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Performance of Broilers on Variants of the Dual- Phase Feeding Regime

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Abstract
The performance of broilers on different variants of the dual phase feeding regime in a 56-day production period was studied. Ninety-six, day-old Ross-308 unsexed broilers were divided into four groups of twenty-four birds each and each group was replicated three times on weight equalization basis. Each group was randomly assigned, in a completely randomized design (CRD) experiment to one of the following variants of the dual phase feeding regime: T1 [(control)(starter 0 – 28 days, Finisher 29 – 56 days)]; T2 (Starter 0 – 15days, Finisher 16 -56 days); T3 (Starter 0- 21 days, Finisher 22-56 days); T4 (Starter 0- 35 days, Finisher 36- 56 days). Feed and water were offered *ad libitum* and the study lasted 56 days. Results obtained from the study indicated that broilers on treatment T4 recorded significantly ($p < 0.05$) higher final body weight (2792.10 g) and body weight gain (2728.49 g) than those in other groups. Birds on diet T1 recorded the best (2.38) feed conversion ratio, lowest feed intake (6512.24 g) and feed cost per kg body weight gain (₦351.12). However, birds on T2 produced the least input cost (₦1660.96). Net income and estimated profit were similarly, significantly ($p<0.05$) higher in T2 and T3 than other groups. It is recommended that broilers could be raised satisfactorily on any variants of the dual phase feeding regime. However, the broilers on T3 (0 - 21days starter diet and 22 - 56 days finisher diet) produced the best-estimated profit and is recommended for broiler producers particularly, if birds are to be sold by weight.

Keywords: Broilers, dual-phase, feeding, regime

Introduction

An accurate estimate of nutritional requirements is essential to optimize dietary nutrient balance which can be achieved through a phase feeding programme. Several phase feeding regimes are, therefore, in use worldwide in this rapidly expanding broiler production enterprise. In Nigeria, the dual phase feeding regime is popular among broiler farmers with the variant having a starter at 0 – 28 days and finisher at 29 – 56 days is the most popular. Other variants of the dual phase feeding regime nevertheless, exists (Olomu, 1995; Gajana *et al*., 2011). Feeding regimes have been reported to affect production cost and efficiency of broilers in items of growth and profitability of the enterprise (Warren and Emmert, 2000; Vandergrift, 2003). Also, cost of feed severely declines as protein content is reduced; therefore, the optimum time at which diet is changed is of economic importance (Salah *et al*., 1996).

This study determined the optimal performance and net income of broilers on variants of the dual phase feeding regime in a 56 day production period.

Materials and Methods

Ninety-six, day old unsexed, Ross 308 broiler chicks were procured a reputable breeder farm in Ibadan, Oyo State, Nigeria. The feed materials for the experimental diets were: yellow maize, soya bean meal, and palm kernel cake, fish meal, bone meal, salt and vitamin/mineral premixes. Two experimental broiler diets were formulated for the starter and finisher broilers. The gross composition and calculated nutrients compositions of the diets are presented in table 3.1. The formulated experimental broiler diet includes broiler starter mash and broiler finisher mash; all diets were offered in mash form.

Table 1: Gross and calculated nutrient composition of experimental broiler diets (%)

Ingredients	Broiler starter diet	Broiler finisher diet
Maize	50.00	60.00
Soya beans	30.20	23.75
Palm kennel cake	12.75	10.20
*Others	7.50	6.08
Total	100.00	100.00
Calculated composition of experimented broiler diets (%)		
Metabolisable energy (Kcal/kg)	2895.51	2995.00
Crude protein	22.43	19.95

* All diets contained the following ingredients: Fish meal, Bone meal, Salt, vitamin/Mineral premix, Lysine and Methionine

