on novel ways of using information about natural genetic variants to improve knowledge of the underlying biological mechanisms behind important dairy cattle traits. The aim is to increase the accuracy of selecting bulls for mating. "It's very exciting to be part of the group exploring this wealth of data and finding ways to use it that will benefit New Zealand and advance our scientific knowledge," she says.

Mel's work sits alongside other on-farm science, including research into pasture persistence, precision agriculture and excellence in farm management. That science and the private/public collaboration at its core have been described as unique and world-leading.

A recent review of the food structure component of the programme by an independent panel of global experts said it was one of the top programmes of its kind in the world. They praised its "high-calibre research" into cheese, cream and other foods and the balance struck between academic study and "clear industry objectives". The panel said the research and innovation was helping the industry develop more high-return, value-added products to "escape

the commodity spiral". One of the panellists, Allen Foegeding from North Carolina State University, said students were working on "cutting-edge" science and "clearly defined, industry-relevant goals".

"The programme gives them access to a broad range of equipment and knowledge to take their work as far as it can go," he said.

Many of these students will go on to work in the dairy industry and build on what they have learnt to create even more new products and opportunities and further enhance New Zealand's strong global reputation for innovation.

The TDVC PGP programme is future-proofing on-farm rural talent and leadership as well. More than 9000 young people have been given a taste of the many opportunities available in the dairy industry through PGP-supported initiatives coordinated by a number of organisations, including the Primary Industry Capability Alliance (PICA) and New Zealand Young Farmers.

The programme helped to set up PICA, which takes a collaborative approach to building rural capability; the dairy industry working with other primary industries to connect more effectively with young people. PICA Chief Executive Andy Somerville says the organisation now has an "alliance of 10 organisations and growing, with members including industry good bodies, education and training providers and government agencies".

It offers primary industry-based activities and educational resources targeted at primary and secondary school students, including a list of all scholarships available to school leavers looking at further study in primary industry-related courses.

New Zealand Young Farmers is doing similar important work through programmes such as AgriKids and TeenAg. These initiatives support regional and national competitions and clubs that promote a positive image of the industry and also empower future farming leaders to strive for excellence through the Leadership Pathway Programme.

Chief Executive Terry Copeland says the industry needs "skilled, vibrant young people" to replenish the dairy workforce.

Career options for people in the industry are very wide, so it's agri-business, science attributes and marketing attributes that we actually need, to take NZ Inc and its products overseas."

HIGH PERFORMANCE MĀNUKA PLANTATIONS

The value of New Zealand's mānuka honey industry could grow from an estimated $75 million in 2010 towards $1.2 billion per annum following a PGP innovation programme led by Manuka Research Partnership (NZ) Limited and Comvita Limited.

Achievements for the 2015/16 financial year:

- Some mānuka trial cultivars have, over four seasons, consistently produced nectar with twice the level of dihydroxyacetone (DHA) as general mānuka growing in the same district. Controlled experiments conducted over three years have shown genetics to be the main influencer of flowering time and duration, nectar yield and quality. The programme has access to proprietary mānuka genetics and will continue to study the influence of genetics.
- The plantation trials have highlighted that picking the right cultivar for the right site is critical to initial survival and for nectar production.
- A commercial company, Mānuka Farming New Zealand, has been established to commercialise the outcomes of the PGP programme, and is now offering consultancy services and seedlings to land owners wishing to plant mānuka. The Mānuka Farming New Zealand website went live with details of its services and of the PGP programme. Enquiries are now flowing through.
- The third iteration of technical notes has been completed for Mānuka Farming New Zealand, providing information and recommendations for establishing and managing high performing mānuka plantations. A protocol for taking nectar samples in the field has been developed and trialled. A pest and weed management regime has been developed for use by Mānuka Farming New Zealand on potential mānuka plantation sites. This information will assist landowners understand the complexities and budget for pest and weed control.
- The High Performance Mānuka Plantations programme and the Tutira plantation trial site were featured on TVNZ's Rural Delivery show, and three academic publications resulting from the research projects have been presented at national and international symposiums.

KEY FACTS:

Programme start: April 2011

Length: 7 years

PGP funding: $1.4 million

Industry funding: $1.5 million

CLEARVIEW INNOVATIONS

Ballance Agri-Nutrients is one of New Zealand's largest nutrient management companies. It is leading the Clearview Innovations PGP programme which could benefit New Zealand with new products, increased on-farm productivity, and improved water quality.

Achievements for the 2015/16 financial year:

- Ballance's focus for the 2015/16 financial year was to further support the adoption and extension of the two products that had been launched in previous years – N-Guru™ and SpreadSmart™.
  - For N-Guru™ the focus has been on further training for the North and South Island sales teams using a case study about the Saint Peter's Demonstration farm in Cambridge.
  - The SpreadSmart™ service commenced with a second plane fitted with the variable rate fertiliser technology. Further training of Ballance staff on SpreadSmart™ has also been carried out this year, along with Farmer Fieldays to promote SpreadSmart™ in Te Kuiti and Masterton.
- The handover of version one of MitAgator™ from AgResearch is now complete.
  - This is a very significant milestone for the Clearview Innovations PGP Programme. This model is a world-first that spatially represents Nitrogen, Phosphorus, Sediment and *E. Coli* loss at the farm scale. MitAgator™ generates critical source area maps and ranks mitigations for each of the selected losses. This spatial decision support tool significantly contributes to farmer understanding of how to manage farm nutrient losses through using visual representations.
  - The model is being piloted with a small number of farmers to explore extension and adoption needs and a business case is under development to establish the preferred route to market for this technology.
- A second series of Nutrient Management Roadshows were conducted across three regions of New Zealand, in collaboration with Fonterra and the Dairy Women's Network. Due to the success of the previous roadshow held in February 2015, Ballance held a further seven regional workshops in Morrinsville, Opunake, Te Awamutu, Gore, Otautau, Reporoa and Inglewood. The content of these built on previous events, helping farmers to interpret their own nutrient use numbers as well as having more of an implementation focus (i.e. what can farmers do).

