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Comparative Evaluation of Broilers Raised on Four Different Commercial Feeds Available in Anyigba, Kogi State

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Abstract

Four commercial feeds coded as T₁, T₂, T₃ and T₄ were assigned to broilers. Each of the treatments had 24 birds and was replicated thrice in a Completely Randomized Design. Results for starter phase showed significant ($p < 0.05/p < 0.01$) differences across all the performance parameters measured. Final weight of birds in T₁ was significantly ($p < 0.01$) higher than those on the other treatments. Total weight gain was statistically similar for treatments T₁, T₂, and T₃. The best feed conversion ratio (FCR) and feed cost/kg gain were obtained for birds in T₃. At the finisher phase, apart from the weight gains (total, weekly and daily), all the other parameters were significantly ($p < 0.05/p < 0.01$) affected by the treatments. Final weight of birds on T₁ was significantly ($p < 0.01$) higher than those for other treatments. The best FCR and feed cost/kg gain were obtained with birds on T₄. Results of carcass and organ weights showed that live weight, carcass weight, back weight and head weight were significantly ($p < 0.05$) affected by experimental diets. The farmer, who depends on commercial feeds and who wants his birds to reach market weight at the shortest possible time should consider T₁. A farmer who wishes to produce birds at cheaper cost not minding the time the birds take to attain market weight should consider T₃.

Keywords: Broilers, commercial, feed and performance

Introduction

Nutrition is the most important aspect of livestock production, which can be used to enhance animal productivity and also reduce the cost of production. In the poultry industry, 75- 80% of the total cost of production is attributed to feeding costs. Of this, nearly thirty percent is due to protein supply in rations (Coon, 2002). According to Mukhtar *et al.* (2007), the ideal poultry diet should satisfy the requirement of most species for amino acids, as well as, achieving the maximum economic return. Considering the high cost of feeding broilers, there is need to focus on efficient feed utilization, in order to maximize profits. Given the increasing number of people, especially novices in feed formulation and production, venturing into poultry business, there is no doubt, that there is a high demand for commercial feeds. There is now the tendency for feed manufacturers, to produce substandard feeds, especially as the quality control agencies are non-existent or non-functional in Nigeria (Okoli *et al.*, 2007; Omede, 2008; Okoli *et al.*, 2008). It appears that the farmers and the public at large are left at the mercy of commercial feed millers and feed raw materials producers and processors.

Materials and Methods

This research was conducted at the Poultry Unit, Teaching and Research Farm of the Department of Animal Production, Kogi State University, Anyigba. The four commercial feeds used were A, B, C and D coded as T₁, T₂, T₃ and T₄, respectively. Apart from Vital feed which is in a pelleted form, all others are in mash form. A total of 96 day old broiler chicks reared on deep litter were used for this experiment. Pre-feeding was carried out for a period of 12 days. Twenty-four birds were assigned to each diet in a Completely Randomized Design. Each dietary group was subdivided into 3 replicates of 8 birds. The starter phase of the experiment which began immediately after pre-feeding lasted for 14 days, while the finisher phase was for 21 days.

Data collected were subjected to analysis of variance (ANOVA) and differences between treatment means were tested using least significant difference.

Results and Discussion

All the performance parameters analyzed for the starter phase were significantly ($p < 0.05/p < 0.01$) affected by the different commercial diets as shown in Table 1. Final weight of birds in T₁ was significantly ($p < 0.01$) higher than for those on the other treatments. Total weight gain was statistically similar ($p > 0.01$) for T₁, T₂ and T₃, while feed intake was statistically similar for T₁ and T₂. The best FCR and feed cost/kg gain were obtained for birds on T₃. The differences observed in the initial weight of the birds might be due to the fact that each treatment was fed the different commercial feeds from day old through pre-feeding before the experiment commenced. The variability in the weight might be as a result of the nutrient contents of the feeds which might have resulted from differences in feed composition and form (pellets or mash). The low feed intake of birds on T₄ relative to those on T₁, T₂ and T₃ might have resulted from the higher metabolizable energy (ME) value of T₄, as birds eat to satisfy their energy

requirement (Leeson and Caston, 2003). Feed cost per kg was lowest with T₄ which means that the feed fed to birds on T₄ was the cheapest when compared to the others.

Table 1: Performance of starter broilers fed four commercial feeds

Parameters	Treatments				SEM	LOS
	T ₁	T ₂	T ₃	T ₄		
Initial weight (g)	389.68 ^a	379.33 ^a	329.00 ^b	311.33 ^b	0.94	**
Final weight (g)	906.67 ^a	884.33 ^{ab}	881.67 ^b	700.00 ^c	1.03	**
Total weight gain (g)	517.00 ^a	505.00 ^a	552.67 ^a	388.67 ^b	1.70	**
Weight gain/week (g)	258.50 ^a	252.50 ^a	276.33 ^a	194.34 ^b	0.85	*
Weight gain/day (g)	36.92 ^a	36.07 ^a	39.47 ^a	27.76 ^b	0.12	*
Total feed intake (g)	1483.33 ^a	1483.33 ^a	1380.00 ^b	1253.33 ^c	3.86	*
Total feed intake/week (g)	741.67 ^a	741.67 ^a	690.00 ^b	626.67 ^c	1.93	*
Total feed intake/day (g)	105.95 ^a	105.95 ^a	98.57 ^b	89.52 ^c	0.28	*
Feed conversion ratio	2.86 ^b	2.94 ^b	2.49 ^a	3.22 ^c	0.01	*
Feed cost/kg (₦)	124.00	120.00	120.00	108.00	-	-
Feed cost/kg gain (₦)	354.64 ^b	352.80 ^b	298.80 ^a	347.76 ^b	7.44	*

^{abc}= Means with different superscripts on the same row differs significantly (p<0.05), NS = Not Significance, LOS = Level of significance, * = Significant at (p<0.05), ** = Highly significant at (p<0.01), SEM = Standard error of mean.

