ABSTRACT

A major drawback of improving feed efficiency in beef cattle enterprises is to identify measures of feed efficiency which do not require feed intake information on an individual animal basis. Kleiber Index, (KI) and relative growth rate (RGR) are alternative measures which do not need individual measurement of intake and can be used select for improved feed and growth efficiency in relation to their body size. The aim of this study was to estimate genetic parameters for measures of feed efficiency and growth traits for the Boran beef cattle in Kenya. A total of 1348, 2209, 2183 and 2184 weight records were available for birth, weaning, yearling and 550-day weight records, respectively, were available for animals born between 1973 and 2019. The traits derived were growth rates (ADG), adjusted weights (WA), KI and RGR at weaning (205 days), yearling (365 days) and 550 days. Genetic parameters were estimated using a maternal genetic effects model. Direct heritability estimates for direct heritability estimates for ADG ranged from 0.12±0.04 for ADG205-365 to 0.27±0.02 for ADGB-205. Estimates for WA were in range of 0.05±0.05 at to 0.10±0.05 at 550 days. Estimates for KI were 0.13±0.05 at 205 to 0.29±0.05 at 550 days. For RGR estimate direct heritability at 205 was 0.21±0.05, 0.19±0.04 at 365 and 0.33±0.05 at 550 days. The direct-maternal genetic correlations for WA, ADG, KI and RGR at 205 days were -0.30±0.05, -0.30±0.04, 0.90±0.05 and -0.72±0.04, respectively. Alongside growth traits, Kleiber Index and residual growth rate had substantial heritability estimates, implying potential for improvement through selection.

Keywords: Climate change, greenhouse gases, kleiber index, relative growth rate.