

PERFORMANCE OF ISA BROWN COCKEREL CHICKS FED VARYING NUTRIENT DENSE DIETS

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ABSTRACT

Eight weeks feeding trial was carried out using a total of 300 day old Isa brown cockerel chicks to evaluate the effect of feeding varying nutrient dense mash. The experimental design was a completely randomized design with three treatments consisting of three diets viz; high nutrient dense mash, medium nutrient dense mash and low nutrient dense mash with each treatment replicated four times with 25 cockerels per replicate. Feed intake and live weight gain were measured. Body weight of the birds was measured at the beginning, weekly intervals and end of the experiment. Feed conversion ratio was determined. Data generated were subjected to statistical analysis. The result of the performance of cockerel chick fed different diets is shown in table 2. All parameters considered were significantly affected by the dietary treatments with the exception of initial weight. The results of the study showed that final weight and weight gain of the cockerel chicks fed high and medium nutrient dense mash were similar ($P>0.05$) but both higher ($P<0.05$) than that of chicks fed low nutrient dense mash. The chicks fed the low nutrient mash had the highest feed intake followed by those fed the high nutrient mash and then those fed the medium nutrient mash. Feed conversion ratio was similar ($P>0.05$) for chicks fed high and medium nutrient dense mash and superior ($P<0.05$) to that chicks fed the low nutrient dense mash. Feed intake per kg gain was higher and hence inferior ($P<0.05$) for both chicks fed high and low nutrient dense mash compared to that of chicks fed the medium nutrient dense mash. The results of this study showed that feed type affected the performance of cockerel chicks. Medium nutrient dense mash performed better in terms of FCR and feed cost per kg gain. It is therefore recommended that Isa brown cockerel chicks should be fed a medium nutrients dense mash which is similar to the chick mash (laying birds early rearing diet).

Keywords: Cockerels, Nutrient, Diets, Feed cost, Weight gain,

INTRODUCTION

In the past, it was not possible to sex day old chicks, so all birds were reared to six or eight weeks, when cockerels and pullets could be distinguished and separated. Cockerels would then be slaughtered as for meat at about 16 weeks and pullets kept for egg production (Leenstra, 2014). With the advent of sexing of day-old chicks, cockerels and pullets were separated at hatch, and it was no longer necessary to raise all birds, poultry production started to specialize in layers for eggs and broilers for meat (Leenstra, 2014). In some countries, most layer type males are killed at hatch. In some Asian countries, the day old chicks are consumed as a snack; in several European countries these chicks are processed as zoo and pet food, and sometimes they are simply destroyed. In many European countries this practice is challenged: Killing chicks immediately after hatch is considered ethically unacceptable (Leenstra, 2014).

Raising cockerels is not very complicated, but production costs may be high compared to producing poultry meat from specialized broilers. This is caused by the rather slow growth rate of cockerels from layer strains. Whereas standard broilers reach 2000 grams at about 5 weeks of age, the layer cockerels need about 18 weeks to attain 2000 grams. Due to this unfavourable feed conversion and the long rearing period, production costs of cockerels are high (Leenstra, 2014). However, cockerel production management is easier than the broiler production particularly in the rural areas where modern facilities including electric supply are not available (Olaniyi *et al.*, 2012). Cockerel are among preferred meat by consumers and have lower chick price, mortality and morbidity, management cost, initial investment, more organoleptic preference, family labour utilization and easy management (Olaniyi *et al.*, 2012). The

aim of the research is to evaluate the performance of Isa Brown cockerel chicks fed varying nutrient dense diets.

MATERIALS AND METHODS

Site location

The experiment was conducted at the Livestock Teaching and Research farm, Department of Animal Science, Federal University, Dutsin-Ma, Katsina state. Dutsin-Ma lies on latitude 12°26'N and longitude 07°29'E. Rainfall is between May and September with a peak in August. The average annual rainfall is about 700 mm. The mean annual temperature ranges from 29°C – 31°C. The highest air temperature normally occurs in April/May and the lowest in December through February (Abaje *et al.*, 2014).

Experimental birds and design

A total of 300 day old cockerel chicks were used for the study. The birds were sourced from a reputable hatchery. The birds were reared on deep litter with all routine management practices adhered to. The experimental design was a completely randomized design with three treatments consisting of three diets viz; high nutrient dense mash, medium nutrient dense mash and low nutrient dense mash. The feed compositions are shown in table 1. Each treatment was replicated four times with 25 cockerels per replicate. The birds were reared on deep litter throughout the experimental period of 8 weeks with *ad libitum* access to feed and water.

