BIOCHAR AS A SUSTAINABLE LITTER AMENDMENT FOR HEAT-STRESSED BROILERS

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Effects of adding biochar to poultry litter (pine shavings) on broiler production were evaluated in two temperature conditions, thermoneutral (TN) and heat stress (HS). Seven hundred and twenty day-old commercial broilers were weighed and placed in each environment. Twelve replicates of 10 chicks each were randomly assigned to three litter treatments in each environment: Treatment 1 (CON) = wood shavings litter; 2 (Pro C 10) = 10 % biochar by volume; 3 (Pro C 20) = 20 % biochar by volume. Birds were fed a corn-soybean diet with feed consumption and body weights recorded weekly. Litter ammonia was measured, litter samples evaluated for wetness and feet assessed for incidence of footpad dermatitis. After slaughter on day 42, breast meat drip loss were evaluated 7 days post slaughter. Data were analyzed using mixed model ANOVA (SAS 9.4, Cary, NC). Feed:gain and weight gain were similar across treatments. However, final weight and carcass weight were significantly (p<0.0001) lower for bird raised under heat stress. Dressing percentage was similar between birds in the control and 20% biochar groups. Drip loss was significantly (p<0.0001) lower in treatment groups compared to the control. The lowest litter moisture (p=0.009) and ammonia (p=0.02) levels occurred in TN birds. Ammonia in the 20% treatment pens tended (p=0.08) to be lower. Footpad dermatitis was not affected (p =0.81) by either temperature or treatment. Birds on the highest level of biochar appeared to exhibit fewer occurrences of the highest score. Biochar litter amendment can potentially positively impact broiler production.

(Key words: Broilers, Heat-stress, Biochar, Footpad dermatitis)