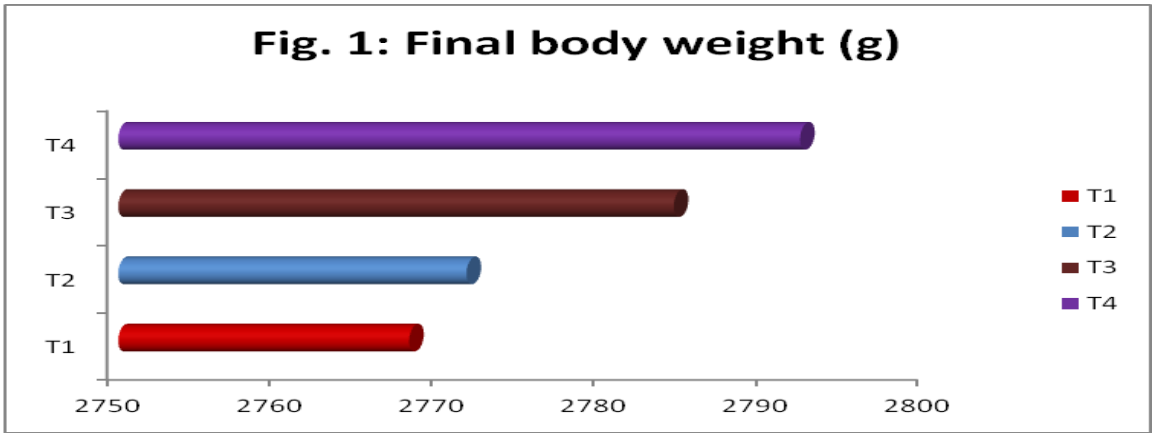
Ninety-six, day old unsexed Ross308 broiler chicks were divided into four groups of 24 birds each. Each group was further subdivided into three replicates of 8 birds each on weight equalization bases. The experimental dietary treatments were randomly assigned to the broiler chick groups in a completely randomized design (CRD) experiment as shown in Table 2. The feeding trial lasted 56 days. Data obtained were subjected to analysis of variance (ANOVA) and where significant differences were observed, the means were compared using the Duncan New Multiple Range Test (DNMRT) (Snedecor and Cochran, 1975) using the statistical package for the social sciences (SPSS, 2012).

Table 2: Variants of the dual-phase feeding regime representing the treatment groups

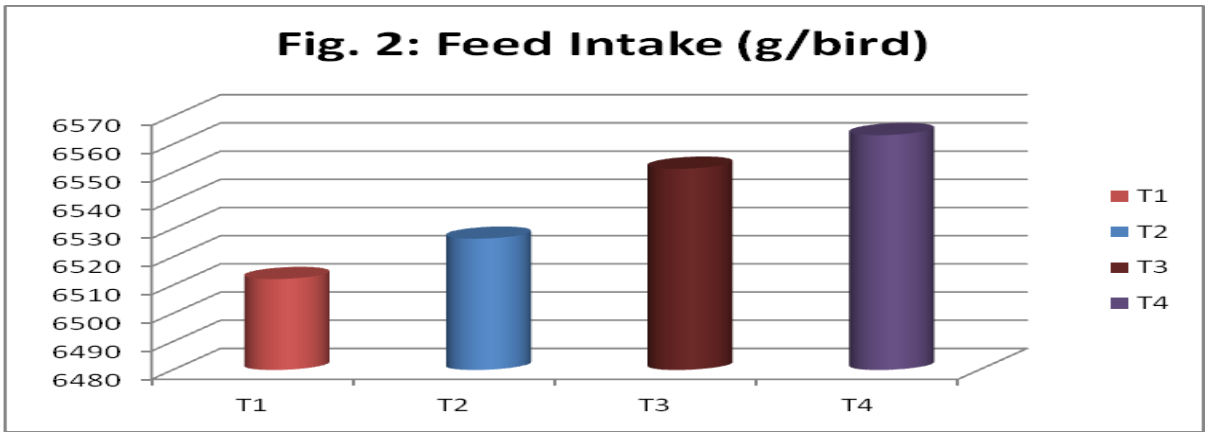
Diets	Treatments (feeding duration in days)			
	T1(control)	T2	T3	T4
Broiler Starter	0-28	0-15	0-21	0-35
Broiler Finisher	29-56	16-56	22-56	36-56

Results and Discussion

Birds in T4 produced the highest final body weight and body weight gain. These values 2792.10g and 2728.49g, respectively were significantly ($p < 0.05$) higher than those obtained for birds in T1 (control), T2 (Figure 1). It does appear from this result that broilers fed over a long period on starter mash (higher protein) produced higher body weight.