KEY FACTS:

Programme start: October 2011

Length: 7 years

PGP funding: $9.8 million

Industry funding: $9.8 million

- A key highlight for this financial year was hosting the Minister of Primary Industries, Hon Nathan Guy on a farm in the Wairarapa. The purpose of the visit was to showcase the products that have been produced from the Ballance Clearview Innovations PGP Programme to date. The visit included presentations on N-Guru™, MitAgator™, SpreadSmart™ and the extension components of the PGP programme, followed by a SpreadSmart™ aircraft demonstration.
- An Extension Advisory Panel was formed to advise the Clearview Innovations PGP Programme Manager and Extension Manager of any items that can be incorporated into the extension programme and provide feedback on what is being extended from this programme.

PRECISION SEAFOOD HARVESTING (PSH)

Precision Seafood Harvesting (PSH) is a PGP programme that seeks to develop a new wildfish harvesting technology that will result in more precise catches, allowing fish to be landed fresher, in better condition, and of higher value.

Achievements for the 2015/16 financial year:

- In February 2016 the programme launched the new Tiaki brand for fish caught using the new method of fishing.
- PSH won Callaghan Innovation's Māori Innovation Award in June 2016.
- Initial results for the post-harvest survivability comparison for juvenile snapper show a significantly improved survival rate for fish harvested using the Modular Harvesting System designs developed by the PSH programme.

KEY FACTS:

Programme start: April 2012

Length: 7 years

PGP funding: $24 million

Industry funding: $24 million

SPATNZ

SPATnz aims to selectively breed high-value Greenshell™ mussels. Sanford subsidiary Shellfish Production and Technology New Zealand Limited (SPATnz) is co-investing with the Ministry for Primary Industries in this PGP programme.

Achievements for the 2015/16 financial year:

- SPATnz was awarded the New Zealand Marine Farming Association Research and Development award for 2015.
- The microalgal production unit has been operating superbly, providing a critical platform for hatchery research.
- About 80 families from the 2014 breeding run have been assessed for a wide range of characteristics.
- Three strains of mussel have been produced at a scale sufficient to establish benchmarking trials across a range of growing conditions.
- Positive survival and growth of seed from 1 mm to 50 mm were recorded for the first batches of spat reared at the hatchery facility.

KEY FACTS:

Programme start: November 2012

Length: 7 years

PGP funding: $13 million

Industry funding: $13 million

FOODPLUS

FoodPlus is generating more value from the red meat carcase and developing new and innovative uses for parts of the animal carcase. There are three streams in the programme, focussing on food products, ingredients and healthcare.

Achievements for the 2015/16 financial year:

- In the last year six products were commercialised through the programme, five food products and one healthcare product. Overall the programme has commercialised 19 food, healthcare and food ingredient products. Of those 19, nine are food products, four are ingredients and six are healthcare products. This includes new forms of meat products, stocks, broths, bio-tissues and blood products.
- All of these are value-added products, with some being taken from material streams that previously went to very low value uses, such as rendering.
- Through the programme a structured approach to market intelligence and new product development have been implemented, enabling ANZCO to better focus on and respond to market pulls.
- The shift towards capturing greater value back in New Zealand has been illustrated by ANZCO finalising the acquisition of Bovogen, the Melbourne-based biotechnology company.

KEY FACTS:

Programme start: November 2012

Length: 7 years

PGP funding: $29.1 million

Industry funding: $29.1 million

STEEPLAND HARVESTING

The Steepland Harvesting PGP programme aims to ensure that harvesting operations on steep terrain keep pace with New Zealand's increasing forest harvest by developing innovative forestry technology to keep forest industry workers out of harm's way, while increasing productivity and lowering production costs.

Achievements for the 2015/16 financial year:

- The first output from the Steepland Harvesting programme was the ClimbMAX, a feller-buncher developed by Kelly Logging Ltd and Trinder Engineers Ltd in Nelson and marketed commercially by ClimbMAX Equipment Ltd. To date, ten units have been sold (three in NZ, six in Canada, and one in the United States).
- The programme achieved remote control and teleoperation (control beyond line-of-sight) of a commercial feller-buncher, a John Deere model 909 harvester, in 2015/16. This is believed to be a world first. Over the last year the programme built an operator cabin and console to tele-operate the feller-buncher.
- Scion and the University of Canterbury mechatronics programme have continued to develop the prototype of the sensor guided bi-ped felling machine (dubbed the "Stick Insect") for steep country felling. This machine moves from tree-to-tree without touching the ground, using remote control technology to operate the machine from safe working distances. It has the potential to change the way steep terrain harvesting will be undertaken in the future.

