

ABSTRACT

Dairy goat populations in Kenya consist of mainly exotic breeds and their crosses with indigenous goats. Genetic improvement efforts have mainly focused on crossbreeding between exotic breeds and local populations to improve both milk and meat. This has resulted in various dairy goat genotypes in the country, their genetic diversity, performance and profitability are not documented. The availability of GoatSNP50 Bead Chip developed by the International Goat Genome Consortium and current genotyping procedures reveals it is practical to implement genomic selection in goats. The overall objective of this study is to contribute to increased dairy goat productivity through the analysis of genetic and economic aspects in implementing genomic selections to dairy goat breeding programmes in Kenya. The study will be conducted in Homa-Bay County (Asego Sub-County), Nyeri County (Mukurweini Sub-County) and Meru County (Central Imenti Sub-County). These are the entry points of the main dairy goats (Saanen, Alpine and Toggenburg) in Kenya. The dairy goat keeping households will be purposively selected basing on being a member of dairy goat farmer group and owns at least two mature does which matches the genotype of specific County. Structured questionnaire will be administered to the selected dairy goat keepers. Genetic diversity among the existing dairy goat genotypes will be investigated using model-based clustering ADMIXTURE 1.3.0 software. Loci subjected to selection will be determined by using the signatures of selection in the genome. The Economic values for the traits in the breeding objective will be derived using partial budgeting method. A deterministic simulation program, will be used to model the breeding programme and estimate the rates of genetic gain and inbreeding. The results of the study may form the basis for recommending certain breeding programme for different dairy goat genotypes and also a starting point to better address future breeding and management policies in dairy goat.