

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

GENETIC PERFORMANCE OF HOLSTEIN BULLS FOR FAT AND PROTEIN YIELDS IN DIFFERENT TEMPERATURE GRADIENTS

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The aim of this study was to verify the genetic performance of the most representative bulls in Holstein dairy cattle in Paraná State for fat and protein yields, for different temperature gradients. We used data from the Paraná Holstein Breeders Association of 57,957 primiparous females, to detect the 20 main bulls used in the last 15 years, for the traits fat yield (FY) and protein yield (PY), adjusted at 305 days. The contemporary groups (CG) formation was based on grouping the animals born on the same farm and year, in which CGs with less than three observations and animals with an age at calving less than 18 or more than 48 months were excluded from the data file. The genetic value estimation was realized by the restricted maximum likelihood estimation (REML) method, with animal model, utilizing the PEST software, considered the regional average temperature, computed by the National Institute Meteorology (INMET). The mean annual temperatures varied between 18°C in the state's south region and 22°C in the north region, where the breeding values were estimated for each animal considering the changes of the temperature range. Posteriorly, a breeding values subset was formed with the 20 most representative bulls, through the statistic software SAS 9.3 applying linear regression, in order to observe the transient genetic behavior due to the environmental gradient changes. The average production of the daughters of the 20 bulls was 322.30 kg e 294.10 kg for FY and PY respectively, evidencing the genetics superiority of selected animals to breeding, in Paraná State, to such traits. We observed significant decrease in genetic value with temperature increase, decreasing 26.44 kg in genetic value of the animals for FY and 13.14 kg for PY, in comparison to the gradient 18°C and 22°C. The re-ranking of bulls showed for FY that two bulls had evident changes thru the gradients but not altering the classification of the other bulls. This fact demonstrates that, although increasing the temperature influence the genetic potential for milk solids, this is not enough to cause an impactful re-ranking of the main bulls in Holstein cattle, facilitating the selection of those traits in Paraná State.

Keywords: dairy cattle, environmental gradients, genetic value, milk solids

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