

## QUARTERLY PROGRESS SUMMARY: January – March 2017

### A New Vision for Pastoral Agriculture through Seed and Nutritional Technology Development

#### Summary of progress during this quarter

- AR501 selections continue to perform well in the internal and external trials, and in on-farm evaluations. Pest resistance trials have been completed and the preliminary results indicate better grass grub and black beetle of perennial ryegrass plants containing AR501. Argentine stem weevil and root aphid resistance damage is also reduced in the AR501 selections. The nucleus seed multiplication of GPT12011 AR501 was harvested in February 2017 with an 88% endophyte transmission.
- The effect of PGP-endophytes on facial eczema spore counts are being assessed under field conditions. Seeds increase of our PGP-endophyte delivered the seed for larger scale animal grazing and agronomy trials. The histology and haematology results from our first animal toxicology study have shown no adverse effects in small animal studies.
- Our feed conversion efficiency project is on track with excellent progress in two key areas. Material has been sown for a field trial that will determine the quantity, seasonal variation and type of our key compound that is being produced. Furthermore progenies from approximately 300 crosses have been sown in the glasshouse for screening and selection.
- A pre-commercial release of Pallaton raphanobrassica has progressed well over the past quarter with approximately 1200ha sown across New Zealand, including sheep, beef and dairy systems. Monitoring and feedback of a range of these farms has provided excellent data on agronomic performance and animal liveweight gain.
- A pre-nucleus HT kale crop has been successfully harvested and new interspecific brassica hybrids have been produced.

#### Key highlights and achievements

- Our elite perennial ryegrass selection with AR501 endophyte has improved bioactivity and has shown excellent agronomic performance, outperforming more than 100 other entries across 8 locations in New Zealand. Our first selection has been entered in the official National Forage Variety Trials. The animal safety trials have continued to provide strong animal performance results without any adverse animal health problems demonstrating the animal safety of this endophyte. The replacement nucleus seed crop harvested in 2017 had 88% endophyte transmission.
- We have demonstrated improved water-use efficiency (+38%), aphid tolerance (+32%), clubroot resistance (100%), lower glucosinolate levels (-80%), excellent seed yield potential and improved agronomic performance (+14% DM yield) of our new hybrid brassica compared to Goliath rape across a range of regional sites. Furthermore our cattle grazing trial resulted in ~30% higher liveweight gain per hectare without any increase in brassica associated liver disease. Initial on-farm studies have also shown strong improvements in lamb finishing systems with >\$2000/ha profitability gains compared with forage rape and grass pasture.
- A nucleus crop of Pallaton raphanobrassica and two further crops grown in Canterbury this summer have been successfully harvested. Approximately 1200 ha of Pallaton were sown across NZ in 2016/17 and DM yield and liveweight gains to date have been very encouraging.
- HT-C Kale is proving tolerant to Telar herbicide under worst case scenarios and is now being increased for agronomic evaluation at multiple locations. A pre-nucleus seed increase has been harvested in Canterbury.

## Upcoming

- A major field trial for our improved feed conversion efficiency project will run over the next two quarters and a major screening and selection project of approx. 300 crosses will continue.
- Genetic control of our AR501 endophyte will be determined in the next quarter and will determine the optimal method for progressing to a commercial product in both diploid and tetraploid perennial ryegrass. Screening and selection for improved grass grub resistance will continue.
- Results from the pre-commercial release of Pallaton raphanobrassica will be summarised and reported. A stand at the national field days at Mystery Creek will highlight the information we have developed around this product.

## Investment

<b>Investment period</b>	<b>Industry contribution</b>	<b>MPI contribution</b>	<b>Total investment</b>
During this Quarter	\$301,849	\$231,178	\$533,027
Programme To Date	\$5,177,729	\$4,653,048	\$9,830,777