



Original Article: EFFECT OF DIFFERENT TYPES OF LITTER ON BROILER PERFORMANCE

Citation

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Abstract: The experiment was conducted during summer months to evaluate the effect of using different types of litter with or without alum on Ross broiler chick's performance, carcass parts and some blood parameters. A total number of six hundred and forty eight of Ross broiler chicks one day old. The birds divided into six treatments (T) of floor litter: T1 birds were raised on wood shavings litter, T2 birds were raised on wood shavings litter with alum, T3 birds were raised on wheat straw litter, T4 birds were raised on Wheat straw litter with alum, T5 birds were raised on sand litter and T6 birds were raised on sand litter with alum. Each treatment included 108 birds which were divided into two equal replicates (each of 54 birds). Birds provided with 6 cm. height of special certain litter. Alum was added at 0.091 kg/ bird for treatments litters.

Based on the results obtained from this experiment, it could be concluded that using sand or wheat straw as a litter during rearing broiler chicks up to 6 weeks of age, is better for their performance than wood shavings. Alum applications exhibited significantly better mortality rate in comparison to birds raised over untreated litter. In general, the sand litter with or without alum is most benefit for broiler performance.

INTRODUCTION

Quality of chicks, feed and water are all of great concern to broiler producers and has been subjected to many different scientific studies; but quality of litter in broiler houses is seldom given sufficient emphasis, this is unfortunate because birds are in continuous contact with litter. Litter conditions significantly influence broiler performance and, ultimately, the profits of growers and integrators. Litter is defined as the combination of bedding material, excreta, feathers, wasted feed and water (Ritz et al. 2010).

Poultry litter, as an environmental factor, is an important and integral element in providing the proper environment inside the poultry facilities to achieve efficient productive and reproductive performance of poultry. Therefore, a characteristic optimal litter has to include some important characters as follow: low moisture, pH and ammonia production, firm in the hand, not wet and sticky, highly absorbent, soft and give off moisture readily and doesn't pack down easily. In addition, it has to be cheap, available and free of molds, preservatives and pesticides (Reece et al. 1979; Elliott and Collins 1982 and Carr et al. 1990).

Poultry litter has also to be reasonably available. Therefore, viable alternatives for the wood shaving, sand, wheat straw to be efficiently utilized in the poultry industry

in an attempt to assure satisfactory and cost-effective bedding supplies.

The aim of current study was to determine the feasibility of wood shavings, sand, and wheat straw litters with or without alum as alternative litter materials for raising Ross broiler chicks. Under the prevailing environmental summer conditions, broiler chicks' performance, carcass parts, and some blood parameters were evaluated.

MATERIALS AND METHODS

The present experiment was planned to evaluate the effect of using different types of litter with or without alum on Ross broiler chick's performance, carcass parts and some blood parameters, under the prevailing environmental summer conditions in Alexandria. It was performed at the Poultry Research Center, Faculty of Agriculture, Alexandria University, during the period from July to August 2009. A total number of six hundred and forty eight of Ross broiler chicks one day old, with an average initial weight 40.0 ± 2.0 gm., were used in this experiment. All birds were randomly divided into six treatments (T) of floor litter: T1 birds were raised on wood shavings litter, T2 birds were raised on wood shavings litter with alum, T3 birds were raised on wheat straw litter, T4 birds were raised on Wheat straw litter with alum, T5 birds were raised on sand litter and T6 birds were raised on sand litter with alum. Each treatment included one hundred and eight birds which were divided into two equal replicates (each of 54 birds). Birds in each replicate were kept in a partition (pens) of 5 square meters, 2.5 meter long and 2 meter width (10 bird / 1 meter square), provided with 6 cm. height of special certain litter. Alum was added at 0.091 kg/bird for treatments T2, T4 and T6 and their replicates. It been grind and mixed with treatments litter. The experiment extended to 42 days of age. Feed and water were available ad-libitum, also all birds were kept under similar management conditions. The studied traits (Live body weight measured weekly, Body weight gain was estimated weekly, Feed consumption and Feed conversion ratio recorded at weekly, water intake was recorded to each pen in 1

day in middle of every week, Mortality rate were recorded daily and expressed weekly in percentages, carcass traits and some blood parameters). Rectal temperature (RT) and Litter pH were measured in the present study during the last week of the experimental period while the temperatures for indoor and outdoor were recorded daily during the experimental period.

RESULTS AND DISCUSSION

The results of water intake as affected with litter types indicated insignificant differences during 1st and 2nd weeks of age. However, it being highly significant ($P \leq 0.01$) during the rest of the weeks of the experimental period. Overall mean of water intake amount averaged 69.9, 124.8, 193.9, 273.9, 316.2 and 403.4 (milliliter/bird/day) during the 1st, 2nd, 3rd, 4th, 5th and 6th weeks of age, respectively.

The results of water intake observed significant differences ($P \leq 0.05$) between alum treatments only during 2,3,4,5 and 6 weeks of age. The birds raised on litter without alum drink more amount of water than those raised on litter with alum during 2, 3 and 4 weeks of age.

The results of mortality rate indicated significant differences ($P \leq 0.05$) among litter types and between treatments, meanwhile the interaction effect has highly significant differences ($P \leq 0.01$). The broilers raised on sand litter has significantly lowest mortality percentage (2.45%) during 0-6 weeks of age than those raised on wheat straw (4.85%) or shaving wood (3.50%). Also, the alum treatment has significant effect in lowering the mortality percentage, since the broiler raised on litter with alum has lower value (2.90%) than those raised on litter without alum (4.20%).

The results showed no significant differences in serum glucose, uric acid, total lipids and cholesterol concentrations between different litter types under the two methods. That insignificant differences in the average uric acid due to treated litter with alum. When alum is added to the litter this acid converts ammonia to ammonium and it work at the reduction in ammonia emissions.

CONCLUSIONS

- Based on the results obtained from this experiment, it could be concluded that using sand or wheat straw as a litter during rearing broiler chicks up to 6 weeks of age, is better for their performance than wood shavings.

- Alum applications exhibited significantly better mortality rate in comparison to birds raised over untreated litter.

- In general, the sand litter with or without alum is most benefit for broiler performance.

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