



Justine's column



Welcome to this edition of Agri-gate. It's hard to believe we're more than half way through 2017. It's been a busy year so far with no signs of slowing down. There have been a number of exciting achievements recently and plenty of activity across many of our funding programmes. Here

are some of the highlights.

Avocado industry celebrates record season

On 4 July, New Zealand Avocado held a successful event at Parliament in Wellington to celebrate the avocado industry's latest record breaking season of \$198 million-up from \$70 million in 2013. They also shared the progress of their New Zealand Avocados Go Global Primary Growth Partnership (PGP) programme with the Ministry for Primary Industries (MPI). This PGP programme is giving the avocado industry the tools to triple productivity to 12 tonnes per hectare and quadruple industry returns to \$280 million per annum by 2023. As you'll see from the figures, this PGP programme, which started in June 2014, is certainly having an impact.



From left: Ashby Whitehead, Chair of the Avocado Industry Council, Jen Scouler, Chief Executive of the Avocado Industry Council, and Todd Muller, MP for Bay of Plenty, at the avocado industry celebration.



Folks gathered the avocado industry celebration.



Hon Nathan Guy, Minister for Primary Industries, speaks at the avocado industry celebration.

Steepland demo

On 3 August, Forest Growers Research Limited held the last of three demonstrations this year of the technologies developed under its Steepland Harvesting PGP programme.

The Steepland Harvesting PGP programme has run a number of successful demonstrations over the last few years. They're a great way of showing the industry and others the achievements of the programme, and generate interest the technologies it has developed to increase both the productivity of forest harvesting trees on steep slopes and worker safety.

You'll find further details of the technology in our June 2017 edition of **Agri-gate (Issue 38)** and on our **MPI website**.



The tele-operated feller-buncher in action at the Steepland Harvesting demonstration.

TE MANA LAMB in My Food Bag

In July, The Omega Lamb Project, one of our PGP programmes, achieved a big milestone with TE MANA LAMB™ selected for the award-winning home delivery service My Food Bag. It has since proven to be My Food Bag's highest rating lamb dish.

TE MANA LAMB™ is rich in polyunsaturated and healthy Omega-3 fats. Up until recently, it was only available at a select number of fine-dining restaurants in New Zealand and Hong Kong since its market launch in summer 2017.

I'd like to congratulate The Omega Lamb Project partners, Alliance Group and Headwaters New Zealand for reaching this milestone.

PGP programme completions

In June, three PGP programmes reached their completion. These were:

- Steepland Harvesting, led by Forest Growers Research Limited (formerly called Future Forests Research Limited), that developed a range of forestry innovations to increase the productivity of forest operations on steep slopes while improving worker safety
- FarmIQ, led by Silver Fern Farms, Landcorp Farming Ltd and Tru-Test Ltd, that ensured the red meat industry better understands all the factors that make a difference to meat quality, to more consistently deliver great eating experiences for consumers and also lift returns for everyone in the value chain.
- The New Zealand Sheep Industry Transformation Project (NZSTX) that has improved returns for New Zealand's fine and mid-micron sheep industry. It has increased the production of market-driven sheep, shifting the balance between New Zealand strong and fine wool production and used product differentiation to generate better grower returns for fibre, meat and other products. It also improved forage, and genetic and animal health outcomes for sheep.

All three programmes are undertaking their final reporting and wrap up activities. As with other completed PGP programmes, we're engaging independent companies to evaluate the programmes and develop reports of their findings.

Once completed, we'll publish these on our MPI website.

Precision Seafood Harvesting PGP programme progress review

Progress reviews are an important part of the governance process for PGP programmes. They generally happen around the midpoint of the programmes, and provide an independent perspective on their progress and recommendations to help them to meet their objectives.

The latest programme to undergo a progress review is Precision Seafood Harvesting (PSH), which is developing new technology that will revolutionise how we fish commercially in New Zealand, and potentially around the world.

PSH has made significant inroads in design, development and testing. PSH aims to help fishing vessels target specific species and sizes of fish and deliver fish in better condition than traditional trawls. The technology and associated innovations, such as the on-board handling systems, are also designed to reduce the impact that the harvesting of wild caught fish has on unintended catch such as juvenile fish and by-catch species by increasing overall survivability of any interaction with the Modular Harvest System (MHS) nets developed by PSH.