Total feed intake of broilers in this study ranged from 6512.24 to 6563.30 g with birds in T1 (control) recording the lowest value (Figure 2). Birds in T4 recorded higher feed intake than other groups. Feed intake of broilers in all the treatments groups was, however, similar ($p > 0.05$). Broilers in treatment 1(T1 control) recorded the best (2.38) feed conversion ratio (FCR). This value was, however, similar ($p > 0.05$) to values obtained in other groups (Table 3). However, birds on T4 recorded the poorest FCR (2.41). Feed cost per kg were the same (Table 3) however, feed cost per kg body weight gain (Figure 3) was significantly ($p < 0.05$) lower in the control (T1) than T4. The result indicated that feeding broilers at 0-28 days with broiler starter diet and 29-56 days with broiler finisher diet produced the best feed conversion ratio (Table 3). Birds on T4 produced the highest revenue per bird but those on T3 produced the highest net income and estimated profitability (Table 4).



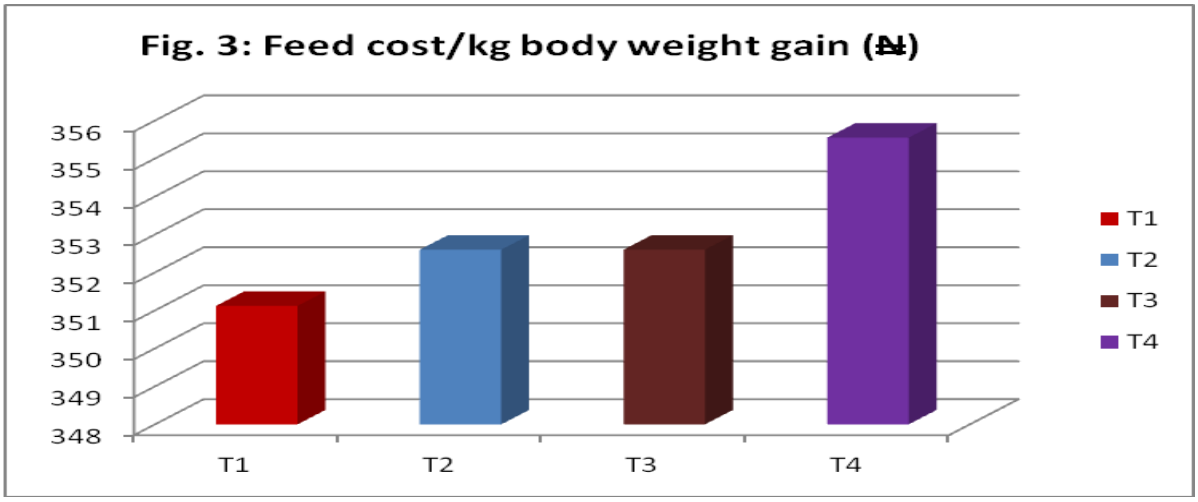


Table 3: Performance of broilers raised on variants of dual-phase feeding regimes

Parameters	Treatments (Feeding period)				
	T1	T2	T3	T4	
Body weight gain (g/bird)	2713.05[b]	2714.59[b]	2727.44[a]	2728.49[a]	4.10
Total feed intake (g/bird)	6512.24	6526.56	6551.37	6563.30	19.94
Feed conversion ratio	2.38	2.39	2.39	2.41	0.01
Feed Cost(₦/kg)	147.53	147.53	147.53	147.53	0.00
Mortality (%)	8.33	12.5	12.5	12.5	1.04

[abc]Means within a row with different superscripts are significantly (p <0.05) different

Table 4: Net income of broilers on variants of dual-phase feeding regimes

Parameters	Treatments				SEM
	T1	T2	T3	T4	
Variable input cost (₦/bird) (A)	1669.60[b]	1660.96[b]	1670.21[ab]	1684.27[a]	4.83
Revenue (₦/bird)(B)	2989.40[b]	2993.22[b]	3007.04[ab]	3015.47[a]	6.06
Net Income/bird (₦) (B-A)	1319.80[b]	1332.26[a]	1336.83[a]	1331.17[a]	3.62
*Estimated profit (%)	79.04[b]	80.21[a]	80.04[a]	79.03[b]	0.32

Conclusion

The final body weights of broilers were higher among those raised on starter diets for 21 and 35 days (T3 and T4). Broilers on T4 (35 days starter diets) also produced the poorest FCR at high feed cost per body weight gain as well as total variable cost. However, data on the net income and estimated profit of the broilers indicated that broilers on T3 (21-day starter diet) were the best and better than those in the control diet.

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