

Tamirat Tessema Teklemichael 2012: Genetic Parameters for Pre-weaning Growth and Some Body Measurement Traits of Crossbred Cattle among Thai Native, Brahman and Charolais (and/or Kamphaengsaen) Breed in Thailand. Master of Science (Tropical Agriculture), Major Field: Tropical Agriculture, Faculty of Agriculture. Thesis Advisor: Assistant Professor Panwadee Sopannarath, Ph.D. 61 pages.

Genetic parameters for birth and weaning weights and some body measurement traits in crossbred beef cattle among Thai Native (N), Brahman (B) and Charolais (C) raised in central part of Thailand were estimated using MTDFREML. Single trait, bivariate and multiple trait models were employed to estimate the direct heritability (h^2) of birth weight (BWT), weaning weight (WWT), weaning hip height (WHH) and weaning body length (WBL), maternal heritability (m^2) and fraction of variance due to maternal permanent environmental effect (c^2) for BWT and WWT, and direct genetic correlation between all traits by fitting contemporary groups (CG) and sex as fixed effect and weaning age (WAGE) for WWT, WHH and WBL, breed fraction of B and C as covariate. Estimates of h^2 ranged from 0.46 to 0.51, 0.43 to 0.70, 0.87 to 0.97 and 0.45 to 0.50 for BWT, WWT, WHH and WBL, respectively. The estimate of m^2 and c^2 were 0 and 0.01 for BWT, 0 to 0.18 and 0.19 for WWT, respectively. The direct additive genetic correlations between traits ranged from 0.48 to 0.97. Single, bivariate and multiple trait animal models fitting only additive effect was fitted the data better than the alternative models used to analyze the data set. Further research is needed due to the problems associated with the estimation of maternal components. Any attempt of considering the result of this study for breeding program of the studied population could lead to an accelerated genetic improvement.

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Thesis Advisor's signature

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