Fish in better condition means consumers can expect a higher quality product, and the fishing industry can expect higher commercial gains for their catch. PSH is undertaking a significant testing programme to ensure the technology performs as expected.

As part of the progress review, the reviewers noted that the PSH programme has made steady progress by bringing together industry competitors, which has involved collaboration, energy and innovation, and that PSH technology "clearly delivers much higher quality fish" and is a "major step forward for the industry."

The reviewers have provided recommendations to help ensure the programme delivers on its outcomes. These include revising metrics to focus on active use of the PSH technology, catch volumes and value uplift, prioritising testing of the selectivity and survivability aspects of the PSH technology, and reviewing the quantum and timing of the potential benefits from the programme.

A summary of the findings and recommendations are available on the **Precision Seafood Harvesting** section of our MPI website.

Sustainable Farming Fund 2018/19 round open

On 1 August applications opened for the Sustainable Farming Fund (SFF). There is \$7 million available for applied research projects led by the primary sector that help to boost rural communities, our economy and the sustainability of our environment. This year we're encouraging applications that showcase new and innovative approaches to addressing problems and opportunities in the primary industries.

Off the bat of celebrating our 1000th project supported through the SFF, we are expecting the usual high calibre of applications and are excited to see the innovative projects coming through.

To find out more and to apply, visit the **Sustainable Farming Fund** section of our MPI website.

Afforestation Grant Scheme results

We are very pleased that 5,171 hectares of new forest will be planted by 112 applicants who received support through the Afforestation Grant Scheme (AGS). This year we received 40 more applications than last year which means we are well on our way to achieve our goal of planting 15,000 hectares of new forest by 2020.

The successful applicants have been notified and planting will get underway next winter. The AGS is designed to help establish new forests in New Zealand by providing grants of \$1,300 per hectare to successful applicants.

For more information, visit the **Afforestation Grant Scheme** section of our MPI website.

Support for quake-affected regions – Earthquake Recovery Fund

Last week we announced the results of the Earthquake Recovery Fund (ERF). The fund was set up to support the Hurunui, Kaikoura and Marlborough regions who face significant erosion and damaged land and needed support to investigate long-term land use options.

About \$3.54 million in funding will support eight community projects to help farmers and growers determine what to do with their land following the November 2016 earthquake.

Land owners and land managers also have the option of accessing advisory services to investigate future land-use options, funded through the ERF. A list of approved suppliers of professional advisory service providers is now available.

To view the list, and find out more about the community projects, visit the **Earthquake Recovery Fund** page on the MPI website.

Vet Bonding Scheme

On 14 August applications for funding through the Vet Bonding Scheme will open. The Scheme funds graduate vets who work with production animals in rural areas.

Since the Scheme was launched in 2009, 227 graduate vets have received a total of \$6.89 million. This has helped to address the ongoing shortages of vets. By providing an incentive for graduate vets to work in practices that focus on treating production and working animals, we're supporting the increasing demand for skilled workers in the primary industries.

I encourage vets interested in applying to visit the **Vet Bonding Scheme** page on the MPI website.

Irrigation study

In July, \$50,000 from the Irrigation Acceleration Fund was awarded to Bay of Plenty District Council to fund a water study focused on effective water use and sustainable options for development in the region.

The funding was announced by Economic Development Minister Simon Bridges and Primary Industries Minister Nathan Guy at the 2017 annual Bay of Connections and Regional Growth Programme forum, where a refreshed Toi Moana Bay of Plenty Economic Action Plan was also released.

We are excited about the prospects of the water study as it has the potential to unlock great economic development opportunities for the region.



Funding for the water study was announced in early July at the annual Bay of Connections and Regional Growth Programme forum in Rotorua, where a refreshed Toi Moana Bay of Plenty Economic Action Plan was also released.

