

ABSTRACT

Performance data of Sahiwal cows born between 1972 and 2004 with milk records between 1976 and 2008 were analysed to estimate genetic parameters for longevity in Sahiwal cattle in Kenya. Measures of longevity related to productive life were: time between birth and last milking record in months (Long_1), time between first calving and last milking record in months (Long_2), number of lactations initiated (Long_3), total number of days in lactation over all lactations (Long_4) and total milk yield over all lactations (kg) (Long_5). Measures of longevity related to survival (Long_6) were defined as survival from birth to 44, 56, 80, 92, 104 and 128 months; or survival from first calving (Long_7) to 12, 36, 60, 84 and 96 months. Longevity measures related to productive life were analysed using linear models while those related to survival were analysed via threshold models. Heritability estimates for measures of longevity related to productive life were low, and ranged from 0.038 ± 0.032 to 0.097 ± 0.04 . Estimates of heritability for longevity measures related to survival were higher and ranged from 0.084 ± 0.053 to 0.119 ± 0.035 . However, survival from first calving to predefined ages had higher heritability estimated (0.09 to 0.12) compared to survival from birth (0.084 to 0.104). Estimates of heritability obtained using threshold models (survival measures) were higher than those estimated using linear models (productive life measures). Heritability estimates for survival measures were higher in the later periods and were higher for Long_7 than Long_6. Long_7 had highest additive genetic variance and heritability estimate, and should therefore be used for genetic evaluation of longevity in Sahiwal cattle in Kenya. This study has also provided part of genetic and phenotypic parameters to enable inclusion of longevity in the breeding objective for the Sahiwal cattle improvement programme.

Keywords: linear models, Kenya, productive life, sahiwal, survival, threshold models