Table 1: Composition (%) of Experimental Diets

Ingredients	High Nutrient Dense Mash	Medium Nutrient Dense Mash	Low Nutrient Dense Mash
Sorghum	59.00	65.00	60.80
Soyabean meal	34.80	23.00	12.00
Wheat offal	-	7.80	23.00
Limestone	0.50	0.50	0.50
Bone meal	3.00	3.00	3.00
Salt	0.25	0.25	0.25
Premix*	0.25	0.25	0.25
Methionine	0.20	0.20	0.20
Palm oil	2.00	-	-
Total	100.00	100.00	100.00
Calculated analysis			
Crude protein	22.15	18.83	16.00
ME (kcal/kg)	2953.08	2856.66	2731.70
Crude fibre	2.61	3.02	4.01
Ether extract	3.53	1.76	2.03
Calcium	1.32	1.31	1.30
Phosphorus	0.88	0.90	0.95
Methionine	0.51	0.47	0.44
Lysine	1.42	1.10	0.84

Measurements

Growth Performance

Feed intake and live weight gain

A given quantity of feed was measured and fed to the birds on a weekly basis. From which weekly feed intake was measured. Daily feed intake and total feed intake were determined. The birds was weighed at day old and assigned to the various treatments. From thereon, they was weighed early in the morning before receiving any feed and water using a weighing balance at weekly interval during the experimental period. Initial and final body weights of the birds were measured at the beginning and end of the

experiment respectively. Average daily weight gain and feed conversion ratio was determined. Mortality was recorded as it occurs and its cause was determined.

Feed Cost

Feed cost: Feed cost (N/Kg) was calculated from the cost of individual ingredients used in feed preparation.

Feed cost per kilogram weight gain: This was calculated by multiplying feed cost per kilogram by feed conversion ratio.

Statistical Analysis

All data generated was subjected analysis of variance. Significantly ($P < 0.05$) different means was separated using Duncan's Multiple Range Test as contained in SAS (1999) package.

Table 2: Effect of Different Feeding Regimes on Growth performance of Isa Brown Cockerels (0-8 weeks)

Parameter	H	M	L	SEM
Initial weight (g)	36.68	36.00	37.00	0.07
Final weight (g)	518.83 ^a	511.08 ^a	411.14 ^b	6.77
Weight gain (g)	482.15 ^a	475.08 ^a	374.14 ^b	6.76
Feed Intake (g)	1710.67 ^b	1650.00 ^c	1770.00 ^a	6.26
Feed Conversion ratio	3.55 ^b	3.48 ^b	4.73 ^a	0.05
Total Feed Cost (₦)	181.67 ^a	150.25 ^b	145.07 ^c	0.63
Feed cost/kg gain (₦)	377.43 ^a	316.69 ^b	388.00 ^a	5.00

SEM – standard error of mean

^{a, b, c} means in a row with no common superscript(s) differ significantly ($P < 0.05$)

H- High nutrient dense mash

M- Medium nutrient dense mash

L- Low nutrient dense mash

RESULTS AND DISCUSSION

The result of the performance of cockerel chick fed different diets is shown in table 2. All parameters considered were significantly affected by the dietary treatments with the exception of initial weight. The final weight of the cockerel chicks fed high and medium nutrient dense mashes were similar ($P > 0.05$) but both higher ($P < 0.05$) than that of chicks fed low nutrient dense mash. Weight gain followed a similar trend with final weight. Feed intake was different ($P < 0.05$) among the different diets. The chicks fed the low nutrient mash had the highest feed intake followed by those fed the high nutrient mash and then those fed the medium nutrient mash. Feed conversion ratio was similar ($P > 0.05$) for chicks fed high and medium nutrient dense mashes and superior ($P < 0.05$) to that chicks fed the low nutrient dense mash. Total feed cost was affected by the different diets with the high nutrient mash recording the highest ($P < 0.05$) compared to medium and low nutrient dense mashes. The low nutrient dense mash had the least feed cost which was less than that of the medium dense mash. Feed intake per kg gain was higher and hence inferior ($P < 0.05$) for both chicks fed high and low nutrient dense mashes compared to that of chicks fed the medium nutrient dense mash. Weight gain similarity observed between the high and medium nutrients dense mashes in this study was contrary to that obtained by Koenig *et al.* (2012) when they compared cockerels fed a broiler diet (high nutrient) and a rearing diet for laying hens (medium nutrient). They observed 11% higher gain in the broiler diet fed chicks compared to the rearing diet fed chicks. They also obtained a better FCR in broiler diet fed chicks compared to the layer rearing diet fed chicks which was contrary to the observations of this study. The higher weight gain observed in the high nutrient dense mash fed group may be due to higher contents of crude protein and metabolizable energy. The superior FCR and feed cost per kg gain of the medium nutrient dense mash may be due to the genotype of the cockerels which is not for rapid weight gain.

CONCLUSION AND RECOMMENDATION

The results of this study showed that feed type affected the performance of cockerel chicks with high nutrient dense mash having weight gain. Medium nutrient dense mash performed better in terms of FCR and feed cost per kg gain. It is therefore recommended that Isa brown cockerel chicks should be fed a medium nutrients dense mash which is similar to the chick mash (laying birds early rearing diet).

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