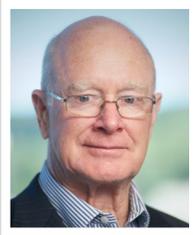
Also in this edition of Agri-gate

- We profile the Seed and Nutritional Technology Development PGP programme
- We shine the spotlight on the giant buttercup control SFF project.

I hope you enjoy this edition of Agri-gate.

Justine Gilliland
Director Investment Programmes, MPI

From the Chair, PGP Investment Advisory Panel



Welcome to this edition of Agri-gate. As with any large programme of work, especially those lasting for a number of years, Primary Growth Partnership (PGP) programmes require effective governance.

The Ministry for Primary Industries (MPI), as a condition of its

investment, requires that each PGP programme has a Programme Steering Group (PSG) that is effectively a board of directors. The makeup of the 'board' includes representation from the programme funders – including MPI and such expertise as the programme requires. While earlier programmes may not have had an independent chair, more recent programmes do, and generally governance is enhanced as a result. An independent Chair is today a requirement imposed by

MPI for new programmes. There is no requirement that the independent chair has particular expertise in the work of the programme – it is their expertise in independent governance that is the requirement.

Independent chairs have proven to be of worth. That worth is primarily governance skills, an independent perspective and the ability to 'referee' possible differences of views, particularly where there are a number of investors.

In addition to enthusiasm and technical expertise, sound business judgement and focus is critical to the success of a programme. The PSG's focus on goals and outcomes and insist on measurement and progress against milestones. Effective PSG's ask the hard questions; separate wishes from facts and are prepared for possible early failure of programme parts and adjustment or redirection where required. In fact, flexibility needs to be a part of all PGP programmes given that they are generally

breaking new ground where some objectives need tweaking, are very occasionally simply not achievable, and occasionally interim outcomes indicate new objectives within the programme's scope.

Given that much of my career has been spent in governance, this aspect of a PSG programme is something I'm passionate about and I'm certain that excellent versus adequate governance can make a large difference to outcomes. I therefore welcome the organisation by MPI of recent governance workshops where more than 60 people from PSG's were able to lift their governance capability. Long may they continue!

John Parker
Chairman, PGP Investment Advisory Panel

PGP Spotlight

Seed and Nutritional Technology Development

The Seed and Nutritional Technology Development Primary Growth Partnership (PGP) programme is developing a suite of new pastoral and supplementary feed products to deliver a number of benefits to New Zealand farmers.

The programme is a partnership between PGG Wrightson Seeds, Grasslanz Technology and the Ministry for Primary Industries (MPI).

Overcoming challenging conditions

New Zealand farmers face a number of challenges from crop and animal diseases to extreme climatic variation. The Seed and Nutritional Technology Development PGP

programme is developing a number of products that will help equip farmers to manage these challenges and improve their productivity, profitability and sustainability.

"All of these projects, and their associated products that we are working to deliver, are high-risk due to the technical challenges involved," says Dr Derek Woodfield, PGP Programme Manager and General Manager Research and Development at PGG Wrightson Seeds. "The flipside is that they also have the potential to deliver significant benefits to New Zealand's pastoral farmers if we are successful."

The programme estimates that successful completion of the programme could result in economic benefits of \$195

million per annum by 2025 for New Zealand's pastoral sector, as well as a number of other non-economic benefits associated with animal welfare and environmental sustainability.

Cultivating success

The programme has growing levels of confidence around successfully commercialising a number of new products. Two products, both supplementary feed crops, are approaching the point of commercialisation. The most advanced, Pallaton Raphno®, is a new supplementary feed crop that has a number of benefits. Trials established around New Zealand have demonstrated improved pest

and disease resistance, higher yield, improved persistence and better water use efficiency compared to current feed crops. All of this adds up to improved crop production, animal productivity and profitability for New Zealand farming systems, particularly sheep and beef. A recent on-farm lamb finishing trial on Pallaton resulted in profitability gains of \$2,000 per hectare compared to forage rape and grass pasture. A limited pre-commercial release of Pallaton across 1,200 hectares occurred this year, with full commercial release due in 2018.

