

PERFORMANCE OF BROILER CHICKENS FED DIFFERENT COMMERCIAL FEED IN BAUCHI, BAUCHI STATE, NIGERIA

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ABSTRACT

An experiment was conducted to evaluate the performance of broiler chickens fed different commercial feeds available in Bauchi, Bauchi State, Nigeria. A total of 225-day old broiler chickens from Zartech Ltd were fed 5 different commercial feeds for duration of 35 days to compare the performance of broiler chickens. Feed intake of the dietary groups differed significantly ($P < 0.05$). T4 dietary group showed high trend of feed consumption (75g) while the lowest feed intake was recorded in treatment 3 (48g). The body weight gain was highest (44.79g) in T5 dietary group ($P < 0.05$) which was statistically similar with T2 and T4 groups and lowest body weight gain was observed in treatment 3 (20.91g). Higher FCR value ($P < 0.05$) was observed in T3 dietary group which indicated low feed conversion efficiency. T3 showed high percent of survivability. Significant difference was obtained for meat yield parameters such as body weights, liver weight, abdominal fat, heart weight, dressed carcass and edible carcass weight. The result of the experiment from biological responses of birds gave an impression that commercial feeds of the feed mills T2, T4 and T5 were found to be better than those of T1 and T3 for the production of broiler chickens for the age duration of day old to 35 days.

Keywords: broiler chickens, performance, feed intake

INTRODUCTION

Poultry feeds are made up of many ingredients which are broadly grouped into providers of energy (fat and carbohydrates), protein (amino acids), vitamins, minerals and feed additives. Cereal grains such as maize, sorghum, wheat and millet provide energy while soya beans and groundnut provide protein. These ingredients are combined in such a way as to provide energy, protein, vitamins and minerals for poultry through the process of feed formulation. However, several factors may affect both feed quality and feed manufacturing parameters (Loar and Corzo, 2011). The nutritional value of grains used in poultry feed varies with the grain cultivars, its chemical characteristics and non-starch polysaccharide content, diet physical form, availability of energy and bird category (Gutierrez-Alamo *et al.*, 2008). These factors in addition to the choice of feedstuffs and quantity incorporated in the finished feed by different feed manufacturers has given to variation in the nutritive value of manufactured feeds and performance of birds fed different brands of feeds.

Poultry feeds are primarily produced to optimize the growth potentials of the target birds through a defined nutritional specification but more than 10% reduction in chicken growth rates has been observed when birds are offered different feed brands (Uchiegbaet *et al.*, 2009). It means there are variations in the compositions of different feed brands meant for the same class of birds. Knowledge of the nutritive value of feed brands is therefore imperative for the poultry industry. This research is aimed at determining the effect of different commercial feeds on growth performance of broiler chickens.

Materials and Methods

The experiment was conducted at the Poultry Unit of Bauchi State College of Agriculture Bauchi Teaching and Research farm. Bauchi State occupies a total land area of 49,119 km² representing about 5.3% of Nigeria's total land mass and is located between latitudes 9° 3' and 12° 3' North and longitudes 8° 50' and 11° East (BSD, 2009).

A total of two hundred and twenty-five (225) broiler chicks were used for the experiment. They were randomly divided into five treatment groups of 45 chicks per group in a completely randomized design (CRD) consisting of three replicates of 15 birds each. Birds were reared on a deep litter, with feed and water provided *ad libitum*. Left over feed and body weight of birds were monitored on a

weekly basis for the starter and finisher phases of the experiment and routine vaccines were given as recommended. All feed not consumed were removed, weighed and deducted from feed given daily to get the daily feed intake.

Five (5) broilers super starter, starter and finisher diets of different selected commercial brand were purchased and label as diet 1,2,3,4 and 5 which is given to treatment groups 1,2,3,4 and 5 respectively. All these feeds differ in composition of energy, crude protein, crude fibre, ether extract among others.

Results and Discussions

The daily feed intake values ranges from (48.93-75.25g) is similar to 53.00-75.55g as reported by Sanusi, *et al.*, 2015, in comparative effect of self-formulated and four commercial diets on the growth performance, carcass and haematological parameters of broiler finishers in the tropics. This result is also similar to values obtained by Domaet *al* (2001) in broilers fed different commercial diets. The daily weight gain was significantly ($P < 0.05$) influenced at the overall phase. The daily, the values obtained ranges from 20.91 to 44.79g were comparable to the report of Domaet *al* (2001) who reported that low protein diet lead to poor performance. Feed conversion ratio was significantly affected by the dietary treatment. The result is similar to what was obtained by Sanusiet *al* (2015). Birds on diet T5 were having better feed conversion ratio of 1.65 which is similar to 1.82 and 1.86 of treatments 4 and 2 respectively. Similarly, feed conversion ratio is obtained on birds in treatment 1 and 3 which is 2.11 and 2.36 respectively.

