Marker detection in beef cattle

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Research Institute: ARC, University of Pretoria, Limpopo Department of Agriculture, USDA-ARS

Research focus area: Livestock production with global competitiveness

Aims of the project

- To detect quantitative trait loci (QTLs) for tolerance to ticks in beef cattle

- To detect QTLs for growth and efficiency in beef cattle

- To detect QTLs for carcass traits in beef cattle

Executive summary

The recent sequencing of the bovine genome has created opportunities for interrogation of the genetic basis underlying the expression of economically important traits in livestock production. In this research, we investigate the potential application of genetic markers to improve traits that are either difficult or expensive to measure. This project consists of two phases: Phase I focuses on the establishment of an F2 discovery population formed from Nguni cows bred to Angus bulls as parental breeds; Phase II involves the collection of phenotypic data on traits of interest i.e. tolerance to ticks, post-weaning growth rate and feed efficiency, and carcass traits. We report on the progress achieved regarding Phase I of the project. The breeding of the Nguni cows to Angus bulls using artificial insemination has been completed. The first crossbred calves from this breeding were born in 2011 and they have been in turn inter se mated in 2013. The first second generation calves are

expected towards the end of 2013. The training of technical staff on collection of tick count data has been completed and the results indicate that there is sufficient variation within the Nguni breed. In addition, new protocols have been developed for DNA extraction from hair that would be suitable for genotyping using the 50K SNP chip.

List of outputs

- A tick count booklet for tick species identification
- Students and technicians were trained on collection of tick count data
- Ms Mapholi (PhD student in the project) presented a poster at the 45th Congress of the South African Society for Animal Science held in July 2012 in East London Eastern Cape.X

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