PHYSICAL CHARACTERISTICS FROM THE HAIRCOAT OF THE SOWS IN FREE-RANGE SYSTEMS UNDER A TROPICAL ENVIRONMENT

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RESUMO

Once placed in free-range systems, the animals are exposed to uncontrolled meteorological variations. Bristles' characteristics and their pigmentation are factors that are related to the best acclimatization of these animals to their habitat. That said, this work aimed to conduct a study about the physical characteristics of sows' haircoat in a free-range system under a tropical environment, from the evaluation of the diameter, length, and amount of the bristles, and meteorological variables. From December 2017 to April 2018, sows, divided into four groups according to body surface pigmentation, from Danbred lineage, in the Água Limpa Farm of the University of Brasilia, Brazil were evaluated. In the sector, the sows were housed in paddocks of 1000 m² each, where the bristles were collected with the aid of pliers from three regions: shoulder, back, and pelvis. The bristles' diameter (µm) was performed with the aid of a precision micrometer; the length (mm) with a digital caliper. From these measurements, effective thermal conductivity, absorptivity, transmissivity, and reflectivity were determined. Female groups were divided according to the presence of pigmentation in the epidermis, divided into four groups: animals that presented less than 20% of the pigmented body; 20 to 40%; 40 to 60%; and above 60% pigmentation. For the characterization of the environment, the air temperature (ºC), relative humidity (%), and shortwave radiation (W m-²), between 8 am and 5 pm from the farm weather station were collected. The data were analyzed by analysis of variance, considering the effect of animals, months, and body region. There was a significant difference ($P<0.05$) for all sources of variation evaluated in the experiment, however, there was no significant difference ($P>0.05$) in the region of the bristles collected in the back of females among the other regions. During the warmer months, the temperature exceeded 24ºC, with a maximum of up to 34ºC in the hottest hours (11 am, 12, and 1 pm). In these months, the average shortwave radiation measured was the highest (Above 400 W m-2). In this period, it was found that the bristles decreased the diameter (µm) compared to the milder months, differing from other mammals managed in tropical environments, with emphasis on April, which presented lower average air temperature (23ºC) and larger diameter (0.291 ± 0.060 µm). Regarding the length of the bristles, the behavior presented was similar, it was found that the highest average length of the bristles (44.72 ± 0.84 mm) was the month of April, with a difference of approximately 13 mm compared to the month most hot. Among the groups, there was a significant difference ($P<0.05$) only from the group of 40 to 60% of the pigmented body concerning the others with differences of up to 3 mm in length and 6 µm in diameter. The effective absorptivity was higher, and the transmittance was lower in the most pigmented sows, demonstrating a connection with the protection against solar radiation. Therefore, the combination of a pigmented and dense coat seems to be the ideal one for pigs managed in free-range systems.

PALAVRAS-CHAVE: Bioclimatologia, effective properties, tropical climate, pig production

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