Other achievements include:

- The Alpine Grapple—a light weight, low cost option for grapple yarding which increases the productivity of cable extraction and eliminates manual breaking out (the process of gathering and hauling logs up slopes). To date 13 units have been sold in New Zealand, with more on order.
- The CutoverCam advanced hauler vision system, which streams high resolution live video of the breaking out and log extraction operation into the hauler cab, providing great visibility of ground operations for the hauler operator who no longer needs to rely on radio and other audio signals. Three units have been sold and it is marketed by Cutover Systems Ltd in Rotorua.
- Development of a second protoype of the Awdon Skyshifter, an innovative twin winch skyline carriage designed for rapid shifting of the cable logging skyline, which is now in production field trials.

KEY FACTS:

Programme start: November 2010

Length: 7 years

PGP funding: $3.3 million

Industry funding: $3.3 million

The stick insect felling machine

- Over the last year more products have come out of the development pipeline that are linked to the other phases of harvesting to improve efficiency of manual tree felling, extraction, log processing and loading:
  - A remote controlled mobile tail hold machine – a prototype has been built and sold.
  - A remote controlled powered felling wedge – a prototype is in development and is undergoing early field testing. First two units are on order.
  - The Doherty Automatic Quick Coupler Attachment – a prototype is in construction, with the first unit already sold.
- The Steepland Harvesting programme has become a catalyst for other innovations in all aspects of steep terrain harvesting, including the development of about 50 other traction-winch assisted felling machines in New Zealand, and over 50 grapple camera systems.

Inside the purpose built teleoperation cabin

SEED & NUTRITIONAL TECHNOLOGY DEVELOPMENT

Tackling climate change, mitigating the impact of droughts and pests, and improving animal health and productivity are among the benefits sought by the Seed & Nutritional Technology Development programme to develop innovative forages for New Zealand farms. The programme is led by PGG Wrightson Seeds and Grasslanz Technology.

Achievements for the 2015/16 financial year:

- The tetraploid perennial ryegrass with endophyte AR501 developed by the programme has continued to show strong agronomic performance in regional trials and a selection has now been entered into the National Forage Variety trials. The first multiplication of this line was harvested in January 2016 and produced excellent seed yields.
- The programme has continued to make excellent progress on traits that should improve feed conversion efficiency and reduce nitrogen emissions from ruminants. The inheritance of a key trait has been shown to be stable, providing good confidence that this project is on track.
- Results from regional trials show a 14 percent yield advantage, 32 percent higher aphid tolerance and 80 percent lower glucosinolate levels for the new hybrid brassica developed by the programme compared to Goliath rape. The animal grazing trial also resulted in an approximate 30 percent higher liveweight gain per hectare without any increase in brassica-associated liver disease for cattle grazing raphanobrassica. On-farm trials have shown substantial (>$2000/ha) profitability gains compared with forage rape and grass pasture.

KEY FACTS:

Programme start: February 2013

Length: 6 years

PGP funding: $7.1 million

Industry funding: $7.5 million

MARBLED GRASS-FED BEEF

Increasing consumer demand for better quality and naturally produced food products, combined with an increasing emphasis on food security provides an exciting opportunity for New Zealand to supply the best marbled grass-fed beef in the world.

Achievements for the 2015/16 financial year:

- Dairy x Wagyu animals now represent nearly 50 percent of processing numbers and their average marbling scores are exceeding Angus x Wagyu. The average Wagyu x Dairy Marble Score of 5.3 from July to March 2015/16 is 0.5 higher than the same period last year.
- Returns to shareholders have continued to exceed prime steer prices, and exceeded the targeted year-round price of $6 per kg. The long term sustainable Wagyu offering continues to attract farmers.
- The sale of Wagyu burgers in the United Kingdom continue to gain momentum and a recent promotion for steak cuts sold out in less than 48 hours.
- Steak is available in New Zealand supermarkets.
- The target number of matings for the 2016 calendar year is over 34,000 (up from the original target of 26,000).
- A Regional Producer Group Hub has now been established in the South Island, adding to those existing in the Lower North Island, Central North Island, the East Coast and Northland.

KEY FACTS:

Programme start: August 2012

Length: 7 years

PGP funding: $11 million

Industry funding: $12 million

WHAI HUA – NEW DAIRY PRODUCTS AND VALUE CHAINS

Developing immune enhancing dairy products is the key goal of the Whai Hua PGP programme.

Achievements for the 2015/16 financial year:

The Whai Hua PGP programme is approaching completion in December 2016. The third full year of work made significant progress across all four objectives and achieved the following:

- Standard Operating Procedures have been prepared for the expansion and maintenance of the elite dairy herd established by the programme and for using new procedures to measure the levels of the target dairy compounds. First calving heifers have been screened and 200 have been identified as replacements for the 2016-17 elite herd.
- Vaccination of cows with two antigens was successfully completed and partial immune responses were measured in milk.
- Good retention of the target compound's activity (76 percent) has been achieved when producing Skim Milk Powder at the Food Innovation Waikato plant. This is a significant achievement and a key step in establishing a commercial process.
- Promising results were obtained from investigations into the effect of secondary processing on the target dairy compounds. Significantly, the manufacture of a model infant formula resulted in only 12 percent loss of the active compound.
- Results from digestion and efficacy studies are promising for Skim Milk Powder that has been produced by the newly developed processing method.
- Three efficacy papers have been prepared, reviewed and submitted to science journals. One further animal model experiment has been completed to determine the target product's efficacy towards treating a gastrointestinal pathogen. These science papers will be valuable in marketing activities.
- Market research has been completed and target customers within four segments have been identified. Test samples of the target product have been supplied to some of these potential customers.