The average live weight ranged between 875.67 to 1738.33g on treatments 3 and 5 respectively, there was significant ($P > 0.05$) difference among the treatments. Other parameters measured such as plucked weight, carcass weight, dressing percentage, lungs weights, head and legs weight, intestinal weight, liver weight, and abdominal fat weight showed significant ($P > 0.05$) difference. But parameters such as heart weight, spleen weight, intestinal length, pancreas weight, caecal length and kidney weight showed no significant difference among the dietary treatment. This result is similar to similar to what was obtained by Hossain *et al* (2006) in his work titled performance of broiler chickens fed with different commercial compound feeds of Bangladesh.

The highest feed cost/kg is recorded in dietary treatments 3 and 5 while all the other dietary treatment had the same feed cost. The feed cost/gain ranged between 260.74 to N3377.70 it dietary groupps 5 and 3 respectively. This results differs with the range of 124.67 to N190.29 obtained by Sanusi *et al* (2015).

Conclusion and Recommendation

Birds on treatments 5, 4 and 2 performed better than those on treatments 1 and 3. And low feed cost/gain was recorded to be lowest in dietary treatment groups 2, 4 and 5 while dietary treatment groups 1 and 3 resulted highest feed cost/gain during the experiment. Diet 2, 4 and 5 are therefore recommended for production of 1.8 to 2.5kg broiler chickens for the period of day old to 42 days.

Table 1: Nutrient Composition of Experimental Diets

Age	Nutrients	Diets				
		T1	T2	T3	T4	T5
0-2	SUPER STARTER PHASE					
	Crude protein (%)	21.00	22.00	20.00	21.00	22.00
	Fat (%)	10.00	5.00	6.00	5.50	4.50
	Crude fibre (%)	10.00	5.00	3.00	1.10	5.00
	Metabolizable energy (MJ/kg)	12.90	12.50	12.10	12.50	12.50
3-4	STARTER PHASE					
	Crude protein (%)	18.00	21.00	19.00	20.00	21.00
	Fat (%)	10.00	4.00	5.00	4.50	5.00
	Crude fibre (%)	12.00	4.5	3.00	5.00	5.00
	Metabolizable energy (MJ/kg)	12.50	12.50	11.70	12.30	12.90
5-6	FINISHER PHASE					
	Crude protein (%)	17.00	18.50	17.00	18.00	18.00
	Fat (%)	10.00	4.00	4.00	5.00	5.00
	Crude fibre (%)	15.00	6.00	3.50	5.00	5.00
	Metabolizable energy (MJ/kg)	12.50	12.90	12.10	12.50	13.30

Table 2: Growth Performance of Broiler Chickens fed Different Commercial Feeds Available in Bauchi, Bauchi State, Nigeria

Parameters	Diets					SEM
	T1	T2	T3	T4	T5	
Initial weight (g/b)	39.58	40.54	41.77	41.76	39.85	1.28 ^{NS}
Final weight (g/b)	1070.95 ^c	1392.59 ^b	772.70 ^d	1496.77 ^b	1730.32 ^a	81.09 [*]
Total feed intake (g/b)	2175.25 ^b	2503.84 ^a	1712.85 ^c	2633.74 ^a	2558.66 ^a	112.71 [*]
Daily feed intake (g/b/d)	62.15 ^b	71.87 ^a	48.93 ^c	75.25 ^a	73.10 ^a	3.27 [*]
Daily weight gain (g/b/d)	29.48 ^b	38.63 ^a	20.91 ^c	41.64 ^a	44.79 ^a	3.27 [*]
Feed conversion ratio	2.11 ^a	1.86 ^{bc}	2.36 ^a	1.82 ^{bc}	1.65 ^c	0.14 [*]
Mortality (number)	2.00	5.00	2.00	3.00	2.00	

Table 3: Carcass Characteristics of Broiler Chickens Fed Different Commercial Feeds in Bauchi, Bauchi State, Nigeria

