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Characterization of mitochondrial genotypes in the foundation herd of the Canchim beef cattle breed

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ABSTRACT. The Canchim (5/8 Charolais + 3/8 Zebu) beef cattle breed was developed at Southeast-Embrapa Cattle to take advantage of hybrid vigor and to combine the higher growth rate and beef quality of Charolais with tropical adaptations of Zebu. The development of three lineages (old, new, and crossbred) has increased its genetic basis. The genotypic origin (*Bos taurus* or *Bos indicus*) of the mitochondrial DNA (mtDNA) of the Canchim breed was unknown. We characterized the mtDNA genotype of this founder herd by allele-specific polymerase chain reaction. The 173 founder Zebu females (62 Indubrasil, 3 Guzerat, and 108 Nellore) and their 6749 offspring were identified. The frequency of *B. indicus* mtDNA ranged from 1.15 to 2.05% among the descendants (N = 6404) of each maternal line with available DNA, and among animals that were alive (N = 689) in December 2007 among the three lineages. Though mtDNA characterization can be used to direct animal selection, the low frequency of *B. indicus* mtDNA impairs the evaluation of its effects on production traits in these animals. The high prevalence of *B. taurus*

mtDNA in Canchim proves that the founder Zebu females from the Indubrasil, Guzerat and Nellore breeds were obtained from crosses of Zebu sires with local *B. taurus* dams.

Key words: Allele-specific polymerase chain reaction; Bovine; Maternal inheritance; Mitochondrial DNA