KEY FACTS:

Programme start: April 2011

Length: 7 years

PGP funding: $2 million

Industry funding: $2 million

RED MEAT PROFIT PARTNERSHIP

The Red Meat Profit Partnership (RMPP) is a highly collaborative programme between the Red Meat Sector with nine partners and the Ministry for Primary Industries. The objective is to drive sustainable productivity improvements in the sheep and beef sector to deliver higher on-farm profitability.

Achievements for the 2015/16 financial year:

- Completed research across 800 farms and the processing industry in relation to optimal supply arrangements.
- Workshops with high performing farmers were conducted across the country to identify how RMPP can assist them further and how they can share their approaches to assist the rest of the industry.
- The first of three years of trial work with 75 pilot farmers has been completed. Interim results are due in November 2016.
- A "strawman" of an extension system was developed and agreed across all programme partners with discussions underway about implementation.
- Launched the Education in Agriculture pilot and ANZ's Red Meat Privately Owned Business Barometer.
- Completed a proof of concept for the electronic Animal Status Declaration (eASD) in conjunction with OSPRI.
- Completed a trial of the NZ Farm Assurance Programme with 34 pilot farmers.
- Increasing levels of farmers are being engaged in RMPP's capability project. This includes 500 women attending the 'Understanding Your Farm Business' course, which now includes a specific course for Māori women, 140 farmers completing the computer upskilling workshops and 1400 members being involved in the Rural Business Network.
- The Attracting Talent project continues to develop and grow. This includes six tertiary institutions now involved in the Red Meat Network, 41 farmers completing the Rural Mentor Programme, 99 TeenAg clubs nationwide with 1500 members, 15 secondary schools trialling agriculture resources matched to general curriculum and 10 primary schools trialling an agriculture resource and matched to a farm.

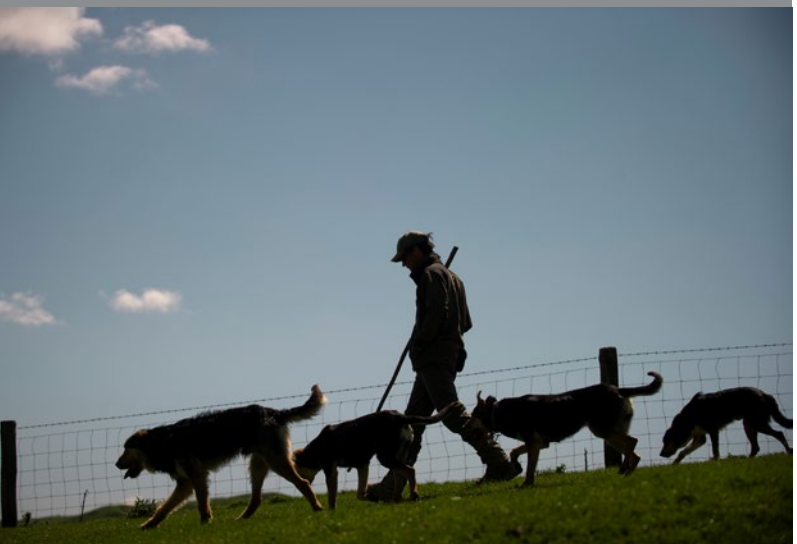
KEY FACTS:

Programme start: November 2013

Length: 7 years

PGP funding: $32.1 million

Industry funding: $32.1 million



PIONEERING TO PRECISION

Ravensdown's Pioneering to Precision PGP programme seeks to improve fertiliser practice on hill country farms through remote sensing of the nutrient status of the farms and precision application of fertiliser.

Achievements for the 2015/16 financial year:

- To date approximately 7,165 soil and 6,935 plant tissue samples have been collected. This represents the most comprehensive dataset taken in New Zealand for the purpose of developing remote sensing technology to improve the identification of nutrient requirements across New Zealand hill country.
- Results relating pasture nutrient levels to sensing data continue to suggest very robust algorithms are achievable. The relationships with underlying soil fertility is now the current focus of the programme.
- Two new South Island focus farms in Waikouaiti and North Otago are entering the programme ahead of schedule for the 2016/17 season. The programme now has four focus farms with one in the Wairarapa and another near Raetihi joining at the beginning of the 2015/16 season.

KEY FACTS:

Programme start: October 2013

Length: 7 years

PGP funding: $5.2 million

Industry funding: $5.2 million

LIFESTYLE WINES

The programme is the largest research and development effort ever undertaken by New Zealand's wine industry. It's designed to position New Zealand as number one in the world for naturally produced, high quality, lower alcohol and lower calorie 'lifestyle' wines. It aims to capitalise on the domestic and international market demand for these wines.

