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PERFORMANCE AND FINANCIAL BENEFITS OF FINISHER BROILER CHICKENS FED SELECTED COMMERCIAL DIETS SOLD IN BAUCHI METROPOLIS

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ABSTRACT

The preponderance of substandard commercial poultry feeds in the Nigerian feed market has been identified as one of the challenges facing poultry production. A study was conducted to assess the utilization of some commercial feeds by finisher broiler chickens. Two hundred and fifty-five (255) broiler chickens weighing between 792 and 804g were randomly allotted to five diets in replicates of three containing 17 birds each in a completely randomized design. Feed and water were served ad libitum and the experiment lasted for 4 weeks. Results of growth performance showed that most parameters; final weight, total weight gain, daily feed intake, daily weigh gain and feed conversion ratio, were significantly (P<0.05) influenced in favour of diets 1 and 3. Daily feed intake ranged between 127.42 and 156.54g, daily weight gain from 45.10 to 58.86g and feed conversion ratio from 2.54 to 3.04. Total weight gain was highest (P<0.05) in birds fed diet 3 (1728.08g) and least for those on diets 2, 4 and 5 (1312.80 – 1458.96g). Feed cost per kg was least in diet 1 (₦274.00) and highest in diet 5 (₦300.00) while feed cost per kg gain was least in diet 2 (₦741.23) and highest in diet 3 (₦1020.68). It was therefore concluded that diet 3 which gave a total weight gain of 1728.08g had better nutritional composition vis-a-vis the requirements for finisher broiler chickens.

Key words: Broiler, Performance, Commercial feeds, Financial benefit.

INTRODUCTION

The principal target of poultry nutrition is to maximize birds' performance as well as return on investment. In this regard, diets are formulated to provide specified levels of nutrients that are needed for optimum performance. The critical indices of performance are growth rate, feed intake and conversion ratio. Health and body composition can also be used to rate performance (Esonu, 2000). Nowadays, a lot of people are venturing into poultry production business, this invariably signifies an increased demand for commercial feeds. However, due to the prevailing upward prices of feed ingredients, and the desire to make huge profit at all cost, there is an increasing tendency of feed millers to produce substandard feeds especially as the quality control agencies in the country are either less concern or non-functional (Jones, 2005).

In a poultry enterprise, feeding alone constitutes about 70% of the total cost of production (Afzal and Khan, 2019). Therefore, this underscores the need to ensure that only quality feeds that meet birds' nutritional requirements are made available for sale by feed millers. Anything short of that will negatively affect birds' performance, short-change the farmer and retard national economic growth. The objective of this study is therefore to evaluate the extent to which selected commercial feeds sold in markets in Bauchi State meet the nutrient requirements for optimum performance of finisher broiler chickens.

MATERIALS AND METHODS

Study Area

The experiment was conducted at the Teaching and Research Farm, Abubakar. Tafawa Balewa University, ATBU, Bauchi. The area is located within the southern guinea savannah on latitude 10^{o} 18' 37.2" N and longitude 9^{o} 50' 38.0" E. Furthermore, it is 616 metres above sea level characterized by two well-defined seasons; Rainy season (May - October) and dry season

(November - April). The average annual rainfall is 1009 mm, highest relative humidity 94 % (August) and the lowest 35 % (February). Temperatures are between 13 – 17 ^{o}C (December – February) and 36 – 37 ^{o}C (March – April) (World Atlas, 2015).

Experimental Design and Management of Birds

Two hundred and fifty-five broiler finisher chickens weighing between 792.50 and 804. 94g were allotted to five different commercial diets, designated as 1, 2, 3, 4 and 5 respectively in a completely randomized design. Each diet was replicated 3 times and each replicate had 17 birds. Feed and water were served *ad libitum* and the study lasted for 4 weeks.

Data Collection

Data was collected for final weight, total weight gain, daily feed intake (DFI), daily weight gain (DWG) feed conversion ratio (FCR) and mortality. Daily feed intake was obtained by difference between quantity of feed offered and the left-over retrieved the following morning. Weight gain was determined by the difference between two consecutive weighing carried out on weekly basis. This value was divided by 7 to obtain DFI while FCR was the value obtained when DFI was divided by DWG. Feed cost per kilogram (FC/kg) was calculated using the prices of commercial broiler finisher feeds at the time of research. Feed cost per kg gain (FC/kg gain) was calculated by dividing the value of total feed intake (TFI) by that of total weight gain (TWG).

