

Agri-Gate

Ministry for Primary Industries
Manatū Ahu Matua



News from the Primary Growth Partnership

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Justine's Desk



In my and Joanna's columns in the last issue of Agri-gate, we talked quite a bit about innovation – the importance of it and how PGP is helping lift and drive innovation.

In a great public recognition of this, the Precision Seafood Harvesting PGP programme was

announced on 15 October as the winner of the Supreme New Zealand Innovator Award, presented to the best overall entry in the New Zealand Innovators Awards for 2014. This followed the programme also winning the award for Innovation in Sustainability and Clean Tech. The awards are run by the New Zealand Innovation Council and aim "to celebrate and recognise innovative high growth New Zealand organisations, and put them on a national stage to celebrate innovation and commercialisation".

The Precision Seafood Harvesting programme is a collaborative programme between Sanford, Aotearoa Fisheries, and Sealord Group. It is commercialising net technology that will allow fish to be landed on fishing boats alive, and in near-perfect condition, while safely releasing small fish and other species before a catch is harvested, to help ensure sustainability and reduce unwanted by-catch.

The potential for a premium seafood product as a result is huge, and is part of the programme's activity also.

In other key achievements lately, the final reports for the first two completed PGP programmes, Stakeholders in Methyl Bromide Reduction (STIMBR) and Stump to Pump, have been published on the MPI website.

The Stump to Pump PGP programme concluded that a biofuels business in New Zealand from forestry residues has potential over the longer term. Having gained confidence through the programme that it is technically feasible, the next stage is to firm up the commercial viability and ensure that the products meet specifications for the intended markets and applications. Reflecting the value chain focus of PGP, having both Norske Skog Tasman and Z Energy leading the programme meant it was possible to identify and consider all the issues from source to end product. They will now progress that next stage of exploration, at which point there is an opportunity to potentially continue towards plant development and ultimately commercialisation.

The STIMBR PGP programme set out to research sustainable and effective alternative treatments for the fumigant methyl bromide. The programme concluded that methyl bromide treatment rates may be able to be reduced by 40 percent, has identified promising methyl bromide destruction technologies, and developed a proof of concept for Joule

Heating technology as a possible niche phytosanitary treatment for high value logs. The work completed by the STIMBR programme will allow industry to keep up the good momentum as it seeks alternative treatments for methyl bromide and the development of technologies to reduce emissions to meet the Environmental Protection Agency's 2020 deadline for no release of methyl bromide to the atmosphere.

Evaluations of these two forestry programmes are now being carried out.

The PGP Expo on 6 November will provide an opportunity to learn more about both of these programmes, and the other 16 programmes currently underway. We look forward to seeing you there.

Justine Gilliland
Director PGP

From the Chair



As Justine says, in the September Agri-gate we talked about innovation, and this month has seen the fabulous “innovation” win for the Precision Seafood Harvesting PGP programme.

However, we have to remember that although innovation is absolutely integral to the PGP, innovation is no good on its own — it has to be commercialised, and the PGP is about boosting productivity and profitability, and delivering

long term economic growth and sustainability across the primary industries. So, in addition to innovation, what is required to do this?

It has become apparent to both the Investment Advisory Panel and MPI that there are some key themes across all of the PGP programmes that are imperative to achieve that translation of innovation to productivity, economic growth and sustainability. These include:

- having excellent research and commercial capabilities;
- having the requisite skill base across the sector; and hence the right education;
- putting things into practice; for example demonstration farms as part of the FarmIQ programme; and
- designing and undertaking extension activities.

To this end it's great to see that MPI has undertaken a number of initiatives to consider each of these. In particular they've held workshops for PGP programme participants to up-skill in these areas and share learnings across PGP programmes.

Progress on each of these themes not only benefits the specific PGP programmes, in my view they are also key spill-over benefits for the primary sector as a whole.

I thought I'd conclude this month's column by noting that the Minister for Primary Industries and MPI's Director-General are currently looking to make new appointments to the Investment Advisory Panel, as some of our current members' terms expire. More information is available on MPI's website. If you're interested I encourage you to make an application, or if you know somebody who might be suitable, please let them know about this opportunity.

Joanna Perry
Chair, Investment Advisory Panel

Programme Spotlight

Seed and Nutritional Technology Development

“Farmers can expect technologies that provide improved profitability and environmental benefits across all New Zealand regions and farming systems,” says PGG Wrightson Seeds Research & Development General Manager Dr Derek Woodfield.