Achievements for the 2015/16 financial year:

- Further market research was completed for New Zealand, Australia, the United Kingdom and Sweden to monitor the lower-alcohol wine category and the substitution-versus-growth effect it is having on the total wine category. This research shows that the growth is incremental.
- Sensory evaluations have been undertaken with consumers, trained panelists and expert winemakers to assess the sensory impact of different alcohol content in wines.
- A range of vineyard techniques, including early grape harvest, irrigation, nutrition and canopy manipulation have been trialled. Canopy management in particular has shown to have an impact on the sugar levels of the grapes, providing a promising method for producing lower-alcohol wines and also for use in producing other wines. Uptake of this new technique is already occurring within and outside of the programme.
- Trial and commercial quantities of lifestyle wines have been produced as part of the 2016 vintage with promising results and some commercial releases due to occur.

KEY FACTS:

Programme start: March 2014

Length: 7 years

PGP funding: $8.1 million

Industry funding: $8.8 million

Photo: Villa Maria

NEW ZEALAND AVOCADOS GO GLOBAL

The New Zealand Avocados Go Global programme began in June 2014 with five key objectives: market entry and growth; consistent and sustainable supply; efficient supply chain; products from waste; and information transfer and adoption. This is a five year programme with a vision that by 2023 an integrated New Zealand avocado industry will deliver NZ$280 million annually in net sales and have tripled productivity to 12 tonnes per hectare.

Achievements for the 2015/16 financial year:

- Supported by favourable market conditions the avocado industry has seen a 25 percent increase in Orchard Gate Return, effectively doubling the industry revenue to $134 million, on track to delivering the programme's 2023 target.
- With over 400 growers attending field days each year and new research outcomes being pushed through the New Zealand Avocado website, the industry has seen the number of best performing orchards continue to increase. Common supply chain challenges are being identified with enhancements to industry managed processes underway.
- The focus on new markets is continuing with the Premium Avocado from New Zealand marketing campaign now being tailored to Asian markets. The number of trays sold in Asia has doubled from 270,000 trays of avocados sold yearly in the region in the 2009-2013 period to 440,000 trays sold yearly for the 2011-2015 period (rolling average).
- There has been significant growth in the New Zealand domestic market as well over the past year, with a reported additional 96,000 consumers purchasing avocados over the previous survey.

KEY FACTS:

Programme start: June 2014

Length: 5 years

PGP funding: $4.3 million

Industry funding: $4.3 million

OMEGA LAMB

The Omega Lamb PGP programme looks to reach existing and emerging markets with a new class of premium lamb products with improved health qualities – including lower levels of saturated fat, and higher levels of polyunsaturated fat and healthy Omega-3 oils – as well as superior taste. The programme is focusing on identifying the sweet spot, where healthy fats are good for animal health, good for human health and give the best possible taste and mouth feel.

Achievements for the 2015/16 financial year:

- Over 300 sires were mated on 10 pilot farms after selection from more than 2000 rams using progeny test data for growth, carcase merit, intramuscular fat and long-chain Omega-3 traits.
- To date, 15,000 lambs from these selected sires have been finished on selected chicory pastures and have reached the programme's criteria for Omega-3, intramuscular and polyunsaturated fats. At under six months of age, lambs are achieving good yields and averaging over three per cent intramuscular fat, in loin, with long chain Omega-3 within the criteria for a "source" health claim.
- Multiple taste panels have been undertaken, including with leading New Zealand chefs, with uniformly positive results. We have discovered that eating quality is a clear a point of differentiation for the programme's lamb, in addition to health.
- Demand from chefs has led, earlier than expected, to market trials in premium food service. Lamb from pilot farms is being supplied to top Auckland and Hong Kong restaurants and the lamb was selected by New Zealand's Culinary Olympic team.
- Over 3000 hill country ewes from the programme's selected family lines have been individually monitored in a commercial farming setting. The first year of data shows strong family correlations between lamb carcase fat and ewe condition (fatness level), which is important for ewes to thrive in hill country.

KEY FACTS:

Programme start: July 2015

Length: 7 years

PGP funding: $12.5 million

Industry funding: $12.5 million

CASE STUDY:
OMEGA LAMB - MEETING WORLD DEMAND FOR HEALTHIER RED MEAT

Globally there are a growing numbers of consumers for whom price is secondary to eating experience and health benefits.

The Omega Lamb Primary Growth Partnership (PGP) programme's objective is to produce the world's tastiest and healthiest lamb and increase the value and returns for premium New Zealand lamb through a combination of genetics, farm management systems, animal feeding and international marketing.

This PGP programme is a collaboration between Alliance Group, Headwaters NZ Ltd and the New Zealand government through the Ministry for Primary Industries (MPI), working with farmers, animal geneticists and agronomists.

It focuses on breeding healthy fat and oils into lambs for new levels of taste and because those same oils and fats make the lamb healthier, both for the animals and for humans.

The seven-year programme was launched in July 2015 with the $25 million investment split equally between MPI's PGP and industry contributions.

Over time the programme aims to deliver premiums for our farmers and processors, and raise the value and profitability of New Zealand's lamb overall. If the programme proves successful, there is potential for all farmers to benefit from new high value market opportunities and the technology developed from the programme.

The Omega Lamb PGP programme is aiming to add over $400 million in earnings, increase lamb revenues by 34 percent for adopting farmers and deliver a 19-fold return on the government's investment. Much of the unique technology and systems developed will also be able to be applied across the industry. This represents a shift in thinking – as a team of fine food producers as against the traditional farmer and processor mindset.

To date, more than 15,000 lambs have been processed and reached the criteria for Omega-3, intramuscular and polyunsaturated fats.

