



Executive Summary

January – March 2014

Innovation is required all along the dairy value chain if we are to meet the needs of consumers, retailers and branded consumer goods companies for foods that are safe, natural, provide a range of health and wellness benefits, taste good, are convenient, represent high value for both consumers and businesses, and are produced in socially responsible and environmentally sustainable ways. The Dairy PGP programme is supporting this through delivering research, training, and knowledge transfer, on both sides of the farm gate.

Pre Farm Gate

The two major themes of the pre-farm gate component of the Dairy PGP programme continue to perform as planned. While progress has been made across all areas of the programme, specific highlights for this quarter include:

Theme 1: Innovation to create on-farm opportunities

The aim of the theme is to increase the productive potential, resource use efficiency and product value behind the farm gate.

As part of the **Gene Sequencing project** Livestock Improvement Corporation (LIC) have discovered variations of the ‘fat gene’ that affects milk composition. This is one of the most exciting discoveries from the project to date.

All cows have this ‘fat gene’, but the variations discovered provide a genetic explanation as to why some cows produce higher fat content in their milk than others. This discovery is one of only a few in the world where the underlying gene affecting differences in milk composition has been identified. It will now be used for LIC’s genomic selection programme for AB sires, and drive further genetic gain improvements of the NZ dairy herd. The findings have been peer reviewed and published in the online journal PLoS ONE.

This ambitious project is building and applying state-of-the-art genomic technologies to find gene variations (markers) linked to important dairy cow traits such as mastitis, milk composition, production and animal health. To date, the programme has discovered 11 such markers.

Theme 2: Capability and Capacity

This theme aims to improve on-farm decisions through building industry capability and knowledge, up-skilling rural professionals, development of support networks, and attracting more people into industry.

The **Dairy Effluent Warrant of Fitness** programme was launched at the Waikato Effluent Expo in March¹, a website has been created (www.effluentwof.co.nz) and an information brochure produced. This WoF helps farmers understand all the requirements to ensure their effluent system is fit for purpose and capable of being compliant 365 days of the year. WoFs are undertaken by an assessor and farmers will receive a report with practical actions that they can undertake.

¹ The Waikato Regional Council's fourth Waikato Effluent Expo held at Mystery Creek had record turnout of more than 650 attendees. Over 50 exhibitors were on show with the aim of supporting farmers who want to boost farm profits while minimising their environmental impacts.

Addressing ***Farmer mental wellness*** forms part of the People aspect of the programme. The ‘Managing Moods and Mates’ workshop at the Dairy Women’s Network (DWN) conference in March attracted more than 100 farmers. This workshop focused on stress and the serious consequences not only for the individual but also for families and the general farming community. Participants came away knowing:

- What to look for; when does stress become distress
- What to say and do when others are affected
- How to reach out when you are affected.

This is just one example of activity that fits into the Farmer Mental Wellness Strategy developed under this PGP programme in collaboration with AgResearch, Federated Farmers and the Mental Health Foundation.

Over 20 businesses have completed the 2013-14 Mark & Measure - ***Farm Business Governance*** programme for large dairy businesses (operating more than one farm). This pilot programme drew on farmer interviews, existing process reviews, analysis of large business databases, existing governance training and consultation with farmers, the Institute of Directors, and banking, accountancy and consultancy companies. The programme includes five in-house days spread over twelve months, with on-farm activities in between. Delivery began in March 2013.

The evaluations by each of the attending businesses showed a significant improvement in their governance practices, with many able to negotiate better banking arrangements as a consequence. All reported that their business stakeholders now have much greater confidence in their business. Future delivery of the programme is now funded independent of PGP through sponsorship and attendance fees, and three courses involving 28 businesses are scheduled for 2014/15.

Post Farm Gate

The use of external experts in a review and advisory capacity is a key element of management of the post-farm gate work and assures both Fonterra and MPI of the quality of the technical work being undertaken.

The third quarter of 2014 has seen significant external expert reviews of both the Creating and Managing Food Structures, and Manufacturing and Supply Chains themes. In both cases the external experts were positive about the quality of the thinking and work within the Dairy PGP programme, and they also provided suggestions for further improvement, many of which are now being implemented.

Theme 3: Creating & Managing Food Structures

The development of science and technology for a natural cheese slice via an alternate make process will come to an early end in June 2014 with the successful delivery of an option for a natural “Swiss” slice. It has become clear that the regulatory environment is unfavourable for taking a natural slice approach with other cheese types, and attempting to change these standards and regulations will take at least 10 years with no guarantee of a favourable outcome, making further work commercially unattractive. The science and technology developments will be reused as part of future work in the programme.

Theme 4: Transforming Manufacturing & Supply Chains

As a trading nation, a fair basis for acceptance of products by importing countries is important to the reputation and economy of NZ. The Codex Alimentarius Commission is an intergovernmental organisation charged with the global harmonisation of food standards to protect consumers and encourage fair trade. Work from the PGP programme on the statistics of measurement uncertainty were presented at the recent Codex Methods of

Analysis and Sampling meeting as part of the NZ delegation's input to a current work item on importation standards.

Theme 5: Robust Health & Wellness Benefits

Decline in skeletal muscle mass and quality is one of the unpleasant realities of ageing. However, with appropriate nutrition and exercise this process can be slowed, enabling people to lead active and healthy lives for longer. Preliminary results from a study on the impact on middle-aged men of consuming milk protein – have shown an immediate and positive effect of a single, large serving of milk proteins on muscle activation and the synthesis of muscle fibres. This PGP work is a first step towards development of science-backed products to help consumers remain active longer.

Results on Vitamin D content from a breast milk composition study, commissioned as part of the PGP programme and conducted in Malaysia, were presented at an International Life Sciences Institute seminar. These results – which showed a low level of Vitamin D in breast milk – will help to raise awareness of the nutritional needs of pregnant and lactating women, and the role that nutritionally fortified foods can play at this important stage of life.

New Publications and Capabilities

Publication of results has continued with eight papers submitted or published in the third quarter and five presentations made at scientific conferences.

An objective of the PGP programme is development of new research talent. This quarter, three Masters Students completed their projects and submitted a Thesis.

Investment

Total investment in the Dairy PGP programme during the third quarter of the 2014 financial year was \$6,719,782, of which industry contributed \$3,471,806 and MPI \$3,247,976.