Firefly kale is a new addition to the Cleancrop™ Brassica System, a group of products bred to be tolerant to the sulphonylurea herbicide, DuPont™ Telar®. “Prior to the PGP programme all efforts to produce a Cleancrop kale had been unsuccessful, however a new approach taken in this programme subsequently cracked this problem. Our Field trials have demonstrated excellent control of wild turnip weed, which has been previously impossible to eradicate within a kale crop, and a further 21 weeds,” says Andy Dumbleton, Brassica Breeder and Product Development Manager, PGG Wrightson Seeds. These include difficult to control weeds like fathen, chickweed, shepherds purse, spurrey and willow weed. Firefly kale offers a simple weed management system that eradicates a range of key problem weeds commonly found in brassica crops, resulting in forage yield improvements and cleaner crops. The Seed and Nutritional Technology Development PGP programme is currently planning a limited pre-commercial release for spring 2017 planting, with full commercial release due in spring 2018.

These two products alone could generate economic benefits for the pastoral sector of more than \$50 million per annum by 2025.

The challenge of research

The products being developed within the Seed and Nutritional Technology Development PGP programme involve a significant amount of technical challenges. The programme began with five projects, but decided in 2016 that one of

these projects did not warrant further investment due to inconsistent results.

“Our programme is a process of discovery and innovation, and we’ve learnt a lot to date. It’s meant that we’ve had to be flexible, and direct effort, energy and investment into the projects that are most likely to deliver value to farmers, and abandon those that are not likely to succeed. It also emphasises the risks involved in developing complex products and that success is never guaranteed,” says Dr Woodfield.

“Timeframes are also an important consideration for the programme, and it takes patience,” says Dr Woodfield. “Most new technologies, particularly seed-based products, take many years to develop. Our PGP programme has helped to give us confidence to continue, and accelerate this

development phase. Most products will be commercialised near or soon after the end of the six year programme but the overall gestation period for one of the products will have taken 14 years from first concept to commercial reality, so both patience and perseverance are important!”

More to come

There are four other products still in development, with growing levels of confidence in their successful delivery. In addition to the benefits that will be delivered by Pallaton and Firefly, the other products have the potential to reduce the impact and severity of facial eczema, improve pest and disease resistance, improve animal productivity, reduce methane emissions and improve nitrogen use efficiency in ruminants.



PGG Wrightson Seeds' Fielddays site featuring Pallaton Raphno®

Sustainable Farming Fund spotlight: Tackling the giant buttercup weed on dairy farms

The Giant buttercup is a widespread weed that costs the New Zealand dairy industry more than \$150 million a year in lost milk solids revenue.

Three years ago, AgResearch scientists embarked on a Sustainable Farming Fund project, focused on researching various control methods to, (SFF) in the long-term, help farmers to manage the pest.

Field experiments were carried out and monitored over the three years, to see how the giant buttercup responds to treatments with chemical herbicides, a biological herbicide, pasture growth promoting chemicals, pre-graze mowing and wet versus dry soils.

The project team found there was considerable variability between farms and between paddocks within farms both in the initial pasture species compositions, and in the responses of the buttercup and the grasses and clovers to the herbicides and to mowing. While the variations remain relatively unexplained, the project team believe it is likely due to evolved herbicide resistance, and/or different types of giant buttercup being present.

However, some general conclusions can be drawn from the project. For example, the team found that gibberellic acid and nitrogenous fertiliser have no effect on giant buttercup. They also found that one of the herbicides tested was considerably more effective than the others in reducing the buttercup and in promoting grasses and clovers.

Progress has been made towards cracking the code for managing the giant buttercup and will continue – a new SFF project is getting underway as we speak. The project will develop tools and plans for farmers to use in cost-effectively tackling the toxic weed, building on the work completed to date.

For more information on the findings, visit www.agresearch.co.nz and <http://agpest.co.nz/?pesttypes=giant-buttercup>

The full details of the recently completed project will be published in a science journal paper in due course.



The dramatic effect of pre-graze mowing in the experiment (mown on left, not on the right).



The effect of one of the best herbicide treatments in the experiment two months after treatment (treated in middle, not on the right).



A relatively dense infestation of giant buttercup in a Golden Bay dairy pasture – similar to the pastures chosen for the experiment.