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Abstract

Cattle in Ethiopia play a significant role in almost all the farming systems. However, Ethiopian cattle breeds have not been studied adequately. The existing types, their number and genetic potentials are not well documented. This study was conducted to estimate genetic distance and magnitude of genetic diversity between and within five indigenous Ethiopian cattle breeds namely Horro, Sheko, Arsi, Abigar and Guraghe highland, and to see the relationship between genetic and geographic distances. Genetic relationships were investigated using three primers, which generated a total of 33 both monomorphic and polymorphic loci. The gene diversity obtained in this study was moderate and analysis of molecular variance (AMOVA) revealed that most of the genetic variation is held among individuals within breed. Among the five breeds, the highest gene diversity was observed in Sheko, which previously was grouped under humpless cattle where as the lowest gene diversity was observed in Arsi, which belongs zebu cattle type. Significant level of breed differentiation was observed except between Guraghe highland and Abigar, and Guraghe highland and Arsi. Similarly, the smallest genetic divergence (distance) was between Abigar and Guraghe highland whereas the largest was found between Guraghe highland and Sheko. The Sheko breed, as previously considered to be of taurine origin, formed distinct branch from the rest of the breeds and Horro showed an intermediate distance from the other breeds as it was believed that the breed resulted after cross breeding of sanga and zebu proper. The genetic distance observed in this study and the geographic distances are not significantly correlated.

Key words/phrases: cattle, breed, gene diversity, genetic distance, RAPD, primer**.**