Genetic Parameter Estimation for Some Production and Reproduction Traits in a Large-Scale Dairy Farm in WL1 Agro-Ecological Zone

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Estimation of genetic parameters of production and reproductive traits is a pre-requisite for genetic selection and improvement of dairy herds. The objective of this study was to determine the factors affecting production and reproductive performance of crossbred cows raised under semi-intensive management system in the WL1 agroecological zone. Performance records of 100 cows in 5 parity groups from a large-scale Government farm in Siringapatha were selected after screening for missing information. The cows were from four crossbreds genotypes, i.e. Jersey cross, Sahiwal cross, Australian Friesian Sahiwal cross, and Girolando cross. The traits studied were lactation yield (LY), lactation length (LL), age at first calving (AFC), number of services per conception (NoS), calving interval (CI), age at sexual maturity (ASM) and calf birth weight (CBW). Analysis of variance (ANOVA) procedure was carried out using crossbred genotype, parity, LL, LY, AFC, NoS, CI, CBW and ASM of cow as fixed effects, and Duncan's Multiple Range Test was used for mean comparison. ANOVA based half sib analysis method was used for heritability estimation. The mean performance values of LY, LL, AFC, NoS, CI, CBW and ASM of the farm were 958.04 liters, 199 days, 58 months, 1.44 services, 13 months, 18.98kg, and 27.60 months, respectively. There was no significant effect ($P>0.05$) of cow genotype on any of the traits owing to greater within breed variability observed. Cows in the fourth and later parities had significantly higher LY and CBW than those of lower parities ($P<0.05$). CI increased significantly with NoS ($P<0.05$). ASM had a significant ($P<0.05$) but weak positive correlation with AFC ($r = 0.22$). The heritability estimates of CBW, LL, LY, NoS and AFC were 0.07, 0.24, 0.22, 0.80 and 0.05, respectively showing the evidence of genetic variability existing within the herd for selection. Improved management conditions could enable revealing of true differences among the genotypes.

Keywords: Breed Comparison, Dairy cows, Heritability estimation, Performance evaluation.

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