

***Bos indicus* or *Bos taurus* mitochondrial DNA - comparison of productive and reproductive breeding values in a Guzerat dairy herd**

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ABSTRACT. The observation of bovine mitochondrial DNA (mtDNA) polymorphisms allows the separation of American zebu cattle, according to its maternal lineage ancestry, into two groups: one with *Bos indicus* mtDNA and other with *Bos taurus* mtDNA. The aim of the present study was to determine the productive and reproductive differences between these two groups, in a Guzerat dairy herd. The genotyping of a sample of 56 animals allowed the categorization of most of the 3835 animals in the pedigree file. The production file included 3528 calving and 3198 lactation records from 729 cows, born during the years 1947 to 2007. The traits considered were: lactation milk yield (LMY); days in milk (DIM); age at first calving (AFC), and calving interval (CI). Heritabilities and breeding values were estimated using an animal model. The regression of the average breeding values per year of birth indicated the genetic trends of the herd. The heritability coefficients estimated for LMY, DIM, AFC, and CI were 0.42, 0.43, 0.20, and 0.10,

respectively. The genetic trends were similar for both groups, pointing to an improvement in the productive and a worsening in the reproductive traits. The two groups differed significantly regarding the average estimated breeding values for LMY, DIM and AFC, in the starting period, until 1970, but no differences were observed in the more recent years, after 1970. The segregation between the groups existed in the starting period, probably because the *Bos taurus* contributions to the herd had occurred more recently at that moment. The conclusion is that mtDNA has no significant effect on these traits.

Key words: *Bos indicus*; *Bos taurus*; Mitochondrial DNA; Guzerat; Production; Reproduction