EFFECT OF FEEDING TIME ON LAYING PERFORMANCE OF BROILER BREEDERS RAISED UNDER TROPICAL ENVIRONMENT

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ABSTRACT
A total of 180 Marshal Broiler breeders within age range 40 to 48 weeks were used to investigate the effect of feeding time on laying performance and survivability. The weights of the birds were equalized and divided on the basis of feeding time into three (3) treatments (3, 5 and 7 AM) for an experimental period of 6 weeks with each treatment consisting of 60 birds. Each treatment was further sub-divided into 3 replicates of 20 birds per replication. Data obtained were subjected to Analysis of Variance in a Completely Randomized Design. Results showed feeding time had no significant ($p>0.05$) influence on feed intake, feed conversion ratio, average egg laid and average egg mass. However, birds fed at 3 and 5 AM recorded significantly ($p<0.05$) higher (69.19 and 69.83%, respectively) hen-day egg production percentage than 60.55% recorded in birds fed at 7 AM. Mortality rate was significantly lower in birds fed at 3 AM (14.84%) when compared with 36.28 and 25.31% recorded respectively for birds fed at 5 and 7 AM. Hence, feeding broiler breeders at 3 AM is recommended for optimal egg production and higher survivability rate.
Keywords: Marshal breeders, feeding time, laying performance

1. INTRODUCTION

The production and supply of day-old chicks is very important for the success of the poultry production chain. Commercial operations depend on hatcheries for the supply of day-old chicks while the subsistence farmers hatch their chicks by natural incubation King'ori (2011). Feeding time is a factor that may lead to heat stress, due to the heat increment from exothermic reactions that happen during feed metabolism. Previously, feeding breeders in the late afternoon was a standard procedure, but according to Leeson and Summers (2009) the choice of feeding time for adult breeders can influence egg production and egg size. Wilson and Keeling (1991) also speculated that delaying feeding time (from morning to afternoon) will result in increased transit time of the egg through the oviduct thereby delaying the time of oviposition.

Based on this background, this study aimed to determine the effect of feeding time on laying performance and survivability of broiler breeders raised under tropical environment.

2. MATERIALS AND METHODS

Experimental Site

The research was conducted at Obasanjo Farms Nigeria Ltd. Breeder Farm, Igboora, Oyo State.

Experimental Birds

A total of 180 Marshal Broiler breeders within age range 40 to 48 weeks were equalized randomly and divided on the basis of feeding time into three (3) treatments (3, 5 and 7 AM) with each treatment consisting of 60 birds. Each treatment was further sub-divided into 3 replicates of 20 birds per replication. The birds were housed in battery cages equipped with nipple drinker system. Birds were fed once a day at varying time of feeding and with 135 g of feed per bird per day. Room's cleaning and disinfection programs were carried out in accordingly. The experiment lasted for a period of six (6) weeks.

Data Collection

Laying performance

Daily records of feed consumed and mortality from the start of the experiment till the end of the experiment was recorded and used for this study.

1. Hen-day production (HDP): This is measured by the ratio of the egg laid in a day divided by the number of birds alive multiplied by 100.

$$\text{HDP} = \frac{\text{Egg laid per day}}{\text{No of birds alive}} \times 100$$

2. Feed Conversion Ratio: This is the ratio of hen-day egg lay to feed (g) consumed,

$$\text{FCR} = \frac{\text{Total feed intake (g)}}{\text{Total egg produced (g)}}$$

3. Mortality rate: This will be the measure of dead birds, which will give an indication of the survivability of a breeder stock.

$$\text{Mortality} = \frac{\text{No.of breeders that dies}}{\text{Total No.of breeders pen}} \times 100$$

Statistical Analysis

Data obtained were subjected to Analysis of Variance in a Completely Randomized Design. Significantly ($p<0.05$) different means were separated using Duncan's multiple range test as contained in SAS (2002).

3. RESULT AND DISCUSSION

Table 1: Effect of Feeding Time on laying performance of Broiler Chicken Breeder reared under tropical environment

Feeding time Parameters	3 AM	5 AM	7 AM
Feed intake (g/b/day)	126.02± 5.59	117.64± 1.20	126.23± 1.09
Feed conversion ratio	1.95±0.15	1.74±0.05	1.98±0.01
Average egg laid	90.31±3.89	84.84±4.76	79.69±2.71
Average egg mass (g)	45.27 ± 3.20	47.81 ± 4.49	38.60 ± 1.31
Hen-day egg production (%)	69.19 ± 1.10[a]	69.83 ± 4.05[a]	60.55 ± 1.65[b]
Mortality (%)	14.84±9.82[b]	36.28±3.96[a]	25.31±2.02[a]

[a,b:] Means on the same row having different superscript are significantly ($p<0.05$) different.

Table 1 shows the effect of feeding time on laying performance of broiler chicken breeder reared under tropical environment. All parameters measured except hen-day egg production and mortality rate were not ($p>0.05$) significantly different. Birds fed at 3 and 5 AM recorded significantly ($p<0.05$) higher (69.19 and 69.83%, respectively) hen-day egg production percentage than 60.55% recorded in birds fed at 7 AM. This is in line with reports by Brake (1985) who found a significant interaction between time of oviposition and feeding time and stated that, delaying feeding may delay oviposition; thus reducing the quantity of eggs produced. Mortality rate was significantly ($p<0.05$) lower in birds fed at 3 AM (14.84%) when compared with 36.28 and 25.31% recorded respectively for birds fed at 5 and 7 AM. This is however in agreement with the reports of Kohne *et al*. (1973) that feeding time may lead to heat stress which increased mortality, due to the heat increment from exothermic reactions happening during feed metabolism.

4. CONCLUSION

From this study, it could be concluded that feeding broiler breeders at 3 AM will result in optimal egg production and higher survivability rate of the breeder stock than the 5am and 7am feeding schedule as this will reduce the effect of the increased exothermic heat reaction on the breeder stock.

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