The Seed & Nutritional Technology Development PGP programme is led by industry partners PGG Wrightson Seeds and Grasslanz Technology. The \$14.63 million programme runs for six years and started in February 2013, with the support of \$7.15 million in PGP funding over the life of the programme from MPI and the remaining \$7.48 million funded by the industry partners.

The programme consists of five projects focusing on developing technologies to improve pasture establishment, reduce the impact of pests and diseases,

overcome animal health disorders and reduce both greenhouse gas emissions and losses from drought stress.

“Future farming systems require forages that can meet the nutritional requirements of high-performing animals while mitigating the environmental impacts often associated with highly productive farming systems,” says Derek.

Tackling these challenges are among the benefits sought from this PGP programme for New Zealand farms and farmers.

The programme has made good progress in developing: an effective seed treatment to improve pasture and crop establishment; a new endophyte with improved bioactivity, and a new hybrid brassica with improved water-use efficiency and disease resistance.



Biological Seed Additive trials in Palmerston North

Biological Seed Additives (BSA)

The BSA project is led by Professor John Hampton, Director of the Lincoln University Seed Research Centre, and his team includes researchers from the Bio-Protection Research Centre and PGG Wrightson Seeds. “Our aim is to develop new biological seed additives for increasing the establishment and yield of pasture and arable crops including ryegrass, forage brassicas and cereals,” says John.

In the first 18 months of the programme, research has concentrated primarily on ryegrass and forage brassica trials at sites in both the North and South Islands, initially using BSA applied in prills or granules introduced to the soil at seed sowing, but more recently through applying BSA as a seed treatment. Results have been very site specific, ranging from no significant response to BSA treatment through to significant increases in plant establishment and dry matter production. “This range of responses is expected when dealing with biological products, and we are pleased that BSA at all sites has performed comparably to existing chemical seed treatment products,” says John. Further data will be collected from the trials sown in spring 2014 across the country.



Biological Seed Additive forage rape sampling at Ashley Dene, Canterbury

A cost-effective method for delivery of BSA is an important part of the programme. With the assistance of Dr Craig Bunt from Lincoln University, a BSA seed treatment has been developed. Ongoing storage trials have shown that the BSA remains viable in ambient conditions for eight months after application to seed. “Being able to apply BSA to seed is a positive step forward,” says Wayne Campbell, Formulation and Product Development Manager at PGG Wrightson Seeds. “It will provide us with a delivery mechanism that fits with our current commercial practices for seed treatment.”

New Endophyte Bioactivity

Another project involves protecting pasture from damaging insect pests through the use of novel fungal endophytes. “Selected endophytes are already a well-established technology used by New Zealand farmers to ensure better ryegrass productivity and persistence,” says Dr David Hume who is the project manager from AgResearch. “However, the perfect endophyte is yet to be discovered, as we still have pests that are damaging our pastures.

We are developing endophyte-grass combinations with new bioactivity, particularly against grass grub larvae.”

In order to achieve the project’s goal a multidisciplinary science team of plant, insect, animal and chemistry experts have been assembled from PGG Wrightson Seeds and AgResearch.

“Much of the success of the project relies on ensuring there is a strong compatibility between the grass and the fungal endophyte – a highly skilled task conducted by the plant breeders,” says David. These new grass-endophyte associations must be bioactive against a wide spectrum of insects and cause no harm to our grazing animals. “To date we have narrowed down our choice of endophytes and ryegrass lines to focus project resources on our best bet.” Checks on animal safety are a key component throughout the life of the project, and in all cases so far sheep grazing on ryegrass containing the new endophyte have been healthy with good gains in body weight. “Our goal is to ensure we deliver better protection against a range of important insect pests,



(Above) Improved root growth in ryegrass containing our novel endophyte (L) vs nil (R) under grass grub larval feeding Photo courtesy of AgResearch



(Left) Roots of ryegrass susceptible (L) and resistant (R) to root aphid. The white wax is a characteristic of root aphid damage. Photo courtesy of AgResearch

including grass grub, that occur in NZ pastures while providing better persistence and animal performance,” says David.

“We are already seeing gains in pest protection over the widely used AR1 endophyte strain, with our new ryegrass-endophyte associations having good resistance to root aphid, a pest that AR1 can be quite susceptible to”.

