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# Genetic Improvement in a Texel Breeding Operation: A case study & Maximising Pedigree Accuracy for Genetic Gain: A comparison of DNA- assigned parentage and lambing book assigned parentage



A report prepared on behalf of

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**Genetic Improvement in a Texel Breeding Operation: A case study**  
**&**  
**Maximising Pedigree Accuracy for Genetic Gain: A comparison of**  
**DNA-assigned parentage and lambing-book assigned parentage**

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## Abstract

There were two main aims to this research. The first was to carry out an investigation of the genetic gain of Landcorp Farming Limited's Waikite Texel breeding operation. This was in order to identify factors that may have been limiting  $\Delta G$  and the financial return of the system and make recommendations for improvement.

It was found that the achieved mean  $\Delta G$  of 33¢/ewe/year was less ( $P < 0.05$ ) than that predicted for the Innervalue Fat Index at 97¢/ewe/year. Financially the system was found to have made a net return over the course of the studied period; however, this was less than what was predicted as possible. The main cause of this shortfall was the majority of genetic selection being imposed on live-weight BVs rather than Index values. This investigation also found that there was little room for improvement in the ewe and ram generation intervals with hogget mating and maintenance of current levels being recommended for L. While the ram selection intensity had little room for improvement, the ewe selection intensity did and this is achievable by imposing less selection pressure on structural traits and more on genetic merit.

The second aim of this research was to compare lambing-book dam records and DNA-assigned dam records in order to identify management practices that would target the minimisation of pedigree identification error. Triplets and lambs born to older dams were found to be the groups most at risk of having incorrect lambing-book data, while singles had a lower mean probability that the DNA identified dam was correct.

Although DNA parentage testing was not found to financially benefit a system, it did offer the opportunity to reduce pedigree error through the use of a variety of practices. These practices include: single sire mating of ewes, lambing ewes in mobs of equal or near equal proportions from each sire group, lambing in mobs based on scanning rank, carrying out two or more checks per day on ewes during lambing, and increase the number of markers used in the DNA parentage assignments of groups most at risk from incorrect parentage assignment if financially feasible.

## **Preface**

The figures presented in this research are estimates only and intended to give a guide to improving system management rather than being exact performance figures. They should therefore be used accordingly.

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