EFFECTS OF AMENDING DIFFERENT LITTERS (CHOPPED RICE STRAW AND PADDY HUSK) WITH BORIC ACID ON THE PERFORMANCE OF BROILER CHICKENS AND THE LITTER QUALITY

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ABSTRACT

Ammonia gas, which is produced as the manure decomposes, has adverse effects on human health, bird welfare and the environment. Using litter amendments can reduce the ammonia emitted from broiler houses. The objective of this study was to evaluate the effects of amending two litter materials (chopped rice straw and, paddy husk) with boric acid on broiler chickens' performance and litter quality.

Total of 120, unisex, day-old, broiler chicks were randomly allocated into four treatment groups with three replicates, based on litter types and each replicates consisted of ten birds. The four litter types were chopped paddy straw, paddy husk, boric acid treated chopped paddy straw and boric acid treated paddy husk. The birds were fed a commercial starter diet from 0 to 21 days and broiler finisher diet from 21 to 42 days. Feed and water were provided *ad libitum* throughout the experimental period. Chicks were placed in floor pens at a final stocking density of 0.07 m^2 per bird. 40g of boric acid was applied to the litter surface of each pens in weekly basis. Body weight gain and feed consumption were recorded weekly and the feed conversion ratio was calculated. On day 42, the live weight and dress weight of birds were taken and the dressing percentage was calculated. At the end of experiment, the weights of organs such as heart, gizzard, spleen, liver, lungs and bursa of fabricius were measured and the relative organ weights were calculated as a percentage of organ weight to the live weight of birds. Finally, the litter parameters such as temperature, pH, moisture content and ammonia content were measured weekly basis.

The results revealed that the broiler chickens raised on the litters such as chopped paddy straw and paddy husk amended with boric acid exhibited significantly improved performance when compared to that of untreated litters.. Boric acid amended chopped straw and paddy husk increased body weight gains (by 14% and 11%, respectively), feed consumption (by 6% and 7%, respectively), live body weight (by 14% and 10%, respectively), dress weight (by 21% and 14%, respectively), dressing percentage (by 8.5% and 3.7 %, respectively) in broiler chickens and reduced their FCR (by 9% and 4%, respectively) over the untreated groups. A significantly highest relative weight of gizzard (2.2%) was recorded in the birds raised on untreated paddy husk. In addition, the largest relative weights of spleen (0.13%) and lungs (0.49%) were obtained from the birds raised on untreated chopped straw.

The results of litter quality revealed that the boric acid treatment to the litter materials (chopped paddy straw and paddy husk) reduced the litter pH significantly when compared to the untreated litters. In addition, boric acid treatment to the chopped straw reduced the litter temperature when compared to other litter types. However, the moisture content was significantly higher in boric acid treated chopped straw than others. Furthermore, Ammonium ion content was higher in boric acid treated litter materials than untreated litter materials. The higher net returns from broiler production were obtained from the birds which are raised on boric acid treated chopped straw and paddy husk (42% and 40%, respectively) when compared to the birds raised on untreated litters.

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