Challenges of the lean years

Over the last 20 years, the sheep industry has focused on selecting animals for lower fat. Some fat, however, is obviously needed by ewes to survive winters and raise lambs. Fat is also needed for red meat to process well, cook well and be tender and succulent – much of the flavour is contained within the fat.

The Omega Lamb PGP programme is based on results from three years of prior research funded by Headwaters, Alliance Group and Beef and Lamb Genetics. These results identified the benefit of putting the right fat back into the mix; producing animals with higher polyunsaturated fatty acids, intramuscular fat and Omega-3.

This breakthrough research and the practical on-farm trialling has found that the right combination of genetics, management and feeding can alter the fat profile of lamb and produce animals that are themselves healthier and also healthier for the consumer, containing higher levels of what nutritionists call "good fat" – polyunsaturated fat and Omega-3. We have discovered that the product also tastes great, considerably out-scoring standard lamb on succulence and tenderness.

Objectives of the programme

New Zealand lamb is recognised internationally for its high quality but it is sold as a protein food.

The research provided solid, science-based evidence for repositioning it as a sought-after natural health product which meets growing consumer demand for natural healthy food.

The Omega Lamb PGP programme builds on those scientific breakthroughs to improve the nutrient profile of lamb and develop products consumers want to buy, in new and exciting markets. Its goal is to produce a better lamb, fed on specialised chicory and chicory/red clover blends which achieves the right fatty acid profile, at a lower cost of production than traditional grass fed lamb and which is more valuable in the market.

Mike Tate, Omega Lamb Programme Manager, says "We are progressing the initial science, to produce Omega lambs cost effectively on farms, providing a major point of difference for New Zealand lamb and, ultimately, improving returns for all farmers.

"The programme selects lambs at the very top end of natural variation Omega-3 and polyunsaturated content for lamb and farms them in systems that will further enhance their Omega-3 levels.

"They range free on extensive 100 per cent grass mountain pastures in the foothills of the Southern Alps before being moved to pilot finishing farms on lower pastures to graze exclusively on chicory herbs. Their health status is closely monitored from birth, and farmers taking part in the programme manage their properties to strict guidelines based on best practice in animal welfare, food safety, environmental stewardship and health and safety."

The PGP programme is also working to gain market insights to drive product innovation to develop new fresh, processed and health products and determine the most lucrative markets. Alongside this there will be a focus on integration across the value chain to ensure there is a connection with producers, processors and consumers.

Achievements

The animals are a selection of New Zealand white-faced breeds bred specifically for the Omega Lamb programme. In developing the Omega Lamb breed, hundreds of genetic lines were screened for taste and fat characteristics with the very best brought together into the Omega flock at Stag Valley in Lumsden.

To date more than 15,000 lambs have reached the programme's criteria for Omega-3, intramuscular and polyunsaturated fats. They are averaging well over the required level for long-chain Omega-3 claims of 30mg. Only two of the 35 slaughter groups have averaged less than 30mg.

The lambs are achieving an average of three percent intramuscular fat (in loin) against two percent average for New Zealand lamb. Although grain-fed animals can reach five percent intramuscular fat at adulthood, three percent is impressive for a pasture-fed animal under six months old.

Initial product has been trialled in high-end restaurants in Auckland as a pilot with glowing endorsement from chefs.

The breeding programme

In July 2015, 153 sires were released on to 10 Headwaters properties, followed by a further 214 in the autumn of 2016. These were selected from 2000 rams using progeny test data for maternal traits, growth, carcase merit, intramuscular fat and long-chain Omega-3 traits.

The programme incorporates traceability and origin principles. All lambs are tagged, individually recorded, and traced to ensure they have the right genetics, feeding, management and welfare.

The ewe programme and progeny test data is showing positive correlation between fat composition in the lamb and the ewe and between hill ewe condition and carcase fat and there have been continuing gains in intramuscular fat and Omega-3 traits.

This demonstrates there is a 'sweet spot' for improved carcase quality and improved ewe condition, achieved without unwanted characteristics such as excess subcutaneous fat in lambs.

Taste testing

The programme is focusing on identifying the sweet spot where fat levels give the best possible taste and mouth feel. Multiple taste panels have been undertaken, including with leading New Zealand chefs, with uniformly positive results, revealing an almost 'night and day' difference between standard and Omega lamb.

"Many consumers associate red meat with undesirable saturated fat but there is international recognition and conclusive evidence of the health benefits of Omega-3," says Mike Tait.

"With a unique genetic profile and nutrition that enhances Omega-3 levels, grass-fed red meat has a strong heath story, equivalent to a 'shelf' of health supplements: Omega 3, iron, zinc, vitamin B12, vitamin D to name a few. For the young and the elderly, the density and ready availability of nutrients in red meat and offal is of particular value."

Consumer insights

Alongside the breeding programme, the first stage of the PGP programme includes working to gain a better understanding of consumers at the intersection of red meat, nutrition and health. Initial consumer work has focused on New Zealand and western markets and will build to include "new wealth" in markets such as China, India and Brazil.

It will build on the existing research to identify and understand target consumer groups and routes to market. Product concepts and prototype health-focused products are being tested with target consumer groups. While the starting point is lamb as a fresh meat product, the scope is steadily expanding to include manufactured meat products and health formulations.

