NONPARAMETRIC SURVIVAL ANALYSIS OF THE AGE AT FIRST CALVING IN NELLORE FEMALES: A SIMULATION STUDY

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ABSTRACT: Time records (in days) until the first calving from Nellore females were simulated, incorporating right censoring, with the aim at estimating survival probabilities and hazard rates associated with such event through the nonparametric method of Kaplan-Meier of survival analysis. The risk function of Weibull from a female in the time t, as continuous dependent variable, was modeled including the fixed effect of herd (five levels) and the random effect of sire (10 or 25 levels) with sire variance of 0.02 or 0.08, that combined gave origin to distinct four scenarios: I (10_0.02); II (10_0.08); III (25_0.02) and IV (25_0.08). The percentages of censoring per scenario were, respectively, of: 26.44 and 28.32% at I and II; and 18.40 and 19.32% at III and IV. There were significant differences among the survival curves of the herds and sires (fathers), of each scenario, what means that they were statistically different between themselves for the reproductive precocity of their females (daughters). In the animal genetic improvement, the sire whose survival curve decreases faster in the time produces daughters that have the first calving earlier, what justifies its use as breeder aiming at reducing the age at first calving of the females into the herds.

KEYWORDS: Beef cattle; censoring; failure; Kaplan-Meier method.

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