Supplementary Feed Crops

Our New Supplementary Feed Crops project has a particular emphasis on improving animal growth rates in dryland environments. This project is developing a range of improved forage crops that can be strategically planted in situations with reduced soil moisture, high insect and disease pressure and weed competition. These crops will provide flexible, reliable, high quality feed which can be used for finishing livestock.

New hybrid brassica cultivars have been developed that have higher dry matter yields from multiple grazing in dryland conditions, plant persistence under repeat grazings, increased palatability and enhanced insect and disease tolerance.

“Our recently completed water use efficiency trial on one hybrid brassica has shown a 38 percent increase in water use efficiency against traditional dryland forage rape cultivar, Goliath rape, says Andrew Dumbleton, PGG Wrightson Seeds Product Development Manager.

“This is exciting as the development of Goliath rape was a game changer for dryland farmers twelve years ago, and now we have agronomically improved its performance with the next generation of hybrid brassicas.”



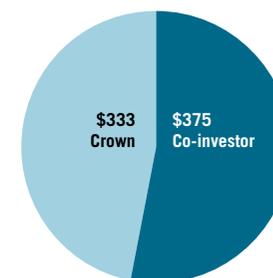
Water Use Efficiency trials at Lincoln, Christchurch

Overview of Primary Growth Partnership Investment

Sector	Programme Name and Co-investor	Total Crown and co-investor investment \$ million	Sector total \$ million	Estimated benefits \$ million (per annum)
Wool	NZ Sheep Industry Transformation (NZSTX) NZ Merino	37	37	250
Dairy	Transforming the Dairy Value Chain Dairy NZ/Fonterra	170		2700
	New Dairy Products and Value Chains Whai Hua Limited Partnership	3	173	8.6
Fishing & Aquaculture	Shellfish – The Next Generation Shellfish Production and Technology NZ (SPATnz)	26		81
	Precision Seafood Harvesting Precision Seafood Harvesting (PSH)	53	79	43.6
Meat	FoodPlus – Redefining Meat Horizons ANZCO	87		630
	Marbled Grass-fed Beef Grass-fed Wagyu Ltd	23		80
	Red Meat Profit Partnership Red Meat Profit Partnership (RMPP)	64		194
	Integrated Value Chain for Red Meat FarmIQ	151	325	1100
Pastoral	A New Vision for Pastoral Agriculture PGG Wrightson Seeds	15		200
	ClearView Innovations Ballance AgriNutrients	20		348
	Precision Application of Fertiliser in Hill Country Ravensdown Fertiliser Co-op Ltd	10	44	120
Beekeeping	High Performance Manuka Plantations Manuka Research Partnership (NZ) Ltd (MRPL)	2	2	925
Forestry	Innovative Steep-land Tree Harvesting Future Forests Research (FFR)	7		100
	Use of Fumigants for Log and Wood Product Exports Stakeholders in Methyl Bromide Reduction (STIMBR)	2.6 (actual cost)		-
	From Stump to Pump Phase 1 (feasibility study) Norske Skog Tasman Ltd (NSTL)/Z Energy	3.6 (actual cost)	13	-
Viticulture	Lifestyle Wines New Zealand Winegrowers	17	17	285
Horticulture	NZ Avocados Go Global Avocado Industry Council	8	8	110
Total			698	

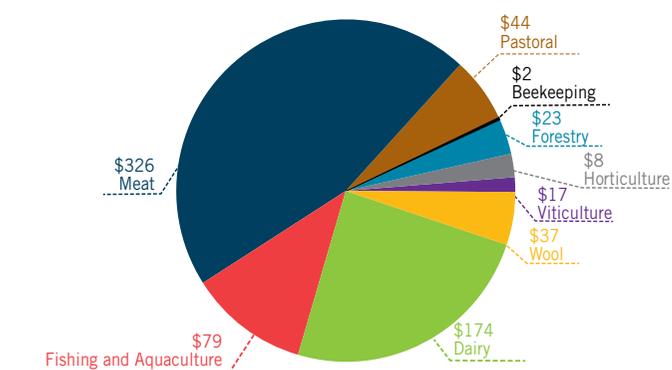
As at 30 September 2014, there were 16 programmes underway and two completed.

Crown/co-investor committed investment (in millions)



Crown/co-investor committed investment by sector (in millions)

Total \$708 million



Total government funding paid to programmes as at 30 September 2014 is \$121.7 million.