To differentiate and capture value from innovation, New Zealand companies need to control products all the way to the consumer.

Supply of raw material to third parties for re-processing, packaging and retailing gives few opportunities to grow value. A key part of the Omega Lamb PGP programme's strategy is focus on high value products, manufactured and packed to final consumer specification in New Zealand and with the origin assurance systems to prove this. A pilot scale packaging facility has been set up and special equipment is being installed to measure and manage meat quality characteristics and trace these back to the grower. If successful the ability to measure eating quality and Omega-3 levels in every lamb will be a breakthrough for the programme and potentially a game changer for the wider industry.

A series of health-focused products will be developed at the pilot plant using rapid product development principles. The outcome will be a series of "first-in-class" products with cross-over between the meat and health food market sectors.

Maximising value

Maximising value to New Zealand means producing product on a large scale.

Mike Tate says "The programme aims to underpin the production of one million lambs contributing to health-focused products by 2025.

"This scale requires building the genetics, forage and management information support base for an expanding pool of lamb breeders and finishers, in close co-ordination with other industry providers and PGP programmes.

"We will co-ordinate with other health-focused New Zealand businesses and investigate opportunities to leverage our learnings in the wider New Zealand meat, pastoral and food sectors."

PASSION2PROFIT

The Passion2Profit programme, which started in June 2015, aims to grow and capture the full value available to New Zealand by collaboratively positioning farm-raised venison in new markets as a premium non-seasonal meat, lifting productivity and by better aligning supply and demand.

Achievements for the 2015/16 financial year:

- Marketing companies Silver Fern Farms, Alliance and Firstlight Foods undertook collaborative promotion and sales of Cervena™ venison in non-seasonal markets over the European spring and summer with promising results.
- Collaborative work between Alliance, Mountain River Venison and NZTE is being undertaken to investigate the potential market opportunity in China for Cervena™ venison.
- Deer Industry Quality Assurance standards have been developed and will be implemented over the next year as part of the Red Meat Profit Partnership's Farm Assurance Programme.
- Multiple resources and tools have been developed to help deer farmers with improving production practices through better animal health, feed management and growth management, and genetics.
- The number of Advance Parties established has reached 23, involving nearly 200 deer farming properties. Advance Parties are proving an important means of encouraging practise change and the current number exceeds the original programme target of 21 Advance Parties established by the end of the programme.

KEY FACTS:

Programme start: June 2015

Length: 7 years

PGP funding: $7.4 million

Industry funding: $8 million

REPORT ON THE PGP PORTFOLIO

The Investment Advisory Panel

The independent Investment Advisory Panel (IAP) comprises six members, including the Chair. It provides expert advice to MPI on PGP investment and on the progress of each PGP programme. Decisions on PGP investment are made by the Director-General of MPI.

The members of the IAP are:

- John Parker (Chair)
- Barry Brook (Deputy Chair)
- Sir Maarten Weavers
- Melissa Clark-Reynolds
- Harry Burkhardt
- Steve smith

Kevin Marshall's tenure ended on 31 October 2015 after serving just over six years on the IAP. Joanna Perry's tenure ended on 30 April 2016, after serving more than six years on the IAP, almost three of them as Chair.

Steve Smith joined the IAP on 1 November 2015, and John Parker joined the IAP as Chair on 1 May 2016. Barry Brook was appointed Deputy Chair in April 2016.

The IAP met eleven times in the 2015/16 year, totalling twelve days.

Independent Progress Reviews

All PGP programmes must have at least one full external progress review during their lifetime to assess their progress towards the programme's goals. These are usually completed approximately halfway through a programme's delivery.

Reports of the review findings are published on MPI's website as they become available.

During the 2015/16 year progress reviews were completed for the FoodPlus and SPATnz programmes. Both reviews confirm that the programmes are being well managed and are on track to deliver their respective outcomes.

Programme evaluations

After the completion of each PGP programme an independent evaluation of the programme is commissioned. No programmes were completed in the 2015/16 year.

Financial Audits

Industry co-investors must keep appropriate financial records and make them available for audit on request at any time.

Each programme is financially audited at least once during its operation, either by MPI's audit function or external auditors. The overall administration of the PGP is also subject to MPI's regular internal audit programme.

Two programmes were audited during the year:

- Red Meat Profit Partnership
- High Performance Mānuka Plantations

No major issues were identified by these audits. In some instances minor recommendations were made by the auditors and these were all accepted and implemented by the programmes.

A partial audit of the Marbled, Grass-fed Beef programme was completed during the year, to confirm that minor issues identified in a 2014/15 audit had been fully addressed.

The audit reports are published on MPI's website.

PGP Finances

The Portfolio

The 2015/16 year started with 18 programmes underway and two programmes completed.

During the 2015/16 year the Wool Unleashed (W^3) programme joined the PGP portfolio. This programme is led by The NZ Merino Company Ltd.

As at 30 June 2016 the PGP Portfolio has 19 programmes underway and two completed. The programmes vary in length from three to seven years.

Change to PGP Funding Share

On 1 December 2015 the maximum PGP investment into new programmes was reduced from 50 percent of total programme funding to 40 percent. This change also applies to funding extensions of existing programmes.

Funding for PGP programmes approved before 1 December 2015 were not affected by this change.