As shown in Table 2 (finisher phase), apart from the weight gains (total, weekly and daily), all other parameters were significant. Final weight of birds on T₁ was significantly higher than those on the other treatments. Feed intake for T₁ and T₂ were similar (P>0.05). The best FCR and feed cost/kg gain were obtained with the birds on T₄. Feed conversion ratio is the ability of the birds to turn feed mass into body mass. The lower the feed conversion ratio, the better the performance of the bird in converting feed into meat. As earlier stated in starter phase, observed feed consumption pattern might be due to feed composition and form. The lowest feed intake by birds on T₄ relative to the other treatments (as also recorded for the starter phase) might have resulted from the higher ME value of the diet. It has also been reported that birds over eat under moderate protein insufficiency, which is not necessarily a craving for protein per se, but a compensatory increase in feed intake in response to the deficient essential nutrients (Lipstein and Bronstein, 1975).

Table 2: Performance of Finisher Broilers Fed Four Commercial Feeds

Parameters	Treatments				SEM	LOS
	T ₁	T ₂	T ₃	T ₄		
Initial weight (g)	906.67 ^a	884 ^{ab}	881.67 ^b	700.00 ^c	1.03	**
Final weight (g)	2273.00 ^a	2110.67 ^{ab}	2076.00 ^b	2002.33 ^b	7.62	*
Total weight gain (g)	1366.33	1226.33	1194.33	1302.33	7.92	NS
Total Weight gain/week (g)	455.44	408.77	398.11	434.11	2.74	NS
Weight gain/day (g)	65.10	58.39	56.87	62.01	0.38	NS
Total feed intake (g)	3432.67 ^a	3398.67 ^a	3186.00 ^b	3033.00 ^c	3.42	*
Feed intake/week (g)	1144.22 ^a	1132.89 ^a	1062.00 ^b	1011.00 ^b	1.14	*
Feed intake/day (g)	163.46 ^a	161.84 ^a	151.71 ^b	144.43 ^b	0.16	*
Feed conversion ratio	2.51 ^b	2.77 ^b	2.67 ^b	2.33 ^a	0.02	*
Feed cost/kg (₦)	120.00	116.00	116.00	104.00	-	-
Feed cost/kg gain (₦)	301.20 ^b	321.32 ^b	309.72 ^b	242.32 ^a	14.90	*

^{abc}= Means with different superscripts on the same row differs significantly (p<0.05), NS = Not Significance, LOS = Level of significance, * = Significant at (p<0.05), ** = Highly significant at (p<0.01), SEM = Standard error of mean.

Results on carcass and organ weights in Table 3 show that only final live weight, carcass weight, back weight and head weight were significantly (P<0.05) affected by the experimental diets. Final live weight and carcass weight for birds on T₁ and T₂ were similar. The differences in carcass and organ weights among the treatments are due to the different composition of the commercial diets used.

Table 3: Carcass and organs weight of broilers fed four commercial feeds

Parameters	Treatments				SEM	LOS
	T ₁	T ₂	T ₃	T ₄		
Final live weight (g)	2461.33 ^a	2352.67 ^a	2271.33 ^{ab}	2143.00 ^b	8.40	*
Carcass weight(%)	2153.33 ^a	2050.67 ^a	1971.33 ^{ab}	1815.33 ^b	9.60	*
Dressing percentage(%)	87.99	87.44	87.20	86.80	0.38	NS
Neck weight(%)	4.73	4.88	4.87	5.30	0.05	NS
Back weight(%)	14.530 ^a	12.42 ^b	12.40 ^{ab}	14.53 ^a	0.09	*
Wing weight(%)	8.57	7.94	7.74	8.27	0.04	NS
Breast weight(%)	21.86	22.40	21.98	21.80	0.12	NS
Thigh weight(%)	11.04	10.99	10.63	10.40	0.06	NS
Drumstick weight(%)	9.80	10.30	9.82	9.74	0.08	NS
Heart weight(%)	0.50	0.50	0.55	0.55	0.01	NS
Gizzard weight(%)	2.40	2.08	2.11	2.30	0.31	NS
Leg weight(%)	4.13	3.99	3.90	3.80	0.05	NS
Kidney weight(%)	0.12	0.11	0.11	0.11	0.002	NS
Lungs weight(%)	0.70	0.69	0.71	0.60	0.01	NS
Head weight(%)	2.54 ^a	1.40 ^{ab}	0.71 ^b	0.60 ^b	0.06	*
Liver weight(%)	2.70	2.50	2.70	2.50	0.01	NS

^{abc}= Means with different superscripts on the same row differs significantly ($p < 0.05$), NS = Not Significance, LOS = Level of significance, * = Significant at ($p < 0.05$), SEM = Standard error of mean.

Conclusion

Based on the results obtained from this study, it might be concluded that; T₄birds were the least in terms of total weight gain and feed utilization but the feed was the cheapest of the four commercial feeds while T₁was the costliest in terms of the cost of feed used to produce 1kg of broiler meat. The farmer, who depends on commercial feeds and who wants his birds to reach market weight at the shortest time possible should consider T₁. A farmer who wishes to produce birds at cheaper cost without regard for the time they attain market weight should consider T₃.

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