Data Analysis

All data for growth performance indices was subjected to ANOVA using the SPSS vr 25 statistical software. Where means differed among diets, Duncan Multiple Range Test (Duncan, 1955) was used to separate them.

RESULTS AND DISCUSSION

Result for growth performance is presented in Table 1. Date analysis revealed significant differences ($P<0.05$) in final weight (FW), TWG, DFI, DWG and FCR of birds. Initial weight of birds was between 788.43 and 804.94g. However, final weight was highest (2530.56g) in birds fed diet 3 followed by those on diet 1 (2293.36g) then others followed (2117.74 – 2249.99g) which were the same. Total weight gain followed a similar trend as FW and was highest ($P<0.05$) in birds on diet 3 (1728.08g), followed by those on diet 1 (1504.93g), then those on diets 2 (1429.12g), 4 (1458.96g), and 5 (1312.80g) which did not differ ($P>0.05$). These values are a little lower than those reported by Hafizu *et al.* (2020) in a similar study.

Daily feed intake of birds fed diets 3 (156.54g) and 1 (144.67g) did not differ significantly ($P>0.05$) but were higher than those on diets 2 (129.73g), 4 (131.67g), and 5 (127.42g) which were similar to each other. The high DFI on diets 3 and 1 might be attributed to a relatively lower energy content of the diet since feed intake is believed to be influenced by dietary energy content (Nahashon *et al.*, 2006). Daily weight gain significantly ($P<0.05$) differed in favour of diet 3 (58.86g) which was higher than 47.66g (diet 1), 51.04g (diet 2), 47.32g (diet 4) and 45.10g (diet 5) which did not differ. The lower DWG obtained on these diets could be informed by the lower feed intake of birds fed these diets. According to Onigemo *et al.* (2015), body weight gain depends directly on nutrient intake. However, FCR was better in birds fed diets other than 1 (3.04). Chickens fed diets in exception of diet 1 showed similar ($P>0.05$) values in FCR (2.54 – 2.83). The varied performance of birds on the different diets may be indication of variability in their nutrient composition and this is an important factor to be noted by farmers in the choice of feeds for broiler chicken production (Uchegbu *et al.*, 2007).

Result for financial benefits of finisher broiler chickens fed different commercial diets is presented in Table 2. Total feed intake was highest on diet 1 (4.05kg) and least in diet 2 (3.63kg). Feed cost per kg was least in diet 1 (₦274.00) and highest in diet 5 (₦300.00) while feed cost per kg weight gain was least in diet 2 (₦741.23) and highest in diet 3 (₦1020.68).

Table 1: Performance of Finisher Broiler Chickens Fed Selected Commercial Diets

	Diets					
Parameter	**1**	**2**	**3**	**4**	**5**	**SEM**
Initial weight (g)	788.43	792.4	802.48	791.03	804.94	9.16^{NS}
Final weight (g)	2293.36^{b}	2221.52^{c}	2530.56^{a}	2249.99^{c}	2117.74^{c}	47.20*
Total weight gain (g)	1504.93^{b}	1429.12^{c}	1728.08^{a}	1458.96^{c}	1312.80^{c}	51.35*
Daily feed intake (g)	144.67^{a}	129.73^{b}	156.54^{a}	131.67^{b}	127.42^{b}	5.37*
Daily weight gain (g)	47.66^{b}	51.04^{b}	58.86^{a}	47.32^{b}	45.10^{b}	2.74*
Feed conversion ratio	3.04^{a}	2.54^{b}	2.66^{b}	2.78^{b}	2.83^{b}	0.10*
Mortality (No.)	2	1	2	1	0	

Table 2: Financial Benefit of Finisher Broiler Chickens Fed Selected Commercial Diets

	Diets				
Parameter	1	2	3	4	5
Total feed intake (kg)	4.05	3.63	4.38	3.67	3.57
Feed cost /kg (₦)	274.00	292.00	284.00	294.00	300.00
Total feed cost (₦)	1109.70	1059.96	1243.92	1078.98	1071.00
Total weight gain (kg)	1.25	1.43	1.65	1.32	1.26
Feed cost per kg gain (₦).	887.76	741.23	1020.68	817.41	850.00

CONCLUSION AND RECOMMENDATION

Based on the results of this study, diet 3 which gave higher total weight gain of 1.43kg appeared to meet the nutritional requirement of finisher broiler chicken more than the other diets. Consequently, it is recommended for broiler chicken producers.

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