

## QUARTERLY PROGRESS SUMMARY: April - June 2016

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

#### Summary of progress during this quarter

- A second nucleus multiplication of GPT12011 AR501 was planted in early autumn 2016. Selections with AR501 also continue to perform well in the agronomic trials and new selections have been successfully entered into 2016 plot trials and on-farm evaluations. We continue to focus on getting higher endophyte transmission levels at diploid and tetraploid levels. Pest resistance trials have been completed and the preliminary results indicate better survival of endophytic plants.
- The impact on PGP-endophytes on facial eczema spores has started to be assessed under field conditions, although some methodology issues need to be resolved for future studies. Transmission levels of PGP-endophyte are being reassessed on field produced seed and seed from the best parental lines has been sown at Lincoln to produce seed for agronomic and animal grazing trials.
- We have continued to make excellent progress on traits that should improve feed conversion efficiency and reduce nitrogen emissions from ruminants. Furthermore the expression and 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% yield advantage, 32% higher aphid tolerance, 80% lower glucosinolate levels of our new hybrid brassica compared to Goliath rape. Our animal grazing trial also resulted in ~30% 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.
- HT kale continues to make strong progress and we now have a good understanding of timing and application rate effects across regions.

#### Key highlights and achievements

- The replacement nucleus seed crop of our perennial ryegrass with AR501 endophyte has been sown. This elite selection 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 National Forage Variety Trials. The animal safety trials have continued to provide strong animal performance results without any adverse animal health problems.
- Demonstration of the improved water-use efficiency (38%), aphid tolerance (32%), clubroot resistance (100%), excellent seed yield potential and improved agronomic performance of our new hybrid brassica across a range of regional sites. Initial on-farm studies have also shown strong improvements in profitability of lamb finishing systems.
- The first seed increase for our new brassica hybrid has been successfully harvested and a nucleus increase has been sown in Canterbury.
- HT-C Kale is proving tolerant to Telar herbicide and is now being increased for agronomic evaluation at multiple locations.

#### Upcoming

- The forage quality attributes in our improved feed conversion efficiency project will be known.
- Information on expanded insect tolerance from our new endophyte bioactivity project
- Our new brassica hybrid breeders seed crop has been sown and should be harvested in late-January 2017.

#### Investment

Investment period	Industry contribution	MPI contribution	Total investment
During this Quarter	\$199,741	\$297,530	\$497,271
Programme To Date	\$4,158,919	\$4,000,221	\$8,159,140