

ID 101

Characterization of inherently small indigenous cattle in Sri Lanka

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Abstract

Indigenous cattle in Sri Lanka are a major neglected genetic resource that will become endangered if not preserved. This study was carried out to describe a geographically isolated inherently small indigenous cattle (SIC) population in Mannar and Jaffna districts in the Northern Province of Sri Lanka. Farming system information and phenotypic parameters of each animal were recorded, and data were statistically analyzed using SPSS software. The mitochondrial gene cytochrome C oxidase I (COI) was used to assess the SIC's divergence from reference genotypes. Thirty-four animals were sampled for phylogenetic comparison where DNA extracted from the selected samples were sequenced to capture the diversity of COI gene. Reference sequences were retrieved from National Center for Biotechnology Information for comparison using MEGA X software. Results revealed that SIC are reared for purposes such as milk production, draught power, meat production, manure, and cultural activities in both districts. Since the system of rearing is extensive management with grazing on natural grasslands and shrubbed lands, the SIC are reared as a low-input activity in both the study areas. SIC in both locations appeared to be well adapted to the high environmental temperature conditions prevailing in the respective areas (average ambient temperature of 32 °C in Mannar and 31 °C in Jaffna). SIC could be generally described as a cattle type with a small body carrying a narrow head, small ears, and a brownish coat with short hair. Comparison of phenotypic characters showed no significant difference between the cattle populations from the two study areas. The phylogenetic clustering pattern of the SIC from two geographical regions occupied the same cluster with *Bos indicus*, and separated from *Bos taurus* cattle, suggesting that *Bos indicus* and small indigenous cattle from two geographical regions have a close genetic relationship. The findings of the study will help in drawing conservation strategies for the indigenous cattle genetic resources of the country.

Keywords: Small Indigenous Cattle, Sri Lanka

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