Performance and behavioural characteristics of Pigs as affected by types and duration of evaporative cooling

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Abstract

Heat stress is one of the main constraints to pig production. Pigs rely on evaporative cooling by wallowing which is unsanitary while most advanced cooling methods are capital intensive. Cheaper evaporative cooling facilities could be installed to mitigate the negative consequences of heat stress on pigs. However, effects of hourly exposure to evaporative cooling on gilts have not been adequately documented. Hence, behavioral attributes and performance of pigs given access to evaporative cooling were studied. In a completely randomized design, cross bred gilts (n=40) (Landrace x Large White) weighing 25.00±2.5kg were allotted to five treatments each replicated four times consisting eight gilts per replicate. Treatment 1 (Negative control, T1) no shower/no wallow, Treatment 2 (Positive control, T2) had only wallow, Treatment 3 (T3) had shower activated 5 minutes hourly for six hours, Treatment 4 (T4) had shower activated 5 minutes every 2 hours and Treatment 5 (T5) had shower activated 5 minutes every 3 hours. Gilts were evaluated at growing phase (10 weeks). At average weight of 40.50±2.50kg, gilts were mated. Data on feed intake (AFI, Kg), weight gain (WG, Kg), Final weight (FW, Kg) and feed conversion ratio (FCR) were determined using standard methods. Behavioural attributes (%) observed include Lateral Lying (LL), Huddling (HD), Frequency of Defecating in Resting Area (FDRA), Frequency of Visiting Water Trough (FVWT) and Frequency of Using Wallow or Shower (FUWS). Also, Respiratory Rate (RR, breath per minute bpm), Rectal Temperature (RT, °C) and Skin Temperature (ST, °C) were monitored, while pens Temperature Humidity Index (THI) were monitored. Indices of reproductive performance (%) include oestrus, anaestrus and conception rate (CR) was determined. Data were analysed using descriptive statistics and ANOVA at á0.05. In the study, THI ranged between 81.12 and 86.39. Pigs that were subjected to 5 minutes shower activation every 3 hours (T5) had significantly highest FW (52.50±0.04) and relatively low AFI of 10.71±0.04 with a FCR of 3.32±0.02 which is not significantly different from pigs that were subjected to 5 minutes shower activation every hour (T3) (4.09±0.02) and pigs that were subjected to 5 minutes shower activation every 2 hours (T4) (4.05±0.01). Pigs exposed to continuous wallowing (T2) had significantly the highest AFI (14.13±0.04) and there was no significant difference in the WG for all treatments. The ST, RT and RR were highest in pigs under no shower/wallow (T1) (37.4, 39.4 and 53.0, respectively). Lateral lying (LL) was highest in T5 (65%) while T2 had the highest HD (40%). FVWT and FDRA were highest in T1 (50 and 55%, respectively) while CR was 75% for T1, T3 and T5 and T2 had 25%.

Keywords: Pig, Performance, evaporative cooling, Reproduction