Committed Funding

As at 30 June 2016 MPI and industry partners committed $727 million over time to 21 contracted PGP programmes, of which the Crown's PGP commitment is $345 million.

An extension to the Whai Hua PGP programme was approved during the year to enable valuable programme activities to be completed. The programme timeline was extended by six months, to 31 December 2016, and $94,000 additional PGP funding was approved, matched by $142,000 new industry investment.

An extension to the New Zealand Sheep Industry Transformation PGP programme was approved during the year to enable further science work to be completed. The programme timeline was extended by two years to 30 June 2017 and $1.62 million additional PGP funding was approved, matched by $1.62 million industry investment.

PGP programmes must demonstrate that they are beyond business as usual, and have the potential to deliver significant economic and non-economic benefits. PGP programmes are therefore ambitious, often high-risk, and required to adapt over their lifetime to respond appropriately to new knowledge, challenges and opportunities.

Programmes utilise the "fast-fail" approach. This means all projects or work streams have set stages at which any failures or risks are assessed for impact. If a project or work stream is deemed unlikely to succeed then it is stopped, and any relevant lessons are applied to the remaining ones.

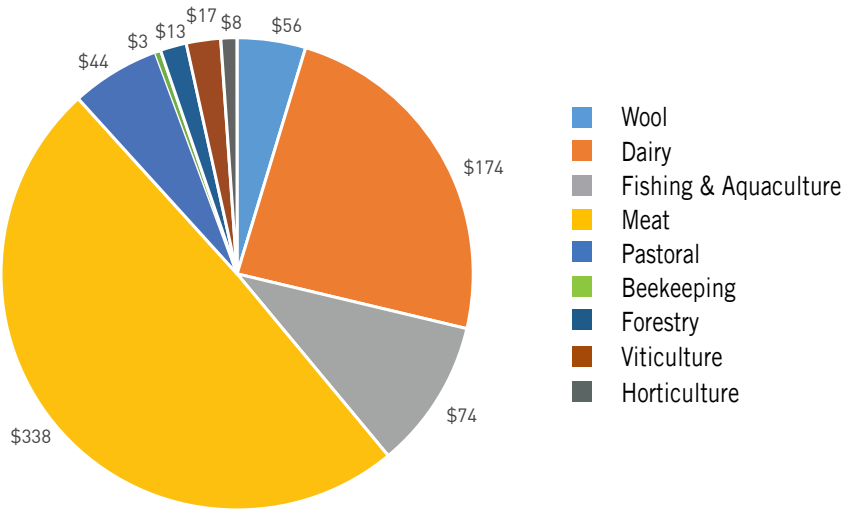
Over the last year the FoodPlus programme prioritised activities as the market opportunities for different types of products became clearer. This resulted in a number of projects being stopped. Accordingly, the total overall programme investment in FoodPlus was reduced and this in turn decreased the total investment for the PGP Portfolio.

The total investment distributed by sector is shown in the chart below.

Funding Paid Out

During the year $45 million of PGP funding was paid out to all PGP programmes. Total Crown funding paid out to the programmes up to 30 June 2016 was $196 million.

Total PGP Investment (in millions)
21 Contracted programmes by sector totalling $727 million



PGP PROGRAMME FINANCIAL SUMMARY

Programme	Committed Funding		PGP Investment Paid Out	
	PGP	Industry	2015/16 Financial Year	Total Programme to 30 June 2016
Innovative Steep-land Tree Harvesting	3,262,500	3,262,500	661,369	3,033,441
NZSTX – NZ Sheep Industry Transformation	16,770,000	16,770,000	1,424,594	15,458,919
Farm^{IQ}	59,342,000	91,387,000	6,208,580	52,966,539
Transforming the Dairy Value Chain	84,610,000	85,660,000	14,388,312	62,665,057
High Performance Manuka Plantations	1,400,000	1,487,768	361,772	866,978
STIMBR (Ended June 2014)	1,186,000	1,465,204	0.00	1,184,031
Clearview Innovations	9,750,000	9,750,000	464,953	7,104,361
Precision Seafood Harvesting	24,021,610	24,023,080	4,820,079	12,377,931
Shellfish – The Next Generation	13,032,452	13,032,452	1,389,219	6,955,830
FoodPlus – Redefining Meat Horizons	29,100,000	29,100,000	2,037,079	7,371,375
Seed & Nutritional Technology Development	7,145,169	7,482,169	1,283,536	3,702,691
Marbled Grass-fed Beef	11,046,562	12,301,466	1,451,218	3,790,593
Whai Hua	2,041,000	2,089,000	340,533	1,671,820
Stump to Pump (Ended September 2014)	1,810,586	1,810,586	0.00	1,810,586
Red Meat Profit Partnership (RMPP)	32,154,636	32,154,636	3,808,305	6,318,317
Pioneering to Precision	5,175,000	5,175,000	1,294,678	2,757,911
Lifestyle Wines	8,125,766	8,843,847	1,348,113	2,430,704
NZ Avocados Go Global	4,281,402	4,281,402	584,227	880,090
NZ Deer Industry Passion2Profit	7,392,000	7,992,000	610,053	610,053
Omega Lamb	12,500,000	12,500,000	1,729,194	1,992,933
W^3 Wool Unleashed	11,049,000	11,049,000	354,674	354,674
Totals	345,195,683	381,617,110	44,560,487	196,304,834

New Zealand Government

October 2016