Parameters	Treatments					SEM
	T1	T2	T3	T4	T5	
Live weight (g)	1111.67 ^c	1283.33 ^c	875.67 ^d	1431.67 ^b	1738.33 ^a	57.44*
Pluck weight (g)	1027.00 ^c	1147.33 ^c	754.00 ^d	1296.17 ^b	1592.33 ^a	54.32*
Carcass weight (g)	712.00 ^c	832.83 ^c	503.67 ^d	996.17 ^b	1278.83 ^a	48.10*
Dressing %	69.19 ^d	72.40 ^b	66.37 ^c	76.77 ^b	80.10 ^a	0.84*
Heart (%)	0.89	0.876	0.93	0.72	0.80	0.89NS
Lungs (%)	1.03 ^{ab}	1.27 ^a	1.25 ^a	0.87 ^b	1.12 ^{ab}	0.16*
Head and Leg (%)	11.10 ^{abc}	12.73 ^{ab}	13.37 ^a	9.84 ^c	10.13 ^{bc}	1.13*
Spleen (%)	0.22	0.19	0.26	0.17	0.27	0.93
Gizzard (%)	1.81	1.82	2.60	1.90	2.20	0.37
Intestinal weight(%)	10.11 ^{ab}	7.05 ^{bc}	10.93 ^a	6.54 ^c	6.25 ^c	1.41*
Intestinal length (cm)	240.33	230.83	235.67	214.16	217.33	16.80NS
Liver (%)	2.13 ^c	3.10 ^b	5.85 ^a	4.63 ^{ab}	4.41 ^{ab}	0.70*
Pancreas (%)	0.18	0.12	0.16	0.15	0.13	0.53NS
Ceacal length (cm)	21.83	17.67	17.67	18.50	21.83	2.15NS
Kidney (%)	1.40	1.13	0.88	0.68	1.04	0.31NS
Abdominal fat (%)	1.44 ^b	2.14 ^{ab}	2.45 ^a	1.83 ^{ab}	1.63 ^{ab}	0.40*

abcd: means within the same row bearing different superscripts are significantly different

*: (P<0.05)

NS: Not Significant

SEM: Standard Error of Mean

Table 4: Financial Benefits of Broiler Chickens Fed Different Commercial Feeds in Bauchi, Bauchi State, Nigeria

Parameters	Diets				
	T1	T2	T3	T4	T5
Total feed intake (kg)	2.18	2.52	1.71	2.63	2.56
Feed cost (₦/kg)	148.00	148.00	161.00	148.00	160.00
Total feed cost (₦)	322.64	372.96	275.72	389.80	409.36
Total weight gain (kg)	1.03	1.35	0.73	1.46	1.57
Feed cost gain (₦/kg gain)	313.24	276.27	377.70	267.00	260.74

References

- Bauchi State Diary (BSD), (2009). ABU/ICT-Centre database, <http://www.nigeriagallery.com/Nigeria/statenigeria/bauchistate>.
- Doma, U.D., Muhammad, A.S., Bello, K.M. and Ugbeh, E. (2001). Performance of broiler chickens fed with local formulated feed and commercial feeds. *Nigerian Journal of Agriculture*, **3**:82-86.
- Gutierrez-Alamo, A. P., Perez D. A., Verstegen, M.W.A., Den Hartog, L.A And Villamide, M.J. (2008). Variability in wheat: factors affecting its Nutritional value. *World Poultry Science Journal*. 64 (1): 20-39.
- Hossain, M. A., Roy, B. C., Islam, M. M. and Miah, M. Y. (2006). Performance of broiler fed with different commercial compound feeds of Bangladesh. *Bangladesh journal of veterinary medicine*, 4(2):97-101.
- Loar, R. E, and Corzo, A. (2011). Effects of feed formulation on feed manufacturing and pellet quality characteristics of poultry diets. *World's Poultry Science Journal*, **67**: 19-28.
- Sanusi, M., Rabi, A., Doma, U.D. and Haruna, J. (2015). Comparative effect of self-formulated and four commercial diets on the growth performance, carcass and haematological parameters of broiler finishers in the tropics. *Sokoto Journal of Veterinary Sciences*, **13**(2):14-19
- Uchegbu, M.C., Irechukwu, N.M., Omede, A.A., Nwaodu, C.H., Anyanwu, G.A., Okoli, I.C., and Udedibie, A.B.I. (2009) Comparative Evaluation of Three Commercial feeds on the performance of Broilers. *Report and opinion*, **1**(4):15-19